

QUESTION BANK OF

LDCE QUOTA AND

PROMOTIONAL QUOTA

(English Version)

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PART – II: NON – TECHNICAL

- 9. ESTABLISHMENT
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- 11. BASICS OF COMPUTERS
- 12. BASICS OF ENGINEERING DRAWING
- 13. BASICS OF ENVIROMENTAL ENGINEERING
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- 15. GENERAL ENGLISH
- 16. RAJBHASHA

1. GENERAL ELECTRICAL ENGINEERING

1. For the protection of single-phase 1.5 kW motor, a MCB of rating should be provided
 - (a) 10 A
 - (b) 16 A
 - (c) 32 A
 - (d) 63 A
2. The low power factor results in
 - (a) Increased losses
 - (b) Decreased losses
 - (c) No effect on losses
 - (d) Better generating efficiency
3. Low power factor
 - (a) Aids the voltage regulation
 - (b) Increase the voltage regulation
 - (c) Decrease the voltage regulation
 - (d) None of the above
4. The power factor of the AC supply can be improved by using
 - (a) Synchronous generator
 - (b) Universal motor
 - (c) Synchronous condenser
 - (d) SCR
5. A distribution line of 440 V is classified as
 - (a) LV
 - (b) MV
 - (c) HV
 - (d) EHV
6. Which of the following is not used as a overhead conductor
 - (a) ACSR
 - (b) Weasel
 - (b) PILCA
 - (d) Zebra
7. Which of the following reduces the power factor
 - (a) Motor on no load
 - (b) Tube lights
 - (c) Fans
 - (d) All of the above
8. Under high voltage test cable shall withstand an AC voltage of
 - (a) 1.5 kV
 - (b) 3 kV
 - (c) 5.2 kV
 - (d) 7.2 kV
9. Under high voltage test cable shall withstand a DC voltage of
 - (a) 1.5 kV
 - (b) 3 kV
 - (c) 5.2 kV
 - (d) 7.2 kV
10. Under water immersion test cable is immersed in a water bath at
 - (a) 40 deg C
 - (b) 50 deg C
 - (c) 60 deg C
 - (d) 70 deg C

11. For water immersion test, cable is immersed in hot water at specified temperature, after 24 hrs the voltage applied between conductor and water for five minutes is
 (a) 3 kV (b) 4 kV
 (c) 5 kV (d) 6 kV
12. Unit of energy is
 a)Kilo volt hours b)Kilo watt hours c)Kilo watt d) None
13. As per Ohm's law
 a) $V = IR$ b) $V = I/R$ c) $R = V \times I$ d) None
14. Unit of resistance is
 a)Ampere b)Volts c)Ohm d)None
15. In three phase 415 volts 50 Hz supply, the phase to phase voltage is
 a)220 Volts b)415 volts c)440 volts d)None
16. In three phase 415 volts 50 Hz supply, the phase to neutral voltage is
 a)220 volts b)230 volts c)440 volts d)None
17. In 4 sq. mm PVC wire, 4 sq. mm stand for
 a) Thickness of wire
 b) Length of wire
 c) The area of thickness of wire
 d) None
18. The instrument to measure the light is called
 a) Tong tester b)Lux meter c) Micrometer d)None
19. 10 hours use of 500 watt lamp will consume the energy
 a) 10 units b)20 units c) 5 units d)None
20. No. of poles in MCB/TPN is
 a) 2 poles b) 4 poles c) 3 poles d)None
21. A.C. is converted into D.C. by
 a) Dynamo b) Motor.
 c) Transformer d) Rectifier
22. Farad is a unit of
 a) Flux b) Capacitance
 c) Mutual inductance d) Resistance of a conductor
23. A kilowatt-hour is a unit of
 a) Energy b) Electrical potential
 c) Power d) Electric current

24. An electric lamp is marked 100 watt. It is working on 200 Volts. The current through the lamp is given as
- a) 0.5 Amp.
 - b) 0.2 Amp.
 - c) 5.0 Amp.
 - d) 1.0 Amp.
25. Before carrying out O/H maintenance following is due
- a) Transformer is switched off
 - b) DG set is switched off
 - c) HT panel is switched off
 - d) Respective O/H feeder is switched off or earthed
26. In house wiring the red wire indicates the
- (a) Phase
 - (b) Neutral
 - (c) Earth wire
 - (d) Dead wire.
27. In house wiring the black wire indicates the
- (a) Phase
 - (b) Neutral
 - (c) Earth wire
 - (d) Dead wire
28. In house wiring the green wire indicates the
- (a) Phase
 - (b) Neutral
 - (c) Earth wire
 - (d) Dead wire.
29. In 4 wire electric circuit, the black conductor is used for
- (a) Phase
 - (b) Neutral
 - (c) Earth wire
 - (d) Armor
30. In cabling system the earth is connected with conductor having colour
- (a) Red
 - (b) blue
 - (c) yellow
 - (d) Armor
31. Unit of current is
- (a) Watt
 - (b) Ampere
 - (c) Volt
 - (d) ohm
32. Heater element is made up of
- (a) Tin
 - (b) Nichrome
 - (c) Silver
 - (d) Any above
33. Filament of incandescent lamp is made of
- (a) Tin
 - (b) Nichrome
 - (c) Tungsten
 - (d) Silver

34. An insulator should have
(a) High resistance (b) High conductance
(c) High conductivity (d) All of the above
35. Which of the following is used to make electric connections
(a) Solder (b) PG clamp
(c) Thimbles (d) All above
36. Instrument used for measuring the speed of rotating machines/ appliances is
(a) Lux meter (b) Tachometer
(c) Micrometer (d) None above
37. Instrument used for measuring the thickness of wire/strip is
(a) Lux meter (b) Tachometer
(c) Micrometer (d) None above
38. Instrument used for measuring the voltage across a circuit is
(a) Ammeter (b) voltmeter
(c) Thermometer (d) None above
39. Instrument used for measuring the current is
(a) Ammeter (b) voltmeter
(c) Thermometer (d) None above
40. Instrument used for measuring the temperature is
(a) Ammeter (b) voltmeter
(c) Thermometer (d) None above
41. Illumination level is measured in terms of
(a) Lux (b) Volt
(c) Ampere (d) Ohm
42. Insulating resistance is measured by using
(a) Multimeter (b) Megger
(c) Voltmeter (d) Hydrometer
43. Which of the following is used for rectification of AC supply
(a) Diodes (b) Transistors
(c) Capacitor (d) Resistors
44. Which preparation should be done starting a new wiring
(a) Prepare a wiring diagram
(b) Prepare for shock treatment
(c) Both a & b
(d) None of the above

- 45 In wiring circuit the fuse will be placed on
(a) Phase (b) Neutral
(c) Earth (d) Any of the above
- 46 Which of the following tests should be done before connecting a wiring to the main line
(a) IR test (b) Continuity test
(c) Polarity test (d) Any above
- 47 Which of the following is a common wiring fault
(a) Short circuit (b) Open circuit
(c) Fuse blown (d) All above
- 48 Wattage rating range of electric kettle is
(a) 50-500 W (b) 350-1000 W
(c) 1000-1500 W (d) 1200-1600 W
- 49 Device used for auto off an electric iron is
(a) Thermostat switch (b) Overload relay
(c) Time delay switch (d) Any of the above
- 50 Can you repair an immersion rod
(a) No (b) Yes
(c) It depend on condition (d) None above.
- 51 A wire gauge is used to measure diameter of
(a) Wire (b) cable
(c) OH conductor (d) Any above
- 52 To improve the power factor, capacitors are connected in the circuit as
(a) Parallel path (b) Series path
(c) Any of a & b (d) None of the above
- 53 To switch ON or switch OFF the supply in accordance with day light, following is used
(a) Light dependent resistor (b) Light emitting diode
(c) Any of a & b (d) None of the above
- 54 In order to draw more current from the electric source
(a) Resistors are connected in parallel
(b) Resistors are connected in series
(c) Resistors are connected in series and parallel
(d) None of the above.

- 55 If a 60 W and 100 W lamps in series and are connected to a source of supply, which lamp will give more light
 (a) 100 W (b) 60 W
 (c) Both will give same light (d) None of the bulb will glow.
- 56 Power is defined as
 (a) Capacity of doing work (b) Rate of doing work
 (c) Product of force and distance (d) Energy dissipated by load.
- 57 Unit of electric power is
 (a) Kilowatt (b) watt
 (c) Kilowatt hour (d) watt hour
- 58 The internal resistance of battery is increased by
 (a) Increase in no. of cells
 (b) Decrease in no. of cells
 (c) None of the above
- 59 A generator converts
 (a) Mechanical energy into light
 (b) Electrical energy to mechanical energy
 (c) Mechanical energy to electrical energy
 (d) None of the above
- 60 Power factor of AC circuit is equal to
 (a) Tan of phase angle (b) Sine of phase angle
 (c) Cosine of phase angle (d) None of the above
- 61 Resistance of open circuit is equal to
 (a) Zero (b) Infinity
 (c) Less than 1 ohm (d) None above
- 62 Laminated core is used to reduce
 (a) Hysteresis loss (b) Eddy current loss
 (c) Copper loss (d) iron loss
- 63 Which of the following is not a non-conventional energy source
 (a) Solar (b) Bio gas
 (c) Wind (d) Electricity
- 64 Solar energy is used for
 (a) Lighting (b) Cooking
 (c) Battery charging (d) All above

- 65 Solar and wind hybrid system is
 (a) Becoming popular (b) Not possible
 (c) Conventional energy source (d) None of the above
- 66 Bio gas depends on
 (a) Electrical energy (b) Waste products
 (c) Both a and b (d) None of the above
- 67 Which of the following is not a constituent of a solar lighting system
 (a) Photo voltaic cell (b) Back up batteries
 (c) Charger (d) Earth wire.
- 68 Which of the following is not a type of fuse
 (a) HRC (b) Rewirable
 (c) Ceramic (d) None above.
- 69 Which of the following is not a type of generating station?
 (a) Thermal (b) Nuclear
 (c) Hydro (d) Atmospheric
- 70 Which of the following is not a part of overhead distribution line
 (a) Conductor (b) Insulator
 (c) Cross arms (d) Thimbles
- 71 Type of insulator not used in a 3 phase, 440 V overhead distribution line
 (a) Pin (b) Shackle
 (c) Disc (d) None above
- 72 Instrument connected in the circuit with the ammeter (in panel) to facilitate the measurement of current is
 (a) Current transformer (b) Potential transformer
 (c) Excitation transformer (d) None of the above
- 73 Capacitor opposes
 (a) Instantaneous change of voltage (b) Instantaneous change of current
 (c) Instantaneous change in resistance (d) None of the above
- 74 Inductor opposes
 (a) Instantaneous change of voltage
 (b) Instantaneous change of current
 (c) Instantaneous change in resistance
 (d) None of the above
- 75 Current is
 (a) Rate of flow of charge (b) Gradual change in resistance
 (c) Linear change in capacitance (d) None of the above.

- 76 When resistances are connected in parallel, the equivalent resistance
(a) Decreases (b) Increases
(c) No change (d) May increase or decrease
- 77 When resistances are connected in series, the equivalent resistance
(a) Decreases (b) Increases
(c) No change (d) May increase or decrease
- 78 Diode allows the flow of the current
(a) In one direction (b) In both the directions
(c) Flow of current not allowed (d) None of the above.
- 79 When capacitances are connected in parallel, the equivalent capacitance
(a) Decreases (b) Increases
(c) no change (d) May increase or decrease
- 80 When capacitances are connected in series, the equivalent capacitance
(a) Decreases (b) Increases
(c) No change (d) May increase or decrease
- 81 Two lamps of 60 W and one of 100 W are connected in series to a supply 220 V, the current flowing in the circuit will be
(a) 1A (b) 2A
(c) 3A (d) 4A
- 82 A 2 x 40 W box type fitting glows for 10 hrs in a day, units consumed per day will be
(a) 0.72 (b) 0.04
(c) 0.8 (d) 1
- 83 A 2 x 40 W box type fitting glows for 10 hrs in a day, electric charges for the month of June @ Rs. 3/- per unit will be Rs.
(a) 18 (b) 3.60
(c) 72 (d) 90
- 84 One ordinary ceiling fan works for 12 hrs in a day, units consumed per day will be
(a) 0.72 (b) 0.04
(c) 0.8 (d) 1
- 85 One ordinary ceiling fan works for 12 hrs in a day, electric charges per day @ Rs. 2/- per unit will be
(a) 0.72 (b) 1.44
(c) 0.8 (d) 1

- 86 One 20-inch desert cooler (150 W) works for 8 hrs per day, units consumed per day will be
 (a) 1.2 (b) 1.8
 (c) 2.1 (d) 2.4
- 87 One 20-inch desert cooler (150 W) works for 8 hrs per day, electric charges for the month of July @ Rs. 3/- per unit will be
 (a) 111.6 (b) 110.2
 (c) 90 (d) 115.3
- 88 A geyser of 25 ltrs., 1500 W remains ON for 2 hrs per day, units consumed for 6 months will be
 (a) 540 (b) 480
 (c) 620 (d) 700
- 89 One 60 W lamp and 2 fans work for 10 hrs per day, units consumed per day will be
 (a) 1.8 (b) 2.1
 (c) 1.7 (d) 3
- 90 A 10 hp pump works for 10 hrs per day, monthly consumption will be
 (a) 223.8 (b) 2.23
 (c) 22.38 (d) 2238
- 91 A grinder in a factory, equipped with 1.5 hp motor, works for 6 hrs per day, the units consumed per day will be
 (a) 5.490 (b) 6.714
 (c) 2388 (d) 1940
- 92 Internal resistance of a cell is 0.1 ohm and 10 cells are connected in series to form a battery supplying a current of 1 A, the power lost in the battery is
 (a) 0.5 W (b) 1 W
 (c) 5 W (d) 50 W
- 93 The resistance of human body lies between
 (a) 100-200 ohm (b) 5 K ohm-50 K ohm
 (c) 1 M ohm-10 M ohm (d) 100 k ohm-500 K ohm
- 94 Instrument used to measure electric energy consumption is
 (a) Galvanometer (b) Potentiometer
 (c) Energy meter (d) None of the above
- 95 Which of the following keeps the poles straight
 (a) Stay rod (b) Cross arm
 (c) Conductor (d) Insulator

- 96 Inside the geyser there is a
 (a) Filament (b) Immersion rod
 (c) Any of a & b (d) None of the above
- 97 Which of the following is used for concealed wiring in a house
 (a) PVC conduit (b) GI pipe
 (c) Spun concrete pipe (d) Any of the above.
- 98 The size of copper wire used for point wiring in sq mm is
 (a) 1.5 (b) 2.5
 (c) 4 (d) 10
- 99 The size of copper wire used for sub main in sq mm is
 (a) 1.5 (b) 2.5
 (c) 4 (d) 10
- 100 The size of Aluminium wire used for point wiring in sq mm is
 (a) 1.5 (b) 2.5
 (c) 4 (d) 10
- 101 The combined Earth resistance of 33kV/11 kV receiving station should not exceed
 (a) 1 ohm (b) 2 ohms
 (c) 10 ohms (d) 20 ohms
- 102 The combined earth resistance of 11 kV/415 V Sub-station should not exceed
 (a) 0.5 ohm (b) 2 ohms
 (c) 10 ohms (d) 20 ohms
- 103 The integration time employed by supply authorities for recording M.D. for a 33 kV/415 V, 10 MVA Sub-station is –
 (a) 5 minutes (b) 15 minutes
 (c) 45 minutes (d) 60 minutes
- 104 While designing a sub-station anticipated future loads in the next ... years are taken
 (a) 1 year (b) 2 years
 (c) 20 years (d) 5-7 years
- 105 As per the present Tariff the minimum power factor of sub-station should be
 (a) 0.8 (b) 0.85
 (c) 0.90 (d) 0.95
- 106 The minimum clearance of lowest conductor from the ground of 33 kV lines, across the load.
 (a) 3 M (b) 4 M
 (c) 6.1 M (d) 14 M

107. The minimum clearance of lowest conductor from the ground of 33 kV lines, along a street.
- (a) 5.8 M (c) 3.0 M
(b) 4.0 M (d) 14 M
108. The minimum vertical clearance from 11 kV line to any part of building.
- (a) 2.0 M (b) 10.M
(c) 3.7 M (d) 6.0 M
109. The minimum Horizontal clearance of 11 kV lines from any buildings.
- (a) 1.2 M (b) 3.7 M
(c) 6.1 M (d) 10 M
110. The Visible, Audible, Partial discharge at the surface of conductor at high voltage is called –
- (a) Skin affect (b) Corona
(c) Creep (d) None of these
111. For maintaining power supply quality, the frequency variation of power supply is restricted to
- (a) $\pm 1 \%$ (b) $\pm 3 \%$
(c) $\pm 0.5\%$ (d) $\pm 10\%$
112. The 3 phase voltage unbalance in supply should not exceed
- (a) 2.5.% to 5% (b) 20%
(c) 25% (d) 10%
113. For maintaining power supply quality, the rate of change of frequency should not exceed.
- (a) 5 Hz/Sec. (b) 10 Hz/Sec
(c) 1 HZ/Sec (d) 3 Hz/ Sec.
114. In Thermal Power plants the generator used are
- (a) AC 3 Ø, Induction Generators.
(b) AC 3 Ø, Synchronous Generators.
(c) D.C. Shunt Generators.
(d) AC 1 Ø Synchronous Generators.
115. The highest system voltage of normal 33 kV System for the purpose of design of equipments is
- (a) 30 kV. (b) 36 kV.
(c) 33 kV. (d) 66 kV.
116. The Rod gap on the L.V.side of 11 kV/415, 250 kVA Transformer is
- (a) 300 mm. (b) 100 mm.
(c) 50 mm. (d) Rod gap L.A. is not provided for LV side of Transformer.

117. The rated voltage of L.A. for 11 kV/415V Transformer Protection is
(a) 11 kV. (b) 12 kV.
(c) 9 kV. (d) 24 kV.
118. For medium sized 11 kV/415 v, 500 kVA Transformer sub-station, the type of L.A. used are
(a) Station type. (b) Line type.
(c) Distribution type. (d) None of these.
119. The line type L.A. used for our 11 kV and 33 kV Sub-station are having a standard normal discharge current (Peak).
(a) 5 KA. (b) 10 KA.
(c) 1.5 KA. (d) 2.5 KA.
120. The span of supports for 11 kV overhead lines should not exceed.
(a) 100 m. (b) 65 m.
(c) 30 m. (d) 27 m.
121. The testing of relays should be performed at a interval of
(a) 6 months (b) 12 months
(c) 18 months (d) 24 months
122. If any live conductor in the circuit is entangled with tree branch_____operates.
(a) EFR (b) OVR
(c) OLR (d) Thermal relay
123. _____relay operates if there is a heavy increase in load current.
(a) EFR (b) OVR
(c) OLR (d) Thermal relay
124. _____relay indicates the temperature rise of a transformer.
(a) EFR (b) OVR
(c) OLR (d) Thermal relay
125. If the relay setting of 60/5 CT is at 3.75, then the tripping will be at
(a) 60 Amp. (b) 45 Amp.
(c) 30 Amp. (d) None

126. The normal SPG of electrolyte of lead acid battery should be
 (a) 1.160 (b) 1.180 (c) 1.220 (d) 1.240
127. The terminal voltage of a fully charged lead acid cell is
 (a) 1.8 V (b) 2.0 V (c) 2.2 V (d) 2.4 V
128. The terminal voltage of a lead acid cell should not fall below
 (a) 1.6 V (b) 1.8 V (c) 2.0 V (d) 2.2 V
129. The normal charging rate of 120 AH lead acid battery set is
 (a) 4 A (b) 8 A (c) 12 A (d) 16 A
130. The ratio of distil water and acid used to prepare new electrolyte for lead acid cell is
 (a) 1 : 1 (b) 2 : 1 (c) 3 : 1 (d) 4 : 1
131. Following law is applicable in the working of lead acid cell
 (a) Faradays law of self induction.
 (b) Faradays law of mutual induction
 (c) Faradays law of electrolysis.
 (d) Newton's law of motion.
132. The capacity of storage battery is expressed as
 (a) No. of recharges it can take
 (b) Time for which it can be used
 (c) No. of cells it contains
 (d) Ampere hour it can deliver.
133. Sedimentation in lead acid cell occurs due to
 (a) Overcharging at high rate.
 (b) Slow charging at low rate.
 (c) Over discharge at low rate.
 (d) Non-utilization for long periods.
134. Even when not in use, a lead acid battery should be recharged once in
 (a) Six week (b) Six days
 (c) Three months (d) Six months.
135. First step to be carried out before starting work starting work on faulty portion of overhead line is to
 (a) Earth the line on both the ends of the portion
 (b) Obtain the permit to work
 (c) Bring ladder or crane
 (d) Climb on the pole immediately

136. Before starting the work on faulty circuit, it should be ensured that
- (a) The faulty portion has been isolated from the power supply
 - (b) The worker is strong enough to climb the pole
 - (c) The cable is not deep enough to dig
 - (d) None of the above.
137. The electric overhead line on which work is to be carried out should be necessarily earthed on both the ends to
- (a) Disperse the charge stored between the conductors due to capacitive effect
 - (b) To bring the line at zero potential
 - (c) Both a & b
 - (d) None of the above
138. One can protect himself from electric shock while working on live circuit by wearing gloves of good
- (a) Conducting material
 - (b) Insulating material
 - (c) Semiconductor material
 - (d) Any of the above.
139. Which of the following are principal safety precautions
- (a) Don't touch live wire or equipment with bare hands
 - (b) Before switching on supply, see no one is working in the line
 - (c) Use rubber gloves and meeting.
 - (d) All of the above.
140. Which of the following is most effective method of artificial respiration
- (a) Mouth to mouth air pumping method
 - (b) To use bicycle air pump
 - (c) Both a & b
 - (d) None of the above
141. Which material is recommended as fire extinguisher in electrical cases
- (a) Carbon tetra chloride
 - (b) Carbon dioxide
 - (c) Sulphur hexafluoride
 - (d) Any of the above
142. Which of the following is to be necessarily kept in a electric substation
- (a) First aid box
 - (b) Stretcher
 - (c) Earthing rod
 - (d) All of the above

143. The warning board to be provided, on the switch of the line on which work is going on
 - (a) Man working
 - (b) Danger
 - (c) Keep away
 - (d) None of the above
144. Staff competent to work on overhead line of MV should be
 - (a) Unskilled
 - (b) Semi-skilled
 - (c) Highly skilled
 - (d) Any of the above
145. Which of the following is a renewable source of energy?
 - a) coal
 - b) oil
 - c) Natural gas
 - d) Solar
146. The law of conservation of energy states that energy
 - a) can be created and destroyed
 - b) is destroyed in the process of burning
 - c) cannot be converted from one
 - d) is neither destroyed nor created form to another
147. Absolute pressure is
 - a) Gauge Pressure
 - b) Atmospheric Pressure
 - c) Gauge pressure + Atmospheric Pressure
 - d) Gauge Pressure – Atmospheric Pressure
148. 100 kCals expressed as kilojoules would be
 - a) 418.7 kJ
 - b) 4.187 Joules
 - c) 4.187 kJ
 - d) 41.87 kJ
149. When heat flows from one place to another by means of a liquid or gas, it is being transferred by
 - a) radiation
 - b) conduction
 - c) sublimation
 - d) convection
150. How many watts are in a hp?
 - a) 700
 - b) 725
 - c) 740
 - d) 746
151. The characteristic of an electrical circuit that forces current to flow is
 - a) watts
 - b) amps
 - c) ohms
 - d) volts
152. Voltage and resistance in an electrical circuit are related by Ohm's law and determine
 - a) resistance
 - b) voltage
 - c) the type of circuit
 - d) current

153. The characteristic of an electrical circuit that opposes current flow is
a) resistance b) voltage c) friction d) power
154. The instrument used to measure RPM is
a) Fyrite b) Pyrometer
c) Ultrasonic flow meter d) Stroboscope
155. Which of the following terms does not refer to specific energy consumption
a) Kwh/ton b) kcal/kL c) kJ/kg d) kg
156. Which of the following will not motivate the employees for energy conservation?
a) Incentive b) Recognition c) Reward d) Threatening
157. The heat input required for generating 'one' kilo watt-hour of electrical output is called as_
a) Efficiency b) Heat Rate c) Calorific Value d) Heat value
158. Which of the voltage is not available for Indian distribution system?
a) 33 kV b) 11 kV c) 280 V d) 433 V
159. The power loss in transmission/distribution line depends on____.
a) Current in the line b) Resistance of the line c) Length of the line d) All
160. If distribution of power is raised from 11 kV to 66 kV, the voltage drop would lower by
a) 6 times b) 1/6 times c) 36 times d) 1/36 times
161. If the distribution voltage is raised from 11 kV to 33 kV, the line loss would be:
a) Less by 1/9 b) More by 9 times c) No change d) None of the above
162. The maximum demand of an industry, if trivector motor records 3600 KVA for 15 minutes and 3000 kVA for next 15 minutes over a recording cycle of 30 minutes is_
a) 3600 kVA b) 3000 kVA c) 3300 kVA d) 600 kVA
163. Presenting the load demand of a consumer against time of the day is known as____.
a) Time Curve b) Load curve c) Demand curve d) Energy curve
164. The vector sum of active power and reactive power required is____.
a) Apparent Power b) Power Factor c) Load Factor d) Maximum Demand
165. Power factor is the ratio of_____and apparent power.
a) Active power b) Reactive power c) Load Factor d) Maximum Demand
166. The kVAr rating required for improving the power factor of a load operating at 500 kW and 0.85 power factor to 0.95 is_____
a) 145 kVAr b) 500 kVAr c) 50 kVAr d) 100 kVAr

167. The rating of the capacitor at motor terminals should not be greater than _____.
 a) magnetizing kVAR of the motor at full load
 b) magnetizing kVAR of the motor at no load
 c) magnetizing kVAR of the motor at half load
 d) magnetizing kVAR of the motor at 75% load
168. The percentage reduction in distribution losses when tail end power factor raised from 0.8 to 0.95 is _____.
 a) 29% b) 15.8% c) 71% d) 84%
169. If voltage applied to a 415 V rated capacitors drops by 10%, its VAR output drops by _____.
 a) 23% b) 87% c) 19% d) 10%
170. The ratio between the number of turns on the primary to the turns on the secondary of a transformer is known as:
 a) turns ratio b) efficiency
 c) winding factor d) power factor
171. The ratio of overall maximum demand of the plant to the sum of individual maximum demand of various equipments is _____.
 a) load factor b) diversity Factor
 c) demand Factor d) maximum demand
172. Core losses in transformer are caused by _____.
 a) Hysteresis loss b) Eddy current loss c) both a & b d) None
173. The load losses in transformer vary according to _____.
 a) Loading of transformer b) Square of loading of transformer
 c) Cube of loading of transformer d) None
174. The total losses in a transformer operating at 50% load with designed no load and load losses at 2 kW and 20 kW respectively are _____.
 a) 7 kW b) 12 kW c) 4.5 kW d) 22 kW
175. The total amount of harmonics present in the system is expressed using _____.
 a) Total Harmonic Factor b) Total Harmonic Ratio
 c) Total Harmonic Distortion d) Crest Factor
176. The 5th and 7th harmonic in a 50 Hz power environment will have:
 a) voltage and current distortions with 55 Hz & 57 Hz
 b) voltage and current distortions with 500 Hz & 700 Hz
 c) voltage and current distortions with 250 Hz & 350 Hz
 d) no voltage and current distortion at all
177. The type of energy possessed by the charged capacitor is
 a) Kinetic energy b) Electrostatic c) Potential d) Magnetic

2. TRANSFORMERS

1. The BDV of transformer oil should be
 - (a) 20 kV
 - (b) 30 kV
 - (c) 40 kV
 - (d) 50 kV
2. The colour of moisten silica gel is
 - (a) Pink
 - (b) Blue
 - (c) Yellow
 - (d) Green
3. The material filled in breather of transformer is
 - (a) Silica gel
 - (b) Sulphuric acid
 - (c) SF6
 - (d) Mineral oil
4. The protective device to indicate the internal fault in a transformer is
 - (a) Thermal relay
 - (b) Bucholz relay
 - (c) OVR
 - (d) EFR
5. The minimum allowable BDV for transformer oil should stand for
 - (a) 15 sec
 - (b) 30 sec
 - (c) 45 sec
 - (d) 60 sec
6. While testing transformer oil the gap between electrodes is kept at a distance of
 - (a) 1 mm
 - (b) 2 mm
 - (c) 3 mm
 - (d) 4 mm
7. Core of a transformer is made up of
 - (a) Aluminium
 - (b) Carbon
 - (c) Lead
 - (d) Silicon steel.
8. Which of the following is not the function of a transformer oil
 - (a) Cooling of primary coils
 - (b) Cooling of secondary coils.
 - (c) Providing additional insulation.
 - (d) Providing inductive coupling.
9. For a transformer, the condition for maximum efficiency is
 - (a) Hysteresis loss = eddy current loss
 - (b) Core loss = hysteresis loss
 - (c) Copper loss = Iron loss
 - (d) Total loss = $\frac{2}{3}$ copper loss.
10. Transformer oil shall be free from
 - (a) Odour
 - (b) Gases
 - (c) Temperature
 - (d) Moisture.

- 11 The power factor in a transformer
(a) Is always unity
(b) Is always leading
(c) Is always lagging
(d) Depends on power factor of load.
- 12 The short circuit test of a transformer gives
(a) Copper loss at full load
(b) Copper loss at half load
(c) Iron loss at any load
(d) Sum of iron loss and copper load.
- 13 The open circuit test of transformer determines
(a) Iron loss
(b) Copper loss at full load
(c) Copper loss at half load
(d) Total losses.
- 14 The type of oil, which is suitable as transformer oil is
(a) Crude oil (b) Organic oil
(c) Mineral oil (d) Animal oil.
- 15 A step up transformer increases
(a) Power (b) Current
(c) Voltage (d) Frequency.
- 16 Which test is conducted on all transformers in a manufacturing concern
(a) Routine test (b) Type test
(c) Special test (d) All above
- 17 The colour of fresh dielectric oil for a transformer
(a) Pale yellow (b) Dark brown
(c) White to grey (d) Colourless
- 18 The ratio of kW to kVA is known as
(a) Voltage regulation (b) power factor
(c) Transformation ratio (d) None above
- 19 Core lifting of a transformer is done after a period of
(a) 3 yrs. (b) 4 yrs.
(c) 5 yrs. (d) 6 yrs.
- 20 The purpose of conservator tank in a transformer is to
(a) Monitor the oil level (b) Top up the oil level
(c) Both a & b above (d) None of the above.

21. Transformers placed in a room enclosed from all the four sides, the minimum spacing between the walls and the transformer should be
 (a) 0.5 m (b) 0.75 m
 (c) 1 m (d) 1.25 m
22. For indoor installation the minimum clearance between the highest point of the conservator tank to the ceiling of the transformer room should be
 (a) 0.25 m (b) 0.5 m
 (c) 0.75 m (d) 1 m
23. At an atmospheric temperature of 45 deg C and keeping in view the working condition, the winding temperature of the transformer should not exceed
 (a) 80 deg C (b) 95 deg C
 (c) 110 deg C (d) 130 deg C
24. Which of the following does not change in a transformer?
 a. Current b. Voltage
 c. Frequency d. All of the above
25. In a transformer the energy is conveyed from primary to secondary
 a. through cooling coil b. through air
 c. by the flux d. none of the above
26. A transformer core is laminated to
 a. reduce hysteresis loss b. reduce eddy current losses
 c. reduce copper losses d. reduce all above losses
27. The path of a magnetic flux in a transformer should have
 a. high resistance b. high reluctance
 c. low resistance d. low reluctance
28. No-load test on a transformer is carried out to determine
 a. copper loss b. magnetizing current
 c. magnetizing current and loss d. efficiency of the transformer
29. The dielectric strength of transformer oil is expected to be
 a. 1 kV b. 33 kV
 c. 100 kV d. 330 kV
30. The efficiency of a transformer will be maximum when
 a. copper losses = hysteresis losses b. hysteresis losses = eddy current losses
 c. eddy current losses = copper losses d. copper losses = iron losses
31. No-load current in a transformer
 a. lags behind the voltage by about 75° b. leads the voltage by about 75°
 c. lags behind the voltage by about 15° d. leads the voltage by about 15°
32. The purpose of providing an iron core in a transformer is to
 a. provide support to windings b. reduce hysteresis loss
 c. decrease the reluctance of the magnetic path d. reduce eddy current losses

33. Which of the following is not a part of transformer installation?
- Conservator
 - Breather
 - Buchholz relay
 - Exciter
34. While conducting short – circuit test on a transformer the following side is short-circuited
- High voltage side
 - Low voltage side
 - Primary side
 - Secondary side
35. In the transformer following winding has got more cross-section area
- low voltage winding
 - High voltage winding
 - primary winding
 - secondary winding
36. A transformer transforms
- voltage
 - current
 - power
 - frequency
37. A transformer cannot raise or lower the voltage of a D.C. supply because
- there is no need to change the D.C. voltage
 - a D.C. circuit has more losses
 - Faraday's laws of electromagnetic induction are not valid since the rate of change of flux is zero
 - none of the above
38. Primary winding of a transformer
- is always a low voltage winding
 - is always a high voltage winding
 - could either be a low or high voltage winding
 - none of the above
39. Which winding in a transformer has more number of turns?
- Low voltage winding
 - High voltage winding
 - Primary winding
 - Secondary winding
40. Efficiency of a power transformer is of the order of
- 100 percent
 - 98 percent
 - 50 percent
 - 25 percent
41. A common method of cooling a power transformer is
- natural air cooling
 - air blast cooling
 - oil cooling
 - any of the above
42. In a transformer routine efficiency depends upon
- supply frequency
 - load current
 - power factor of load
 - both (b) and (c)

43. The maximum efficiency of a distribution transformer is
- at no load
 - at 50% full load
 - at 80% full load
 - at full load
44. Transformer breaths in when
- load on it increases
 - load on it decreases
 - load remains constant
 - none of the above
45. No-load current of a transformer has
- has high magnitude and low power factor
 - has high magnitude and high power factor
 - has small magnitude and high power factor
 - has small magnitude and low power factor
46. Spacers are provided between adjacent coils
- to provide free passage to the cooling oil
 - to insulate the coils from each other
 - both (a) and (b)
 - none of the above
47. In a transformer the tapplings are generally provided on
- primary side
 - secondary side
 - low voltage side
 - high voltage side
48. The chemical used in breather for transformer should have the quality of
- ionizing air
 - absorbing moisture
 - cleaning the transformer oil
 - cooling the transformer oil
49. The chemical used in breather is
- asbestos fibre
 - silica sand
 - sodium chloride
 - silica gel
50. The transformer ratings are usually expressed in terms of
- Volts
 - amperes
 - kW
 - kVA
51. Material used for construction of transformer core is usually
- Wood
 - copper
 - Aluminium
 - silicon steel
52. The thickness of lamination used in a transformer is usually
- 0.4mm to 0.5 mm
 - 4 mm to 5 mm
 - 14mm to 15mm
 - 25mm to 40 mm
53. The function of conservator in a transformer is
- to protect against internal fault
 - to reduce copper as well as core losses
 - to cool the transformer oil
 - to take care of the expansion and contraction of transformer oil due to variation of temperature of surroundings

54. A Buchholz relay can be installed on
 - a. auto-transformers
 - b. air-cooled transformers
 - c. welding transformers
 - d. oil cooled transformers
55. Buchholz's relay gives warning and protection against
 - a. electrical fault inside the transformer itself
 - b. electrical fault outside the transformer in outgoing feeder
 - c. for both outside and inside faults
 - d. none of the above
56. The transformer laminations are insulated from each other by
 - a. mica strip
 - b. thin coat of varnish
 - c. paper
 - d. any of the above
57. During open circuit test of a transformer
 - a. primary is supplied rated voltage
 - b. primary is supplied full-load current
 - c. primary is supplied current at reduced voltage
 - d. primary is supplied rated kVA
58. Open circuit test on transformers is conducted to determine
 - a. hysteresis losses
 - b. copper losses
 - c. core losses
 - d. eddy current losses
59. Short circuit test on transformers is conducted to determine
 - a. hysteresis losses
 - b. copper losses
 - c. core losses
 - d. eddy current losses
60. The function of breather in a transformer is
 - a. to provide oxygen inside reduced load
 - b. to cool the coils during reduced load
 - c. to cool the transformer oil
 - d. to arrest flow of moisture when outside air enters the transformer
61. The secondary winding of which of the following transformers is always kept closed?
 - a. Step-up transformer
 - b. Step-down transformer
 - c. Potential transformer
 - d. Current transformer
62. For a transformer, operating at constant load current, maximum efficiency will occur at
 - a. 0.8 leading power factor
 - b. 0.8 lagging power factor
 - c. zero power factor
 - d. unity power factor
63. Which of the following protection is normally not provided on small distribution transformers?
 - a. Over-fluxing protection
 - b. Buchholz relay
 - c. Over-current protection
 - d. All of the above

64. Which of the following acts as a protection against high voltage surges due to lightning and switching?
- a. Horn gaps
 - b. Thermal overload relays
 - c. Breather
 - d. Conservator
65. Which of the following parts of a transformer is visible from outside?
- a. Bushings
 - b. Core
 - c. Primary winding
 - d. Secondary winding
66. The noise produced by a transformer is termed as
- a. zoom
 - b. hum
 - c. Ringing
 - d. buzz
67. Which of the following loss in a transformer is zero even at full load?
- a. core loss
 - b. friction loss
 - c. eddy current loss
 - d. hysteresis loss
68. If a transformer is continuously operated the maximum temperature rise will occur in
- a. Core
 - b. windings
 - c. Tank
 - d. any of the above
69. An open-circuit test on a transformer is conducted primarily to measure
- a. Insulation Resistance
 - b. Copper loss
 - c. Core loss
 - d. Total loss
70. A no-load test is performed on a transformer to determine
- a. Core loss
 - b. Copper loss
 - c. Efficiency
 - d. Magnetizing current and loss

3. EARTHING

1. The code of practice for earthing is governed by
(a) IS: 3043 (b) IS: 4340 (c) IS: 4340 (d) IS: 4430
2. The length of pipe electrode used for earthing should not be less than
(a) 3.5 m (b) 2.5 m (c) 4.5 m (d) 5 m
3. As per IS, the earthing electrode shall not be within a distance of _____ mtrs from any building being earthed.
(a) 0.5 m (b) 1 m (c) 1.5 m (d) 2 m
4. Maximum permissible earth resistance at large power stations is
(a) 0.5 ohm (b) 1 ohm (c) 2 ohms (d) 8 ohms
5. Maximum permissible earth resistance at major power stations is
(a) 0.5 ohm (b) 1 ohm (c) 2 ohms (d) 8 ohms
6. Maximum permissible earth resistance at small power stations is
(a) 0.5 ohm (b) 1 ohm (c) 2 ohms (d) 8 ohms
7. Maximum permissible earth resistance for buildings is
(a) 0.5 ohm (b) 1 ohm (c) 2 ohms (d) 8 ohms
8. Earth continuity inside an installation i.e. from plate earth to any point in installation should be
(a) 0.5 ohm (b) 1 ohm (c) 2 ohms (d) 8 ohms
9. The plate electrode of copper used for earthing should be with minimum size of
(a) 50cm x 50cm x 3.15mm (b) 50cm x 50cm x 6.3mm
(c) 60cm x 60cm x 3.15mm (d) 60cm x 60cm x 6.3mm
10. The plate electrode of GI or steel used for earthing should be with minimum size of
(a) 50cm x 50cm x 3.15mm (b) 50cm x 50cm x 6.3mm
(c) 60cm x 60cm x 3.15mm (d) 60cm x 60cm x 6.3mm
11. In pipe earthing, the minimum internal diameter for GI pipe should be
(a) 30 mm (b) 40 mm (c) 50 mm (d) 60 mm
12. In pipe earthing, the minimum internal diameter for cast iron pipe should be
(a) 80 mm (b) 90 mm (c) 100 mm (d) 60 mm
13. Copper strip electrodes used for earthing should not be less than
(a) 22.5 mm x 1.60 mm (b) 20 mm x 2.5 mm
(c) 25 x 1.60 mm (d) 25 mm x 2.5 mm

- 14 GI or Steel strip electrodes used for earthing should not be less than
(a) 25 mm x 4mm (b) 20 mm x 3 mm
(c) 25mm x 3mm (d) 20mm x 4mm
- 15 Earthing arrangement for HT installations, substations and generating stations should be inspected at an interval of
(a) 3 months (b) 6 months (c) 9 months (c) 12 months
- 16 Earthing arrangement for low voltage installations such as service buildings, public buildings should be inspected at an interval of
(a) 3 months (b) 6 months (c) 9 months (c) 12 months
- 17 Earthing arrangement for residential buildings should be inspected at an interval of
(a) 3 months (b) 6 months (c) 9 months (c) 12 months
- 18 Earthing arrangement for medium voltage installations should be inspected at an interval of
(a) 3 months (b) 6 months (c) 9 months (c) 12 months

4. LIGHTING & ILLUMINATION

1. The illumination level at A class stations should be
(a) 20 lux (b) 30 lux (c) 40 lux (d) 50 lux
2. The illumination level at B class stations should be
(a) 20 lux (b) 30 lux (c) 40 lux (d) 50 lux
3. The illumination level at C class stations should be
(a) 20 lux (b) 30 lux (c) 40 lux (d) 50 lux
4. Recommended no. of light points in type I (DR) quarter is
(a) 5 (b) 6 (c) 7 (d) 8
5. Recommended no. of light points in type II quarter is
(a) 5 (b) 6 (c) 7 (d) 8
6. Recommended no. of light points in type III quarter is
(a) 5 (b) 6 (c) 7 (d) 8
7. Recommended no. of light points in type IV quarter is
(a) 8 (b) 9 (c) 10 (d) 11
8. Recommended no. of light points in type IV spl. quarter is
(a) 11 (b) 12 (c) 13 (d) 14
9. Recommended no. of fan points in type I quarter is
(a) 2 (b) 3 (c) 4 (d) 5
10. Recommended no. of fan points in type II quarter is
(a) 2 (b) 3 (c) 4 (d) 5
11. Recommended no. of fan points in type III quarter is
(a) 2 (b) 3 (c) 4 (d) 5
12. Recommended no. of fan points in type IV quarter is
(a) 2 (b) 3 (c) 4 (d) 5
13. Recommended no. of fan points in type IV spl. quarter is
(a) 2 (b) 3 (c) 4 (d) 5
14. Recommended connected load for type I (DR) quarter is
(a) 1.36 kW (b) 3.48 kW (c) 4.17 kW (d) 6.85 kW

15. Recommended connected load for type II quarter is
 (a) 1.36 kW (b) 3.48 kW (c) 4.17 kW (d) 6.85 kW
16. Recommended connected load for type III quarter is
 (a) 1.36 kW (b) 3.48 kW (c) 4.17 kW (d) 6.85 kW
17. Recommended connected load for type IV quarter is
 (a) 1.36 kW (b) 3.48 kW (c) 4.17 kW (d) 6.85 kW
18. Recommended connected load for type IV spl. quarter is
 (a) 4.17 kW (b) 6.85 kW (c) 8.6 kW (d) 11.85 kW
19. Recommended connected load for type V quarter is
 (a) 4.17 kW (b) 6.85 kW (c) 8.6 kW (d) 11.85 kW
20. Luminous efficiency of a fluorescent tube is
 a. 10 lumens/ watt b. 20 lumens/ watt
 c. 40 lumens/ watt d. 60 lumens/ watt
21. Candela is the unit of which of the following?
 a. wavelength b. luminous intensity
 c. luminous flux d. frequency
22. Colour of light depends upon
 a. frequency b. wave length
 c. both (a) and (b) d. speed of light
23. Illumination of one lumen per sq. metre is called
 a. lumen metre b. lux
 c. foot candle d. candela
24. The unit of luminous flux is
 a. watt/ m² b. lumen
 c. lumen/ m² d. watt
25. Filament lamps operate normally at a power factor of
 a. 0.5 lagging b. 0.8 lagging
 c. unity d. 0.8 leading
26. What percentage of the input energy is radiated by filament lamps?
 a. 2 to 5 percent b. 10 to 15 percent
 c. 25 to 30 percent d. 40 to 50 percent
27. The filament of a GLS lamp is made of
 a. tungsten b. copper
 c. carbon d. aluminium

28. Which of the following lamps is the cheapest for the same wattage?
- Fluorescent tube
 - mercury vapour lamp
 - GLS lamp
 - sodium vapour lamp
29. Which of the following is not the standard rating of GLS lamps?
- 100 W
 - 75 W
 - 40 W
 - 15 W
30. The colour of sodium vapour discharge lamp is
- red
 - pink
 - yellow
 - bluish green
31. A reflector is provided to
- protect the lamp
 - provide better illumination
 - avoid glare
 - do all of the above
32. The purpose of coating the fluorescent tube from inside with white powder is
- to improve its life
 - to improve the appearance
 - to change the colour of light emitted to white
 - to increase the light radiations due to secondary emissions
33. In the fluorescent tube circuit the function of choke is primarily to
- reduce the flicker
 - minimize the starting surge
 - initiate the arc and stabilize it
 - reduce the starting current
34. The function of capacitor across the supply to the fluorescent tube is primarily to
- stabilize the arc
 - reduce the starting current
 - improve the supply power factor
 - reduce the noise
35. Most affected parameter of a filament lamp due to voltage change is
- wattage
 - life
 - luminous efficiency
 - light output
36. In electric discharge lamps for stabilizing the arc
- a reactive choke is connected in series with the supply
 - a condenser is connected in series to the supply
 - a condenser is connected in parallel to the supply
 - a variable resistor is connected in the circuit
37. For precision work the illumination level required is of the order of
- 500 – 1000 lumens/m²
 - 200 – 400 lumens/m²
 - 50 – 100 lumens/ m²
 - 10 – 25 lumens/ m²
38. For normal reading the illumination level required is around
- 20 – 40 lumens/ m²
 - 60 – 100 lumens/ m²
 - 200 – 300 lumens/ m²
 - 400 – 500 lumens/ m²

39. In electric discharge lamps light is produced by
- cathode ray emission
 - ionization in a gas or vapour
 - heating effect of current
 - magnetic effect of current
40. A substance which change its electrical resistance when illuminated by light is called....
- photoelectric
 - photovoltaic
 - photoconductive
 - none of the above
41. In case of ... power factor is the highest.
- GLS lamps
 - mercury arc lamps
 - tube lights
 - sodium vapour lamps
42. A mercury vapour lamp gives ... light.
- white
 - pink
 - yellow
 - greenish blue
43. Sometimes the wheels of rotating machinery, under the influence of fluorescent lamps appear to be stationary. This is due to the
- low power factor
 - stroboscopic effect
 - fluctuations
 - luminescence effect
44. The flicker effect of fluorescent lamps is more pronounced at
- lower frequencies
 - higher frequencies
 - lower voltages
 - higher voltages
45. Which gas can be filled in GLS lamp?
- oxygen
 - carbon di-oxide
 - xenon
 - any inert gas
46. The gas filled in vacuum filament lamps is
- nitrogen
 - argon
 - air
 - none
47. The vapour discharge tube used for domestic lighting has
- no filament
 - one filament
 - two filament
 - three filament
48. Stroboscopic effect due to use of discharge lamps in workshops results in moving machinery appearing
- stationary
 - stationary running slow
 - stationary running in reverse direction
 - all of the above
49. Glare is reduced by
- using diffusers
 - increasing the height of the lamp
 - using reflectors to cut-off the light at certain angle
 - all of the above

50. Which of the following is present inside the fluorescent tube?
- a. argon and neon
 - b. argon and CO₂
 - c. mercury vapour
 - d. helium and oxygen
51. When an electric bulb is broken it produces bang; this is due to
- a. vacuum inside the bulb
 - b. pressure of air in the bulb
 - c. pressure inside is equal to that outside
 - d. none of the above

5. D.G. SET

- 1 If a DG set fails to start, the probable cause may be
 - (a) Dirty clogged air cleaner
 - (b) Fuel tank empty
 - (c) Nozzle niddle jammed
 - (d) All of the above
- 2 If a DG set starts but stop after some time, the probable cause may be
 - (a) Air in fuel
 - (b) Fuel line choke
 - (c) Fuel filter choked
 - (d) All of the above
- 3 If a DG set is not gaining full speed, the probable cause may be
 - (a) Fuel tank empty
 - (b) Governor spring broken
 - (c) Fuel filter dirty
 - (d) All of the above
- 4 If a DG set misses during operation, the probable cause may be
 - (a) Air in fuel line
 - (b) Nozzle damaged
 - (c) Water mixed with fuel
 - (d) All of the above
- 5 If a DG set lacks power, the probable cause may be
 - (a) Pump may inject insufficient quantity of fuel
 - (b) Poor quality of fuel
 - (c) Dirty cooling system
 - (d) All of the above
- 6 If a DG set gives excessive smoke at no load, the probable cause may be
 - (a) Dirty clogged air cleaner
 - (b) choked fuel injection hole
 - (c) Faulty fuel pump
 - (d) All of the above
- 7 If a DG set excessive smoke at full load, the probable cause may be
 - (a) One or more cylinder not working
 - (b) Poor quality of oil
 - (c) Nozzle jammed
 - (d) All of the above
- 8 If a DG set gives out blue smoke, the probable cause may be
 - (a) Worn out liner on piston
 - (b) Wrong graded lubricating oil
 - (c) Engine used after a long time
 - (d) All of the above
- 9 If a DG set gives white smoke, the probable cause may be
 - (a) Water mixed with fuel
 - (b) Engine used after a long time
 - (c) Worn out liner piston
 - (d) All of the above
- 10 If a DG set overheats, the probable cause may be
 - (a) high exhaust back pressure
 - (b) Engine overloaded
 - (c) Damaged main or connecting bearings
 - (d) All of the above
- 11 If a DG set consumes excessive fuel, the probable cause may be
 - (a) Injector adjustment disturbed
 - (b) External/internal fuel leakage
 - (c) Incorrect value of fuel timing
 - (d) All of the above

- 12 If the alternator of DG set is overheats, the probable cause may be
(a) Improper ventilation (b) Misalignment
(c) Overloading of machine (d) All of the above
- 13 If the armature of DG set overheats, the probable cause may be
(a) Overloading (b) Internal short circuit
(c) Both a & b (d) None of the above
- 14 The maximum rated speed for 125 kVA Cummins make DG set is
(a) 1500 rpm (b) 1800 rpm (c) 2100 rpm (d) 2500 rpm
- 15 The oil temperature gauge of a DG set should normally read between
(a) 82-116 deg C (b) 90-125 deg C (c) 100-140 deg (d) 122-148 deg C
- 16 During warming up, the load should be applied gradually on a DG set until the oil temperature reaches
(a) 40 deg C (b) 60 deg C (c) 80 deg C (d) 100 deg C
- 17 The water temperature of DG set in operation should normally range between
(a) 60-80 deg C (b) 74-91 deg C (c) 88-98 deg C (d) 95-110 deg C
- 18 The pH value of the coolant in the radiator of a DG set should be maintained between
(a) 6.5 to 8.5 (b) 8.5 to 10.5 (c) 10.5 to 12.5 (d) 12.5 to 14.5
- 19 The diesel engine should not be operated if the pH value in the radiator is less than
(a) 6.5 (b) 8.5 (c) 10.5 (d) 12.5
- 20 Primary filters in the fuel system of the DG set should be cleaned at every
(a) 150 hrs (b) 200 hrs (c) 250 hrs (d) 300 hrs
- 21 Primary filters in the fuel system of the DG set should be replaced at every
(a) 500 hrs (b) 800 hrs (c) 1000 hrs (d) 1500 hrs
- 22 The secondary fuel filter of a DG set should be replaced when the fuel pressure gauge is below
(a) 10 psi (b) 12 psi (c) 15 psi (d) 20 psi
- 23 The exciter in a DG set is
(a) Shunt motor (b) Compound generator
(c) Either of a or b (d) None of the above.

24. The compression ratio in diesel engines is in the range of:
 a) 10:1 to 15:1 b) 14:1 to 25:1 c) 5:1 to 10:1 d) 1:2 to 3:1
25. Which of the following is the last step in diesel engine operation?
 a) Induction stroke b) Compression stroke c) Ignition stroke d) Exhaust stroke
26. The power requirement of the DG set is determined by:
 a) base load b) Maximum load c) Partial load d) Zero load
27. Present specific fuel consumption value of DG sets in industries is about____.
 a) 220 g/kWh b) 100 g/kWh c) 160 g/kWh d) 50 g/kWh
28. The efficiency of diesel generating set falls in the region of:
 a) 35 – 45% b) 50 – 60% c) 65 – 70% d) Above 80%
29. Auxiliary power consumption of DG set at full load in its operating capacity is about____.
 a) 1 - 2% b) 5 – 6% c) 10 - 12% d) Above 15%
30. The rating required for a DG set with 500 kW connected load and with diversity factor of 1.5, 80% loading and 0.8 power factor is _____.
 a) 520 kVA b) 600 kVA c) 625 kVA d) 500 kVA
31. The starting current value of DG set should not exceed % of full load capacity of DG set.
 a) 100 b) 200 c) 150 d) 300
32. The maximum permissible percentage unbalance in phase loads on DG sets is_____.
 a) 5% b) 15% c) 10% d) 1%
33. The permissible percentage overload on DG sets for 1 hour in every 12 hours of operation is_____.
 a) 5% b) 15% c) 10% d) 1%
34. Designed power factor of a DG set is generally at:
 a) 1.0 b) 0.8 c) 0.9 d) 1.1
35. Lower power factor of a DG set demands_____.
 a) Lower excitation currents b) Higher excitation currents
 c) No change in excitation currents d) None of the above

36. Which of the following losses is the least in DG sets:
a) cooling water loss b) exhaust loss
c) frictional loss d) alternator loss
37. The waste heat potential for a 1100 kVA set at 800 kW loading and with 480 °C exhaust gas temperature is _____.
a) 4.8 lakh kCal/hr b) 3.5 lakh kCal/hr c) 3 lakh kCal/hr d) 2 lakh kCal/hr
38. Typical exit flue gas temperature of 5 MW DG set operating above 80% load is of the order of _____.
a) 550 to 560 °C b) 210 to 240 °C c) 340 to 370 °C d) 400 to 450 °C
39. The maximum back pressure allowed for DG sets is in the range of _____.
a) 100 – 200 mm WC b) 250 – 300 mm WC
c) 400 – 500 mm WC d) above 500 mm WC
40. The operating efficiency of DG set also depends on:
a) turbo charger b) Inlet air temperature c) % loading d) all the above
41. For a DG set, the copper losses in the alternator are proportional to the:
a) Current delivered by the alternator
b) Square of the current delivered by the alternator
c) Square root of the current delivered by the alternator
d) None of the above
42. The jacket cooling water temperature for DG sets should be in the range of _____.
a) 40 – 50° C b) 30 – 40°C c) 80 – 90°C d) 45 – 60°C
43. The main precaution to be taken care by the waste heat recovery device manufacture to prevent the problem in DG set during operation is:
a) Temperature raises b) Back pressure
c) Over loading of waste heat recovery tubes d) Turbulence of exhaust gases

6. PUMPS

- 1 If pump delivers no liquid, then probable cause is
 - (a) Lack of prime
 - (b) Gas or air in liquid
 - (c) Bent shaft
 - (d) Moisture in lubricating oil
- 2 If pump discharge pressure is low, then probable cause is
 - (a) Lack of prime
 - (b) Gas or air in liquid
 - (c) Bent shaft
 - (d) Moisture in lubricating oil
- 3 If there is excessive vibration in pump, then probable cause is
 - (a) Lack of prime
 - (b) Gas or air in liquid
 - (c) Bent shaft
 - (d) Moisture in lubricating oil
- 4 If the bearing of pump overheats, then probable cause is
 - (a) Lack of prime
 - (b) Gas or air in liquid
 - (c) Bent shaft
 - (d) Moisture in lubricating oil
- 5 If pump overloads the driver, then probable cause is
 - (a) Packing too tight
 - (b) Suction line not filled with liquid
 - (c) Gas or liquid in air
 - (d) None of the above
- 6 Which of the following is not a criteria of pump selection
 - (a) Type of duty required
 - (b) Details of head
 - (c) Duration of availability of power supply
 - (d) The look of pump.
7. HS Pump works with suction head.
 - (a) 15-20 feet head
 - (b) 21-40 feet head
 - (c) 41-80 feet head
 - (d) None of the above.
8. VS Pump works with total head
 - (a) Upto 46 Mtrs. head.
 - (b) 46-70 Mtrs. head
 - (c) 70-100 Mtrs. Head
 - (d) None of the above
9. Motor of the VS pump is located
 - (a) Above the ground level
 - (b) Below the ground level
 - (c) Deep in the bore
 - (d) None of the above
10. Line shaft of the VS pump is lubricated
 - (a) Spindle oil
 - (b) Diesel oil
 - (c) Lub oil SAE-40/30
 - (d) None of the above
11. Priming is required for
 - (a) HS Pump
 - (b) VS Pump
 - (c) Submersible Pump

12. RPM of submersible pump set is
 (a) 440 (b) 1440 (c) 380 (d) 2800
13. Which pump is most suitable for deep & titled bore
 (a) HS Pump (b) VS Pump (c) Submersible (d) Jet pump
 (e) None of above.
14. Redevelopment of bore is done
 a) For smooth operation of pump
 b) For taking good yield for bore
 c) To maintain long life of bore
 d) To avoid the frequent failure of the pump
 e) All of above.
15. Capacity of pump set is selected on the ground of
 a) Yield, Static-water-level, Working-water-level.
 b) Location of bore
 c) Type of starter provided
 d) Quantity of water to be used.
16. Pump fails mostly due to
 a) Less working
 b) Excessive working
 c) Incorrect operation
 d) Failure of pump
17. Pump set motor burns due to
 a) Single phasing
 b) Reverse phasing
 c) Over loading for a shorter period
 d) None of above.
18. For a 10 HP pump set which type of starter is suitable
 (a) DOL (b) Start Delta (c) Auto Transformer
 (d) None of the above
19. A 5 HP pump set draws current on full load
 (a) 5 A (b) 10 A (c) 7.5 A (d) 6 A
20. Ammeter is provided in control panel of pump set to measure the
 (a) Voltage (b) Frequency (c) Power Factor (d) Current
21. No. of contractors provided in star-delta starter
 (a) 1 (b) 2 (c) 3 (d) 4

22. Pump Guard functions to protect the submersible pump set against
- Single Phasing
 - Reverse Phasing
 - Over Loading
 - Dry Running
 - All of above.
23. Automation of pump set is done to
- To limit the working of pumps
 - To avoid the working of water
 - To save the electrical energy
 - To reduce the man power
 - All of the above.
24. Centralized control of pumps means
- Operation of pump from individual pump houses
 - Operation of all pumps from a single location
 - None of the above
25. The functional head due to flow of water in the pipe line ---- length of piping system.
- Inversely proportional to
 - Directly proportional to
 - Constant and independent of
 - None of the above.
26. The functional head due to flow of water in the pipe line ---- Diameter of pipe.
- Inversely proportional to
 - Directly proportional to
 - Constant and independent of
 - None of the above.
27. The functional head due to flow of water in pip line is directly proportional to----- of water.
- Velocity
 - (Square root of) Velocity
 - 1 / Velocity
 - Velocity²
28. The average of velocity of water in the suction pipe ---- the delivery pipe.
- Less than in
 - More than in
 - Same as in
 - None of the above.
29. Theoretically the maximum suction head for ordinary centrifugal pumps should not exceed.
- 20 feet
 - 34 feet
 - 10 feet
 - 5 feet.

30. For vertical shaft pump and submersible pumps the suction head is always.
 (a) Positive (b) Negative (c) Zero (d) None of the above.
31. The motor of vertical shaft, 75 HP rating pump is.
 (a) Force air cooled (b) Natural air cooled
 (c) Water cooled. (d) None of the above.
32. The specific speed of pump (in RPM) is the speed at which the impeller would run to give discharge of --- against head of ----
 (a) 1 GPM, 1 Foot
 (b) 1 GPH, 1 Foot
 (c) 1 GPM, 34 feet
 (d) 1 GPH, 34 feet
33. The specific speed of pump is directly proportional to ---- where 'Q' is rate of discharge in GPH.
 (a) (Square root) Q (b) Q
 (c) Q^2 (d) None of the above.
34. The specific speed of pump is directly proportional to ---- where 'N' is speed of pump in RPM.
 (a) Square root (N) (b) N
 (c) N^2 (d) None of the above.
35. Positive displacement pumps are generally less efficient than centrifugal pumps. State whether the statement is true or false
 (a) True (b) False
36. Installing larger diameter pipe in pumping system results in reduction in-----
 a) static head b) frictional head c) both a and b d) neither a nor b
37. Generally water pipe lines are designed with water velocity of
 a) < 1 m/s b) up to 2.0 m/s c) > 2 m/s d) None of the above
38. What is the impact on flow and pressure when the impeller of a pump is trimmed?
 a) Flow decreases with increased pressure b) Both flow and pressure increases
 c) Both pressure and flow decreases d) None of the above
39. For high flow requirement, pumps are generally operated in
 a) parallel b) series c) any of the above d) none of the above

40. “In case of throttling operation, the pump has to overcome additional pressure in order to deliver the reduced flow”. Please indicate whether this statement is
(a) True (b) False
41. Friction losses in a pumping system is-----
a) proportional to $1/Q$ b) proportional to $1/Q^2$
c) proportional to $1/Q^3$ d) proportional to $1/Q^4$
42. For large capacity centrifugal pumps, design efficiencies are in the range of
a) around 70% b) around 85% c) around 95% d) any of above
43. The moving part in centrifugal pump is -----
a) impeller b) diffuser c) both a & b d) neither a nor b
44. The most efficient method of flow control in a pumping system is-----
a) Throttling the flow b) Speed control c) Impeller trimming d) None
45. In case of increased suction lift from open wells, the delivery flow rate-----
a) increases b) decreases c) remains same d) none of the above
46. Pump efficiency generally increases with specific speed. State whether the statement is True or False.
(a) True (b) False
47. Throttling the delivery valve of a pump results in increased_____.
a) head b) power c) both (a) and (b) d) either (a) or (b)
48. The operating point in a pumping system is identified by
a) Point of intersection of system curve and efficiency curve
b) Point of intersection of pump curve and theoretical power curve
c) Point of intersection of pump curve and system curve
d) Cannot be decided by pump characteristic curves
49. The intersection point of the pump curve and the system curve is called-----
a) Pump efficiency b) Best efficiency point
c) System efficiency d) None of the above
50. If the speed of a centrifugal pump is doubled, its power consumption increases by----- times.
a) two b) four c) eight d) no change

51. Installation of Variable frequency drives (VFD) allows the motor to be operated with_____.
a) lower start-up current b) higher start-up current
c) constant current d) none of the above
52. In case of centrifugal pumps, impeller diameter changes are generally limited to reducing the diameter to about_____of maximum size.
a) 75% b)50% c) 25% d) None of the above
53. If the delivery valve of the pump is throttled such that it delivers 30% of the rated flow, one of the best options for improved energy efficiency would be
a) Trimming of the impeller b) Replacing the motor
c) Replacing the impeller with a smaller size impeller d) None of the above
54. Small by-pass lines are installed some times to_____.
a) control flow rate b) control pump delivery head
c) prevent pump running at zero flow d) reduce pump power consumption

7. TRACK CROSSINGS

- 1 The minimum height above rail level of the lowest portion of any conductor of 11 kV to 66 kV overhead lines crossing (including guard wire) the railway track should be
(a) 14.1 m (b) 14.6 m (c) 15.4 m (d) 17.9 m
- 2 The minimum height above rail level of the lowest portion of any conductor of 66 kV to 132 kV overheads lines crossing the railway track should be
(a) 14.1 m (b) 14.6 m (c) 15.4 m (d) 17.9 m
- 3 The minimum depth of underground cable track crossing (through) pipe should be
(a) 1 m (b) 1.5 m (c) 2 m (d) 2.5 m
- 4 The Electrical Inspector at zonal railway is
(a) CEE (b) Dy. CEE (c) DRM (Elect.) (d) CESE.
- 5 The regulations for electrical line crossing on railway track is not applicable to
(a) Crossing of railway track laid underground/ inside tube and tunnels
(b) 1500 V DC traction system
(c) 25 kV, 50 Hz traction systems
(d) All of the above
- 6 In special cases the reduction in specified clearance of electrical crossing on railway track can be permitted by
(a) Electrical Inspector (b) Asst. Electrical Inspector
(c) DRM (d) ADRM
- 7 In view of electrical lines crossing on railway tracks the materials used should comply with Indian Standards specifications but where these are not available, which of the following should be followed
(a) British standard specifications
(b) US standard specifications
(c) Russian standard specifications
(d) France standard specifications
- 8 Electrical crossings on railway tracks should be inspected by the owner at a interval not exceeding
(a) 3 months (b) 6 months (c) 9 months (d) 12 months
- 9 If at instance of railways any electrical crossing on railway track is to be shifted or modified the cost will be borne by (shifting not foreseen at the time of agreement)
(a) Owner (b) Railways (c) Both (d) Either a or b

- 10 In case of defects and failures in electrical crossing on railway tracks, owner has to send a detailed report to all the authorities mentioned in the regulations, within _____ hrs of the first report
(a) 12 (b) 24 (c) 36 (d) 48
- 11 Angle of overhead electrical line crossing to railway track shall be
(a) Right angle
(b) Acute angle
(c) Obtuse angle
(d) Angle does not matter.
- 12 In special cases the maximum permitted deviation in angle of OH electrical line crossing to railway track shall be
(a) 10 deg (b) 20 deg (c) 30 deg (d) 45 deg
- 13 The minimum distance of structures (for electrical line crossing) from the centre of nearest railway track shall be equal to the height of the structure in meters plus
(a) 3 m (b) 6 m (c) 9 m (d) 12 m
- 14 The span of the OH electrical line crossing the railway track is restricted to
(a) 100 m (b) 200 m (c) 300 m (d) 400 m
- 15 The minimum height above rail level of the lowest portion of any conductor of 132kV to 220kV overhead lines crossing (including guard wire) the railway track should be
(a) 14.1 m (b) 14.6 m (c) 15.4 m (d) 17.9 m
- 16 The minimum height above rail level of the lowest portion of any conductor of 220kV to 400kV overhead lines crossing (including guard wire) the railway track should be
(a) 14.1 m (b) 4.6 m (c) 15.4 m (d) 17.9 m
- 17 In special circumstances if the railway crane has to work under the overhead electrical line crossing, the minimum clearance between the highest point of the jib and the lowest conductor of the 33 kV lines should be
(a) 1.5 m (b) 2 m (c) 2.25 m (d) 2.5 m
- 18 In special circumstances if the railway crane has to work under the overhead electrical line crossing, the minimum clearance between the highest point of the jib and the lowest conductor of the 66 kV lines should be
(a) 1.5 m (b) 2 m (c) 2.25 m (d) 2.5 m
- 19 In special circumstances if the railway crane has to work under the overhead electrical line crossing, the minimum clearance between the highest point of the jib and the lowest conductor of the 110kV lines should be
(a) 1.5 m (b) 2 m (c) 2.25 m (d) 2.5 m

- 20 In special circumstances if the railway crane has to work under the under the overhead electrical line crossing, the minimum clearance between the highest point of the jib and the lowest conductor of the 132kV lines should be
(a) 1.5 m (b) 2 m (c) 2.25 m (d) 2.5 m
- 21 In special circumstances if the railway crane has to work under the under the overhead electrical line crossing, the minimum clearance between the highest point of the jib and the lowest conductor of the 220kV lines should be
(a) 2.25m (b) 2.5 m (c) 3.5 m (d) 6.0 m
- 22 In special circumstances if the railway crane has to work under the under the overhead electrical line crossing, the minimum clearance between the highest point of the jib and the lowest conductor of the 400kV lines should be
(a) 2.25m (b) 2.5m (c) 3.5 (d) 6.0 m
- 23 In sections where tracks are not to be electrified in future, lines upto 11 kV overhead crossing are permitted with clearance between lowest conductor of the line and railway track
(a) 9 m (b) 10.95 m (c) 11.05 m (d) 12.1 m
- 24 The factor of safety of each string of insulator used for overhead electrical crossing on railway track should not be less than
(a) 1 (b) 2 (c) 3 (d) 4
- 25 The minimum height between any guard wire and a live conductor of electrical crossing on railway track shall not be less than
(a) 1 m (b) 1.5 m (c) 2 m (d) 2.5 m
- 26 Each structure on either side of the railway track, supporting the span of overhead electrical line crossing should be provided with no. of independent earths
(a) 1 (b) 2 (c) 3 (d) 4
- 27 The maximum permissible earth resistance on either side of the electrical overhead line crossing (on railway track) is
(a) 5 ohm (b) 8 ohm (c) 10 ohm (d) 12 ohm
- 28 The owner of the overhead electric line crossing on railway tracks, is required to inspect and test the earth on hot dry day at an interval of
(a) 3 months (b) 6 months (c) 9 months (d) 12 months
- 29 Which of the following should be displayed on the marker at each end of the underground cable crossing on railway track
(a) No. of cables (b) Size of cable
(c) Make of cables (d) All of the above

- 30 Which of the following data is to be provided by the owner, while proposing for overhead electrical line crossing on railway track
- (a) Temperature data provided
 - (b) Name of supervisor from owner's side
 - (c) Life of crossing
 - (d) None of the above.
- 31 The final authority to grant the approval for proposed electrical line crossing on railway track
- (a) Electrical Inspector
 - (b) DRM
 - (c) DRM (Elect.)
 - (d) ADRM

8. INDIAN ELECTRICITY RULES

- 1 The maximum variation allowed in voltage of LV & MV AC supply is
(a) $\pm 2\%$ (b) $\pm 3\%$ (c) $\pm 4\%$ (d) $\pm 5\%$
- 2 The maximum variation allowed in voltage of HV & EHV AC supply is
(a) $\pm 8.5\%$ (b) $\pm 10.5\%$ (c) $\pm 12.5\%$ (d) $\pm 14.5\%$
- 3 The maximum variation allowed in frequency of AC supply is
(a) $\pm 2\%$ (b) $\pm 3\%$ (c) $\pm 4\%$ (d) $\pm 5\%$
- 4 Clearance of the lowest conductor (across the street) from the ground for LT and MT lines should be
(a) 17 ft. (b) 18 ft. (c) 19 ft. (d) 20 ft.
- 5 Clearance of the lowest conductor (across the street) from the ground for HT lines should be
(a) 17 ft. (b) 18 ft. (c) 19 ft. (d) 20 ft.
- 6 Clearance of the lowest conductor (along the street) from the ground for LT and MT lines should be
(a) 17 ft. (b) 18 ft. (c) 19 ft. (d) 20 ft.
- 7 Clearance of the lowest conductor (along the street) from the ground for HT lines should be
(a) 17 ft. (b) 18 ft. (c) 19 ft. (d) 20 ft.
- 8 Clearance of the lowest conductor vertical above the building for LT and MT lines should be
(a) 4 ft. (b) 6 ft. (c) 8 ft. (d) 12 ft.
- 9 Clearance of the lowest conductor vertical above the building for HT lines should be
(a) 4 ft. (b) 6 ft. (c) 8 ft. (d) 12 ft.
- 10 Clearance of the conductor Horizontal from the building for LT and MT lines should be
(a) 4 ft. (b) 6 ft. (c) 8 ft. (d) 12 ft.
- 11 Clearance of the conductor Horizontal from the building for HT lines should be
(a) 4 ft. (b) 6 ft. (c) 8 ft. (d) 12 ft.
- 12 The on line vertical spacing between the conductors for 400/230 V, 150 ft. span lines should be
(a) 1'3" (b) 1'6" (c) 2' (d) 2'6"

- 13 The on line vertical spacing between the conductors for 400/230 V, 150-250 ft. span lines should be
(a) 1'3" (b) 1'6" (c) 2' (d) 2'6"
- 14 The on line vertical spacing between the conductors for 11 kV lines should be
(a) 1'3" (b) 1'6" (c) 2' (d) 2'6"
- 15 The on line horizontal spacing between the conductors for 400/230 V, 150 ft. span lines should be
(a) 1'3" (b) 1'6" (c) 2' (d) 2'6"
- 16 The on line horizontal spacing between the conductors for 400/230 V, 150-250 ft. span lines should be
(a) 1'3" (b) 1'6" (c) 2' (d) 2'6"
- 17 The on line horizontal spacing between the conductors for 11 kV lines should be
(a) 1'3" (b) 1'6" (c) 2'6" (d) 3'9"
- 18 The clearance between the conductor and pole for 400/230 V, 150 ft span lines, should be
(a) 6" (b) 9" (c) 12" (d) 1'3"
- 19 The clearance between the conductor and pole for 400/230 V, 150-250 ft span lines, should be
(a) 6" (b) 9" (c) 12" (d) 1'3"
- 20 The clearance between the conductor and pole for 11 kV lines, should be
(a) 6" (b) 9" (c) 12" (d) 1'3"

9. POLICY

- 1 Provision of rebate by state electricity authority is applicable if the power factor is kept above
(a) 0.9 (b) 0.92 (c) 0.95 (d) 0.98
2. Penalty is imposed by state electricity authority if the power factor is below
(a) 0.9 (b) 0.92 (c) 0.95 (d) 0.98
- 3 Electric energy charges from the railway employees residing in railway colonies are at
(a) Flat rate
(b) Fixed rate
(c) Average consumption
(d) The rate that of local supply authority
- 4 Electric energy charges from the staff/ teachers of Kendriya Vidhyalaya residing in railway colonies is at
(a) Flat rate
(b) Fixed rate
(c) Average consumption
(d) The rate applicable to railway employees
- 5 Electric energy charges from the social welfare organizations such as railway institute, community halls, clubs, etc. is at
(a) Flat rate
(b) Fixed rate
(c) Average consumption
(d) The rate applicable to railway employee subject to maximum limit of consumption.
- 6 Electric energy charges from the religious buildings (electric supply fed by railway) such as temples. Mosque etc is at
(a) Flat rate
(b) Fixed rate
(c) Average consumption
(d) The rate that of local supply authority
- 7 Per day charges from officers on duty (entitled to 1st class AC travel) for occupation of air conditioned accommodation on railway rest house is Rs.
(a) 3 (b) 5 (c) 6 (d) 7
- 8 Per day charges from officers on leave (entitled to 1st class AC travel) for occupation of air conditioned accommodation on railway rest house is prescribed room rent plus Rs.
(a) 3 (b) 5 (c) 6 (d) 7
- 9 Per day charges from officers on duty (entitled to 1st class AC travel) for occupation of air conditioned accommodation on railway rest house during winter season is Rs.
(a) 3 (b) 5 (c) 6 (d) No charges

- 10 The firms dealing with coin operated person weighing machines has to deposit security money equivalent to
 (a) One month electric charges
 (b) Two month electric charges
 (c) Three month electric charges
 (d) No charges.
- 11 The private parties applying for electric connection from railways has to deposit security money equivalent to
 (a) One month electric charges
 (b) Two month electric charges
 (c) Three month electric charges
 (d) No charges.
- 12 As per Railway Board recommendations, following are to be connected with DG set supply
 (a) Vacuum testing plants
 (b) Water coolers on platforms
 (c) Hospital with operation theatre
 (d) All of the above.
- 13 As per Railway Board recommendations, the stations/ halts should be electrified, where the electric supply is available within
 (a) 1 km (b) 1.5 km (c) 2 km (d) 2.5 km
- 14 The porters rest centres are treated as
 (a) Service building (b) Private building
 (c) Passenger amenity (d) None of the above
- 15 As per Indian Electricity Act, penalty against unauthorized electricity connection is
 (a) Imprisonment up to 3 yrs and fine up to Rs. 1000/-
 (b) Imprisonment up to 2 yrs and fine up to Rs. 1000/-
 (c) Imprisonment up to 3 yrs and fine up to Rs. 1500/-
 (d) Imprisonment up to 2 yrs and fine up to Rs. 1500/-
- 16 Number of geysers that can be provided in officer's flat (on special request)
 (a) 1 (b) 2 (c) 3 (d) 4
- 17 Number of geysers that can be provided in the GM's bungalow is
 (a) 1 (b) 2 (c) 3 (d) 4
- 18 The railway stations at zonal headquarters and state capitals are classified as of category
 (a) A (b) B (c) C (d) D

- 19 The railway stations at divisional headquarters and district headquarters are classified as of category
 (a) A (b) B
 (c) C (d) D
- 20 As per Railway Board recommendations, the light fittings for platform on category A and B stations are
 (a) 1 x 36 W FL tube (b) 2 x 36 W HPSV
 (c) 1 x 70 W HPSV (d) 2 x 36 W HPSV
- 21 As per Railway Board recommendations, the light fittings for platform on category C stations are
 (a) 1 x 36 W FL tube (b) 2 x 36 W HPSV
 (c) 1 x 70 W HPSV (d) 2 x 36 W HPSV
- 22 As per Railway Board recommendations, the light fittings for ASM office, SM office, enquiry and PRS on category A and B stations are
 (a) 2 x 36 W mirror optic FL tube (b) 4 x 36 W mirror optic FL tube
 (c) 2 x 36 W box type FL tube (d) 4 x 36 W box type FL tube
- 23 As per Railway Boards recommendations, the light fittings in station approach and car parks are
 (a) 1 x 70 W HPSV (b) 2 x 70 W HPSV
 (c) 1 x 40 W Box type (d) 2 x 40 W box type
- 24 As per Railway Board recommendations, on platform having width of 9-6 m, fannage should be provided in
 (a) 1 row (b) 2 rows (c) 3 rows (d) 4 rows
- 25 As per Railway Board recommendations, on platform having width more than 9 m, fannage should be provided in
 (a) 1 row (b) 2 rows (c) 3 rows (d) 4 rows
- 26 As per Railway Board recommendations, the sweep of fans provided on platforms should be
 (a) 800 mm (b) 1200 mm (c) 1500 mm (d) 1800 mm
- 27 As per Railway Board recommendations, the sweep of fans provided in offices, waiting hall etc. should be
 (a) 800 mm (b) 1200 mm (c) 1500 mm (d) 1800 mm
- 28 As per Railway Board recommendations, the sweep of fans provided in retiring rooms on each bed should be
 (a) 800 mm (b) 1200 mm (c) 1500 mm (d) 1800 mm
- 29 At stations where neither electrical supervisor nor engineering supervisor is headquartered, the upkeep of pumps in water supply system is under
 (a) S & T supervisor (b) Station Master (c) Gangman (d) Pointsman

- 30 State Electricity Board charges Electricity Duty against selling electricity to railways amounting Rs.
(a) 10,000/- (b) 50,000/- (c) 75,000/- (d) No charges
- 31 Railway Board has recommended that locations where HPSV lamps affect the colour light signalling should be replaced by
(a) Mercury Vapour Lamps
(b) FL tube fittings
(c) Any of A & B
(d) No such recommendation has been made.
- 32 The maintenance of water coolers donated by private parties is to be done by
(a) The donating party
(b) Railways
(c) On contract
(d) Any of the above.
- 33 The electrical energy consumption on water coolers donated by private parties are to be borne by
(a) The donating party
(b) Railways
(c) SEB
(d) Through collection from public
- 34 The Railway Board has recommended to provide water coolers at stations with _____passengers (inward & outward) per day
(a) 500 (b) 1000 (c) 1500 (d) 2000

10. ELECTRICAL UNITS: EQUIVALENTS & FORMULAE

1. One HP =
(a) 756 watts (b) 746 watts (c) 860 watts (d) 856 wats
2. Torque in ft. lbs. =
(a) $HP \times 33000 / (RPM \times 2)$ (b) $HP \times 2 / (RPM \times 33000)$
(c) $HP \times RPM / (2 \times 33000)$ (d) $RPM \times 2 / (HP \times 33000)$
3. Current =
(a) Watts/Volts (b) Volts/Watts
(c) Kilowatt/Volts (d) Kilovolt/watt
4. Motor output in HP=
(a) $KW \text{ input} \times \text{efficiency} / 0.746$ (b) $KW \text{ input} \times 0.746 / \text{efficiency}$
(c) $\text{Efficiency} \times 0.746 / KW \text{ input}$ (d) $0.746 / (KW \text{ input} \times \text{efficiency})$
5. kVA equal to
(a) $1000 \times \text{Amps} / \text{volts}$ (b) $\text{volts} \times \text{Amps} \times 1000$
(c) $\text{Volts} \times 1000 / \text{Amps}$ (d) $\text{Amps} \times \text{volts} / 1000$
6. Power factor =
(a) True Power/Apparent power (b) Apparent power/True power
(c) Average power/True power (d) Apparent power/Average power
7. True power in three-phase circuit in Kilowatt is
(a) $1.414 \times \text{volts} \times \text{amperes} \times \text{pf} / 1000$ (b) $1.73 \times \text{volts} \times \text{amperes} \times \text{pf} / 1000$
(c) $\text{Volts} \times \text{Amperes} \times \text{pf} / 1000$ (d) $\text{Volts} \times \text{Amperes} \times 1000 / \text{pf}$
8. Amperes drawn by single-phase motor are equal to
(a) $\text{Efficiency} \times \text{Volts} \times \text{pf} / (HP \times 746)$ (b) $\text{Efficiency} \times \text{pf} / (\text{volt} \times HP \times 746)$
(c) $HP \times 746 / (\text{Efficiency} \times \text{volts} \times \text{pf})$ (d) $HP \times 746 \times \text{volts} / (\text{Efficiency} \times \text{pf})$
9. Amperes drawn by three phase motor are equal to
(a) $\text{Efficiency} \times \text{Volts} \times \text{pf} / (HP \times 746)$ (b) $\text{Efficiency} \times \text{pf} / (\text{volt} \times HP \times 746)$
(c) $HP \times 746 / (\text{Efficiency} \times \text{volts} \times \text{pf} \times 1.73)$ (d) $HP \times 746 \times \text{volts} / (\text{Efficiency} \times \text{pf})$
10. One Kilowatt =
(a) 1.314 HP (b) 13.41 HP (c) 134.1 HP (d) 1341 HP
11. One Kilowatt =
(a) 1360 Metric HP (b) 136 Metric HP
(c) 13.60 Metric HP (d) 1.360 Metric HP
12. One Kwh =
(a) 34.13 BTU (b) 44.13 BTU
(c) 3.413 BTU (d) 4.413 BTU

13. One Kwh =
 (a) 1000 calories (b) 860 calories (c) 740 calories (d) 970 calories
14. One BTU =
 (a) 0.2520 calories (b) 2.520 calories (c) 25.20 calories (d) 252.0 calories
15. One Calorie =
 (a) 39.68 BTU (b) 4.968 BTU (c) 49.68 BTU (d) 3.968 BTU
16. One foot pound =
 (a) 0.1383 M Kg (b) 1.383 M Kg (c) 13.83 M Kg (d) 138.3 M Kg
17. One BTU =
 (a) 0.1076 M Kg (b) 1.076 M Kg (c) 10.76 M Kg (d) 107.6 M Kg
18. One Kilowatt =
 (a) 202 M Kg/sec (b) 102 M Kg /sec (c) 20.2 M Kg/sec (d) 10.2 M Kg/sec
19. One Electrical Unit =
 (a) 1 Kwh (b) 1 Kw (c) 1 kVA (d) Watt
20. Power factor =
 (a) R/Z (b) Z/R (c) V/I (d) I/V
21. The current rating of PVC insulated and PVC sheathed four core , armoured aluminium cable of size 120 sq mm (laid direct in ground) is approximately
 (a) 80 amps (b) 185 amps (c) 290 amps (d) 320 amps
22. The current rating of PVC insulated and PVC sheathed four core , armoured aluminium cable of size 70 sq mm (laid in duct) is approximately
 (a) 115 amps (b) 210 amps (c) 290 amps (d) 350 amps
23. The current rating of PVC insulated and PVC sheathed four core , armoured aluminium cable of size 50 sq mm (laid in air) is approximately
 (a) 65 amps (b) 105 amps (c) 200 amps (d) 250 amps
24. The current rating of PVC insulated and PVC sheathed four core , armoured aluminium cable of size 35 sq mm (laid direct in ground) is approximately
 (a) 92 amps (b) 160 amps (c) 200 amps (d) 250 amps
25. The current rating of PVC insulated and PVC sheathed four core , armoured aluminium cable of size 25 sq mm (laid direct in ground) is approximately
 (a) 55 amps (b) 76 amps (c) 90 amps (d) 150 amp

11. INDUCTION MOTOR

1. Which of the following component is usually fabricated out of silicon steel ?
 - a. Bearings
 - b. Shaft
 - c. Stator core
 - d. None of the above
2. The frame of an induction motor is usually made of
 - a. Silicon steel
 - b. cast iron
 - c. aluminium
 - d. bronze
3. The shaft of an induction motor is made of
 - a. high speed steel
 - b. stainless steel
 - c. carbon steel
 - d. cast iron
4. In squirrel cage induction motors, the rotor slots are usually given slight skew in order to
 - a. reduce windage losses
 - b. reduce eddy currents
 - c. reduce accumulation of dirt and dust
 - d. reduce magnetic hum
5. In case the air gap in an induction motor is increased
 - a. the magnetizing current of the rotor will decrease
 - b. the power factor will decrease
 - c. speed of motor will increase
 - d. the windage losses will increase
6. In N_s is the synchronous speed and s the slip, then actual running speed of an induction motor will be
 - a. N_s
 - b. $s.N_s$
 - c. $(1-s)N_s$
 - d. $(N_s-1)s$
7. Slip rings are usually made of
 - a. copper
 - b. carbon
 - c. phosphor bronze
 - d. aluminium
8. The efficiency of an induction motor can be expected to be nearly
 - a. 60 to 90%
 - b. 80 to 90%
 - c. 95 to 98%
 - d. 99%
11. Star-delta starting of motors is not possible in case of
 - a. single phase motors
 - b. variable speed motors
 - c. low horse power motors
 - d. high speed motors
12. An induction motor with 1000 r.p.m. speed will have
 - a. 8 poles
 - b. 6 poles
 - c. 4 poles
 - d. 2 poles

13. The crawling in the induction motor is caused by
 - a. low voltage supply
 - b. high loads
 - c. harmonics developed in the motor
 - d. improper design of machine
 - e. none of the above
14. It is advisable to avoid line starting of induction motor and use starter because
 - a. motor take five to seven time its full load current
 - b. it will pick up very high speed and may go out of step
 - c. it will run in reverse direction
 - d. starting torque is very high
15. Rotor rheostat control method of speed control is used for
 - a. squirrel-cage induction motors only
 - b. slip ring induction motors only
 - c. both (a) and (b)
 - d. none of the above
16. If any two phases for an induction motor are interchanged
 - a. the motor will run in reverse direction
 - b. the motor will run at reduced speed
 - c. the motor will not run
 - d. the motor will burn
17. An induction motor is
 - a. self-starting with zero torque
 - b. self starting with high torque
 - c. self starting with low torque
 - d. non self starting
18. In three-phase squirrel-cage induction motors
 - a. rotor conductor ends are short-circuited through slip rings
 - b. rotor conductors are short-circuited through end rings
 - c. rotor conductors are kept open
 - d. rotor conductors are connected to insulation
19. In a three-phase induction motor, the number of poles in the rotor winding is always
 - a. zero
 - b. more than the number of poles in stator
 - c. less than number of poles in stator
 - d. equal to number of poles in stator
20. DOL starting of induction motors is usually restricted to
 - a. low horsepower motors
 - b. variable speed motors
 - c. high horsepower motors
 - d. high speed motors
21. The power factor of an induction motor under no-load conditions will be closer to
 - a. 0.2 lagging
 - b. 0.2 leading
 - c. 0.5 leading
 - d. unity
22. Size of a high speed motor as compared to low speed motor for the same H.P. will be
 - a. bigger
 - b. smaller
 - c. same
 - d. any of the above

23. Slip ring motor is recommended where
- speed control is required
 - frequent starting, stopping and reversing is required
 - high starting torque is needed
 - all above features are required
24. Which type of bearing is provided in small induction motors to support the rotor shaft
- ball bearings
 - cast iron bearings
 - bush bearings
 - non of the above
25. Lubricant used for ball bearing is usually
- graphite
 - grease
 - mineral oil
 - molasses
26. If the rotor circuit of a squirrel cage induction motor is open, the rotor will
- run at very high speed
 - run at very low speed
 - make noise
 - not run
27. The advantage of a slip-ring induction motor over a squirrel cage induction motor is that
- it has higher efficiency
 - it has higher power factor
 - it can be started with help of rotor resistance starter
 - non of the above
28. A 3-phase slip-ring induction motor is always started with
- a starting winding
 - squirrel cage winding
 - no external resistance in rotor circuit
 - full external resistance in rotor circuit
29. The synchronous speed of a 3- phase induction motor is given by the formula
- $N_s = 120f/P$
 - $N_s = 120P/f$
 - $N_s = 120 fP$
 - $N_s = f P/120$
30. If single-phasing occurs on the running position in an induction motor, the motor will
- fail to carry load
 - produce peculiar noise
 - draw unbalanced and excessive currents
 - not start
31. A pump induction motor is switched on to a supply 25 percent lower than its rated voltage. The pump runs; eventually
- the pump will get heated and consequently get damaged
 - the pump will stall after sometimes
 - the pump will continue to run at lower speed without damage
32. If there is an open circuit in the rotor of a squirrel cage induction motor
- rotor will overheat
 - line fuses will blow
 - motor will be noisy
 - motor will not start

33. The principle of operation of a 3-phase induction motor is most similar to that of
 - a. transformer with a shorted secondary
 - b. synchronous motor
 - c. capacitor start induction run motor
 - d. repulsion start motor induction motor
34. The A.C. motor which would be best suited to drive a centrifugal pump for discharging a variable quantity of water against a fixed head is the
 - a. repulsion motor
 - b. synchronous motor
 - c. squirrel cage
 - d. slip ring induction motor
35. Two of the power supply terminals to a 3-phase induction motor get inter-changed during reconnection after maintenance of the motor. When put back into service, the motor will
 - a. get heated up and damaged
 - b. rotate in the same direction as it was prior to maintenance
 - c. fail to rotate
 - d. rotate in the reverse direction to that prior to maintenance
 - e. none of the above
36. The frame of an induction motor is made of
 - a. carbon
 - b. closed grained cast iron
 - c. aluminium
 - d. stainless steel
37. Slip rings for induction motors are made of
 - a. phosphor bronze
 - b. aluminium
 - c. carbon
 - d. cobalt steel
38. The shaft, on which the rotor of an induction motor is mounted is made of
 - a. high speed steel
 - b. chrome vanadium steel
 - c. cast-iron
 - d. mild steel
 - e. aluminium
39. Which of the following type of bearing is generally used to support the rotor of an induction motor
 - a. Ball bearing
 - b. Needle bearing
 - c. Plummer block
 - d. Bush bearing
40. Under which method of starting an induction motor is expected to take largest starting current?
 - a. star-delta starting
 - b. auto-transformer starting
 - c. direct on line starting
 - d. stator rotor starting
41. The direction of rotation of a 3-phase induction motor can be reversed by
 - a. interchanging any two phases
 - b. supplying low voltage
 - c. reducing load
 - d. reducing frequency

42. The number of slip rings on a squirrel cage induction motor is
- four
 - three
 - two
 - none
43. The starting torque of the slip ring induction motor can be increased by
- adding resistance to the stator
 - adding resistance to the rotor
 - adding resistance to stator as well as the rotor
 - none of the above
44. If the rotor is open in a squirrel cage motor, it
- will run at very high speed
 - will run at very slow speed
 - will not run
 - will make noise
45. The value of average flux density in air gap in an induction motor, should be small
- to achieve good efficiency
 - to get poor power factor
 - to get good power factor
 - for minimum cost
46. An induction motor has a rated speed of 720 r.p.m. How many poles has its rotating magnetic field?
- 8 poles
 - 6 poles
 - 4 poles
 - 2 poles
47. During starting if an induction motor hums, the probable cause could be
- open circuit
 - unequal phase resistance
 - inter-turn short circuit on rotor
 - any of the above
48. The probable reason for an induction motor running too hot could be
- low voltage
 - uneven air gap
 - clogged ventilating ducts
 - any of the above
49. In case single phasing occurs in delta connected motor
- one phase will be seriously over-loaded and two others will be slightly overloaded
 - two phases will be seriously over-loaded and there will be no current in the third phase
 - there will be no current in one phases
 - there will be no current in two phases
50. Synchronous speed is defined as
- the speed of a synchronous motor
 - the natural speed at which a magnetic field rotates
 - the speed of the rotor of an induction motor
 - the speed of an induction motor at no load

51. The speed of three phase cage-rotor induction motor depends on
- a. number of poles only
 - b. input voltage
 - c. frequency of supply only
 - d. number of poles and frequency of supply
 - e. none of the above
52. The two important parts of a 3-phase induction motor are
- a. rotor and armature
 - b. rotor and stator
 - c. slip ring and brushes
 - d. stator and field
53. Phase advancers are used with induction motors to
- a. reduce noise
 - b. reduce vibrations
 - c. reduce copper losses
 - d. improve power factor

12. CABLES

1. The insulating material for a cable should have
 - a. low cost
 - b. high dielectric strength
 - c. high mechanical strength
 - d. all of the above
2. Which of the following protects a cable against mechanical injury
 - a. bedding
 - b. sheath
 - c. armouring
 - d. none of the above
3. Which of the following insulation is used in cables?
 - a. Varnished cambric
 - b. rubber
 - c. paper
 - d. any of the above
4. Empire tape is
 - a. varnished cambric
 - b. vulcanized rubber
 - c. impregnated paper
 - d. none of the above
5. The thickness of the layer on insulation on the conductor, in cables, depends upon
 - a. bedding
 - b. sheath
 - c. armouring
 - d. none of the above
6. The bedding on a cable consists of
 - a. Hessian cloth
 - b. jute
 - c. any of the above
 - d. none of the above
7. The insulating material for cables should
 - a. be acid proof
 - b. be non-inflammable
 - c. be non-hygroscopic
 - d. have all above properties
8. In a cable immediately above metallic sheath..... is provided
 - a. earthing connection
 - b. bedding
 - c. armouring
 - d. none of the above
9. In case of three core flexible cable the colour of the neutral is
 - a. blue
 - b. black
 - c. brown
 - d. none of the above
10. Low tension cables are generally used upto
 - a. 200 V
 - b. 500 V
 - c. 700 V
 - d. 1000 V

11. PVC stands for
- a. polyvinyl chloride
 - b. post varnish conductor
 - c. pressed and varnished cloth
 - d. positive voltage conductor
 - e. all above parameters
12. In the cables, the location of fault is usually found out by comparing
- a. the resistance of the conductor
 - b. the inductance of conductors
 - c. the capacitances of insulated conductors
 - d. all above parameters
13. The material for armouring on cable is usually
- a. steel tape
 - b. galvanized steel wire
 - c. any of the above
 - d. none of the above
14. In the cables, sheaths are used to
- a. prevent the moisture from entering the cable
 - b. provide enough strength
 - c. provide proper insulation
 - d. none of the above
15. Underground cables are laid at sufficient depth
- a. to minimize temperature stresses
 - b. to avoid being unearthed easily due to removal of soil
 - c. to minimize the effect of shocks and vibrations due to passing vehicles, etc.
 - d. for all of the above reasons
16. The advantage of cable over overhead transmission lines is
- a. easy maintenance
 - b. low cost
 - c. can be used in congested areas
 - d. can be used in high voltage circuits
17. The insulating material should have
- a. low permittivity
 - b. high resistivity
 - c. high dielectric strength
 - d. all of the above
18. The disadvantage with paper as insulating material is
- a. it is hygroscopic
 - b. it has high capacitance
 - c. it is an organic material
 - d. none of the above

ANSWER SHEET

1. GENERAL

1 - b	2 - a	3 - b	4 - c	5 - b	6 - c
7 - d	8 - b	9 - d	10 - c	11 - d	12 - b
13 - a	14 - c	15 - b	16 - b	17 - c	18 - b
19 - c	20 - b	21 - d	22 - b	23 - a	24 - a
25 - d	26 - a	27 - b	28 - c	29 - b	30 - d
31 - b	32 - b	33 - c	34 - a	35 - d	36 - b
37 - c	38 - b	39 - a	40 - c	41 - a	42 - b
43 - a	44 - a	45 - a	46 - a	47 - d	48 - b
49 - a	50 - a	51 - a	52 - a	53 - a	54 - a
55 - b	56 - b	57 - c	58 - a	59 - c	60 - c
61 - b	62 - b	63 - d	64 - d	65 - a	66 - b
67 - d	68 - c	69 - d	70 - d	71 - c	72 - a
73 - a	74 - b	75 - a	76 - a	77 - b	78 - a
79 - b	80 - a	81 - a	82 - c	83 - c	84 - a
85 - b	86 - a	87 - a	88 - a	89 - a	90 - d
91 - b	92 - b	93 - d	94 - c	95 - a	96 - b
97 - a	98 - a	99 - b	100 - c	101 - a	102 - b
103 - b	104 - d	105 - d	106 - c	107 - a	108 - c
109 - b	110 - b	111 - b	112 - a	113 - c	114 - b
115 - b	116 - d	117 - c	118 - b	119 - a	120 - c
121 - b	122 - a	123 - c	124 - d	125 - b	126 - c
127 - c	128 - b	129 - c	130 - d	131 - c	132 - d
133 - a	134 - a	135 - b	136 - a	137 - c	138 - b
139 - d	140 - a	141 - b	142 - d	143 - a	144 - c
145 - d	146 - d	147 - c	148 - a	149 - d	150 - d
151 - d	152 - d	153 - a	154 - d	155 - d	156 - d
157 - b	158 - c	159 - d	160 - b	161 - a	162 - c
163 - b	164 - a	165 - a	166 - a	167 - b	168 - a
169 - c	170 - a	171 - b	172 - c	173 - b	174 - a
175 - c	176 - c	177 - b	178 - b	179 - d	180 - c
181 - c	182 - c	183 - b	184 - b	185 - b	186 - c
187 - c	188 - b	189 - b	190 - b	191 - c	192 - c
193 - c	194 - a	195 - a	196 - b		

2. TRANSFORMERS

1-b	2-a	3-a	4-b	5-d	6-d	7-d	8-d	9-c	10-d
11-d	12-a	13-a	14-c	15-c	16-a	17-d	18-b	19-c	20-c
21-d	22-b	23-b	24-c	25-c	26-b	27-d	28-c	29-b	30-d
31-a	32-c	33-d	34-b	35-a	36-c	37-c	38-c	39-b	40-b
41-c	42-d	43-b	44-b	45-d	46-a	47-d	48-b	49-d	50-d
51-d	52-a	53-d	54-d	55-a	56-b	57-a	58-c	59-b	60-d
61-d	62-d	63-b	64-a	65-a	66-b	67-b	68-b	69-c	70-d

3. EARTHING

1-a	2-b	3-c	4-a	5-b	6-c	7-d	8-b	9-c	10-d
11-b	12-c	13-c	14-a	15-d	16-b	17-b	18-d		

4. LIGHTING AND ILLUMINATION

1-d	2-b	3-a	4-b	5-b	6-d	7-c	8-c	9-a	10-a
11-b	12-c	13-d	14-a	15-b	16-c	17-d	18-c	19-d	20-d
21-b	22-c	23-b	24-b	25-c	26-a	27-a	28-c	29-b	30-c
31-d	32-d	33-c	34-c	35-b	36-a	37-a	38-b	39-b	40-c
41-a	42-d	43-b	44-a	45-d	46-d	47-c	48-d	49-d	50-c
51-a									

5. D.G. SET

1-d	2-d	3-d	4-d	5-a	6-d	7-d	8-d	9-a	10-d
11-d	12-d	13-c	14-a	15-a	16-b	17-b	18-b	19-b	20-c
21-b	22-b	23-a	24-b	25-d	26-b	27-c	28-a	29-a	30-a
31-b	32-c	33-c	34-b	35-b	36-d	37-a	38-c	39-b	40-d
41-b	42-c	43-b							

6. PUMP

1-a	2-b	3-c	4-d	5-a	6-d	7-b	8-b	9-a	10-c
11-a	12-d	13-d	14-b	15-a	16-b	17-a	18-b	19-c	20-d
21-c	22-e	23-d	24-b	25-b	26-a	27-d	28-a	29-b	30-a
31-c	32-a	33-a	34-b	35-b	36-b	37-b	38-c	39-a	40-a
41-b	42-b	43-a	44-b	45-b	46-a	47-c	48-c	49-b	50-c
51-a	52-a	53-c	54-c						

7.. TRACK CROSSING

1-a	2-b	3-a	4-a	5-d	6-a	7-a	8-d	9-b	10-d
11-a	12-c	13-b	14-c	15-c	16-d	17-a	18-b	19-c	20-d
21-c	22-d	23-b	24-b	25-b	26-b	27-c	28-d	29-a	30-a
31-b									

8. INDIAN ELECTRICITY RULES

1-d	2-c	3-b	4-c	5-d	6-b	7-c	8-c	9-d	10-a
11-b	12-b	13-c	14-c	15-a	16-b	17-d	18-a	19-b	20-c

9. POLICY

1-c	2-a	3-d	4-d	5-d	6-d	7-c	8-c	9-d	10-a
11-c	12-d	13-a	14-a	15-a	16-a	17-b	18-a	19-b	20-c
21-a	22-a	23-a	24-a	25-b	26-d	27-c	28-b	29-b	30-d
31-c	32-b	33-b	34-b						

10. ELECTRICAL UNITS: EQUIVALENTS & FORMULAE

1-b	2-a	3-a	4-a	5-d	6-a	7-b	8-c	9-c	10-a
11-d	12-c	13-b	14-a	15-d	16-a	17-d	18-b	19-a	20-a
21-b	22-a	23-b	24-a	25-b					

11. INDUCTION MOTOR

1-c	2-b	3-c	4-d	5-b	6-c	7-c	8-b		11-a
	12-b	13-c	14-a	15-b	16-a	17-c	18-b	19-d	20-a
21-a	22-b	23-d	24-a	25-b	26-d	27-c	28-d	29-a	30-a
31-a	32-d	33-a	34-d	35-d	36-b	37-a	38-d	39-a	40-c
41-a	42-d	43-b	44-c	45-c	46-a	47-d	48-d	49-a	50-b
51-d	52-b	53-d							

12. CABLES

1-d	2-c	3-d	4-a	5-c	6-c	7-d	8-b	9-a	10-d
11-a	12-c	13-c	14-a	15-c	16-c	17-d	18-a		

13. BASIC ELECTRONICS

1. Electron-hole pair are produced by
(a) recombination (b) **thermal energy**
(c) ionization (d) doping
2. Recombination is when
(a) **an electron falls into a hole**
(b) a positive and a negative ion bond together
(c) a valence electron becomes a conduction electron
(d) a crystal is formed
3. Each atom in a silicon crystal has
(a) four valence electrons
(b) four conduction electrons
(c) **eight valence electrons, four of its own and four shared**
(d) no valence electrons because all are shared with other atoms
4. The current in a semiconductor is produced by
(a) electrons only (b) holes only
(c) negative ions (d) **both electrons and holes**
5. The process of adding an impurity to an intrinsic semiconductor is called
(a) **doping** (b) recombination
(c) atomic modification (d) ionization
6. A trivalent impurity is added to silicon to create
(a) germanium (b) **a p-type semiconductor**
(c) an n-type semiconductor (d) a depletion region
7. The purpose of pentavalent impurity is to
(a) reduce the conductivity (b) increase the number of holes
(c) **increase the number of free electrons** (d) create minority carriers
8. For a silicon diode, the value of the forward-bias voltage typically
(a) must be greater than 0.3V
(b) **must be greater than 0.7V**
(c) depends on the width of depletion region
(d) depends on the concentration of majority carriers
9. When forward biased, a diode
(a) blocks current (b) **conducts current**
(c) has a high resistance (d) drops a large voltage
10. When a voltmeter is placed across a forward-biased diode, it will read a voltage approximately equal to
(a) the bias battery voltage (b) 0V
(c) **the diode barrier potential** (d) the total circuit voltage

11. The term bias means
 - (a) the ration of majority carriers to minority carriers
 - (b) the amount of current across a diode
 - (c) a dc voltage is applied to control the operation of a device**
 - (d) none of the above

12. .In a LED, the light is produced by a solid state process called as
 - (a) light radiation**
 - (b) electroluminescence**
 - (c) light multiplication
 - (d) phospherence

13. Efficiency of LED is given by
 - (a) light to light conversion
 - (b) light to electrical conversion
 - (c) electrical power to visible light conversion**
 - (d) none of above

14. The wavelength of the light emitted and its color depends on the
 - (a) forward voltage
 - (b) forward current
 - (c) band gap energy of the material forming P-N junction**
 - (d) none of the above

15. The material used for red LED is
 - (a) GaP
 - (b) GaAsP
 - (c) AlGaAs
 - (d) Above all**

16. A silicon diode is in series with a 1.0 k Ω resistor and a 5V battery. If the anode is connected to the positive battery terminal, the cathode voltage with respect to the negative battery terminal is
 - (a) 0.7V
 - (b) 0.3V
 - (c) 5.7V
 - (d) 4.3V**

17. Although current is blocked in reverse bias,
 - (a) there is some current due to majority carrier
 - (b) there is very small current due to minority carriers**
 - (c) there is an avalanche current
 - (d) none of the above

18. The average value of a half wave rectified voltage with a peak value of 200V is
 - (a) 63.7V**
 - (b) 127.3V
 - (c) 141V
 - (d) 0V

19. When a 60Hz sinusoidal voltage is applied to the input of a half-wave rectifier, the output frequency is
 - (a) 120Hz
 - (b) 30Hz
 - (c) 60Hz**
 - (d) 0Hz

20. The peak value of the input to a half-wave rectifier is 10V.The approximate peak value of the output is
 - (a) 10V
 - (b) 3.18V
 - (c) 10.7V
 - (d) 9.3V**

21. The average value of full-wave rectified voltage with a peak value of 75V is
 (a) **53V** (b) 47.8V
 (c) 37.5V (d) 23.9V
22. When a 60Hz sinusoidal voltage is applied to the input of a full-wave rectifier, the output frequency is
 (a) **120Hz** (b) 60Hz
 (c) 240Hz (d) 0Hz
23. The total secondary voltage in a center-tapped full-wave rectifier is 125Vrms. Neglecting the diode drop, the rms output voltage is
 (a) 125V (b) 177V
 (c) 100V (d) **62.5V**
24. When the peak output voltage is 100V, the PIV for each diode in a center-tapped full-wave rectifier is (neglecting the diode drop)
 (a) 100V (b) **200V**
 (c) 141V (d) 50V
25. The ideal dc output voltage of a capacitor-input filter is equal to
 (a) **The peak value of the rectified voltage**
 (b) The average value of the rectified voltage
 (c) The rms value of the rectified voltage
 (d) None of the above
26. If the load resistance of a capacitor-filtered full-wave rectifier is reduced, the ripple voltage
 (a) **increases** (b) decreases
 (c) is not affected (d) has a different frequency
27. If one of the diodes in a bridge full-wave rectifier opens, the output is approximately
 (a) 0V
 (b) one-fourth the amplitude of the input voltage
 (c) **a half-wave rectified voltage**
 (d) a 120Hz voltage
28. The cathode of zener diode in a voltage regulator is normally
 (a) **more positive than the anode** (b) more negative than the anode
 (c) at +0.7 V (d) grounded
29. If a certain zener diode has a zener voltage of 3.6V, it operates in
 (a) regulated breakdown (b) **Zener breakdown**
 (c) forward conduction (d) avalanche breakdown
30. The data sheet for a particular zener gives $V_Z=10V$ at $I_{ZT}=500mA$. Z_Z for these conditions is
 (a) 50Ω (b) **20Ω**
 (c) 10Ω (d) unknown
31. An LED
 (a) emits light when reverse biased (b) senses light when reverse biased
 (c) **emits light when forward biased** (d) acts as a variable resistance

32. When operated in cutoff and saturation, the transistor acts like
(a) a linear amplifier (b) **a switch**
(c) a variable capacitor (d) a variable resistance
33. In a voltage divider biased npn transistor, if the upper voltage-divider resistor(the one connected to (VCC) opens,
(a) **the transistor goes into cutoff** (b) the transistor goes into saturation
(c) the transistor burns out (d) the supply voltage is too high
34. In a voltage divider biased npn transistor, if the lower voltage-divider resistor (the one connected to ground) opens,
(a) **the transistor goes into cutoff** (b) the transistor goes into saturation
(c) the transistor burns out (d) the supply voltage is too high
35. A certain common-emitter amplifier has a voltage gain of 100.If the emitter bypass capacitor is removed,
(a) The circuit will become unstable (b) **the voltage gain will decrease**
(c) the voltage gain will increase (d) The Q-point will shift

14. LIFTS AND ESCALATORS

1. Which of the following is **not** a safety device on an elevator?
a) Over speed Governor
b) Door lock
c) Limit Switch
d) Call button
2. If an elevator is said to be roped 1:1, how many sheaves are placed on top of the car?
a) 1
b) 0
c) 2
d) 4
3. Which of these is NOT likely to be found on a standard, non-roped hydraulic elevator?
a) Door locks
b) Over speed Governor
c) Hydraulic ram
d) Pit valve
4. What is the mechanism called that detects if the elevator is going too fast?
a) Ward-Leonard drive
b) Over speed governor
c) Hydraulic ram
d) Limit Switch
5. Which of the following elevator drives is not suitable for a high rise building of say, 50 floors?
a) VVVF
b) SCR-DC
c) Ward-Leonard
d) 2 speed AC
7. What is the purpose of the counterweight?
a) To conform to Master Dogen's instructions
b) It looks good
c) **To balance the load of the car across the sheave**
d) To balance the weight of the ropes across the sheave
8. What is the purpose of compensating chains or ropes?
a) To compensate for feeling insecure
b) To compensate for the difference in weight of the car, counter weights and cables
c) To keep engineers in a job
d) To compensate for over balance
9. In which of these cases are landing buttons ignored by an elevator?
a) The elevator is switched off
b) Fire service
c) Independent Service
d) All of these
10. What principle do roped elevators work on?
a) **Traction**
b) Hope
c) Friction
d) Pressure
11. What type of elevator would you expect to have a valve block?
a) A belt driven elevator
b) A gearless elevator
c) Hydraulic elevator
d) An escalator

12. What is the function of emergency lights provided in lift car? (b)
 a. To make call outside b. To indicate the control switches
 c. To make the way to exit d. To call the rescue team
13. What is full form of ARD? (a)
 a. Automatic Rescue Device b. Automatic Reset Device
 c. Automatic Restart Device d. Automatic Restore Device
14. What is the full form of VVVF in electrical traction drive system? (a)
 a. Variable Voltage Variable frequency b. Variable Voltage Variable field
 c. Variable Voltage Variable flux d. Vertical Voltage Variable flux
15. How elevator car cabin is classified? (c)
 a. Type of door b. Location of Elevator
 c. Numbers of entrances and Location d. Height of travelling
16. What is full form of OSG? (a)
 a. Over Speed Governor b. Over Speed Guide
 c. Over Speed Gear d. Over Speed Grip
17. Which is safety component is used in electrical traction elevator? (a)
 a. Progressive gear b. Guide rail
 c. Counter weight d. Deflector sheave
18. Which test done on power cable during elevator commissioning? (d)
 a. Core continuity b. Core colours
 c. Core size d. Neutral and Earth continuity
19. Which is the first step of elevator installation? (d)
 a. Fixing of power room accessories b. Making a trial
 c. Fixing of motor and accessories d. Fixing of template
20. Which switch operates before the car come into contact with the buffers? (a)
 a. Final limit switch b. ARD
 c. OSG d. Pit switch
21. Which device is used to prevent reversal of direction of escalator? (b)
 a. Braking system b. Speed governor
 c. Motor drive d. Controller
22. Which component is an escalator controller component? (b)
 a. Sensor b. MCB
 c. Limits switch d. Intermediate switch
23. How soft start controller controls the speed? (c)
 a. Control power and frequency b. Control current and frequency
 c. Control voltage and frequency d. Control resistance and frequency
24. What is the purpose of maintenance switch used in escalator system? (b)
 a. ON operating circuits b. Cut OFF operating circuits
 b. Switching safety circuits d. Switching alarm circuits
25. What is the purpose of Pit switch? (d)
 a. Change speed b. Run lift c. Change direction d. Stop lift
26. Which elevator part wiring should run separately? (d)
 a. Normal bottom limit switches b. Terminal up limit switch
 c. Set switch d. Door motor

15. ENERGY CONSERVATION AND ENERGY AUDIT

1. In BEE Star labelled distribution transformers, which of following losses are defined?
a) **total loss at 50% and 100% loading** b) total loss at 75 % loading
c) total loss at 75% and 100% loading d) total loss at 100% loading
2. Friction losses in a pumping system is
a) inversely proportional to flow b) inversely proportional to cube of flow
c) **proportional to square of flow** d) inversely proportional square of flow
3. If V_1 is actual supply voltage and V_2 is the rated voltage of a capacitor, the reactive kVAR produced would be in the ratio of
a) V_2^2/V_1^2 b) V_1^2/V_2^2 c) $1 - V_2^2/V_1^2$ d) $1 + V_2^2/V_1^2$
4. The blow down loss in a cooling tower depends on
a) TDS in circulating water b) TDS in make-up water
c) evaporation loss d) **all the above**
5. Energy Star Label Rating scheme for Fluorescent lamp is based on:
a) **Lumens per Watt at 100, 2000 and 3500 hours of use**
b) End of Lamp Life in terms of burning hours
c) Lumen depreciation at 2000 hours
d) Color Rendering Index
6. Identify the wrong statement from the following regarding Vapor Compression Refrigeration system
a) condenser rejects heat to atmosphere
b) evaporator removes heat from process or space
c) compressor sends superheated vapor to condenser
d) **high pressure sub-cooled liquid refrigerant returns back to evaporator**
7. The efficiency of a pump does not depend on
a) Suction head b) discharge head
c) **Motor efficiency** d) density of liquid.
8. Which of the following is a positive displacement compressor?
a) Screw compressor b) Reciprocating compressor
c) Centrifugal compressor d) **Both a & b**
9. The most energy intensive dryer among the following
a) refrigeration b) desiccant (heat of compression)
c) **Desiccant (heatless purge)** d) desiccant (blower reactivated)

10. The ratings of the PF correction capacitors at motor terminals for a 37 kW induction motor at 3000 rpm synchronous speed will be ----- in comparison to the same sized induction motor at 1500 rpm synchronous speed
- a) More **b) less** c) same d) dependent on the connected load
11. In a vapor compression refrigeration system, the component across which the enthalpy remains constant
- a) compressor b) condenser **c) expansion valve** d) evaporator
12. A pump discharge has to be reduced from 120 m³/hr to 100 m³/hr by trimming the impeller. What should be the percentage reduction in impeller size?
- a) 83.3% **b) 16.7%** c) 50.0% d) 33.3%
13. In an engine room 15 m long, 10 m wide and 4 m high, ventilation requirement for 20 air changes/hr is m³/hr
- a) 30 b) 3000 **c) 12000** d) none of the above
14. Which of the following type of lamps is most suitable for colour critical applications?
- a) **halogen lamps** b) LED lamps
- c) CFLs d) Low pressure sodium vapour lamp
15. Which of the following is not true regarding system characteristic curve in a pumping system with large dynamic head?
- a) System curve represents a relationship between discharge and head loss in a system of pipes
- b) System curve is dependent on the pump speed**
- c) The basic shape of a system curve is parabolic
- d) System curve will start at zero flow and zero head if there is no static lift
16. The inexpensive way to improve energy efficiency of a motor which operates consistently at below 40% of rated capacity is by
- a) **Operating in Star mode** b) Replacing with correct sized motor
- c) Operating in delta mode d) Operating in VFD mode
17. Installing larger diameter pipe in pumping system results in reduction in
- a) static head **b) frictional head** c) both a and b d) neither a nor b
18. If the delivery valve of the pump is throttled such that it delivers 30% of the rated flow, one of the best options for improved energy efficiency would be
- a) Trimming of the impeller b) Replacing the motor
- c) Replacing with a smaller pump** d) operating with VFD
19. A cooling tower is said to be performing well when:
- a) **approach is closer to zero** b) range is closer to zero
- c) approach is larger than design d) range is larger than design

20. Capacitors with automatic power factor controller when installed in a plant:
- a) reduces active power drawn from grid
 - b) reduces the voltage of the plant
 - c) reduces the reactive power drawn from grid**
 - d) increases the load current of the plant
21. For an air compressor with displacement of 100 CFM and system leakage of 10%, free air delivery is
- a) 111.11 CFM
 - b) 90 CFM
 - c) 100 CFM**
 - d) None of the above
22. If 30,000 kcal of heat is removed from a room every hour then the refrigeration tonnage will be nearly equal to
- a) 30 TR
 - b) 15 TR
 - c) 10 TR**
 - d) 100 TR
23. A 500 cfm reciprocating compressor has a loading and unloading period of 5 seconds and 20 seconds respectively during a compressed air leakage test. The air leakage in the compressed air system would be
- a) 125 cfm
 - b) 100 cfm**
 - c) 200 cfm
 - d) none of the above
24. The Solar Heat Gain Coefficient (SHGC) of window of a building is 0.30. This means that
- a) The window reflects back to exterior a minimum of 30 % of the sun's heat
 - b) The window allows 30 % of the sun's heat to pass through into the building interior**
 - c) 70 % of the sun's heat is incident on the window
 - d) The window allows 70 % of the sun's heat to pass through into interior of the buildings
25. The illuminance is 20 lm/m² from a lamp at 1 meter distance. The illuminance at half the distance will be
- a) 401 lm/m²
 - b) 10 lm/m²
 - c) 20 lm/m²
 - d) 80 lm/m²**
26. Use of soft starters for induction motors results in
- a) **Lower mechanical stress**
 - b) Lower power factor
 - c) Higher maximum demand
 - d) All the above
27. Energy performance index is calculated based on
- a) total building annual energy consumption /built up area**
 - b) total building annual energy consumption /carpet area
 - c) total building annual energy consumption for HVAC and lighting /carpet area
 - d) none of the above
28. A 4 pole 50 Hz induction motor is running at 1470 rpm. What is the slip value?
- a) 20%
 - b) 2%**
 - c) 4%
 - d) 40%

29. Which of the following power plants has the highest efficiency?
- Open cycle Gas Turbine
 - Diesel Engine
 - Combined cycle gas turbine**
 - Conventional coal plants
- 30.-----is used as refrigerant both in vapour compression and vapour absorption systems
- Lithium Bromide
 - Water
 - HFC 134A
 - Ammonia**
31. Which of the following parameters is not required for evaluating volumetric efficiency of reciprocating air compressor?
- Power input**
 - FAD
 - Cylinder Stroke
 - Cylinder bore
32. The gross efficiency of a coal based power generating unit with a gross heat rate of 2600 kcal / kWh is
- 41.4%
 - 38.7%
 - 33.1%**
 - 30.8%
33. The COP of a vapour compression refrigeration system is 3.3. If the motor draws power of 10 kW at an operating efficiency of 90%, the tonnage of refrigeration system is about:
- 0.8
 - 8.5**
 - 7.2
 - 9.6
34. Increasing the suction pipe diameter in a pumping system will
- Decrease NPSHA
 - increase NPSHA**
 - Decrease NPSHR
 - Increase NPSHR
35. For a Cooling Tower, if evaporation loss is 15 m³ / hour and Cycles of Concentration is 2.5, the blowdown is equal to
- 6 m³/ hour
 - 10 m³/ hour**
 - 22.5 m³/ hour
 - 37.5 m³ / hour
36. In T-5 Fluorescent Lamp, "5" is indicative of:
- 5-watt power rating
 - 5% Energy Saving with respect to T8
 - 5th generation lamp
 - Tube diameter**
37. Which of the following is not likely to create harmonics in an electrical system?
- soft starters
 - variable frequency drives
 - uninterrupted power supply source (UPS)
 - electric heater**
38. The performance of rewinding of an induction motor can be assessed by which of the following factors?
- load current
 - stator resistance
 - no load current
 - both b and c**

39. In a DG set, a 3-phase alternator is supplying on an average 100 A at 420 V and 0.9 pf to a load. If the specific fuel consumption of this DG set is 0.30 Its/ kWh at that load, then how much fuel is consumed while delivering generated power for one hour?
a) 11.34 litre **b) 19.64 litre** c) 21.82 litre d) 1964.088 litre
40. The total loss for a transformer loading at 60% with no load and full load losses of 3 kW and 25 kW respectively, is
a) 3 kW **b) 12 kW** c) 18 kW d) 25 kW
41. A process fluid at 40 m³/hr, with a density of 0.95, is flowing in a heat exchanger and is to be cooled from 35 °C to 29 °C. The fluid specific heat is 0.78 kCal/kg. If the chilled water range across the heat exchanger is 4 °C, the chilled water flow rate is
a) **44.46 m³/hr** b) 40.41 m³/hr c) 35.37 m³/hr d) none of the above
42. In which of the following fans the air does not change flow direction from suction to discharge?
a) tube axial fan b) vane axial fan
c) propeller fan **d) all the above**
43. What is window to wall ratio
a) Vertical fenestration area / gross exterior wall area
b) Vertical fenestration area / Net exterior wall area
c) gross exterior wall area/ Vertical fenestration area
d) Net exterior wall area/ Vertical fenestration area
44. The maximum thermal efficiency of a diesel engine power plant is in the range of
a)43-45 % b) 53-55% c)63-65 % d)73-75%
45. The advantage of multi-staging compression over single stage compression is
a) Lower power consumption per unit of air delivered
b) High volumetric efficiency
c) Decreased discharge temperature
d) All of above
46. The specific ratio as defined by ASME and used in differentiating fans, blowers and compressors, is given by
a) discharge pressure/suction pressure
b) suction pressure/discharge pressure
c) discharge pressure/ (suction pressure + discharge pressure)
d) suction pressure/ (suction pressure + discharge pressure)

47. A device that distributes filters or transforms the light emitted from one or more lamps is
 a) Control gear **b) Luminaire** c) Lamp d) Starter
48. For the same quantity of power handled by a distribution line, lower the voltage
 a) lower the current drawn and lower the distribution loss
 b) lower the voltage drop and lower the distribution loss
c) higher the current drawn and higher the distribution loss
 d) higher the voltage drop and lower the distribution loss
49. The power drawn by a centrifugal fan is
a) inversely proportional to fan efficiency
 b) directly proportional to fan efficiency
 c) inversely proportional to static pressure
 d) inversely proportional to flow rate
50. In a transformer on load, if the secondary voltage is one-fourth the primary voltage, then the secondary current will be
 a) **four times the primary current** b) sixteen times the primary current
 c) one-fourth the primary current d) two times the primary current
51. What percentage of the sun's energy can silicon solar panels convert into electricity?
 a) 30% **b) 15%**
 c) 75% d) 50%
52. Non-contact speed measurements can be carried out by
 a) Tachometer **b) Stroboscope**
 c) Oscilloscope d) Speedometer
53. The amount of energy transfer from a higher temperature to a lower temperature is measured in
 a) **kcal** b) Watt c) Watts per second d) none
54. The amount of electricity required to heat 200 litres of water from 30°C to 70°C through resistance heating is
 a) 0.93 kWh **b) 9.3 kWh** c) 930 kWh d) 8 kWh
55. A process requires 100 kg of fuel with a calorific value of 5000 kcal/kg for heating with a system efficiency of 83 %. The loss would be
 a) 235,000 kCal **b) 85,000 kCal** c) 103680 kCal d) 415,000 kCal
56. The internal rate of return is the discount rate for which the NPV is
 a) Always positive b) Always negative
 c) negative or positive **d) None of the above**
57. The producer gas consists of
 a) CO b) H₂ c) CH₄ **d) All of the Above**

58. Which of the following with respect to fossil fuels is true?
- Reserve I Production (RIP) ratio is a constant once established
 - RIP ratio varies every year with only changes in production
 - RIP ratio varies every year with only changes in reserves
 - RIP ratio varies every year with changes in both production and reserves**
59. Air velocity in the ducts can be measured by using ----- and manometer
- Orifice meter
 - Bourden gauge
 - Pitot tube**
 - Anemometer
60. Which industry among the following is not a designated consumer as per EC Act-2001?
- Fertilisers
 - Chlor alkali
 - Cement
 - Sugar**
61. Propane is an example of stored energy
- Nuclear
 - Radiant
 - Chemical**
 - Mechanical
62. Statement not applicable to TOD (Time of the Day) in electricity tariff structure?
- Higher energy charges during peak period
 - It is an incentive to maximize off- peak consumption
 - It is an incentive to minimize peak time power draw from the grid by consumers
 - It is a disincentive for Distribution Company**
63. In a heat treatment furnace the material is heated up to 1053 K from ambient temperature of 303 K. Considering the specific heat of material as 0.125 kCal / kg °C. what is the energy content gained by one kg of material after heating?
- 94 kCal**
 - 250 kCal
 - 350 kCal
 - 100 kCal
64. The top two commercial energy consuming sectors in our country are .
- Industry and Agriculture
 - Agriculture and Transport
 - Residential and Industry
 - Industry and Transport.**
65. The quantity of heat required to convert one kg of a liquid into vapour without change of temperature is called
- latent heat of fusion
 - specific heat
 - sensible heat
 - Latent heat of Evaporation**
66. Acid rain is caused by the release of which of the following components:
- SO_x and NO_x**
 - SO_x and CO₂
 - CO₂ and NO_x
 - Ozone
67. Inexhaustible energy sources are known as:
- Primary energy
 - Secondary energy
 - Commercial energy
 - Renewable energy**

79. As per Energy Conservation Act, 2001 appointment of BEE Certified Energy Manger is mandatory for .
- a) All commercial buildings b) All State designated agencies
c) All large Industrial. consumers. **d) All designated consumers**
80. A list of instruments and what they measure are given below. Which is the incorrect among this list?
- a) Gas analyzer – CO** **b) Lux Meter- Lumens**
c) Manometer- Pressure d) Tachometer - Speed
81. The ISO Series pertaining to the Energy Management System is .
- a) ISO 9001 b) ISO 14001 c) ISO 27000 **d) ISO 50001**
82. "Toe" stands for .
- a) Total oil equivalent b) Tons of effluent
c) Tons of energy equivalent **d) Tons of oil equivalent**
83. Sensitivity analysis is an assessment of .
- a) Profits b) Losses **c) Risks** d) All of the above
84. Micro hydro wilt generates
- a) less than 10 kW** **b) 11kW up to 100 kW**
c) 101 kW to 2 MW d) None of the above
85. Energy security measure includes ,
- a) fully exploiting domestic energy resources
b) diversifying energy supply source
c) Substitution of imported fuels for domestic fuels to the extent possible
d) all of the above
86. The process of capturing CO₂ from point sources and storing them is called .
- a) **carbon sequestration** b) carbon sink
c) carbon capture d) carbon adsorption
87. The retrofitting of a variable speed drive in a plant costs Rs 2 lakh. The annual savings is Rs 0.4 lakh. The maintenance cost is Rs. 0.05 lakh/year. The return on investment is
- a) 25% b) 22.5% c) 24% **d) 17.5%**
88. 2000 kJ of heat is supplied to 500 kg of ice at 0°C. If the latent heat of fusion of ice is 335 kJ/kg then the amount of ice in kg melted will be .
- a) 1.49 b) 83.75 **c) 5.97** d) None of the above
89. The number of moles of water contained in 27 kg of water is .
- a) 5 b) 3 c) 4 **d) 1.5**

90. Which of the following GHGs has the longest atmospheric life time?
a) CO₂ b) CFC
c) Sulfur Hexafluoride (SF₆) d) **perfluorocarbon (PFC)**
91. An indication of sensible heat content in air-water vapour mixture is
a) wet bulb temperature b) dew point temperature
c) density of air d) **dry bulb temperature**
92. Which of the following comes under mandatory labelling program
a) Diesel Generators b) Ceiling fan
c) **Tubular Fluorescent Lamps** d) Pumps
93. Find the future value of Rs. 1,000 at an interest rate of 10% in 10 years' time.
a) **Rs. 2,594** b) Rs. 385
c) Rs. 349 d) Rs. 10,000
94. In a drying process, moisture is reduced from 50% to 30%. Initial weight of the material is 100 kg. Calculate the weight of the final product in kg
a) 80 b) 86 c) **71.4** d) 74.3
95. Energy intensity is the ratio of
a) Fuel consumption / GDP b) GDP/fuel consumption
c) GDP/ energy consumption d) **Energy consumption I GDP**
96. As per primary commercial energy consumption mix in India, the fuel dominating the energy production mix in India is
a) Natural gas b) Oil c) **coal** d) Nuclear energy
97. An activity has an optimistic time of 15 days, a most likely time of 18 days and a pessimistic time of 27 days. What is the expected time?
a) 60 days b) 20 days c) **19 days** d) 18 days
98. Bio-gas generated through anaerobic process mainly consists of
a) Only methane b) **Methane and carbon dioxide**
c) Only ethane d) None of these
99. Which of the following is not a part of energy audit as per the Energy Conservation Act, 2001?
a) Monitoring and analysis of energy use
b) Verification of energy use
c) Submission of technical report with recommendations
d) **Ensuring implementation of recommended measures followed by review**

100. Which of the following statements are true regarding simple payback period?

- a) Considers impact of cash flow even after payback period
- b) Takes into account the time value of money
- c) Considers cash flow throughout the project life cycle
- d) None of the above**

16. RENEWABLE ENERGY SOURCES AND SOLAR ENERGY

1. Which of the following is a disadvantage of renewable energy?
 - a) High pollution
 - b) Available only in few places
 - c) High running cost
 - d) Unreliable supply**
2. A Solar cell is an electrical device that converts the energy of light directly into electricity by the _____
 - a) Photovoltaic effect**
 - b) Chemical effect
 - c) Atmospheric effect
 - d) Physical effect
3. Wood is a renewable resource.
 - a) True**
 - b) False
4. In hydroelectric power, what is necessary for the production of power throughout the year?
 - a) Dams filled with water**
 - b) High amount of air
 - c) High intense sunlight
 - d) Nuclear power
5. The main composition of biogas is _____
 - a) Methane**
 - b) Carbon dioxide
 - c) Nitrogen
 - d) Hydrogen
6. Which among the following have a large amount of installed grid interactive renewable power capacity in India?
 - a) Wind power**
 - b) Solar power
 - c) Biomass power
 - d) Small Hydro power
7. Nuclear Energy is a Renewable Energy.
 - a) True
 - b) False**
8. Based on usability, Energy Resources are classified into _____
 - a) primary, secondary and tertiary resources
 - b) primary and secondary resources
 - c) primary, secondary, intermediate and tertiary resources
 - d) primary, intermediate and secondary resources**
9. Which of the following is not a type of primary resource?
 - a) Crude Oil
 - b) Coal
 - c) Hydrogen Energy**
 - d) Sunlight

10. The ratio of energy received from a raw energy source to energy spent to obtain the raw energy source is called as _____
- a) consumption ratio
 - b) fuel ratio
 - c) energy yield ratio**
 - d) joule ratio
11. Energy Resources which are being used for many decades are known as _____
- a) conventional energy sources**
 - b) non-conventional energy sources
 - c) primary energy sources
 - d) fuel cells
12. A new renewable energy system is designed to harvest energy from wind. The total energy required to build the system is 240 kJ. The energy yield ratio of the system is 14:3. The total energy provided by the system over its lifetime is _____
- a) 18,000 kJ
 - b) 54,000 kJ
 - c) 1,120 kJ**
 - d) 2,258 kJ
13. Which of the statements is correct about Solar Energy?
- a) It is a renewable and conventional source of energy
 - b) It is a non-renewable and non-conventional source of energy
 - c) It is a renewable and non-conventional source of energy**
 - d) It is a non-renewable source of energy
14. Wind and Hydrogen energy are examples of _____
- a) primary sources
 - b) primary and secondary sources respectively**
 - c) secondary sources
 - d) tertiary sources
15. On the basis of long-term availability, resources are classified into _____
- a) conventional and non-conventional resources
 - b) renewable and non-renewable resources**
 - c) primary and secondary resources
 - d) commercial and non-commercial resources
16. Which of these Energy resources is/are widely used in industries?
- a) Coal and Gasoline**
 - b) Wood
 - c) Biogas
 - d) Crop Residue
17. Which of these resources does not produce CO₂ during electricity generation?
- a) Coal
 - b) Methane
 - c) Uranium**
 - d) Biogas

28. Apart from supplying energy, fossil fuels are used for _____
- storing energy in solar ponds
 - drying Vegetables
 - rotating turbine in Hydro Power plants
 - d) manufacture of Organic Chemicals**
29. The only country having a full-fledged ministry for Development of New and Renewable Resources is _____
- a) India**
 - Bangladesh
 - USA
 - China
30. CASE was established after the Oil Crisis of 1973.
- a) True**
 - False
31. Which of the following schemes was launched by MNRE?
- MNREGA
 - UJJWALA
 - c) KUSUM**
 - JWALA
32. Conventional Energy Sources are cheaper than Non-Conventional Sources.
- a) True**
 - False
33. Which of the following pollutants are emitted by the burning of fossil fuel?
- a) Oxides of Carbon, Nitrogen, and Sulphur**
 - Oxides of Carbon, Uranium, and Radium
 - Calcium Halides and Oxides of Nitrogen
 - Noble Gases
34. _____ is a petrochemical and is used as raw material for chemical, pharmaceutical, and paint industry.
- Plutonium
 - Uranium
 - Coal
 - Protactinium
35. Which of the following statements is not true about radioactive waste?
- It has radioactivity quotient of dangerous levels.
 - The disposed radioactive waste is to be guarded for a long period
 - c) It has low radioactivity quotient**
 - Its radioactivity decreases with time
36. Which of the following is not a disadvantage of Hydro Power?
- A large land area submerges into the water leading to deforestation
 - It causes dislocation of a large population and rehabilitation
 - It causes ecological disturbances like earthquake
 - d) It causes calamities like landslides**
37. Which Oxides of Nitrogen are generated by burning of fossil fuel?
- a) NO and NO₂**
 - NO₂, NO₃, and N₂O₅
 - N₂O₅ and N₂O₃
 - NO₃ and N₂O₅

38. 3 percentage of the total greenhouse gas emissions are due to Hydropower plants.
a) True
b) False
39. Which Uranium isotope is used in nuclear power plants?
a) U-235
b) U-234
c) U-215
d) U-218
40. Based on the following statements, choose the correct option.
Statement I: The technology for harnessing fossil fuels is well developed.
Statement II: Fossil fuels are a cheap source of energy.
a) Statement -I is true, Statement -II is true and Statement -II is the correct explanation of Statement -I
b) Statement-I is true, Statement -II is true and Statement -II is not the correct explanation of Statement-II
c) Statement -I is true and Statement -II is false
d) Statement -I is false and Statement -II is true
41. _____energy sources provide energy in dilute form.
a) Non-Renewable
b) Conventional
c) Nuclear
d) Renewable
42. Non-Conventional Energy sources have a high gestation period.
a) True
b) False
43. Based on the following options, choose the correct option.
Statement I: Non-Conventional energy is available in nature free of cost.
Statement II: Non-Conventional energy is exhaustible in nature.
a) Statement I and Statement II are correct and Statement II is the correct explanation of Statement I
b) Statement I and Statement II are correct and Statement II is not the correct explanation of Statement I
c) Statement I is true and Statement II is false
d) Statement II is true and Statement I is false
44. The availability of Renewable energy sources is _____
a) uncertain
b) constant
c) high
d) regular
45. The cost of harnessing energy from Non-Conventional Energy sources is low.
a) True
b) False

46. Which of the following statements is not true about Renewable Energy?
- a) They do not cause pollution
 - b) Their transportation is difficult
 - c) They cause ecological imbalance**
 - d) They have a low gestation period
47. Renewable energy-based power plants have _____
- a) negligible fuel cost**
 - b) low energy availability
 - c) negligible production capacity
 - d) fuel storage tanks
48. Renewable energy plants require _____ than traditional generators.
- a) more fuel
 - b) less maintenance**
 - c) higher operating cost
 - d) more uranium
49. Most of the Renewable energy sources are _____
- a) location-specific**
 - b) universally available
 - c) highly efficient
 - d) polluting
50. The storage of renewable energy sources is expensive.
- a) True**
 - b) False
51. Which of the following has caused global warming since the past 150 years?
- a) Anthropogenic greenhouse gas emissions**
 - b) Ice age greenhouse gas emission
 - c) Emissions of sulphur
 - d) Emissions of aerosols
52. Which of the following has caused global warming?
- a) Burning of biomass
 - b) Burning of fossil fuels**
 - c) Releasing CFCs into the atmosphere
 - d) Melting metals
53. What is the major problem with wind energy?
- a) Generates energy from wind
 - b) It is a renewable source of energy
 - c) Requires large area of land**
 - d) Compact and does not require large area of land
54. How does acid rain affect the environment?
- a) By precipitating clean and fresh rainwater only in freshwater bodies
 - b) By precipitating clean and fresh rainwater in all water bodies at once
 - c) By consuming all polluted water and precipitate clean water from water cycle
 - d) By precipitating acidic rainwater**

55. What is the pH level of acid rain?
- Between 3-4**
 - Between 6-8
 - 7
 - Between 11-14
56. Which of the following is/are directly harming the atmosphere?
- Contamination of water bodies
 - Ozone layer depletion and emission of acidic gas**
 - Global climate change and contamination of water bodies
 - Land fills and industrial emissions into water bodies
57. Which of the following is/are major contributor(s) of acid rain?
- Sulphur
 - Sulphur and sulphur dioxide
 - Sulphur dioxide and nitrogen dioxide**
 - Nitrogen dioxide and argon
58. Which of the following energy sources is affected when energy crops compete with food production?
- Solar
 - Wind
 - Hydro
 - Biomass**
59. What is a solar cooling technology?
- Sun's thermal energy is transferred to a heat transfer fluid which passes through a heat exchanger**
 - Sun's thermal energy is transferred to a heat transfer solid which passes through a heat exchanger
 - Sun's nuclear energy is transferred to a heat transfer fluid which passes through a cold exchanger
 - Sun's thermal energy is transferred to a heat transfer fluid which passes through a cold exchanger
60. What does ozone protect the earth from?
- Sound waves
 - Harmful UV radiation**
 - Visible radiation
 - Greenhouse effect
61. Wind plants affect the habitat of _____
- tigers
 - whales
 - birds and bats**
 - fish
62. Which of the following is an example of a nuclear accident?
- Construction of dams
 - Burning of fossil fuels
 - Nuclear fusion
 - Nuclear reactor core melt**

63. What happens when a nuclear reactor core is damaged?
- Significant amounts of radioactive isotopes are released**
 - Significant amounts of radio-inactive isotopes are released
 - Significant amounts of nitrogen oxides are released
 - Greenhouse gases are released
64. Which of the following is the cleanest fossil fuel?
- Natural gas**
 - Petrol
 - Petroleum
 - Coal
65. Where is the ozone hole located?
- Asia
 - Antarctica**
 - Europe
 - America
66. What is main potential water pollutant from a geothermal reservoir?
- Carbon
 - Silicon
 - Sulphur**
 - Nitrogen
67. How does a geothermal plant prevent the leakage of sulphur into environment?
- By trapping it inside the reservoir during extraction of hot water
 - By trapping it inside the reservoir before extraction of hot water
 - By disposing it into water bodies
 - By using a closed-loop water system**
68. Which of the following gases is commonly emitted into the atmosphere from an open-loop geothermal system?
- Hydrogen sulphide**
 - Hydrogen
 - Carbon
 - Silicon
69. How does hydrogen sulphide from geothermal plants contribute towards pollution?
- By reacting with acidic gases to cleans the precipitating rainwater
 - By forming sulphur dioxide**
 - By changing into one of the noble gases
 - By reacting with ozone
70. Which of the following is the largest emitter of sulphur dioxide?
- Geothermal plants
 - Photosynthesis
 - Coal plants**
 - Respiration
71. Land requirement of a geothermal plant depends on _____
- greenhouse gas emissions
 - hydrogen sulphide emissions
 - the wildlife
 - amount of power capacity**

72. Which of the following is one of the major problems caused by a geothermal plant to land?
- Land subsidence**
 - Land fertilisation
 - Reservoir cleansing
 - Noble gas emissions
73. Photovoltaic manufacturing requires hazardous materials.
- True**
 - False
74. Life cycle assessment is a good indicator of the net environmental impact of any technology.
- True**
 - False
75. What is “3E”?
- Energy, economy and environment**
 - Reduce, reuse and recycle
 - Energy, economy and envision
 - Ergonomics, evolution and economy
76. Which of the following relates the three elements of “3E”?
- Energy from fossil fuels
 - Energy from natural gas
 - Renewable energy sources and technology**
 - Economy
77. Which of the following ensures sustainable growth?
- Positive economic growth, deterioration of environment with economic expansion and energy resource meeting energy demands
 - Negative economic growth, deterioration of environment with economic expansion and energy resource meeting energy demands
 - Positive economic growth, non-deterioration of environment with economic expansion and growth of energy resource not meeting energy demands
 - Positive economic growth, deterioration of environment with economic expansion and growth of energy resource meeting energy demands**
78. Sustainable development requires that energy resource _____
- cannot be exhausted completely**
 - can be complete exhausted
 - can destroy the environment
 - cannot meet the growing demand
79. Which of the following contributes towards growth of economic and energy?
- Intermittent capital and human resource investment
 - Continuous capital and human resource investment**
 - Decrement in capital and human resource investment
 - No capital and human resource investment
80. Which of the following energy resources seems inexhaustible?
- Natural gas
 - Coal
 - Sun**
 - Petrol

81. For sustainable development, environment damage rate_____environment recovery rate.
- should be greater than the
 - should be exponentially greater than the
 - should be same as the
 - should be lesser than the**
82. Which of the following best describes the aim of sustainable consumption and production?
- To reduce resource consumption, waste generation and emissions across the full life cycle of processes and products**
 - To increase resource consumption, waste generation and emissions across the full life cycle of processes and products
 - To reduce resource consumption, increase waste generation and emissions across the full life cycle of processes and products
 - To increase resource consumption, reduce waste generation and emissions across the full life cycle of processes and products
83. Which of the following best describes green economy?
- A high carbon, resource inefficient and socially inclusive economy
 - A low carbon, resource efficient and socially inclusive economy**
 - A low carbon, resource inefficient and socially exclusive economy
 - A high carbon, resource efficient and socially inclusive economy
84. What is the goal of sustainability in any process?
- To maintain the process finitely
 - To eventually eliminate the process
 - To maintain the process indefinitely**
 - To support damaging the environment
85. What are the three pillars of sustainable development?
- Energy, economy and ergonomics
 - Environment, economy and evolution
 - Energy and evolution
 - Energy, economy and environment.**
86. Sustainable development binds together the concern for natural systems with social and political challenges
- True**
 - False
87. Sustainability can be achieved by replacing existing resources with other resources of equal value.
- True**
 - False
88. Which of the following best describes world energy consumption?
- Total energy produced and used by humanity**
 - Total energy consumed by humanity
 - Total energy consumed by humans in the biological pyramid
 - Total energy produced by humans in the biological pyramid
89. Which of the following is NOT included in world energy consumption?
- Solar energy
 - Energy from food**
 - Energy from wind
 - Energy from fossil fuels

90. World energy consumption is measured _____
 - a) quarterly
 - b) half-yearly
 - c) yearly**
 - d) every decade
91. Which of the following energy sources is majorly used?
 - a) Wind energy
 - b) Nuclear energy
 - c) Hydrogen energy
 - d) Fossil fuels**
92. Why is there a demand for renewable sources of energy?
 - a) Because they emit greenhouse gases
 - b) Because of low or zero carbon footprint**
 - c) Because of the decreasing global temperatures
 - d) Because they are more efficient
93. Despite significant investments in renewable sector, why are fossil fuels still used?
 - a) Because of logistic, structural and operational issues**
 - b) Because people do not trust the renewable sector
 - c) Because fossil fuels are cheap
 - d) Because global warming is a hoax
94. What is total primary energy supply?
 - a) Total energy produced and used by humanity
 - b) Total energy consumed by humanity
 - c) Sum of energy production minus storage changes**
 - d) Sum of energy production including storage changes
95. What is the unit of total primary energy supply?
 - a) Watts
 - b) Joules
 - c) Newtons
 - d) Watt-hours**
96. What was the growth in energy demand in the year 2018 as stated by IEA?
 - a) 2.3%**
 - b) 1.3%
 - c) 1%
 - d) 0.5%
97. World energy consumption is a power source metric of civilization.
 - a) True**
 - b) False
98. It estimated that the world energy consumption will grow by 50% between 2018 and 2050.
 - a) True**
 - b) False
99. Which of the following leads the energy production in low-carbon sources?
 - a) Photovoltaics**
 - b) Wind energy
 - c) Solar thermal power systems
 - d) Nuclear energy.

100. Which of the following countries is least dependent on fossil fuels?
- India
 - Iceland**
 - USA
 - England
101. Which of the following is the most usable form of energy for future?
- Solar
 - Electricity**
 - Thermal
 - Nuclear
102. Which of the following sources are amongst the fastest growing energy sources?
- Solar and wastewater
 - Wind and hydro
 - Hydro and solar**
 - Wind and wastewater
103. In terms of total primary energy consumption, India stands _____
- third**
 - second
 - first
 - fifth
104. Where is the largest coal belt in India?
- Uttar Pradesh
 - Jharkhand**
 - Assam
 - Kerala
105. Which of the following majorly account for thermal power in India?
- Oil
 - Solar thermo-mechanical systems
 - Coal and lignite**
 - Biomass
106. Which of the following is a non-commercial form of energy used for cooking in India?
- Cow dung**
 - Coal
 - Hydro
 - Electricity
107. What is the largest thermal power plant in India?
- Mundra Thermal Power Station
 - Vindhyachal Thermal Power Station**
 - Sasan Ultra Mega Power Plant
 - Talcher Super Thermal Power Station
108. What is the second largest thermal power plant in India?
- Tiroda Thermal Power Plant
 - Vindhyachal Thermal Power Station
 - Mundra Thermal Power Station**
 - Talcher Super Thermal Power Station
109. Which of the following states is known oil reserves?
- Jharkhand
 - Odisha
 - Madhya Pradesh
 - Assam**

110. Which of the following states is known for gas reserves?
a) Nagaland
b) Odisha
c) Maharashtra
d) Jharkhand
111. _____ is the largest windfarm in India?
a) Vindhayachal
b) Mundra
c) Muppandal
d) Talcher
112. Where is Muppandal Windfarm located in India?
a) Assam
b) Andhra Pradesh
c) Kerala
d) Tamil Nadu
113. India has 22 nuclear reactors in operation.
a) True
b) False
114. India is a net energy importer.
a) True
b) False
115. What is the biggest nuclear power plant in India?
a) Vindhyachalul
b) Kudankulam
c) Mundra
d) Muppandal
116. Where Kundakulam Nuclear Power Plant located in India?
a) Andhra Pradesh
b) Telangana
c) Tamil Nadu
d) Gujarat
117. Which sector dominates hydroelectric power production in India?
a) Private
b) NGOs
c) Food industry
d) Public sector

SOLAR

1. Direct Solar energy is used for
(A) Water heating
(B) Distillation
(C) Drying
(D) All of the above
2. The power from the sun intercepted by the earth is approximately
(A) 1.8×10^8 MW
(B) 1.8×10^{11} MW
(C) 1.8×10^{14} MW
(D) 1.8×10^{17} MW
3. The following is indirect method of Solar energy utilization
(A) Wind energy
(B) Biomass energy
(C) Wave energy
(D) All of the above
4. A liquid flat plate collector is usually held tilted in a fixed position, facing _____if located in the northern hemisphere.
(A) North
(B) South
(C) East
(D) West
5. The collection efficiency of Flat plate collector can be improved by
(A) putting a selective coating on the plate
(B) evacuating the space above the absorber plate
(C) both (A) and (B)
(D) None of the above
6. The efficiency of various types of collectors _____with _____ temperature.
(A) increases, decreasing
(B) decreases, increasing
(C) remains same, increasing
(D) depends upon type of collector
7. Maximum efficiency is obtained in
(A) Flat plate collector
(B) Evacuated tube collector
(C) Line focussing collector
(D) Paraboloid dish collector
8. The following type of energy is stored as latent heat
(A) **Thermal energy**
(B) Chemical energy
(C) Electrical energy
(D) Mechanical energy
9. Which of the following type of collector is used for low temperature systems?
(A) Flat plate collector
(B) Line focussing parabolic collector
(C) Paraboloid dish collector
(D) All of the above

- 10 In the paraboloid dish concept, the concentrator tracks the sun by rotating about
(A) One axes
(B) Two axes
(C) Three axes
(D) None of the above
- 11 The sun subtends an angle of _____ minutes at the earth's surface.
(A) 22
(B) 32
(C) 42
(D) 52
- 12 The value of Solar Constant is
(A) 1347 W/m^2
(B) 1357 W/m^2
(C) 1367 W/m^2
(D) 1377 W/m^2
- 13 The extraterrestrial radiation flux varies by _____% over a year.
(A) ± 1.1
(B) ± 2.2
(C) ± 3.3
(D) ± 4.4
- 14 The following is (are) laws of black body radiation.
(A) Plank's law
(B) Stefan-Boltzmann law
(C) both (A) and (B)
(D) None of the above
- 15 Absorption of Solar radiations at earth's surface occur due to presence of
(A) Ozone
(B) Water vapours
(C) Carbon di-oxide
(D) All of the above
- 16 Global radiation =
(A) Direct radiation – Diffuse Radiation
(B) Direct radiation + Diffuse Radiation
(C) Direct radiation / Diffuse Radiation
(D) Diffuse Radiation / Direct radiation
- 17 The zenith angle is the angle made by the sun's rays with the _____ to a _____ surface.
(A) normal, horizontal
(B) tangent, horizontal
(C) normal, vertical
(D) tangent, vertical
- 18 Solar radiation flux is usually measured with the help of a
(A) Anemometer
(B) Pyranometer
(C) Sunshine recorder
(D) All of the above

- 19 Beam radiations are measured with
(A) Anemometer
(B) Pyrheliometer
(C) Sunshine recorder
(D) All of the above
- 20 The angle made by the plane surface with the horizontal is known as
(A) Latitude
(B) Slope
(C) Surface azimuth angle
(D) Declination
- 21 The angle made in the horizontal plane between the horizontal line due south and the projection___of the normal to the surface on the horizontal plane is
(A) Hour angle
(B) Declination
(C) Surface azimuth angle
(D) Solar altitude angle
- 22 Surface azimuth angle varies from
(A) 0 to 90°
(B) -90 to 90°
(C) 0 to 180°
(D) -180° to 180°
- 23 The hour angle is equivalent to
(A) 10° per hour
(B) 15° per hour
(C) 20° per hour
(D) 25° per hour
- 24 The complement of zenith angle is
(A) Solar altitude angle
(B) Surface azimuth angle
(C) Solar azimuth angle
(D) Slope
- 25 The correction has a magnitude of___minutes for every degree difference in longitude.
(A) 2 (B) 4
(C) 6 (D) 8
- 26 The global radiation reaching a horizontal surface on the earth is given by
(A) Hourly beam radiation + Hourly diffuse radiation
(B) Hourly beam radiation – Hourly diffuse radiation
(C) Hourly beam radiation / Hourly diffuse radiation
(D) Hourly diffuse radiation / Hourly beam radiation
- 27 The ratio of the beam radiation flux falling on a tilted surface to that falling on a horizontal surface is called the
(A) Radiation shape factor
(B) Tilt factor
(C) Slope
(D) None of the above

- 28 The function of a solar collector is to convert.....
A. Solar Energy into Electricity
B. Solar Energy radiation
C. Solar Energy thermal energy
D. Solar Energy mechanical energy
- 29 Most of the solar radiation received on earth surface lies within the range of.....
A. 0.2 to 0.4 microns
B. 0.38 to 0.78 microns
C. 0 to 0.38 microns
D. 0.5 to 0.8 microns
- 30 For satellite the source of energy is.....
A. Cryogenic storage
B. Battery
C. Solar cell
D. Any of the above
- 31 Reflecting mirrors used for exploiting solar energy are called.....
A. Mantle
B. Ponds
C. Diffusers
D. Heliostats
- 32 The output of solar cell is of the order of.....
A. 1 W
B. 5 W
C. 10 W
D. 20 W
33. Flat plate collector absorbs.....
A. Direct radiation only
B. Diffuse radiation only
C. Direct and diffuse both
D. All of the above
34. A pyrometer is used for measurement of.....
A. Direct radiation only
B. Diffuse radiation only
C. Direct as well as diffuse radiation
D. All of the above
35. Most widely used solar material is.....
A. Arsenic
B. Cadmium
C. Silicon
D. Steel

36. Photovoltaic cell or solar cell converts.....
A. Thermal energy into electricity
B. Electromagnetic radiation directly into electricity
C. Solar radiation into thermal energy
D. Solar radiation into kinetic energy
37. Temperature attained by a flat-plate collector is of the.....
A. Order of about 90° C
B. Range of 100 ° C to 150 ° C
C. Above 150 ° C
D. None of the above
38. The voltage of a single solar cell is.....
A. 0.2 v
B. 0.5 v
C. 1.0 v
D. 2.0 v
39. Solar cells, for power generation, entail the following major disadvantages.....
A. Variable power
B. High cost
C. Lack of availability
D. Large area requirement
40. Thermionic converter utilizes.....
A. Thermionic emission effect
B. Peltier effect
C. Seebeck effect
D. None of the above
41. Largest geothermal plant in operation is in.....
A. Maxico
B. Italy
C. Russia
D. California
42. Bulb turbines are..... turbines
A. Low head
B. High head
C. High speed
D. High pressure

17. ELECTRICAL SAFETY – LV EARTHING

1. ____ is the flow of electrons around a circuit.

A. Current

B. Electricity

C. Power

D. Voltage

2. Electrical hazards include shock, electrical arcs and blasts, and _____ or faulty equipment.

A. Broken

B. Double-insulated

C. Polished

D. Secure

3. ____ is a measurement of how much energy you are using each second.

A. Distance

B. Power

C. Volume

D. Weight

4. Avoid working in _____ conditions.

A. Cold

B. Dry

C. Sunny

D. Wet

5. ____ gives a stray current somewhere to go and keeps workers from becoming part of the circuit.

A. De-energizing

B. Energizing

C. Grounding

D. Guarding

6. ____ tools are encased in plastic and prevent the user from getting electrocuted if the tool develops a short circuit.

A. Corded

B. Double-insulated

C. Green colored

D. Grounded

7. Specially designed PPE for electrical work includes _____ insulating gloves, matting, blankets, and covers.

A. Plastic

B. Rubber

C. Steel

D. Wood

8. One of the main functions of personal protective grounds is to provide a _____ impedance path for a short circuit.

A. High

B. Low

C. Smooth

D. Adequate

9. The Prohibited Approach Boundary is considered the same as making_____.
- A. Insulation
 - B. Confluence
 - C. Contact**
 - D. Pastry
10. Gloves used for electrical protection must be electrically tested every...
- A. 3 months
 - B. 6 months**
 - C. 12 months
 - D. Never
11. One of the three generally recognized hazards of electrical work is_____.
- A. Arc Flash**
 - B. Cuts
 - C. Falls
 - D. Concussion
12. Work performed on an electrical system within reaching distance of energized components is_____work.
- A. Energized**
 - B. Essential
 - C. Safe
 - D. Unavoidable
13. A Safety Electrical One Line Diagram should be used to_____all sources of electrical energy.
- A. Identify**
 - B. Castigate
 - C. Evaluate
 - D. Modify
14. The minimum allowable work space around electrical equipment is_____inches deep.
- A. 36
 - B. 48
 - C. 24
 - D. 30**
15. The secondary of a current transformer must never be_____while energized.
- A. Grounded
 - B. Opened**
 - C. Examined
 - D. Shortened
16. Which is the “Can’t Let Go” range of current flow?
- A. 3-9 ma
 - B. 9-25 ma**
 - C. 25-60 ma
 - D. 1-3 ma

1. Which of the following is not related to the system earthing? (d)
a. TN System b. TT system c. IT system d. TT-S system
2. Which of the following is not related to the TN system earthing? (c)
a. TN-S System b. TN-C system c. TN-E system d. TN-C-S system
3. Letters T,N,S,C,I represents in LV Earthing system respectively____ (c)
a. T-Earth, N-Neutral, S-System, C- Combined, I-Insulated
b. T-Equipment, N-Neutral, S-System, C- Combined, I-Insulated
c. T-Earth, N-Neutral, S-Separate, C- Combined, I-Insulated
d. T-Earth, N-Neutral, S-Separate, C- Combined, I-Current
4. Which system is used where continuity of supply required? (d)
a. TN System b. TT System c. TN-C-S System d. IT System
5. Impedance/ resistance encountered by Fault current under earth fault condition is called as (a)
a. Earth fault loop Impedance b. Earth low fault Impedance
c. Equipment fault loop Impedance d. Equipment high fault Impedance
6. Which of the following device used for Earth fault protection? (b)
a. MCB b. RCCB c. ACB d. MCCB
7. For determination of connected load, If load values are not specified, then the connected loads of sockets 6A and 16A may be considered respectively as____ (c)
a. 500 W, 1000W b. 250W, 500W c. 100W, 1000W d.500W, 1500W
8. What is the meaning of **PEN** in LV Earthing (a)
a. Protective and Neutral conductor combined b. Protective and Neutral conductor not combined
c. Protection Enabled in Neutral d. Protection not Enabled in Neutral
9. How many types of MCBs available according to Time-Current characteristics (d)
a. 4 b.2 c.1 d.3
10. RCCB is a____ (b)
a. Voltage dependent operating device b. Voltage Independent operating device
c. Current dependent operating device d. Current Independent operating device

18. CELLS

1. An electrolyte use in train lighting cell is the mixture of [c]
a) Sulphuric acid and tap water
b) Sulphuric acid and mineral water
c) **Sulfuric acid and demineralized/distilled water**
d) None of the above
2. When cell is fully charged, the positive plate becomes [a]
a) **Lead peroxide** c) Lead sulfate
b) Spongy lead d) None
3. When the lead acid cell is fully charged the negative plate becomes [b]
a) Lead peroxide c) Lead sulfate
b) **Spongy lead** d) None
4. The capacity of cell is measured in [a]
a) **Ampere hour** c) Amperes
b) Watt hour d) Watts
5. Internal resistance of lead acid cell is mainly due to [d]
a) Size of plates c) Nature of electrolyte
b) Distance between the plates d) **All the above**
6. Trickle charging of storage battery help to [a]
a) **Compensate for internal losses** c) Increase its capacity
b) Maintains proper electrolyte d) None
7. The capacity of Battery used in 110V T.L system [a]
a) **120AH** c) 320Ah
b) 210Ah d) 90AH
8. SPGR of fully charged cell [a]
a) **1.220** c) 1.140
b) 1.180 d) 1.100
9. SPGR of half charged cell [a]
a) **1.210** c) 1.140
b) 1.175 d) 1.100
10. SPGR of fully discharged cell is [d]
a) 1.210 c) 1.200
b) 1.175 d) **1.140**
11. Total number of cells available in TL flooded Battery of 110V system [a]
a) **54**
b) 56
c) 24
d) 18

12. Sulphation occurs due to [d]
 a) Cells kept under discharged condition
 b) Cells kept under not fully charged condition
 c) Cells over charged
 d) **All the above**
13. The codal life of lead acid TL/AC cells is [a]
 a) **4** c) 2
 b) 3 d) None
14. The capacity of batteries used for RMPU AC coaches is [d]
 a) 525 AH c) 800 AH
 b) 400 AH d) **1100 AH**
15. VRLA Batteries works on [a]
 a) **Oxygen recombination principle**
 b) Hydrogen recombination principle
 c) Hydrogen-oxygen recombination principle
 d) None of the above
16. The VRLA cells can be mounted in a position. [d]
 a) Horizontal c) Slanting
 b) Vertical d) **Both a & b**
18. Conductivity is the ability of a solution to conduct electrical current commonly expressed in [c]
 a) Amperes
 b) Watt
 c) Micro mhos/cm
 d) None
19. Conductivity of DM water is measured by [d]
 a) Conductivity meter c) pH meter
 b) Universal solution d) all of the above
20. Acceptable quality of treated water conductivity is in micro mhos/cm [a]
 a) <10 c) 40
 b) <30 d) None
21. Acceptable quality of treated water PH value will be [a]
 a) 6.8 to 7.2 c) 8.5 to 10
 b) 7.5 to 8.5 d) None
22. VRLA Batteries means [a]
 a) Valve regulated lead acid batteries b) Voltage regulated lead acid
 batteries
 c) Both a & b d) None
23. SMF Batteries stands for [a]
 a) Sealed maintenance free batteries b) Self maintenance free batteries
 c) a&b d) None

24. Frequent topping up of distilled water in VRLA cells [b]
 a) Required b) Not required
 c) Sometimes required d) None
25. Self discharge of VRLA Battery _____percentage of capacity for week [a]
 a) 0.5% to 1% b) 2%
 c) 3% d) 4%
26. VRLA Battery separators can be of [c]
 a) The gelled electrolyte type b) The absorbed electrolyte type
 c) a & b d) None of the above
27. For VRLA Battery, every 1 degree C in temperature, the charge/float voltage is to be reduced by _____per cell [a]
 a) 3mv b) 5 mv
 c) 1 mv d) 6 mv
28. Codal life of VRLA battery is [a]
 a) 4 years b) 5 years
 c) 3 years d) 7 years
29. Charging voltage/ Current ripple factor for VRLA batteries should less than [b]
 a) less than 5 % b) less than 2 %
 c) less than 15 % d) none
30. The containers and covers of VRLA batteries are made up of [a]
 a) PPCP (poly-Propylene co-polymer) b) Hard rubber
 c) PVC d) None
31. Train Lighting mono block 120 AH battery belongs to [a]
 a) Lead acid battery b) Nickel iron battery
 c) Nickel cadmium battery d) All the above
32. The specific gravity of the concentrated sulphuric acid is [a]
 a) 1.840 b) 1.200
 c) 1.220 d) 1.180
33. The specific gravity of the electrolyte used in TL cellsis [b]
 a) 1.800 b) 1.200
 c) 1.100 d) 1.180
34. The positive plate of lead acid is made of [a]
 a) Lead peroxide b) Spongy lead
 c) Lead sulphate d) None
35. The secondary cell [a]
 a) Once discharged it can be charged
 b) Once discharged it cannot be charged
 c) Once discharged it had to throw away
 d) None

46. Over charge results in [d]
 a) Higher temperature of electrolyte b) Corrosion of plates
 c) Oxidation of the separators and loss of water d) All the above
47. Undercharging results in [d]
 a) Irreversible Sulphation b) Reversal of cells
 c) Loss of the capacity d) All the above
48. Reverse polarity is mainly due to [a]
 a) Deep discharge b) RR Unit setting is high
 c) Battery kept in fully charged condition d) None
49. Excessive gassing and high SPGR. [a]
 a) Alternator/regulator setting high b) Alternator/regulator setting low
 c) Lack of electrolyte d) None
50. Hydrometer used in TL system is [a]
 a) Syringe type hydro meter b) Suction hydrometer
 c) Both a and b d) None of the above
51. If water consumption in particular cell is more due to [d]
 a) Hermitically sealed joint leak b) Higher charging current
 c) Leakage of electrolyte due to cracks in container d) All of the above
52. Initial charging rate of lead acid battery is [d]
 a) 0.1XC10 capacity b) 0.2XC10 Capacity
 c) 0.05XC10 Capacity d) 0.033XC10 capacity
53. TL 110 V TL coaches are provided with following batteries [a]
 a) Mono block batteries b) Individual cells
 c) Both a & b d) None
54. Conductivity of DM water is measured by [d]
 a) Conductivity meter b) Universal Solution
 c) PH meter d) All of the above
55. Best quality of treated water conductivity is in micro mhos/cm [a]
 a) <10 b) <35
 c) <40 d) None
56. Best quality of treated water PH Value will be [a]
 a) 6.8 to 7.2 b) 7.5 to 8.5
 c) 8.5 to 10 d) None

19. ALTERNATOR & RRU

1. Alternator is a device that converts [a]
 - a. Mechanical energy into electrical energy
 - b. Electrical energy into mechanical energy
 - c. Chemical energy into electrical energy
 - d. None of the above
2. Both field winding and 3 phase winding of AC coach alternator 120V are provided on _ [a]
 - a. Stator
 - b. Rotor
 - c. Both a and b
 - d. None
3. TL/AC coach alternator 120V designed to have _____ [a]
 - a. Residual magnetism
 - b. Permanent magnetism
 - c. Both a and b
 - d. None of the above
4. Recommended Cut in speed of 4.5 KW TL alternator is by RDSO with MA RR unit _ [a]
 - a. 357 rpm
 - b. 600 rpm
 - c. 1100 rpm
 - d. 2500 rpm
5. Minimum speed for full output of 4.5 KW 120V TL alternator, recommended by RDSO is [b]
 - a. 357 rpm
 - b. 600 rpm
 - c. 1500 rpm
 - d. 2500 rpm
6. Maximum speed of TL/AC coach alternator is [d]
 - a. 400 rpm
 - b. 800 rpm
 - c. 1500 rpm
 - d. 2500 rpm
7. Field coils of 120V TL/AC coach alternator are connected in [a]
 - a. Series
 - b. Parallel
 - c. Star
 - d. Delta
8. Three phase windings of 120V TL/AC coach alternator are connected in [a]
 - a. Star
 - b. Delta
 - c. Series
 - d. Parallel
9. Size of V belts used for driving 110V 4.5KW TL alternators [a]
 - a. C122
 - b. C118
 - c. C124
 - d. None
10. Number of V belts used for driving 110V 4.5KW TL alternator is _____ [a]
 - a. 4
 - b. 6
 - c. 12
 - d. None
11. Number of V belts used for driving 110V 18KW & 25KW AC alternator is_____ [c]
 - a. 4
 - b. 6
 - c. 12
 - d. None

12. DC output voltage of Alternator /Regulator of 110V TL/AC coach is [a]
 a. (110-140) DC c. (90-120) DC
 b. (70-90) DC d. None
13. Rated DC output current of 4.5KW 110V Alternator is [a]
 a. 37.5A c. 43A
 b. 19A d. None
14. Rated DC output current of 18KW 110V Alternator is [c]
 a. 193A c. 135A
 b. 175A d. None
15. Rated DC output current of 25KW 110V Alternator is [a]
 a. 193A c. 135A
 b. 175A d. None
16. Pitch circle diameter of Axle pulley of 110V TL system [c]
 a. 200mm c. 572.6mm
 b. 140mm d. None
17. Pitch circle diameter of Axle pulley of 110V AC coach system [a]
 a. 200mm c. 572.6mm
 b. 584mm d. None
18. As per the latest SMI, the voltage setting of alternator 4.5KW 110V for passenger train with flooded batteries is [c]
 a. 127V DC c. 128.5V DC
 b. 124V DC d. None
19. As per the latest SMI, the voltage setting of alternator 4.5KW 110V for passenger train with VRLA batteries is [b]
 a. 123+/-0.5V DC c. 121+/-0.5V DC
 b. 128.5+/-0.5V DC d. None
20. As per the latest SMI _____the voltage setting of alternator 4.5KW 110V for mail/express trains with VRLA batteries is [b]
 a. 123+/-0.5V DC c. 121+/-0.5V DC
 b. 128.5+/-0.5V DC d. None
21. As per the latest SMI the voltage setting of alternator 4.5KW 110V for super fast trains with VRLA batteries is [b]
 a. 123+/-0.5V DC c. 121+/-0.5V DC
 b. 128.5+/-0.5V DC d. None
22. As per the latest SMI the voltage setting of AC coach alternator 110V for passenger train with VRLA batteries is [a]
 a. 128+/-0.5V DC
 b. 127+/-0.5V DC
 c. 126+/-0.5V DC
 d. None

23. As per the latest SMI the voltage setting of AC coach alternator 110V for Mail/express train with VRLA batteries is _____ [a]
 a. 128+/-0.5V DC c. 126+/-0.5V DC
 b. 127+/-0.5V DC d. None
24. As per the latest SMI the voltage setting of AC coach alternator 110V for super fast train with VRLA batteries is _____ [a]
 a. 128+/-0.5V DC
 b. 127+/-0.5V DC
 c. 126+/-0.5V DC
 d. None
25. The purpose of TL Alternator used in Railways. [d]
 a. Charging the coach battery on train run
 b. Working of lights and fans in the coach during train run
 c. Sharing the load to other coaches in case of emergency
 d. All the three above
26. The capacity of alternator used for BG coach 110V Train Lighting system. [b]
 a. 3KW c. 12KW
 b. 4.5KW d. None
27. The capacity of alternator used for BG coach 110V roof mounted AC coach [c]
 a. 12KW c. 25KW
 b. 18KW d. None
28. The capacity of alternator used for BG coach 110V under slung AC coach. [c]
 a. 25KW c. 18KW
 b. 12KW d. None
29. The PCD (pitch circle diameter) of 25KW 110V alternator pulleys is [b]
 a. 584mm +/- 0.4mm
 b. 200+/-0.3 mm
 c. 100 mm
 d. None
30. The field resistance of 4.5KW 110V TL alternator has [a]
 a. 4.5 +/-0.5 ohms c. 10+/-0.5 ohms
 b. 6.0+/-0.5 ohms d. None
31. The resistance between two phases of 4.5KW 110V TL alternator is [a]
 a. 0.4 +/-0.05 ohms c. 4.5 +/-0.5 ohms
 b. 0.8 +/-0.10 ohms d. None
32. The purpose of providing anti rotating clamp near suspension arrangement of alternator is [d]
 a. Not to rotate suspension pin of alternator
 b. Not to damage the nylon bushes of alternator/ suspension bracket
 c. Not to damage the suspension bracket/boss of alternator
 d. All of the above

33. The insulation material recommended for alternator windings of 4.5 KW 110V shall be _____ class. [c]
- a. A c. F
b. B d. None
34. The voltage setting of Alt/RR unit is to be set in far with current and RPM for 4.5KW is [a]
- a. Half rated capacity of the alt as load as 1500 RPM
b. $\frac{1}{4}$ rated capacity of the alt as load at 1000 RPM
c. Full rated capacity of alt as load at 2550 RPM
d. None of the above
35. While measuring insulation resistance of 110V alternator/rectifier cum regulator the rating of megger is to be used is [b]
- a. 100V DC megger c. Both a nad b
b. 500V DC megger d. None
36. The resistance between two phase of 25KW KEL alternator is about [a]
- a. 0.0530746 ohms
b. 0.034 to 0.038
c. 44.2 mille ohms
d. None
37. The field resistance of 25KW KEL alternator about [a]
- a. 9.7568 ohms c. 10.72 ohms
b. 8+/-0.5 ohms d. None
38. The gap between two halves of axle pulley to be maintained is [a]
- a. 3.0 +/-0.5 mm
b. 6mm +/- 0.5 mm
c. 4mm +/- 0.5 mm
d. None
39. Codal life of 4.5, 18, 22.75 & 25 KW alternator / RR unit [a]
- a. 12 years c. 15 years
b. 25 years d. None
40. Codal life of 120 AH VRLA Battery [b]
- a. 5 years c. 3 years
b. 4 years d. None
41. Codal life of 120 AH Flooded Battery [b]
- a. 5 years c. 3 years
b. 4 years d. None
42. Codal life of Battery charger [a]
- a. 12 years c. 25 years
b. 15 years d. None
43. Codal life of Coach wiring [b]
- a. 12 years c. 20 years
b. 15 years d. None

44. Codal life of Carriage fans [a]
 a. 10 years c. 15 years
 b. 12 years d. None
45. The distance to be maintained while fixing axle pulley on wheel, from wheel hub to axle pulley outer wedge for 25 KW alternator is [a]
 a. 225 mm c. 145 mm
 b. 240 mm d. None
46. The distance to be maintained while fixing axle pulley on wheel, from wheel hub to axle pulley outer wedge for 18 KW alternator is [b]
 a. 225 mm c. 145 mm
 b. 240 mm d. None
47. The distance to be maintained while fixing axle pulley on wheel, from wheel hub to axle pulley outer wedge for 4.5 KW alternator is [c]
 a. 225 mm c. 145 mm
 b. 240 mm d. None
48. 'V' belt dropping/smoking/burning due to mechanical failure [c]
 a. Brake block jamming c. Both a and b
 b. Guide cups of damper's have dropped d. None
49. 'V' belt dropping/smoking/burning due to electrical failure [d]
 a. Load on Alt is heavy c. Loose/excessive tension
 b. Wrong alignment d. All of the above
50. The minimum insulation resistance to be maintained for 4.5KW alternator is [b]
 a. 1 Mega ohm c. 20 Mega ohm
 b. 2 Mega ohm d. None
51. The minimum insulation resistance to be maintained for 18 & 25 KW alternators [b]
 a. 20 mega ohm c. 5 Mega ohm
 b. 2 Mega ohm d. None
52. No. of ET's used in 25 KW RR Unit MA type [c]
 a. 2 c. Zero
 b. 1 d. None
53. No. of MA's used in 25 KW MA type RR Unit [a]
 a. 2 c. Zero
 b. 1 d. None
54. The type of suspension bushes are to be provided TL/AC alternators/ suspension bracket as per RDSO specification no RDSO / PE/Ac/0006/99 (Rev.0) [b]
 a. Cast nylon bushes
 b. Nylon 66 bushes
 c. MS bushes
 d. All of the above
55. Residual magnetism lost in the alternator core the reason is [c]
 a. Field polarity changed c. Both a and b
 b. Alternator is in idle condition for long time d. None of the above

56. As per the Railway Board letter No. 2006/Elec(G)/138/3Pt. I unit Exchange spare recommended for alternators and Regulators for TL/AC depot [b]
- a. 5% c. 15%
b. 10% d. None
57. ERRU stands for [a]
- a. Electronic Rectifier cum Regulator Unit
b. Electromagnetic Rectifier cum Regulator unit
c. Electrostatic Rectifier cum Regulator Unit
d. None
58. IGBT stands for [a]
- a. Insulated Gate Bipolar Transistor
b. Injection Gate Bipolar Transistor
c. Indicator gate Bipolar Transistor
d. None
59. IGBT is [a]
- a. Fast switching device
b. Slow switching device
c. Very fast switching device
d. None
60. Non drive end bearing of 4.5 kw 120v 4.5kw TL alternator is___ [a]
- a) SKF 6309 b) SKF NU311 c) SKF 6200 d)None
61. Driving end bearing of 4.5 kw 120 V 4.5 kw TL alternator is_____ [b]
- a) SKF 6309 b) SKF NU311 c) SKF 6200 d)None
62. Recommended Cut in speed of 4.5 kw TL alternator is by RDSO with MA RR unit [a]
- a) 357 rpm b) 600 rpm c) 1100 rpm d)2500rpm
63. Minimum speed for full output of 4.5 kw 120V TL alternator, Recommended by RDSO is [b]
- a) 357 rpm b) 600 rpm c) 1100 rpm d)2500rpm
64. Field coils of 120VTL/AC coach alternator are connected in [a]
- a) Series b) Parallel c) Star d)Delta
65. Three phase windings of 120V TL/AC coach alternator are connected in [a]
- a) Star b) Delta c) Series d)Parallel

66. Field coils of TL coach alternators are located on [a]
a) Stator b) Rotor c) Both a and b d) None
67. Each field coil of TL/AC coach alternator embraces _____ total number of there phase winding slots. [a]
a) Half of the
b) One fourth of the
c) Three fourth of the
d) None
68. Size of V belts used for driving 110V 4.5 kw TL alternators [a]
a) C122 b) C118 c) C124 d) None
69. Number of V belts used for driving 110 V 4.5 kw TL alternator is [a]
a) 4 b) 6 c) 12 d) None
70. Numbers of alternator pulleys are available on 4.5 kw TL Alternator. [a]
a) 1 b) 2 c) 3 d) None
71. Numbers of Alternators pulleys are available on BG AC coach Alternator. [b]
a) 1 b) 2 c) 3 d) None
72. Residual magnetism retains in _____ [b]
a) Rotor core b) Stator Core c) Rotor teeth d) None
73. Number of slots are available in stator for 3Phase ac winding in 4.5 KW 120V Alternator [a]
a) 36 b) 60 c) 18 d) None
74. 3 Phase AC voltages are first produced in ac winding in Alternator by [a]
a) Residual magnetism b) Permanent magnetism
c) Both a and b d) None
75. When the rotor of 4.5 kw 120V alternator is rotated by hand the voltage developed in the 3 phase winding will be [a]
a) 3.5 v b) 12v c) 24v d) None
76. DC output voltage of Alternator/Regulator of 110 V TL/AC coach is [a]
a) (110-140) DC b) (70-90) DC c) (90-120) DC d)None
77. Rated DC output current of 4.5kw 110v Alternator is [a]
a) 37.5A b) 19A c) 43A d)None
78. Rated DC output current of 3kw 110v Alternator is [b]
a) 37.5A b) 19A c) 43A d)None
79. Rated DC output current of 25kw 110v Alternator is [a]
a) 193A b) 175A c) 135A d)None
80. Pitch circle diameter of Axle pulley of 110v TL system [c]
a) 200mm b) 140mm c) 572.6mm d)None
81. Pitch circle diameter of Axle pulley of 110v AC coach system [c]
a)200mm b) 140mm c) 572.6mm d)None
82. As per the latest SMI, the voltage setting of alternator 4.5kw 110v for Express/ mail trains with flooded batteries is _____ [a]
a) 128.5v DC b) 124v DC c) 122v DC d)120v DC

83. As per the latest SMI, the voltage setting of AC coach alternator 110v for passenger train with VRLA batteries is [a]
 a) 128+/-0.5vDC b) 127 +/- 0.5vDC c) 126 +/-0.5vDC d)None
84. The purpose of TL Alternator used in Railways [d]
 a) Charging the coach battery on train run
 b) Working of lights and fans in the coach during train run
 c) Sharing the load to other coaches in case of emergency
 d) All the above
85. The purpose of Ac coach Alternator used in Railways [d]
 a) Charging the coach battery on train run
 b) Working of lights and fans in the coach during train run
 c) Sharing the load to other coaches in case of emergency
 d) All the above
86. The capacity of alternators are used for BG coach 110v Train Lighting system. [b]
 a) 3kw b)4.5kw c)12kw d)None
87. The capacity of alternators are used for BG 110v roof mounted AC coach [c]
 a) 3kw b) 18kw c)25kw d)None
88. Number of Alternators are provided for AC sleeper, AC chair car, AC composite coach [b]
 a) 1 b)2 c)3 d)None
89. The AC winding/ Main winding of TL/AC coach alternator has _____ [c]
 phase winding
 a) Single b) Double c) Three d) None
90. The safety items of TL/AC alternator are [a]
 a) Suspension hanger pin with bushes and Cottar Pin
 b) Alternator Suspension arrangement
 c) Alt pulley & nut
 d) All the above
91. NU 311 bearing is [a]
 a) Roller bearing
 b) Ball bearing
 c) Both a and b
 d) None
92. The field resistance of 4.5kw 110v TL alternators has [a]
 a) 4.5+/-0.5 ohms
 b) 6.0+/-0.5 ohms
 c) 10+/-0.5 ohms
 d) None
93. MA type RR units are working on the principle [a]
 a) Saturation and de saturation of magnetic core
 b) Mutual induction
 c) BJT
 d) None
94. Generally the voltage setting of the alternator is to be set at _____ At 1500rpm [b]
 a) Full rated current
 b) Half rated current
 c) 2/3rd rated current
 d) None

95. Both directions of train run, the polarity of Dc output supply of TL/AC alternator [b]
a) Changes b) Do not change c) Change at start d) None
96. The mating of pulley with shaft of TL/AC alternator shall be [a]
a) 80% b) 70% c) 60% d)50%
97. The cleat of alternator is to be made of [a]
a) Fibre glass in forced fire-retardant DNC
b) Bakelite
c) Phenolicd
d) None
98. Rotor shaft of KEL 110v 4.5kw alternator made up of [a]
a) EN 24 b) EN 8 c)Both a and b d)None
99. Type of suspension bushes to be used while mounting alternators [b]
as per latest RDSO instructions are
a) Cast Nylon b)Nylon 66 c)MS d)None
100. The insulation resistance of alternator when measured with megger [a]
the IR value should not be less than
a) 2 mega ohms b)5 mega ohms c)both a and b d)None
101. In case of over voltage in 4.5kw 120v RR unit, the tripping voltage [a]
of relay may be set at
a) 145+/-2 b) 150+/-2 c) 135+/-2 d)None
102. The number of safety chains provided for 18kw and 25kw alternator [b]
a) 2 b) 3 c) 4 d)None
103. The cut in speed of 25kw alternator is not more than [a]
a) 400rpm b) 600rpm c) 800rpm d)None
104. The MFO of 25 kw alternator is not more than [c]
a) 400rpm b) 600rpm c) 800rpm d)None
105. The field resistance of 25 kw KEL alternator about [a]
a) 9.7568 ohms b) 8 +/-0.5 ohms c) 10.72 ohms d)None
106. To prevent breakage of shaft during service the following test should be [a]
Done as per RDSO SMI
a) Non destruction dye-penetrate test
b) Shock pulse meter test
c) Ultrasonic test
d) None
107. The gap between two halves of axle pulley to be maintained is [a]
a) 3.0mm+/- 0.5mm b)6mm +/- 0.5mm c)4mm +/-0.5mm d) None
108. Before lifting coach body, the following electrical items as to be removed, [d]
otherwise coach body will not separate from trolley
a) Belt tensioning mechanism
b) V Belts
c) Alternator cables
d) All the above
109. Rating of AC fuses to be provided in 25kw MA type RR unit [b]
a) 125A HRC b) 160A HRC c)Either a or b d)None
110. The rating of filed fuse to be provided in 4.5kw 110v HMTD MA type RRU [a]
a) 6A b)2A c)4A d)None

- | | | | | |
|---|-----------|---------|--|-------|
| 111. Field resistance of 25 kw alternator | | | | [a] |
| a) 9.75 ohms b)4.5 ohms | c)10 ohms | d) none | | |
| 112. Codal life of 120 AH VRLA battery | | | | [b] |
| a) 5 yrs b)4 yrs | c)3 yrs | d) None | | |
| 113. Codal life of 120 AH Flooded battery | | | | [b] |
| a) 5 yrs b)4 yrs | c)3 yrs | d) None | | |
| 114. 127.Codal life of Battery charger | | | | [a] |
| a) 12 yrs b)15 yrs | c)25 yrs | d) None | | |
| 115. Codal life of coach wiring | | | | [b] |
| a) 12 yrs b)15 yrs | c)20 yrs | d) None | | |

20. ERRU

- 01.** Voltage regulation of alternator with ERRU for all capacities of alternator. [c]
a) +/-5% b) +/-3% c) +/-2% d) None
- 02.** Voltage ripples of output supply with ERRU should be less than [a]
a)2% b)5% c)15% d)none
- 03.** ISO pack power diode modular are used for converting [a]
a)AC to DC b) DC to AC c) both A&B d) none
- 04.** The advantage of ISO pack power modules are [d]
a) Directly can mount on heat sink
b) two diode combined unit
c) Small in size
d) all of the above
- 05.** The ERRU shall have the following protection [d]
a) Over voltage/surge protection b) DC output short circuit protection
c) Over charging current limit protection d) all of the above
- 06.** UVC used in ERRU must be [a]
a) Suitable to work with all capacities b) suitable to work all makes
c) Both A&B d) none
- 07.** The over voltage setting of OVP with ERRU should be set at [a]
a)140-145V b)125-130V c)135-140V d)none
- 08.** The battery charging current limit with 4.5 KW ERRU is to be set at [a]
a) 24A +/-2A b)12A +/-2A c)36A +/-2A d) none
- 09.** The battery charging current limit with 25kw ERRU when both alternators are paralleled is to be set at [a]
a) 110A +/-5A b)220A +/-5A c)220A +/-10A d)none
- 10.** OVP provided with ERRU shall latch before output voltage reaches to [c]
a) 145V b) 150V c) 135V+/-2V d) none
- 11.** Hall senses are used to sense [c]
a) Total alternator load current b) battery charging current c) both A&B d) none
- 12.** OVP is provided in ERRU for the purpose of [c]
a) To arrest the over voltage
b) latch the output voltage 90V for working lights and fans
c) Both A&B
d) none
- 13.** PWM stands for [a]
a) Pulse width modulation
b) phase width modulation
c) both A&B
d) none
- 14.** EEPROM stands for [a]
a) Electrically erasable programmable read only memory
b) Electronically erasable programmable read only memory
c) Both A&B
d) none
- 15.** SMPS stands for [a]
a) switch mode power supply b) single mode power supply
c) sweep mode power supply d) none

21. RAILWAY CARRIAGE FANS

01. Air delivery of fan can be measured by [a]
a) Anemometer b) ammeter c) lux meter d) none
02. When insulation resistance test is carried out on railway carriage fan it's insulation resistance should not be less than [a]
a) 2 mega ohms b) 10mega ohms c) 2mega ohms d) none
03. The wattage of 110V DC 400mm sweep RC fan is [a]
a) 32w b) 25w c) 19W d) none
04. The wattage of 110V DC 300mm RC fan is [b]
a) 32w b) 25w c) 19W d) none
05. Voltage drop between battery and any of the farthest fan shall not exceed _____volts at battery voltage of 108v [b]
a) 5 b) 3 c) 1 d) none
06. Codal life of RC fan is [a]
a) 10 years b) 12 years c) 4 years d) none
07. Input power of 110V BLDC 400mm sweep fan of CGL make [c]
a) 24w b) 38w c) 32w d) none

22. TRAIN LIGHTING COACH WIRING

01. Capacity of rotary switches provided in rotary junction box is [a]
a) 40A b)16A c)10A d)15A
02. Capacity of limit switch provided for alarm chain pulling indication light circuit [a]
a) 10A b)15A c)35A d)40A
03. Size of rewirable fuse recommended for individual fan in 110V TL system is [a]
a)35 SWG R/W b) 29 SWG R/W c)20 SWG R/W d) 22 SWG R/W
04. Positive and negative cable in roof runs through on either side of coach to avoid [c]
a) earth leakage b) over load c) short circuits d) none
05. Essential lights in SG TL coaches other than First class consists of [a]
a) Lavatory lights, door way lights and Night lights and 50% of compartment lights
b) Lavatory lights
c) Lavatory and door lights
d) Lavatory, door lights and Night lights
06. The wattage of TL Fan [a]
a) 32W b)10W c)80W d)60W
07. The capacity of battery fuse for 110Volt SG TL coach is [a]
a) 40A HRC b) 16A HRC
c) 10 A HRC d)4 A HRC
08. FRP tray shall be provided at the bottom of the battery box to avoid [a]
a) Corrosion of the battery box from splitting of acid
b) Electrical insulation for battery and battery box
c) Vibration of batteries
d) all of the above
09. The minimum clearance between the top of the battery and battery box for maintenance of cells_____shall have [b]
a)50mm b)150mm c)100mm d)none
10. The size of the Fan provided on SGBG coaches of 110V system [a]
a)400mm sweep b)300 mm sweep c)225 mm sweep d)200 mm sweep
11. The total number of V belts provided to the drive TL alternator 4.5KW are [a]
a) 4 b)6 c)2 d)3
12. The train lighting wiring is [b]
a) two wire earthed system b) two wire unearthed system
c) one wire earthed system d)none of the above
13. The insulation resistance of 110V coach when measured with 500V Megger during healthy weather condition [a]
a) 2mega ohms b) 1 mega ohms c)3 mega ohms d)0.5 mega ohms

14. The insulation resistance of 110V coach when measured with 500V Megger during adverse weather condition [b]
 a) 2mega ohms b) 1 mega ohms c)3 mega ohms d)none
15. Electrical fires on coach is mainly due to [d]
 a) loose connections b)short circuits and earth faults
 c) undersize cables d) all of the above
16. The earth leakage can be checked both positive and negative cables at a time by [a]
 a) double test lamp method b) 500V megger
 c) single test lamp d)none of the above
17. Double test lamps are connected in [a]
 a)series b) parallel c) both a&b d)none
18. When double test lamp is connected to EFTB, red lead connected lamp glows and blue lead lamp does not glow then coach is [c]
 a) healthy b)having positive earth c)having negative earth d) none
19. When double test lamp is connected to EFTB, red lead lamp does not glows and blue lead lamp glows then coach is [b]
 a) healthy b)having positive earth c)having negative earth d) both B&C
20. The insulation resistance of coach is to be measured with [a]
 a) megger b)ohm meter c)continuity meter d)none
21. The instrument used to measure the current without disturbing the circuit is [a]
 a) tong tester b) tacho meter c) photo meter d)none
22. Voltmeter is to be connected to the circuit in [a]
 a)parallel b)series c)series and parallel d)none
23. Ammeter is to be connected to the circuit in [b]
 a)parallel b)series c)series and parallel d)none
24. While measuring the earth leakages by double test lamp, lamps should have [a]
 a) same wattage b) different wattage c)any wattage d)none
25. While giving supply to adjacent coaches through EFT the supply polarities are to be maintained [a]
 a)same polarity b)opposite polarity c)any polarity d)none
26. No generation of TL alternator is due to [d]
 a) alternator Field/AC wire defective b) no residual magnetism
 c) Rectifier /regulator box defective d)any of the above
27. Cables used for wiring in coaches should have [a]
 a) minimum joints b)five joints c)maximum joints d)none
28. The level of illumination will be measured by [c]
 a)photo meter b)lux meter c)both A&B d)none

29. The percentage of spare coaches should be available in TL maintenance depot on traffic account is

[b]

a) 10

b) 5

c) 6

d) none

30. The percentage of spare coaches should be available in AC maintenance depot on traffic account is

[c]

a) 12

b) 5

c) 6

d)none

23. ABBREVIATIONS OR EXPANDED FORM

1. What is the abbreviation of BARC (a)
a. Bhabha Atomic Research center
C. Bhagya nagar Atomic Research Center
b. Bombay Atomic Research Center
d. None
2. What is the abbreviation form of COFMOW (b)
a. Central for Modernization office works
C. Central for Modernization of other works
b. Central for Modernization of workshop
d. None
3. What is the abbreviation form of CONCOR (a)
a. Container corporation
C. Cement corporation
b. Central Corporation
d. None
4. What is the abbreviation form of CORE (c)
a. Central organization for rural Engineering
b. Central Organization for roads Engineering
C. Central Organization for railway Electrification
d. None
5. What is the abbreviation form of CRIS (b)
a. Central for Rural information system
C. Central for railway investment system
b. Central For railway information system
d. None of the above
6. What is the abbreviation form of CAMTECH (d)
a. Central Advanced Management Technology
b. Central Advance Management of Tracks
c. Central Advanced Monitoring Technology
d. Centre For Advance Maintenance Technology
7. What is the abbreviation form of IRCON (a)
a. Indian Railway Construction company Limited
b. Indian Roads Construction company Limited
C. International Railway Construction company Limited
d. None
8. What is the abbreviation form of IRFC (b)
a. International Rural Finance Corporation
b. Indian Railway Finance Corporation
C. Indian Roads Finance Corporation
d. None
9. What is the abbreviation form of IRIEEN (a)
a. Indian Railway Institute of Electrical Engineering
b. Indian Railway Institute of Electronics Engineering
c. Indian Railway Institute of Economics and Engineering
d. None
10. What is the abbreviation form of IRWO (d)
a. Indian Rural Welfare Organization
c. Indian Rural work Organization
b. International Rural Welfare Organization
d. Indian Railway welfare organization
11. What is the abbreviation form of PNM (c)
a. Passenger Nominating Machinery
c. Permanent Negotiating Machinery
b. Permanent National Machinery
d. Permanent Navigating Machinery

12. What is the abbreviation form of RCT (a)
 a. Railway Claims Tribunal b. Railway Charges Tribunal
 c. Railway change Tribunal d. Railway Cleaning Tribunal
13. What is the abbreviation form of RDSO (b)
 a. Railway Design and Standards Origination b. Research Design and Standards Organization
 c. Railway Design and Standards Organization d. None of the Above
14. What is the abbreviation form of RITES (d)
 a. Railway Institute of Technical Engineering services ltd.
 b. Railway Institute of Technical Electrical services ltd.
 c. Railway Indian Technical Electrical services ltd.
 d. Rail India Technical and Economics services Ltd
15. What is the abbreviation form of SCADA (a)
 a. Supervisory Control and Data Acquisition.
 b. Supervisory Central and Distribution Acquisition
 c. Supervisory Central Advanced Data Acquisition.
 d. none of the Above
16. What is the abbreviation form of FRPCPY (c)
 a. Fault rate Percentage per year b. Failure rate Practice per year
 c. Failure rate Percentage per year. d. Fault rate Practice per year
17. What is the abbreviation form of PATB (b)
 a. Passenger and Terminal bracket b. Passenger alarm Terminal Board
 c. Passenger aluminum terminal Board d. Permanent alarm terminal Board
18. What is abbreviation form of EIG (c)
 a. Electrical Institute of Government b. Electrical Inspection to the Government
 c. Electrical Inspection to the Government d. None of the above.
19. Who is EIG (b)
 a. PCEN b. PCEE
 c. PCME d. PCPO
20. What is abbreviation form of DGS&D (a)
 a. Director General of supply and disposal b. Director General of stores and Distribution
 c. Director General of Stores and Disposal d. None of the above.
21. What is abbreviation form of EMD (c)
 a. Earnest Money Demand b. Earnest Monitoring and Dispatch
 c. Earnest Money Deposit d. None of the above
22. What is abbreviation form of SD (d)
 a. Supply and Dispatch b. Supply and Demand
 c. Security Data d. Security Deposit
23. What is abbreviation of PG (a)
 a. Performance Guarantee b. Programmer Guarantee
 c. Play and Ground d. Program of Goods
24. What is abbreviation of CRI (c)
 a. Colour remaining Index b. Coach rendering Index
 c. Colour rendering Index d. Colour resonance Index

25. What is abbreviation of SAF

- a. Supply Application Form
- c. Supply Advanced Form

- b. Stores Application Form
- d. Stocking Application Form

(d)

24. AIR CONDITIONING

1. The purpose of evaporator is (c)
 - a. To absorb heat from coach and to send cooled air in to the coach.
 - b. To convert liquid refrigerant into vapor
 - c. Both (a) and (b)
2. The purpose of evaporator is (a)
 - a. To absorb heat from the coach and to send cooled air in to the coach
 - b. To draw refrigerant vapor from the cooling coil and boost the temperature and pressure of refrigerant.
 - c. To reject the heat of refrigerant to the water or air and to convert refrigerant vapor into liquid
 - d. To control and pump the refrigerant to the cooling coil.
3. The purpose of compressor is (b)
 - a. To absorb heat from the coach and to send cooled air in to the coach
 - b. To draw refrigerant vapor from the cooling coil and to boost the temperature and pressure of refrigerant
 - c. To reject the heat of refrigerant to the water and air and to convert refrigerant vapor into liquid
 - d. To control and pump the refrigerant to the cooling coil.
4. The purpose of condenser is to (c)
 - a. To absorb heat from the coach and send cooled air in to the coach
 - b. To draw refrigerant vapor from the cooling coil and to boost the temperature and pressure of refrigerant
 - c. To reject the heat of refrigerant to the water of air and to convert refrigerant vapor in to liquid
 - d. To control an pump the refrigerant to the cooling coil
5. The purpose of expansion valve is (d)
 - a. To absorb heat from the coach and send cooled air in to the coach
 - b. To draw refrigerant vapor from the cooling coil and to boost the temperature and pressure of refrigerant
 - c. To reject the heat of refrigerant to the water of air and to convert refrigerant vapor in to liquid
 - d. To control an pump the refrigerant to the cooling coil
6. The purpose of liquid receiver is (d)
 - a. It carries the low pressure vapor from the evaporator to the suction inlet of the compressor
 - b. It conveys the high pressure and high temperature refrigerant from the compressor to the condenser
 - c. It carries the liquid refrigerant from the liquid receiver and conves it to the expansion valve
 - d. It acts as a reservoir which stores the liquid refrigerant coming from the condenser and supplies it to the cooling coil according to its requirement
7. The relative humidity for the human comfort zone is (a)
 - a. 40 - 60%
 - b. 80 - 100%
 - c. 20 - 40%
 - d. None
8. The cooling temperature during summer mostly preferred by passengers in Railway AC coaches is single setting is (a)
 - a. 23 to 25 C
 - b. 19 to 21 C
 - c. 26 to 28 C
 - d. None

9. The heating temperature during winter proffered by passengers in Railway AC coaches is single setting is
 a. 23 to 25 C b. 19 to 21 C c. 26 to 28 C d. None (b)
10. The air conditioning system used in Railway coaches is (a)
 a. Vapor compressor system b. Circulation of cold water system
 c. Ice activated system d. All of the above
11. The purpose of compressor in vapor compressor system is (c)
 a. It extracts refrigerant gas from the evaporator coil at low pressure
 b. it compresses low temperature and low pressure gas and delivers to the condenser at high pressure and high temperature
 c. Both (a) and (b)
12. The purpose of dehydrator and filter used in vapor compression system is (c)
 a. It removes moisture available in refrigerant system
 b. It prevents particles and scales in refrigerant system
 c. Both (a) and (b)
 d. d. None
13. The purpose of high pressure cut out used in vapor compressor system is (c)
 a. It stops the compressor if the pressure exceeds the preset value
 b. It protects the compressor and piping from damage
 c. Both (a) and (b)
 d. None
14. The purpose of condenser used in vapor compressor system is (c)
 a. It cools the high pressure hot gas received from the compressor.
 b. It converts high pressure gas into liquid
 c. Both (a) and (b)
 d. None
15. The purpose of expansion valve/capillary tube used in vapor compression system is (c)
 a. It controls the rate flow of high pressure refrigerant liquid
 b. It allows refrigerant liquid to evaporator at low pressure
 c. Both (a) and (b)
 d. None
16. The purpose of the evaporator (cooling coil) used in vapor compression system is (c)
 a. It evaporates refrigerant liquid by absorbing heat from surrounding areas
 b. It cools surrounding area
 c. Both (a) and (b)
 d. None
17. Formula for converting centigrade into foreign heat (b)
 a. $5/9 (F-32)$ b. $9/5 (C +32)$
 c. $9/5 (F-32)$ d. $5/9 (C +32)$
18. Formula for converting foreign heat into centigrade (a)
 a. $5/9 (F-32)$ b. $9/5 (C +32)$
 c. $9/5 (F-32)$ d. $5/9 (C +32)$
19. The normal body temperature of human being is (c)
 a. 37 C b. 98.6 F c. Both (a) and (b) d. None
20. The danger for the human body, if the temperature fails below (a)
 a. 98 F b. 98.6 F c. 105.6 F d. None
21. The danger for the human body, if the temperature fails below (a)
 a. 36.5 C b. 37 C c. 40.5 C d. None
22. The danger for the human body, if the temperature increase above (a)
 a. 40.5 C b. 37 C c. 36.5 C d. None

23. The danger for the human body, if the temperature increase above (c)
 a. 98 F b. 98.6 F c. 105.6 F d. None
24. If the relative humidity is below 30% the result will be (c)
 a. Mucous membranes b. Skin surface becomes too dry
 c. Both (a) and (b) d. None
25. If the relative humidity is above 70% the result will be (c)
 a. Clammy sensation b. Sticky sensation
 c. Both (a) and (b) d. None
26. For summer air conditioning the relative humidity should not be more than (b)
 a. 40% b. 60% c. 75% d. 90%
27. For winter air conditioning the relative humidity should not be less than (a)
 a. 40% b. 60% c. 75% d. 90%
28. The duct is made of (e)
 a. Galvanized Iron b. Aluminum
 c. Fiber glass d. Cement asbestos
 e. Any one of the above
29. Capillary tube id used in (a)
 a. Hermitically sealed units b. Open type AC units
 c. Semi open type AC units d. None
30. An evaporator is also known as (d)
 a. Freezing coil b. Cooling coil
 c. Chilling coil d. All of the above
31. Evaporator is also known as (d)
 a. Freezing coil b. Cooling coil
 c. Chilling coil d. All of the above
32. Condenser is used in the pressure side of the refrigerant system (b)
 a. Low b. High c. Medium d. None
33. The highest temperature in a vapor compressed system occur after (a)
 a. Compressor b. Condensation
 c. Expansion d. Evaporation
34. The lower at temperature in vapor compressed system occur after (b)
 a. compressor b. Condenser
 c. Expansion valve d. Evaporator
35. Dry bulb temperature is (a)
 a. The temperature indicated by a temperature with a clean, dry sensing element that is shielded from radiation effects.
 b. The temperature measured by a thermometer with its bulb covered bt a wick wetted with distilled water exposed to a current of rapidly moving air.
 c. An arbitrary index of the degree of warmth or cold felt by the human body in response to a combination of the temperature, humidity and movement of air
 d. None
36. Wet bulb temperature is (b)
 a. The temperature indicated by a thermometer with a clean, dry sensing element that is shielded from radiation effects
 b. The temperature measured by a thermometer with its bulb covered by a wick wetted with distilled water exposed to a current of rapidly moving air,
 c. An arbitrary index of the degree of warmth or cold felt by the human body in response to a combination Of the temperature, humidity and movement of air
 d. None
37. The air conditioning system depends on its action on the (c)
 a. Latent heat principle b. Expansion principle
 c. Both (a) and (b) d. none

38. Latest heat principle is (c)
 a. Any substance is passing from the liquid to gaseous state absorbs a specific quantity of heat at constant temperature.
 b. Any substance is passing from the gaseous to liquid state gives up a specific quantity of heat at constant temperature.
 c. Both (a) & (b)
 d. None.
39. Latest heat principal is applied for (c)
 a. Evaporator
 b. Condenser
 c. Both (a) & (b)
 d. None
40. Psychometric chart is (d)
 a. The fundamental tool of air conditioning engineer.
 b. The science involving thermo dynamic properties of moist air
 c. The changes occurring in humid air when it is subjected to various air conditioning process can be traced.
 d. All the above.
41. Psychometric chart shows relationship between (f)
 a. Dry bulb temperature
 b. Wet bulb temperature
 c. Dew point temperature
 d. Humidity
 e. Total heat (enthalpy)
 f. All the above.
42. Refrigerant used in air condition should be (d)
 a. Non-irritating
 b. non-poisonous
 c. Non-inflammable
 d. All the above.
43. Refrigerant used in air condition system should not have (c)
 a. Corrosive action
 b. Disagreeable odor
 c. Both (a) & (b)
 d. None
44. Refrigerant used in air condition system (d)
 a. Leak detection should be easy and simple.
 b. Latent heat of vaporization should be large.
 c. The volume of vapor for given weight should be slightly above atmosphere
 d. All the above.
45. The refrigerant used in AC system (d)
 a. Must be capable of being liquefied at condensing temperature.
 b. Must not solidify at any temperature within the range of working.
 c. The vapor pressure should be slightly above atmosphere.
 d. All the above.
46. The purpose of air condition is (e)
 a. Temperature control
 b. Humidity control
 c. Air movement and circulation
 d. Air filtering, cleaning and purification
 e. All the above.
47. The range of temperature for year round human comfort is (a)
 a. 22.8° to 25°C
 b. 27° to 29°C
 c. 15° to 17°C
 d. None.
48. The range of air motion for year round human comfort is (a)
 a. 5m/min to 8m/min
 b. 15m/min to 20m/min
 c. 25m/min to 8m/min
 d. None.
49. The unit for the capacity of air conditioning is in (a)
 a. Ton of refrigeration
 b. Kilograms
 c. Founds
 d. None
50. One ton of refrigeration is equal to (a)
 a. 288000 Btu/24 hr
 b. 144000 Btu/ 24 hr
 c. 72000 Btu/ 24 hr
 d. None.

51. One ton of refrigeration is equal to (a)
 a. 12000 Btu/ hr b. 6000 Btu/ hr
 c. 2000 Btu/ hr d. None.
52. One ton of refrigeration is equal to (a)
 a. 200 Btu/ min b. 100 Btu/ hr
 c. 50 Btu/ hr d. None.
53. One ton of refrigerant equals to (c)
 a. 72000 Kcal/ 24 hrs b. 288000 BTU/24 Hrs
 c. Both (a) & (b) d. None.
54. One ton of refrigerant equals to (c)
 a. 3000 Kcal/ hrs b. 12000 BTU/ Hrs
 c. Both (a) & (b) d. None.
55. One ton of refrigeration is equal to (c)
 a. 50 Kcal/min b. 200 BTU for minute
 c. Both (a) & (b) d. None.
56. One ton of refrigerant is (d)
 a. A machine having its capacity to produce cooling effect of 200 BTU/min or 50 Kcal per min.
 b. A machine having its capacity to procure cooling effect of 12000 BTU/ hours or 3000 Kcal/per Hrs.
 c. Removes the heat at the rate of 3000 Kcal/hr or 50 kcal/min
 d. All of the above.
57. Refrigerant is a (c)
 a. Substance which is circulated in a refrigeration system to reject heat
 b. Substance which is circulated in a refrigeration system to absorb heat
 c. Both (a) & (b)
 d. None.
58. R22, refrigerants comes under group of (a)
 a. HCFC b. HFC
 c. Both (a) & (b) d. None
59. 134a refrigerant comes under the group of (b)
 a. HCFC b. HFC
 c. Both (a) & (b) d. None
60. HCFC Stands for (a)
 a. Hydro chloro, fluoro carbon b. Halo chloro fluoro carbon
 c. Both (a) & (b) d. none
61. HCF Stands for (a)
 a. Hydro fluoro carbon b. halo fluoro carbon
 c. Both (a) & (b) d. none
62. The moisture in AC systems causes (e)
 a. Corrosion b. Sludge
 c. Amalgam d. Freeze-up
 e. All the above.
63. Corrosion caused due to moisture in air condition systems results (a)
 a. Damage the metallic components
 b. Reduce the lubrication properties of the oil.
 c. Increase the lubrication properties of the oil.
 d. None
64. Sludge caused due to moisture in air condition system results (c)
 a. Increase the lubrication properties of the oil.
 b. Reduce the lubrication properties of the oil.
 c. Blocks flow of refrigerant
 d. None.
65. Amalgam caused due to moisture/water at capillary in AC system results (c)
 a. Damage the metallic components
 b. Blocks flow of refrigerant
 c. Reduce the lubrication properties of the oil
 d. none.

66. Freeze up caused due to moisture/water at capillary in AC system results. (c)
- Damage the metallic components
 - Reduce the lubrication properties of the oil
 - Blocks flow of refrigerant
 - All of the above.
67. The moisture in the AC system can be eliminate by (b)
- Blowing dry air/nitrogen through the system
 - Pulling vacuum through the system
 - Heating the system to high temperature, while pulling vacuum, simultaneously
 - All of the above.
68. The suction pressure of the system lower than the normal, the causes are (e)
- An obstruction in the flow of system
 - Failure of blower fan, filters
 - Rate of flow of refrigerant in the system is low
 - Electronic thermostats are not functioning
 - All the above.
69. Suction pressure of the system is higher than the normal, the reasons may be (d)
- Excess load on the evaporator
 - Expansion valve defective
 - Compressor speed low
 - All the above
70. The cooling in the coach is not sufficient, the reasons may be (e)
- Compressor not getting loaded/poor effiance
 - Too little gas or air may have accumulated in the system
 - Condenser, fresh/return filters, evaporator dirty/ choked
 - Setting of expansion valve disturbed
 - All the above.
71. Purging means (a)
- Expelling all the air in the system by admitting gas
 - admitting air into the system
 - Admitting refrigerant into the system
 - None.
72. Condenser head pressure is lower than the normal, thereason is (d)
- Less gas in the system
 - Gas leakage in the system
 - Expansion valve/ evaporator/ Compressor suction strainer choked
 - All of the above.
73. Condenser head pressure is higher than the normal, thereason is (d)
- Condenser fans are not working properly
 - Air in the system
 - Excessive gas in the system
 - All of the above.
74. Capillary tube is also called as (d)
- Condenser
 - Evaporator
 - Compressor
 - Expansion valve
75. The function of capillary tube is same as. (d)
- Condenser
 - Evaporator
 - Compressor
 - Expansion valve

25. RMPU COACHES

1. RMPU means (a)
 - a. Roof mounted package unit
 - b. Rail mounted package unit
 - c. Rack mounted packaged unit
 - d. None
2. Weight of the FEEDERS LLOYD RMPU is about (b)
 - a. 2700 kg
 - b. 620kg
 - c. 700kg
 - d. none
3. Weight of the SIDWAL RMPU is about (c)
 - a. 2700 kg
 - b. 620kg
 - c. 700kg
 - d. none
4. Installation time of RMPU is about (a)
 - a. 4 hours
 - b. 24 hours
 - c. 48 hours
 - d. None
5. Refrigerant is used in RMPU is (a)
 - a. R22
 - b. R12
 - c. R134a
 - d. None
6. Chemical name of R22 is (a)
 - a. Mono chloro Difluoro methane CHCIF₂
 - b. Dichloro difluoro methane CCl₂F₂
 - c. Dichloro monoflour methane CHCl₂F
 - d. None.
7. Quantity of refrigerant to be Charged for one AC circuit of RMPU is about (a)
 - a. About 3 Kgs
 - b. About 20Kgs
 - c. About 30KGS
 - d. None
8. The type of compressor used in RMPU unit is (a)
 - a. Heretically sealed
 - b. opened
 - c. Semi opened
 - d. None
9. Potential leakage of RMPU unit is (a)
 - a. Low
 - b. Large
 - c. Enormous
 - d. none
10. Type of power supply to compressors and condenser and evaporator units of RMPU coach is (b)
 - a. DC
 - b. AC
 - c. Pulsating DC
 - d. None
11. Power supply is fed to compressors and condenser and evaporator units of RMPU coach is (b)
 - a. 1 Phase 230V
 - b. 3 phase 415 V
 - c. 3 Phase 110V
 - d. None
12. Maintenance of RMOU units is about (a)
 - a. Little
 - b. More
 - c. Heavy
 - d. None
13. Dust collection on RMPU units is about (a)
 - a. Little
 - b. More
 - c. Heavy
 - d. None
14. Damage due to cattle run for RMPU units is (a)
 - a. NIL
 - b. More
 - c. Little
 - d. None
15. Performance of RMPU unit is (c)
 - a. Poor
 - b. Satisfactory
 - c. Excellent
 - d. None
16. Technology of RMPU unit is (c)
 - a. Old
 - b. Obsolete
 - c. Latest
 - d. None

17. Water dropping on passengers due to RMPU units is (c)
 a. Regularly b. Sometimes c. Nil d. None
18. Required fresh air for AC RMPU coach is taken from (a)
 a. Roof of the coach b. Sides of the coach near toilets
 c. Under frame of the coach d. None
19. Capacity control of RMPU is (b)
 a. 50% to 100% b. 25% to 100% c. 75% to 100% d. None
20. Capacity in tons of refrigeration of RMPUs of AC sleeper coach (a)
 a. 14 tons b. 10.4 tons c. 5.2 tons d. None
21. Capacity in tons of refrigeration of RMPUs of first class AC coach is (Single unit) (c)
 a. 14 tons b. 10.4 tons c. 7 tons d. None
22. Wave form of AC of supply fed to RMPU unit (c)
 a. Square b. Sine c. PWM d. None
23. Capacity in tons of refrigeration of one RMPU unit (c)
 a. 14 tons b. 5.2 tons c. 7 tons d. None
24. Number of Compressor are available in RMPU has (b)
 a. 4 b. 2 c. 1 d. none
25. Number of Compressor are available in RMPU coach other than first class has (a)
 a. 4 b. 2 c. 1 d. none
26. Number of RMPUS are available in all AC coach other than first class are (a)
 a. 2 b. 1 c. 3 d. none
27. The power required for one RMPU is about (a)
 a. 13 KW b. 5.75 KW c. 23 KW d. None
28. The current taken by the one RMPU unit is (b)
 a. 40 A b. 22 A c. 10A d. None
29. The advantage of RMPU AC coach system is (g)
 a. Less weight
 b. Hermitically sealed compressor, no refrigerant leakage
 c. Less space occupation
 d. Less maintenance and reliable
 e. Consuming less power
 f. More Energy efficient
 g. All of the above
30. Number of Condensers one RMPU has (b)
 a. One b. Two c. Three d. None
31. Number of Blower Motor one RMPU has (a)
 a. One b. Two c. Three d. None
32. Number of heater one RMPU has (b)
 a. One b. Two c. Three d. None

33. RMPU is Fitted (a)
 a. Above toilets in a roof b. Underneath the coach
 c. Inside the coach d. None
34. The capacity of Compressor motor used in RMPU AC Coach is (a)
 a. 5.25 kw b. 6.3 kw c. 4.3kw d. None
35. The capacity of Condenser motor used in RMPU AC Coach is (a)
 a. 1 HP b. 1.5 HP c. 2.5 HP d. None
36. The capacity of crank case heater of compressors used in RMPU AC Coach (a)
 a. 50 W b. 150 W c. 200 W d. None
37. The capacity of evaporator fan motor used in RMPU AC Coach (a)
 a. 1.5 HP b. 0.5 HP c. 2.5 HP d. None
38. Control panel load of RMPU AC Coaches is About (b)
 a. 400 W b. 200 W c. 100 W d. None
39. The capacity WRA motor RMPU AC Coaches is (a)
 a. 373 W/ 0.37 KW b. 500 W c. 200 W d. No
40. Heaters load of one RMPU is about (a)
 a. 6 KW b. 3 KW c. 12KW d. None
41. Current taken by one compressor motor of RMPU of AC coach is (a)
 a. 8.25+/-25 b. 2.6+/-10% c. 2.2+/-10% d. None
42. Current taken by one condenser fan motor of RMPU of AC coach is (c)
 a. 8.25+/-25 b. 2.6+/-10% c. 2.2+/-10% d. None
43. Current taken by one evaporator fan motor of RMPU coache (b)
 a. 8.25+/-25 b. 2.6+/-10% c. 2.2+/-10% d. None
44. Starting current taken by one compressor motor of RMPU coach in (b)
 a. 10A b. 49 Ac. 15 A d. None
45. The RMPU coaches are manufactured by (f)
 a) M/s.Fedders Lloyd b) M/s.Sidwal c.) M/s.Intech d) M/s.Amit Engg f) All of the above
46. The control panel of RMPU coaches works on (b)
 a. 230 V AC b. 110 V AC c. 440 V AC d. None
47. Speed of the condenser motor of RMPU coach is (a)
 a. 910 RPM b. 720 RPM c. 2880RPM d. None
48. Speed of the evaporator fan motor of RMPU coach is (a)
 a. 415 RPM b. 720 RPM c. 2880RPM d. None
49. The size of the FEDDER LLOID RMPU is about (a)
 a. 2150 x2250x620 mm b. 1600 x1800x620 mm
 c. 1400 x1500x620 mm d. None

50. The size of the SIDWAL RMPU is about (a)
a. 2150 x2250x620 mm b.1600 x1800x620 mm
c. 1400 x1500x620 mm d. None
51. 415 V 3 Phase AC supply required for operating motors of RMPU is fed from (b)
a. 25 KW Alternator b. 25 KVA inverter c. Both (a) and (b) d. None
52. The capacity of inverters used in RMPU coach is (b)
a. 18 KVA b. 25 KVA c.12 KVA d. None
53. No of inverters required for one RMPU coach are (a)
a. Two b. One c. Three d. Four
54. The input Voltage of 25 KVA inverter of RMPU coach (a)
a. 110/135 DC b. 24 V DC c.415 V AC d. None
55. The output Voltage of under slung/on board inverter of RMPU coach (a)
a. 415 VAC b. 230 VAC c. 110 VAC d. None
56. 110 V AC voltage required for operating control panel of RMPU AC Coach is steppeddown from (b)
a. 750 V AC b. 415 V AC c. 220 V AC d. None
57. The wave form of 110V AC voltage fed to control panel of RMPU coach is (a)
a. Shine wave b. Square wave c. PWM wave d. None
58. PWM wave of 110V AC voltage of 25 KVA inverter is converted in to sine wave by _____ to feed to cooling fan of RMPU (a)
a. Shine filter b. COS filter c. Tan filter d. None
59. No of evaporator fan motors are available for one RMPU AC coach (a)
a. Two b. One c. Three d. Four
60. Approximate 1st Class AC load in terms of ton of refrigeration (a)
a. 5.3 tons b. 7.4 tons c. 11.1 tons d. None
61. Approximate Air Conditioning load of II tire AC Coach (c)
a. 5.3 tons b. 7.4 tons c. 11.1 tons d. None
62. Approximate Air Conditioning load of III tire AC Coach (c)
a. 5.3 TR b. 7.4 TR c. 11.1 TR d. None
63. Approximate Air Conditioning load of AC chair car (c)
a. 5.3 TR b. 7.4 TR c. 11.1 TR d. None
64. Cooled air is sent to the compartment through (b)
a. Fresh air filters b. Duct & grills c. Return air filters d. None
65. Required fresh air for AC RMPU coach is collected from roof Is sent to evaporator through (a)
a. Fresh air filters b. Return air filters c. Both (a) and (b) d. None
66. Air cooled from compartment of AC coach is sent to evaporator through (a)
a. Return air filters b. Freshair filters c. Both (a) and (b) d. None

67. Air blown over condenser is sent to (c)
a. Evaporator b. Heater c. Outside atmosphere d. None
68. Air flow of condenser motor used in Sidwal make RMPU (c)
a. 10000 cubic feet for minute b. 17000 cubic Meter for hour
c. Both (a) and (b) d. None
69. Air flow of condenser motor used in FEDER make RMPU (c)
a. 8000 cubic feet for minute b. 13600 cubic meter for hour
c. Both (a) and (b) d. None
70. Type of condenser/evaporator coils used in Sidwal / Feddersmake RMPU (a)
a. Fin-On-Tube type b. Shell on tube
c. Tube in tube d. All the above
71. The condenser coils are made up of (b)
a. Aluminum b. Copper
c. Zinc d. None
72. The evaporator coils are made up of (b)
a. Aluminum b. Copper
c. Zinc d. None
73. The outer diameter of condenser coil of Sidwal make (a)
a. 9.52 mm b. 6 mm c. 28 mm d. None
74. The outer diameter of evaporator / condenser coil of Sidwal / Fedders make (a)
a. 9.52 mm b. 6 mm c. 28 mm d. None
75. Air flow of evaporator fan used in Sidwal make RMPU (c)
a. 2400 cubic feet per minute b. $4000 \pm 5\%$ cubic meters of hour
c. Both (a) and (b) d. None
76. Air flow of evaporator fan used in Fedders make RMPU (b)
a. $2000 \pm 10\%$ cubic meters of hour b. $4200 \pm 10\%$ cubic meters of hour
c. Both (a) and (b) d. None
77. The under frame equipment of the RMPU coach other than first class has (e)
a. One set of battery 110V, 1100 AH. b. Two sets of alternators 25KW capacity
c. 200 A battery charger d. Two WRAs
e. All the above
78. Dip tray provided under cooling coils to collect the rain water should be made of (b)
a. Iron b. Steel c. Copper d. Zinc
79. Drip tray provided under cooling coils in RMPU coaches should have a depth of (a)
a. 90 mm b. 50 mm c. 25 mm d. None
80. Recommended relative humidity inside the coach is (a)
a. 60 % maximum b. 70 % maximum c. 80 % maximum d. None
81. Power cables and control cables of RMPU should run through (b)
a. Same conduit b. Separate conduit
c. Same conduit with better insulation d. None
82. Motors used in RMPU coaches are (a)
a. Induction motors b. Synchronous motors
c. Slip ring induction motors d. None

83. The induction motors used in RMPU are (a)
 a. Three phase motors b. Single phase motors
 c. Two phase motors d. None
84. The starters used for 3 phase induction motors of RMPU coaches are (a)
 a. Direct on line starters b. Star delta starters
 c. Slip ring induction starters d. None
85. RMPU of AC coach should be made from (c)
 a. Iron with GI coating b. Iron with nickel coating
 c. Stainless steel d. None
86. Fresh air requirement inside the 1st class compartment for person is (a)
 a. 0.7m³/min b. 0.35 m³/min c. 0.5 m³/min d. None
87. Fresh air required inside the AC coach for II Tire Sleeper and III Tire Sleeper per person is about (b)
 a. 0.7m³/min b. 0.35 m³/min c. 0.5 m³/min d. None
88. Minimum fresh air requirement for one RMPU of AC coach (a)
 a. >17.5 m³/min b. 5.5 m³/min c. 10 m³/min d. None
89. The compressor of RMPU coach shall be provided with (c)
 a. High pressure cut out b. Low pressure cut out
 c. Both (a) and (b) d. None
90. HP cut out of RMPU coach shall be set at (b)
 a. 135 + 15% PSI b. 415 + 15% PSI
 c. 35 + 15% PSI d. None
91. LP cut out of RMPU coach shall be set at (c)
 a. 135 + 5% PSI b. 415 + 15% PSI
 c. 35 + 15% PSI d. None
92. HP cut out of RMPU coach is (a)
 a. Manual reset type b. Auto reset type
 c. Both (a) and (b) d. None
93. Accessibility of return air filters of RMPU of AC coach (b)
 a. From top of the unit
 b. From bottom of the unit inside the coach in corridor
 c. Middle access door at the bottom of the unit
 d. Access door on each side at bottom of the unit
94. Fresh air filters are used for filtering (b)
 a. Return air b. Only fresh air
 c. Return air and fresh air d. None
95. RMPU blower fan motors are manufactured by (d)
 a. ABB b. CG
 c. NGEF, KEC, Bharat Bigili d. All of the above
96. Fresh air filter maximum air flow rate shall be (a)
 a. 10 m³/min b. 15 m³/min c. 20 m³/min d. None

97. Fresh air filter maximum air velocity in feet/min (a)
a. 300 b. 400 c. 500 d. None
98. The maximum resistance of the fresh air filter, when it is clean (a)
a. 4mm (WG) b. 6mm (WG) c. 8 mm (WG) d. None
99. The maximum resistance of fresh air filter with dust concentration is (a)
a. 12 mm (WG) b. 6 mm (WG) c. 8 mm (WG) d. None
100. Return air filter maximum air flow rate in m-cub/minute (a)
a. 30 b. 40 c. 50 d. None
101. Return air filter maximum air velocity in feet/minute (a)
a. 500 b. 700 c. 1000 d. None
102. Maximum resistance of the return air filter when it is clean (a)
a. 3 mm (WG) b. 5 mm (WG) c. 7 mm (WG) d. None
103. Maximum resistance of the return with dust concentration (a)
a. 10 mm (WG) b. 15 mm (WG) c. 18 mm (WG) d. None
104. The evaporator blower should be designed for air delivery at _____ mm head of water gauge (c)
a. 5 b. 10 c. 20 d. None
105. The copper parts of the Air conditioning coil should be (a)
a. Tinned b. GI coated c. Nickel coated d. None
106. The cooling temperature settings of electronic thermostat are recommended by RDSO is (a)
a. 23°C to 25°C b. 22°C to 25°C c. 24°C to 26°C d. None
107. The heating temperature setting of electronic thermostat are recommended by RDSO is (b)
a. 17°C to 19°C b. 19°C to 21°C c. 21°C to 23°C d. None
108. During IR test of RMPU, IR of compressor / Motors shall not be less than (b)
a. 100 mega ohms b. 2 mega ohms c. 20 mega ohms d. None
109. IR value of RMPU to be tested with (a)
a. 1000 Volts megger b. 500 volts megger
c. 100 volt megger d. None
110. During high voltage test of RMPU, the duration of high voltage to be applied on RMPU is (a)
a. 60 sec b. 120 sec c. 30 sec d. None
111. During high voltage test of RMPU, the high voltage to be applied (b)
a. 1000 volts ac b. 2000 volts ac c. 5000 volts ac d. None
112. During high voltage test of RMPU, the high voltage to be applied (b)
a. 1000 volts ac b. 2000 volts ac c. 5000 volts ac d. None
113. Number of over heat protector thermostats are required for one RMPU are (b)
a. 1 b. 2 c. 3 d. None
114. Number of vane relays required for one RMPU are (a)
a. 2 b. 1 c. 3 d. None
115. Number of LP cut outs required for one RMPU are (a)
a. 2 b. 1 c. 4 d. None

116. Number of HP cut outs required for 1 RMPU are (a)
a. 2 b. 1 c. 4 d. None
117. Three phase 3 KW heaters required for one RMPU unit is (b)
a. 1 b. 2 c. 3 d. 4
118. The electronic thermostat will be located on (a)
a. One of the flap doors of control panel from inside b. Front top of the unit
c. From bottom of the unity inside the coach d. None
119. Sensor of electronic thermostat will be located (a)
a. at return air entries b. fresh air path
c. In the duct inside the compartment d. None
120. The size of cables recommended for 5-10 HP motor leads in RMPU coaches (a)
a. 6 sq. Mm (84/0.3) b. 4 sq. mm (56/0.3)
c. 1.5 sq. mm d. None
121. The size of the cable recommended for 0.75 HP to 2 HP motor leads in RMPU coaches (b)
a. 6 sq. Mm (84/0.3) b. 4 sq. mm (56/0.3)
c. 1.5 sq. mm d. None
122. The size of cable recommend for control panel wiring of RMPU coaches (c)
a. 6 sq. mm b. 4 sq. mm c. 1.5 sq. mm d. None
123. Rotor shafts of RMPU motors are made out (c)
a. EN.8 b. EN.9 c. Both a and c d. None
124. The Study state temperature rise of stator winding of compressor motor of H class RMPU should not exceed above ambient of 65°C with full load at rated voltage is (b)
a. 70°C b. 80°C c. 100°C d. None
125. Sensor of electronic thermostat will be located (a)
a. at return air entries b. fresh air path
c. In the duct inside the compartment d. None
126. The size of cables recommended for 5-10 HP motor leads in RMPU coaches (a)
a. 6 sq. Mm (84/0.3) b. 4 sq. mm (56/0.3)
c. 1.5 sq. mm d. None
127. The size of the cable recommended for 0.75 HP to 2 HP motor leads in RMPU coaches (b)
a. 6 sq. Mm (84/0.3) b. 4 sq. mm (56/0.3)
c. 1.5 sq. mm d. None
128. The size of cable recommended for control panel wiring of RMPU coaches (c)
a. 6 sq. mm b. 4 sq. mm c. 1.5 sq. mm d. None
129. Rotor shafts of RMPU motors are made out (c)
a. EN.8 b. EN.9 c. Both a and c d. None
130. The Study state temperature rise of stator winding of compressor motor of H class RMPU should not exceed above ambient of 65°C with full load at rated voltage is (b)
a. 70°C b. 80°C c. 100°C d. None

131. The Study state temperature rise of stator winding of condenser/ blower motor of F class RMPU should not exceed above ambient of 65°C with full load at rated voltage is (a)
a. 70°C b. 80°C c. 100°C d. None
132. The type of insulation recommended for condenser and evaporator motor in RMPU coaches are (a)
a. F class b. A class c. B class d. None
133. The type of insulation recommended for compressor motor in RMPU coaches (b)
a. F class b. H class c. B class d. None
134. Capacity of WRA mono block pump in RMPU coaches (a)
a. 0.5 HP/0.37 KW at 415 V 50 Hz PF 0.5 b. 1.0HP/0.746 KW at 415 V 50HZ PF 0.5
c. 1.5 HP/ 1.1 KW at 415 V 50 HZ PF 0.5 d. None
135. Control panel of RMPU coach works (a)
a. 110 V AC 50Hz b. 230V AC 50Hz
c. 415 V AC 30Hz d. None
136. The maximum ripple content of 415/110 V supply fed to control circuit can (a)
a. 10% b. 15% c. 20% d. 25%
137. No of over load relay provided in the control panel of one RMPU (b)
a. 3 b. 5 c. 7 d. None
138. No of time delay relays provided in one RMPU are (b)
a. 3 b. 2 c. 4 d. 1
139. No of control transformers provided in RMPU AC coach (a)
a. 1 b. 2 c. 3 d. None
140. The capacity of control transformer provided in RMPU coach (a)
a. 400 VA b. 1000 VA c. 2500 VA d. None
141. The capacity of C1, C2, C3 contactor provided in control panel of RMPU coach is (a)
a. 16 A b. 50 A c. 32 A d. None
142. The purpose of time delay relay I is (a)
a. To delay compressor I operation for 2 minutes
b. To delay the compressor II operation for 2.5 minutes
c. To delay the condenser I operation for 2 minutes
d. To delay the condenser II operation for 2.5 minutes
143. The purpose of time delay relay II (b)
a. To delay compressor I operation for 2 minutes
b. To delay the compressor II operation for 2.5 minutes
c. To delay the condenser I operation for 2 minutes
d. To delay the condenser II operation for 2.5 minutes
144. The duration of TDR- I delay setting (a)
a. 2 min b. 2.5 min c. 3.5 min d. none
145. The duration of TDR- II delay setting (b)
a. 2 min b. 2.5 min c. 3.5 min d. none
146. The current carrying capacity of rotary switch RSWI provide in control panel of RMPU coach is (a)
a. 63 A b. 16 A c. 6/8 A d. None

147. The current carrying capacity of rotary switch RSWI provide in control panel of RMPUcoach is
 b. 63 A b. 16 A c. 6/8 A d. None (a)
148. Make of rotary switches recommended by RDSO to provide in control panel of RMPU AC Coach is
 a. Salzer b. Keycee c. Both a & b d. None (c)
149. Makes of contractors recommended by RDSO to provide in control panel of RMPU AC Coach is
 a. L&T b. BCH c. Both a & b d. None (c)
150. RMPU over load relay one (OLI) NC contract is connected in series to the
 a. Blower contractor coil b. Auxiliary contractor coil
 c. Condenser I&II contractor Coil d. Compressor I&II contractor coils
 e. Heaters I&II contractor coils f. All of the above (a)
151. RMPU Air loses indication LED glows when vane relay contract are in
 a. Open condition b. Closed condition
 c. Both a & b d. None (a)
152. If blower fan motor is defect in RMPU coach. The result will
 a. Condenser motors did not switch ON b. Compressor did not switch ON
 c. Heater did not switch ON d. All of the above (d)
153. If vane relays are defective in RMPU coach the results will
 a. Condenser motors did not switch ON b. Compressor did not switch ON
 c. Heaters did not switch ON d. All of the above (d)
154. If single phasing occurred on any one of the motor, in RMPU Coach, result will
 a. Motor trips b. Motor failure indication occurs
 c. Both a & b d. None (c)
155. AC system is operating in manual mode, both condenser motors defective in RMPU coach, the result will be
 a. High pressure develops b. HP1 and HP2 open
 c. compressors tips d. All of the above (d)
156. System working in manual cooling mode, blower or vane relays became defective in RMPU coach, the results will be
 a. Low pressures develops b. LP1, LP2 open
 c. Both compressor will trip in 15 minutes d. all of the above (d)
157. The system is working in manual heating mode, blower/vane relay defective in RMPU the result will be
 a. temperature shoots up b. OHP1, OHP2 open
 c. Heater switches off d. All of the above (d)
158. If heaters are ON condition, in RMPU then compressor and condensers will be
 a. ON condition b. OFF Condition
 c. Switches off after 15 minutes d. None (b)
159. If time delay relay-I fails to operate in RMPU the result will be
 a. Compressor-I switches on
 b. Compressor-I does not switch on
 c. Compressor switches on but after two minutes it switches off
 d. None. (b)

160. If time delay relay two fails to operate in RMPU the result will be (b)
 a. Compressor-II switches on
 b. Compressor-II does not switches on
 c. Compressor-II switches on but switches off 2.5 minutes.
 d. None.
161. AC system is working on vent mode in RMPU then (a)
 a. Blower only works
 b. Heater only works
 c. Entire cooling systems works
 d. None
162. AC system is working in auto mode in RMPU then (c)
 a. It works on cooling mode only
 b. It works on heating mode only
 c. It works on both (a) & (b)
 d. None
163. If system works on manual cooling mode in RMPU then (d)
 a. Blower works
 b. Two condensers works
 c. compressor works
 d. All of the above
164. If system work on manual heating mode in RMPU then (c)
 a. Blower works
 b. Heater works
 c. Both (a) & (b)
 d. None
165. Vapour compressor system used in Railways consists of (g)
 a. Compressor
 b. Condenser
 c. Expansion valve
 d. Evaporator
 e. Dehydrator and filter
 f. Accumulator or liquid receiver
 g. All of the above.
166. The purpose of low pressure cut out used in vapour compression system is (c)
 a. It shuts down the compressor if the suction pressure drops down
 b. It automatically resets if the pressure becomes normal
 c. Both (a) & (b)
 d. None.
167. Number of WRAs are available in RMOU AC Coach are (b)
 a. 1
 b. 2
 c. 3
 d. None
168. The capacity of overhead tank (Auxiliary tank) provided in RMPU coaches is about (a)
 a. 50 ltr
 b. 400 ltr
 c. 300 ltr
 d. None.
169. Over load setting of compressor motor is in RMPU coaches is (c)
 a. 2.2 A
 b. 3.2 A
 c. 10.5 A
 d. None
170. Capacity of battery used in RMPU AC Coach (b)
 a. 800 AH
 b. 1100 AH
 c. 540 Ah
 d. None
171. Capacity of battery charger used in RMPU AC Coach (a)
 a. 220 A
 b. 40 A
 c. 70 A
 d. None
172. Battery charger used in RMPU AC Coach is also called as (a)
 a. Pre-cooling transformer
 b. Diesel DC generator set
 c. Both (a) & (b)
 d. None
173. Number of VRLA cells available in battery of SG RMPU AC Coach (a)
 a. 56
 b. 54
 c. 112
 d. None

- [illegible]

26. LHB COACHES

1. What is the rating of distribution transformer used in LHB AC Coaches (c)
 a. 50KVA b. 26KVA c. 60KVA d. 30KVA
2. What is the integrated panel control supply in LHB AC Coach (b)
 a. 110V AC b. 110V DC c. 415V 3Ø AC d. 750V 3Ø AC
3. What is the rating of Battery used in LHB AC Coach (b)
 a. 800Ah b. 70Ah c. 1100Ah d. 90Ah
4. What is the rating Battery fuse used in LHB AC Coach (b)
 a. 100A b. 32A c. 40A d. 63A
5. What is the rating of LHB AC Coach 750V side fuse (b)
 a. 100A b. 125A c. 63A d. 250A
6. What is abbreviation of RBCR (b)
 a. Regulated Booster current b. Regulated Battery charger
 c. Regulated Battery Current d. None.
7. The Main function of RBCR used in LHB Coach (d)
 a. To Charge the battery b. To feed control supply
 c. To feed supply light and fans d. All the above.
8. What is input supply to RBCR in LHB coach (d)
 a. 110V AC b. 110V DC c. 230V AC d. 415V 3Ø AC
9. What is the capacity of RBCR (c)
 a. 2.5 KW b. 5KW c. 6.5KW d. 10KW
10. What is the RDSO specification number of RBCR used in LHB coach (a)
 a. RDSO/PE/SPEC/AC/0129-2009 (Rev-I)
 b. RDSO/PE/SPEC/AC/0056-2014 (Rev-I)
 c. EDTS-041-Rev A
 d. None
11. What is the maximum out put current DC Current of RBCR in LHB coach (a)
 a. 50A b. 220A c. 20A d. None
12. Output Voltage Range of RBCR in LHB Coach (a)
 a. 110V – 135V DC b. 110V-135V AC c. 415V AC d. None
13. What is abbreviation of EBCR used in LHB AC Coach (a)
 a. Emergency Battery charger b. Emergency Boost charger
 c. Emergency Back up charger d. None
14. What is the rating of EBCR in LHB AC Coach (b)
 a. 0.5KW b. 2.5KW c. 6.5KW d. None
15. What is the input supply of EBCR in LHB coach (c)
 a. 110V AC b. 110V DC c. 230V AC d. 415V, 3Ø AC
16. What is the out put supply voltage of EBCR in LHB coach (b)
 a. 110V AC b. 110V DC c. 230V AC d. 415V, 3Ø AC

17. What is the maximum current out put of EBCR in LHB coach (b)
a. 220A b. 20A c. 63A d. 35A
18. what is the RDSO specification number of EBCR in LHB AC coach (c)
a. RDSO/PE/SPEC/AC/0129-2009(Rev-1) b. RDSO/PE/SPEC/AC/0056-2014(Rev-1)
c. EDTS-163, Rev-C d. EDTS-041, Rev-A
19. What id the purpose of EBCR in LHB AC coach (b)
a. Give supply to the AC plant b. To give control supply to power panel in emergency
c. To give supply to mobile chargers d. None
20. When the EBCR in LHB AC coach is starts functioning (b)
a. It starts when coach is dark b. It starts when RBCR is fails to work
c. It starts on Pre-cooling supply d. None
21. What is the supply of end on generation system in LHB (a)
a. 750V, 50Hz, 3Ø, AC b. 230V, AC c. 415V, 3Ø, 50Hz d. None
22. How many distribution transformer per coach in LHB AC coach (a)
a. One b. Two c. Three d. None
23. How many vane relays are available in LHB AC coach (d)
a. One b. Two c. Four d. None
24. EOG power car supply Is feeded to coaches by LHB coaches (b)
a. IV coupler b. ZS coupler c. CBC coupler d. None
25. EOG power car supply is feeded to AC coaches in Garibrath AC coaches by (a)
a. IV coupler b. ZS coupler c. CBC coupler d. None
26. How many ZS couplers having per coach (a)
a. Two male and Two female b. Four male and four female
c. Three male and Three female d. None
27. What is capacity of the fuse provided in 415 voltage side of LHB AC (a)
a. 100A b. 125A c. 80A d. 63A
28. What is capacity of the fuse provided in local main supply of LHB AC (c)
a. 100A b. 125A c. 80A d. 63A
29. How many fuses of 32A are provided in positive fuse box of LHB AC coach (a)
a. One b. Two c. Three d. Nil
30. How many fuses of 32A are provided in negative fuse box of LHB AC coach (b)
a. One b. Two c. Three d. Nil
31. What is input supply of microprocessor in LHB AC coach (b)
a. 110V Ac b. 110V DC c. 230V AC d. 415V AC
32. Contactor K1 and K2, are for what purpose in LHB AC coach (a)
a. for feeeder selection b. for local supply c. Transformer d. None

33. Contactor K41 and K42 are for what purpose in LHB AC coach (b)
 a. for feeder selection b. for local supply c. Transformer d. All the above
34. Contactor K43 is for what purpose in LHB AC coach (c)
 a. for DC supply b. Feed supply selection
 c. for local main supply d. Transformer supply
35. What is the abbreviation form of D and ED in LHB AC coach (a)
 a. Disconnection and Earthing device b. Disconnecting and Energising device
 c. Dead and Energising device d. None
36. What is the purpose of Disconnecting and Earth in Device in LHB coach (a)
 a. Disconnecting the circuit and Earthing in Off position b. Connecting and Earthing
 c. Disconnecting and Earthing in On position d. None
37. What is the abbreviation of MMR used in LHB coach (c)
 a. Measuring and Minimising Relay b. Measuring and Maximising
 c. Measuring and Monitoring Relay d. All the above
38. How many MMR are available in 750V side in LHB AC coach (c)
 a. 1b. 3 c. 2 d. 4
39. How many MMR are available in 415V side in LHB AC coach (a)
 a. 1b. 3 c. 2 d. 4
40. What purpose K05 contactor using in LHB coach (c)
 a. for lighting circuit b. for RMPU c. for WSP d. for WRA
41. How many centrifugal double inlet exhaust fans are available in LHB AC coach (b)
 a. 1 b. 2 c. 3 d. 4
42. How many fans are available in LHB coaches in which are manufactured after 2015 in passenger area (d)
 a. 18 b. 20 c. 16 d. None
43. What is the contactor number of WRA in LHB AC coach (c)
 a. K1, K2 b. K28, K29 c. K24, K25 d. K30, K31
44. What is the indicating MPCB number of WRA (b)
 a. F85, F86 b. F21, F22 c. F30, F31 d. None
45. What id the abbreviation of MPCB (b)
 a. Motor pump case breaker b. Motor protection circuit breaker
 c. Monitoring protecting circuit breaker d. None
46. What is the rating range of MPCB of WRA pump in LHB (a)
 a. 1.0A to 1.6A b. 1.5A to 2.5A c. 2.5 to 3.0A d. 3.0A to 3.5A
47. What is the Rating range of MPCB for exhaust fan in LHB AC coach (b)
 a. 1.0A to 1.6A b. 0.1A to 2.5A c. 2.5A to 3.0A d. None
48. What is the contactor number of fresh air flap motor in LHB AC coach (c)
 a. K8 b. K9 c. K21 d. K44
49. What is the input supply for flap motors in LHB AC coach (c)
 a. 110V AC b. 110V DC c. 24V DC d. 230V AC

50. What is the blower contactor number is in LHB AC coach PP side (a)
a. K28 b. K26 c. K31 d. K32
51. What is the blower contactor number of NPP side RMPU in LHB AC (b)
coach a. K28 b. K26 c. K31 d. K32
52. What is condenser motors contactor number PP side of LHB AC coach (a)
a. K36, K37 b. K38, K39 c. K28, K26 d. None
53. What is condenser motors contactor number NPP side RMPU in LHB AC coach (b)
a. K36, K37 b. K31, K32 c. K28, K26 d. None
54. What is compressor contactors of PP side of LHB AC coach (d)
a. K36, K37 b. K31, K32 c. K28, K26 d. K38, K39
55. What is compressor motors contactor number NPP side RMPU in LHB AC coach (d)
a. K36, K37 b. K31, K32 c. K38, K39 d. K33, K34
56. What is Heater contactor number of PP side RMPU in LHB Ac coach (c)
a. K33 b. K35 c. K40 d. K39
57. What is Heater contactor number of NPP side RMPU in LHB Ac coach (b)
a. K33 b. K35 c. K40 d. K39
58. What is the input supply voltage for pump controller in AC coach (d)
a. 110V AC b. 110V DC c. 24V DC d. All the above
59. How many Insulation control relays available in LHB AC Coach (b)
a. One b. Two c. Three d. Four
60. What is the function of Insulation control relays in LHB AC coach (b)
a. Gives indication of higher insulation in panel
b. Gives indication of lower insulation in panel
c. Not indicate any thing
d. Indicate supply position
61. K05 timer belongs for which device in LHB coach (c)
a. Timer for AC compressor b. Timer for AC plant
c. Timer for Anti skid device d. None of the above
62. Contactor K06 belongs to which circuit in LHB AC coach (b)
a. Anti skid device b. Electro pneumatic break application
c. AC plant d. None of the above
63. Contactor K07 belongs to which circuit in LHB AC coach (c)
a. Anti skid device b. Electro pneumatic break application
b. Electro pneumatic break release d. None
64. Contactor K08 belongs to which circuit in LHB AC coach (a)
a. MVR of level 1 b. MVR of level 2 c. MVR of level 3 d. None
65. What ids the abbreviation of MVR in LHB Ac coach (a)
a. Minimal voltage relay b. maximum voltage relay
c. Maximum value relay d. None
66. Contactor K-23 indicates which supply availability in LHB AC coach (c)
a. 110V DC b. 110V AC c. 415V AC d. None

67. F-01 MCB (triple pole) 10A belongs to which motor in LHB AC coach (a)
 a. Blower motor of unit 1 b. Condenser motor of unit 1
 c. Condenser motor of unit 2 d. Blower motor of unit 2
68. F-02 MCB (Triple pole) 10A belong to which motor in LHB AC coach (b)
 a. Blower motor of unit 1 b. Blower motor of unit 2
 c. Condenser motor of unit 1 d. Condenser motor of unit 2
69. F-03 MCB (Triple pole) 20A belong to which motor in LHB AC coach (c)
 a. Blower motor of unit 1 b. Blower motor of unit 2
 c. Condenser motor of unit 1 d. Condenser motor of unit 2
70. F-05 MCB (Triple pole) 20A belong to which motor in LHB AC coach (b)
 a. Compressor motor of unit 1 b. Compressor motor of unit 2
 c. Blower motor of unit 1 d. Blower motor of unit 2
71. F-04 MCB (Double pole) 10A belong to which motor in LHB AC coach (c)
 a. Compressor motor of unit 1.1 b. Compressor motor of unit 1.2
 c. Crank case heaters for CP 1.1 and CP 1.2 d. None
72. F-06 MCB (Triple pole) 10A belong to which motor in LHB AC coach (a)
 a. Condenser motor of unit 1.1 b. Condenser motor of unit 1.2
 c. Condenser motor of unit 2.1 d. Condenser motor of unit 2.1
73. F-07 MCB (Triple pole) 10A belong to which motor in LHB AC coach (b)
 a. Condenser motor of unit 1.1 b. Condenser motor of unit 1.2
 c. Condenser motor of unit 2.1 d. Condenser motor of unit 2.1
74. F-08 MCB (Triple pole) 6A belong to which motor in LHB AC coach (a)
 a. Heater of unit-1 b. Heater of unit-2
 c. Blower motor unit-1 d. None
75. F-09 MCB (Triple pole) 20A belong to which motor in LHB AC coach (d)
 a. Blower motor-1 b. Blower motor-2
 c. Compressor motor 2.2 d. Compressor motor 2.1
76. F-10 MCB (Double pole) 10A belong to which circuit in LHB AC coach (d)
 a. Heater of unit-1 b. Heater of unit-2
 c. Crank case heaters for CP 1.1 and CP 1.2 d. Crank case heaters for CP 2.1 and CP 2.2
77. F-11 MCB (Triple pole) 20A belong to which motor in LHB AC coach (a)
 a. Compressor motor of unit 2.1 d. Compressor motor of unit 2.2
 c. Compressor motor of unit 1.1 d. Compressor motor of unit 1.2
78. Net 1 and Net 2 of LHB AC can be selected at a time (a)
 a. No b. Yes c. Both working at time d. None
79. Why the Net 1 and Net 2 can not be selected at a time in LHB coach (c)
 a. Since there is a different supply b. Since there is no supply
 c. Since there is a different supply d. All of the above

80. Contactor K- 44 for which supply feed to coach in LHB type AC coach (c)
a. 110V AC supply b. 110V AC supply
c. 60 KVA transformer out put supply d. None of the above
81. In LHB type RMPU, what type of overheat protection available (c)
a. OHP b. ESTI c. Both (a) and (b) d. None of the above
82. When ESTI fuse link protection comes in circuit in LHB RMPU (c)
a. If OHP fail to operate b. If heating temperature
c. Both (a) and (b) d. None
83. ESTI self-destroying type fusible link of heater circuit in LHB RMPU in series with which supply (d)
a. 110V AC b. 230V AC c. 110V DC d. 415V AC, 3Ø
84. How many sensors are available in LHB AC coach for sensing the temperature parameters (d)
a. 3 b. 4 c. 5 d. 6
85. Humidity control facility is available in which type coach (c)
a. Under slung type AC b. SG type RMPU
c. LHB type RMPU d. None of the above
86. Why LHB RMPU motor are in built with OTP (a)
a. To sense and protect against over temperature
b. To sense and protect against lower temperature
c. To sense and protect against lower temperature
d. To sense and protect against low IR value
87. What are the under gear safety items to be checked in LHB AC coach (e)
a. Junction boxes b. 60 KVA transformer c. WRA pumps d. Battery box
e. all of the above
88. What is abbreviation of (c)
a. Like Half man bush b. Link Half man Bush
c. Link Half man bush d. None
89. LHB Technology was imported from which (d)
a. Japan b. USA c. Italy d. Germany
90. Ist Alstam LHB coach designed and manufactured and commissioned on (a)
a. 23 june 2003 b. 23 june 2004 c. 23 june 2005 d. None
91. Length of LHB Coach is (b)
a. 22.54M b. 23.54M c. 24.54M d. 25.54M
92. Passenger capacity of 2-AC LHB coach (d)
a. 46 b. 48 c. 52 d. 54
93. Passenger capacity of 3-AC LHB coach (d)
a. 46 b. 56 c. 64 d. 72
94. Which AC coaches are designed with Moisture control (c)
a. Under slung type b. RMPU type c. LHB type d. All the above

95. 750V Circuit insulation test to be done by with.....Volts megger (c)
a. 230V b. 500V c. 1000V d. None
96. 415V circuit cables insulation test to be done by with.....Volts megger (c)
a. 230V b. 500V c. 1000V d. None
97. 230//190V circuit cables insulation test to be done by with.....Volts megger (b)
a. 230V b. 500V c. 1000V d. None
98. 110V circuit cables insulation test to be done by with.....Volts megger (b)
a. 230V b. 500V c. 1000V d. None
99. 24V circuit cables insulation test to be done by with.....Volts megger (a)
a. 230V b. 500V c. 1000V d. None
100. 415 Volts circuit cable insulation test done by 1000V megger the value should not less than.....ohms (b)
a. 2 Ohms b. 3 ohms c. 5 ohms d. 10 ohms
101. 230/190V circuit cable insulation test done by with 500 megger the value should not less than...ohms (a)
a. 2 ohms b. 3 ohms C. 5 ohms d. 10 ohms
102. 110V circuit cable insulation test done by with 500 megger the value should not less then... ohms (a)
a. 2 ohms b. 3 ohms C. 5 ohms d. 10 ohms
103. LHB type one RMPU cooling capacity (c)
a. 5Ton b. 6ton c. 7ton d. None
104. LHB type one RMPU power consumption capacity.....KW (d)
a. 10.6KW b. 12.6KW c. 13.0KW d. 13.6KW
105. LHB type one compressor motor power consumption capacity.....KW (a)
a. 5.25KW b. 6.25KW c. 7.25KW d. None
106. LHB type RMPU Manufacturing firms are (d)
a. M/S Sidwal b. M/S LLOYD c. M/S Stesalit d. All the above
107. Refrigerants used in LHB RMPU are (d)
a. R134a b. R22 c. 407C d. (b) & (c)

27. EOG POWER CAR

1. What is the meaning of EOG? (b)
 - a. End off generation
 - b. End on generation
 - c. End over generation
 - d. All the above.
2. What is the supply voltage of EOG system? (d)
 - a. 415 V AC
 - b. 440 V AC
 - c. 750 V DC
 - d. 750 V AC
3. What is the capacity of alternator of EOG power car? (c)
 - a. 280 KVA
 - b. 490 KVA
 - c. 500 KVA
 - d. 450 KVA
4. What is the unit for capacity of a diesel engine? (c)
 - a. HP
 - b. HHP
 - c. BHP
 - d. KVA
5. What is the operating speed of diesel engine of EOG power car? (b)
 - a. 1800 rpm
 - b. 1500 rpm
 - c. 2000 rpm
 - d. 1000 rpm
6. What is the battery voltage and capacity of engine starting batteries in EOG power car? (b)
 - a. 8V 290 AH
 - b. 24V 290 AH
 - c. 24V 450 AH
 - d. 8V 450 AH
7. No. of engines available in a EOG power car is ____? (b)
 - a. 1
 - b. 2
 - c. 4
 - d. 3
8. What is the quantity and capacity of transformers in LHB type EOG power car? (c)
 - a. 2 nos. of 50 KVA and 1 no. of 60 KVA
 - b. 4 Nos. of 50 KVA
 - c. 3 Nos. of 60 KVA
 - d. 20 Nos. of 50 KVA and 2 Nos of 60 KVA
9. How many ventilator fan motors are available in a EOG power car? (b)
 - a. 3
 - b. 4
 - c. 2
 - d. 8
10. What is the rating of ventilator fan motor of EOG power car? (a)
 - a. 7.5 HP
 - b. 5 HP
 - c. 10 HP
 - d. 20 HP
11. High water temperature switch of diesel engine of Power car is set at what temperature? (d)
 - a. 100 deg C
 - b. 99 deg C
 - c. 95 deg C
 - d. 97 deg C
12. What does LLOP stand for? (a)
 - a. Low lube oil pressure
 - b. Low lube over pressure
 - c. Low level oil pressure
 - d. Lower level oil pressure
13. Over speed switch of diesel of EOG power car is set at ____ rpm? (b)
 - a. 1500 +/- 5 % rpm
 - b. 1800 +/- 4.5 % rpm
 - b. 1800 rpm
 - d. 1500 rpm
14. The UVR of alternator of power car operates at set voltage of ____? (c)
 - a. 600 V
 - b. 715 V
 - c. 687 V
 - d. 650 V
15. What is the MPCB rating of radiator control panel? (d)
 - a. 68A
 - b. 75A
 - c. 40A
 - d. 63A
16. What is the rating of MPCB of ventilator panel? (b)
 - a. 16A
 - b. 10A
 - c. 5A
 - d. 15A
17. Smoke detector in LHB power car works on ____ V? (c)
 - a. 24V DC
 - b. 110V AC
 - c. 110V DC
 - d. 24V AC
18. What is the input voltage of SBCR (Starting battery charger) of Power car? (c)
 - a. 110V DC
 - b. 415 V AC
 - c. 230V AC
 - d. 110 V AC
19. What are the protections provided in alternator of power car? (d)
 - a. Short circuit
 - b. Overload
 - c. Earth Fault
 - d. All the above
20. Frequency of SS-III schedule is - (c)
 - a) 2 years
 - b) 3 years
 - c) 6 years
 - d) 5 years

21. Frequency of SS-II schedule is - (c)
 a) 1 year b) 2 years c) 3 years d) 5 years
22. What do you mean by HOG system? (b)
 a. High On generation b. Head on generation
 c. Head over generation d. None of the above
23. In HOG system power is taken from _____? (a)
 a. OHE b. DA Set
 b. Adjacent coach d. None of the above
24. The radiator and ventilator control panel of Power car are _____? (a)
 a. Star delta starter b. DOL starter
 c. Capacitor start capacitor run starter d. None of the above
25. What is the present CPCB norms followed by diesel engines of EOG power car? (Ans. b)
 a. CPCB I b. CPCB II c. CPCB III d. CPCB IV
26. What Is the abbreviation of CPCB ? (c)
 a. Central population control board
 b. Central pollution checking board
 c. Central pollution control board
 d. None

NON-TECHNICAL

1. ESTABLISHMENT

1. What is the main object of the payment and wages Act? (c)
a) Wages should be paid in time b) No unauthorized deductions from Wages
c) Both a and b d) None.
2. When payment and wages Act came in to operation w.e.f. in India? (c)
a)21.1.1937 b)21.2.1937 c)21.3.1937 d)21.4.1937
3. What are the permissible deductions from wages? (d)
a)Fine
b)Deduction for absence from duty, towards damages or loss
c) Deduction of provident fund, advance & Loans d) All the above
4. What is the abbreviation of HOER? (a)
a)Hours of employment regulations b) Hours of employment rules
c) Hours of Employment roster d) none
5. Classification of HOER? (d)
a)Intensive b) Essentially intermittent c) Continues & Excluded d) All the above
6. What is the abbreviation of WCA? (b)
a) Worker compensation act b) Workmen's compensation act
c) Worker company act d) None
7. When factory act 1948 came in force? (d)
a) w.e.f. 1.1.1949 b) w.e.f. 1.2.1949 c) w.e.f. 1.3.1949 d) w.e.f. 1.4.1949
8. What is mean by "suspension"? (a)
a) Suspension is an action where by railway servant is kept out of duty
b) Suspension is an action where by railway servant is remove from duty
c) Suspension is an action where by railway servant is dismissed from duty
d) None
9. In respect of one disability special disability leave shall in no case exceed. (b)
a. 12 months b. 24 months c. 28 months d. none of these
10. Railway servant working in administrative office is entitled for casual leave (b)
a. 12 days b. 08 days c. 11 days d. none of these
11. The distances of transferred stations of Railway employee are 2025 KMs. He is entitled for joining time? (c)
a. 12 days b. 10 days c. 15 days d. none of these
12. School; pass are granted according to (b)
a. Calendar Year b. Academic Year c. financial Year d. none of these
13. The weekly duty hours of a clerk in the administrative office is (a)
a. 42 Hours b. 45 Hours c.40 Hours d.48 Hours
14. A running staff after performing 9 hours duty is entitled to rest at Head Quarter (c)
a. 12 Hours b. 14 Hours c.16 Hours d.10 Hours
15. The long on period in case of "continuous "staff is: (b)
a. 08 Hours b. 12 Hours c.14 Hours d.10 Hours
16. Railway staff is eligible for TA/DA if he goes out of his head quarter (a)
a. beyond 8 KM b. beyond 6 KM c. beyond 10KM d. none of these
17. Railway servant shall be entitled to (b)
a. 15 days LAP in a Calendar Year b. 30 days LAP in a Calendar Year
c. 20 days LAP in a Calendar Year d. none of these
18. Maximum limit for accumulation of LHAP is (d)
a.240 days b. 180 days c. 300 days d. No limit for accumulation

19. Leave not due may be granted to Railway Servant at a time (c)
 a. 60 days b. 90 days c. 360 days d. none of these
 20. All kind of leave in one spell shall not exceed (c)
 a. 02 years b. 04 years c. 05 years d. none of these.
 21. Maximum Hospital leave granted to Railway Servant in one spell (a)
 a. 24 months b. 28 months c. 12 months d. None of these
 22. 04 set of PTO are admissible to (a)
 a. all groups b. Group A & B officers only
 c. Group A, B & C only d. None of these
 23. According to Rule -13 A, of Services Conduct Rule a Railway Servant desires to file a defamation suit in his private capacity, he is (a)
 a. Required to obtain permission before filing suit b. No permission required before filing suit
 c. both a & b d. none of these
 24. The holder of Silver pass can travel in Ist AC (c)
 a. Self only b. With his family up to 4 members. c. with wife d. None of these
 25. According to Rule -13 A, of Services Conduct Rule a Railway Servant (c)
 a. can not take dowry b. cannot accept dowry
 c. Both A & B d. none of these
 26. Member ship for clubs & Institute in Division is (a)
 a. Optional b. Compulsory
 c. On some division optional and on some Division Compulsory d. None of these
 27. Half day LAP is granted to (c)
 a. Group C & D employees b. All Railway employees
 c. Artisan staff of Workshop/Production unit d. None of these.
 28. In which case special pass is not allowed (d)
 a. sports tournament b. Territorial Army c. Union meeting d. None of these
 29. Condition regarding sale and purchase of immovable property mentioned in (c)
 a. Rule-7 b. Rule-9 c. Rule-18 d. none of these
 30. For blood donation, special casual leave can be sanctioned for (c)
 a. 02 days b. 03 days c. 01 day d. None of these
 31. Group "C" & "D" employees are entitled for three sets of pass on (c)
 a. On completion of 01 year service b. On completion of 01 years' service
 c. On completion of 05 years service d. None of these
 32. Not entitled for running allowance (c)
 a. Driver b. Shunter c. travelling ticket examiner d. Guard
 33. Casual leave can be combined with (a)
 a. special casual leave b. LAP c. Hospital leave d. None of these
 34. Female Railway servant entitled for maternity leave for (c)
 a. 90 days b. 120 days c. 180 days d. None of these
 35. Paternity leave can be sanctioned up to (c)
 a. 12 days b. 20 days c. 15 days. d. none of these
 36. On Sports Quota recruitment is made in (c)
 a. Group "B" b. Group "C"
 c. Group "C" & "D" d. none of these
 37. Recruitment in Group D category from open market is to be done by (c)
 a. Divisional Office b. Railway Recruitment Board
 c. RRC d. None of these.

37. Rule -3 of Service Conduct rule is related to (a)
- a. General Conditions-devotion to duty integrity.
 - b. Demonstration by Railway Servant
 - c. Employment of near relative;
 - d. None of these.
38. According to Rule 5 of Conduct Rules Railway Servant (b)
- a. Can be a member of Political Party
 - b. Cannot be a member of Political Party
 - c. none of these
 - d. a&b
39. According to Rule -6 Railway Servant (b)
- a. Can Criticize Govt. in public interest.
 - b. Cannot Criticize Govt. in public interest.
 - c. a & b
 - d. none of these -

2. STORES/PROCUREMENT

1. For best Inventory performance results we must combine ABC analysis & VED analysis.
Our first focus should be on (A)
A. Vital & A items B. Vital & C items C. Desirable & A items D. Desirable & C items
2. Stores Directorate in Rly Board is under (A)
A. Member (Mech) B. Member (Elect) C. Member (Staff) D. Financial Commissioner
3. Why is the ABC analysis important (B)
A. for improving service level B. for improving financial performance
C. to improve the profits D. none of the above.
4. For the stores declared surplus by a depot, any returned stores are (C)
A. not to be accepted.
B. to be sent to any other depot where they are required.
C. to be accepted but credit is given only for scrap value.
D. a high level committee is to be set up for taking a decision.
5. Indian Railway stores code is in how many Volumes ? (A)
A. 2 B. 3 C. 4 D. 5
6. The pre-check of the purchase order by accounts department is necessary if the value is More than (D)
A. Rs. 5,00,000/- B. Rs. 4,00,000/- C. Rs. 1,00,000/- D. above Rs. 7,00,000/-
7. Which one of the following system of codification is followed by Indian Railway for codification of store items? (B)
A. Fully significant coding system B. Semi significant coding system
C. Non-significant coding system D. Color codification coding system
8. In Indian Railways the case is to be dealt by tender committee, when it is a case of (D)
A. Open tender B. Limited tender C. Bulletin tender D. High value tender
8. When the firms are selected and tender enquiry is sent to them, it is a case of (B)
A. Open tender B. Limited tender C. Bulletin tender D. Global tender
9. In Indian Railways the case is to be dealt by tender committee when the purchase value is more than Rs. (D)
A. 10 lakhs B. 20 lakhs C. 25 lakhs D. above 50 lakhs
10. In Indian Railways 'A' category items represent what percentage of total consumption value? (D)
A) 50 % B) 90% C) 65% D) 70%
11. PL No. of an item is 11360010. This item may be an item of (D)
A) Stationery B) Steam Locomotive C) Electrical item D) Diesel Locomotive
12. EOQ is the Quantity at which – (D)
A) Inventory carrying cost is maximum
B) Warehousing cost is minimum
C) Inventory carrying cost + ordering cost is maximum
D) Inventory carrying cost + ordering cost is minimum
13. Tenders are to be invited for purchasing 12000 nos. of Chokes approx. rate of which is Rs. 90/- each.
In this case we will normally invite - (A)
A) Open tender B) Limited tender C) Single tender D) No tender
14. In a PL No. the subgroup to which the item belongs to is represented by – (A)
A) First two digits B) 3rd and 4th digits C) 5th and 6th digits D) 2nd and 3rd digits

15. In ABC analysis of items, "A" category items represent (C)
 A) Low consumption value items B) Important items
 C) High Annual consumption value items D) High rate items
16. Buffer stock limit depends on – (A)
 A) ABC classification of the item B) VED classification of the item
 C) Combination of (A) & (B) D) Stock and Non-stock classification of the items
17. Buffer stock is provided – (A)
 A) To meet unforeseen requirement B) To supply items to other users
 C) To make good shortfall due to theft, deterioration D) To have items out of stock
18. In a VED analysis "V" stands for – (A)
 A) Vague items B) Very costly items C) Vital item D) Variety of items
19. Indication of value in the demand is necessary (D)
 A) for posting in liability register / fund register B) for knowing the appropriate approving authority
 C) for the payment to the supplier D) combination of (A) & (B)
20. Item not required for the purpose for which it was originally purchased is known as – (C)
 A) Inactive item B) Scrap item C) Over stock item D) Emergent stock item
21. An item having regular turnover caused by constant demand will be known as – (A)
 A) Ordinary Stock Item B) Emergency stock item C) Regular item D) Non- stock item
22. Inactive items are those stock items, stock of which (C)
 A) is unserviceable B) more than 3 months old
 C) has not been issued to any user for past 12 months D) is more than the requirement of next 24 months
23. Principal Head of Stores Department on a Zonal Railway is – (A)
 A) Principle Chief Materials manager B) Chief Controller of Stores
 C) Controller of Stores D) Chief Controller of Stores and Purchases
24. Processing of a tender case after the opening of tenders depends on – (C)
 A) Estimated value of purchase B) Value of the case as per highest offer
 C) Value of the case as per lowest offer D) None of the above
25. An offer received from the firm to whom no inquiry was sent is known as – (C)
 A) Single offer; B) Delayed offer; C) Unsolicited offer; D) Unapproved offer
26. Only one offer received in respect to Limited/ Open tender is known as – (C)
 A) Single tender; B) PAC offer; C) Single offer; D) Late offer
27. Proprietary Article certificate is to be issued for the item required to be purchased from - (A)
 A) Single firm only B) RDSO approved firms only C) Approved firms only D) None of the above
28. Items not required by the user can be returned on (A)
 A) Advice note for returned stores B) Requisition C) Minus issue note D) Indent
29. Ordinary scrap items are those items which are (A)
 A) Of no use in the railway B) Retained for railway's use
 C) To be sold to the staff D) To be sold by public auction
30. On a railway, the items have been classified as A, B, C and V, E, D. While designing stock Level limits for various items, we will provide to keep minimum safety stocks for – (A)
 A) A-V Items B) A- D Items C) C-V Items D) C-D Items.
31. Materials not required are returned to the nominated stores depot as per stores code para number (B)
 A) S - 1539 B) DS-8 C) NS-11 D) SS-11

32. Disposal of scrap may be done by (A) (B) Sale by tender
(A) Auction (C) Sale to other Govt. department and undertaking (D) All above.
33. Custody stores are the stores – (C)
(A) Which are kept under the custody of indenter
(B) Custody stores are imprest stock items
(C) These are charged off stores but kept under the custody of stores depot awaiting future use.
(D) Custody stores are non-stock items which are surplus with the user
34. Standardisation helps in (D)
(A) Easy maintenance of equipment by suitable replacement
(B) It is easy for the supplier to manufacture the item with suitable technology
(C) Scale of economy can be achieved
(D) All of them as above
35. PL No. of an item is 98-05-0400. This item may be an item of (D)
(A) Uniforms (B) Stationery (C) Steam Locomotive (D) Scrap

3. BASIC KNOWLEDGE ON COMPUTERS

1. WWW stands for? (D)
A. World Whole Web B. Wide World Web C. Web World Wide D. World Wide Web
2. Which of the following are components of Central Processing Unit (CPU) ? (B)
A. Arithmetic logic unit, Mouse B. Arithmetic logic unit, Control unit
C. Arithmetic logic unit, Integrated Circuits D. Control Unit, Monitor
3. Which among following first generation of computers had? (A)
A. Vacuum Tubes and Magnetic Drum B. Integrated Circuits
C. Magnetic Tape and Transistors D. All of above
4. Where is RAM located? (C)
A. Expansion Board B. External Drive C. Mother Board D. All of above
5. If a computer has more than one processor then it is known as? (B)
A. Uniprocess B. Multiprocessor C. Multithreaded D. Multiprogramming
6. If a computer provides database services to other, then it will be known as ? (C)
A. Web server B. Application server C. Database server D. FTP server
7. Full form of URL is? (A)
A. Uniform Resource Locator B. Uniform Resource Link
C. Uniform Registered Link D. Unified Resource Link
8. In which of the following form, data is stored in computer? (B)
A. Decimal B. Binary C. Hexa Decimal D. Octal
9. Technology used to provide internet by transmitting data over wires of telephone network is?(D)
A. Transmitter B. Diodes C. HHL D. DSL
10. Which level language is Assembly Language? (C)
A. high-level programming language B. Medium-level programming language
C. low-level programming language D. Machine language
11. Documents, Movies, Images and Photographs etc are stored at a? (D)
A. Application Sever B. Web Sever C. Print Server D. File Server
12. Which of following is used in RAM? (B)
A. Conductor B. Semi Conductor C. Vacuum Tubes D. Transistor
13. What is full form of GUI in terms of computers? (D)
A. Graphical user Instrument B. Graphical unified Interface
C. Graphical unified Instrument D. Graphical user Interface
14. What is full form of ALU? (A)
A. Arithmetic logic unit B. Allowed logic unit C. Ascii logic unit D. Arithmetic least unit
15. Who was the Founder of Bluetooth? (A)
A. Ericson B. Martin Cooper C. Steve Jobs D. Apple
16. Who was the father of Internet? (B)
A. Chares Babbage B. Vint Cerf C. Denis Riche D. Martin Cooper
17. Verification is process of? (D)
A. Access B. Login C. Logout D. Authentication
18. What is LINUX? (B)
A. Malware B. Operating System C. Application Program D. Firmware
19. What is the name of first super computer of India? (B)
A. Saga 220 B. PARAM 8000 C. ENIAC D. PARAM 6000
20. Which is most common language used in web designing? (D)
A. C B. C++ C. PHP D. HTML

21. Full form of RAM is? (C)
 A. Read access Memory B. Read alternative Memory
 C. Random Access Memory D. Random alternative Memory
22. LED stands for (C)
 A. Laser Emitting Diode B. Light Emitting Device
 C. Light Emitting Diode D. Laser Emitting Device
23. What is the short cut for copying in MS - Word? (D)
 A. CTRL + V B. CTRL + X C. CTRL + Z D. CTRL + C
24. What is the shortcut for saving in MS – Word? (B)
 A. CTRL + P B. CTRL + S C. CTRL + A D. CTRL +R
25. In 48 MP camera, what does MP stand for? (D)
 A. Micro pixel B. Mini pixel C. Mega picture D. Mega pixel
26. Who is the founder of “Facebook”? (C)
 A. Steve Jobs B. Bill Gates C. Mark Zuckerberg D. Evan Spiegel
27. Gigabite is equal to MB. (B)
 A. 10240 B. 1024 C. 124 D. 102400
28. If HDD is Hard Disk Drive, what does SSD stands for? (D)
 A. Solid Storage Disk B. Solid State Disk C. Solid Storage Drive D. Solid State Drive
29. What is the short cut for “paste “in MS - Word? (B)
 A. CTRL +Z B. CTRL + V C. CTRL+P D. CTRL+C
30. What is the fill form of PDF ? (C)
 A. Published Document Format B. Printed Document Format
 C. Portable Document Format D. Public Domain Format
31. HTTP stands for ? (B)
 A. Hyper Text Manipulation Language B. Hyper Text Markup Language
 C. Hybrid Text Markup Language D . None of These
32. Which of these is not a social media application? (B)
 A. Facebook B. Twitter C. Firefox D. Instagram
33. What is the full form of “Cc ” in e- mail ? (C)
 A. Complete Copy B. Cache Copy C. Carbon Copy D. Carbon Code
34. “.docx “ is the file extension for ? (C)
 A. MS Excel B. MS Power point C. MS Word D. MS Access
35. Deleted mails go into which folder in e-mail? (B)
 A. Spam B. Draft C. Trash D. Starred

4. ENGINEERING DRAWING

1. Trimmed size of A0 drawing sheet. (A)
A) 841x1189 B) 880x1230 c) 420x594 D) 450x625
2. Trimmed size of A1 drawing sheet (B)
A) 625x850 B) 594x841 C) 297x420 D) 330x450
3. Trimmed size of A2 drawing sheet. (A)
A) 420x594 B) 841x1189 C) 625x880 D) 880x1230
4. Trimmed size of A2 drawing sheet. (C)
A) 330x450 B) 210x297 C) 297x420 D) 330x450
5. Trimmed size of A2 drawing sheet. (A)
A) 210x297 B) 240x330 C) 594x841 D) 147x210
6. Recommended boarder as per BIS specification for A4 size drawing sheet (B)
A) 5 mm B) 10mm C) 15mm D) 20mm
7. Title block is provided in the drawing sheet at (B)
A) Left side at the bottom B) Right side at the bottom
C) Right side at the top D) Left side at the top
8. When the projections is parallel to each other and also perpendicular to the projection plane it is called (D)
A) Perspective projection B) oblique projection
C) isometric projection D) orthographic Projection
9. In first angle projection the plan comes _____ to the elevation (C)
a. above b. left side c. below d. right side
10. In first angle projection the object is kept in the quadrant (A)
a. first b. second c. third d. fourth
11. In third angle projection the object is kept in the quadrant (C)
a. first b. second c. third d. fourth
12. In the third angle projection plan comes _____ the elevation (A)
a. above b. below c. left side d. right side
13. In the first angle projection the view of the object observed from the right side drawn _____ to the side of the elevation. (A)
a. Left b. right c. top d. below
14. In third angle projection the view of the object observed from the right side drawn to the elevation (B)
a. left b. right c. top d. below
15. Sketching is a (D)
a. scale drg b. correct drg c. isometric drg d. free hand drg.
16. for initial work and constructional lines pencil used (C)
a. 3H b. 2H c. H d. HB
17. Writing of titles of notes on a drg. Is called (B)
a. spacing b. lettering c. shading d. sizing
18. octagon is having _____ sides (D)
a. 5 b. 6 c. 7 d. 8
19. invisible features of an object is shown by _____ (C)
a. straight lines b. thick lines c. hidden lines d. thin lines

20. the algebraic difference between the max size & basic size is called (B)
 a. lower deviation b. upper deviation c. max limit d. min limit
21. The algebraic difference between the minimum limit and the basic size is called (A)
 a. Lower deviation b. Upper deviation c. maximum limit d. tolerance
22. In the tolerance system the holes are represented by _____ (B)
 a. Small letters b. Capital letters c. Numbers d. Symbols
23. In the tolerance system the shafts are represented by (B)
 a. Small letters b. Capital letters c. Numbers d. Symbols
24. PCD stands for (C)
 a. poly centre diameter b. plain center diameter
 c. pitch circle diameter d. Primary circle diameter
25. Auto cad is used for (B)
 a. manufacturing b. drafting c. simulation d. programming
26. The taper on a shaft is indicated along the (B)
 a. dashed line b. center line c. base line d. out line
27. In isometric projection the block is kept at an angle of (A)
 a. 30 degrees b. 45 degrees c. 60 degrees d. 90 degrees
28. The included angle of a circle is (D)
 a. 90 degrees b. 60 degrees c. 30 degrees d. 360 degrees
29. One inch is equal to (B)
 a. 25 mm b. 25.4 cm c. 25.4 mm d. 25 cm

5. ENVIRONMENTAL ENGINEERING

- | | | | |
|---|--|---|--------|
| 01. Hard water contains | A. Calcium Carbonate
C. Magnesium Carbonate | B. Magnesium sulphate
D. All the above. | Ans: D |
| 02. Maximum permissible color for domestic supplies , based on cobalt scale is: | A. 5
B. 10 | C. 20
D. 25 | Ans: D |
| 03. The largest source of water for public water is : | A. Lakes
B. Ponds | C. Streams
D. Rivers | Ans: C |
| 04. On pH scale, maximum alkaline has the value of: | A. 5
B. 7 | C. 14
D. 21 | Ans: C |
| 05. Disinfection of drinking water is done to remove: | A. Turbidity
B. Odor | C. Color
D. Bacteria | Ans: D |
| 06. The temporary hardness of water can be removed by | A. Boiling
B. Adding lime | C. Adding alum
D. Filtration. | Ans: A |
| 07. The pH value of neutral water is | A. 0
B. 5 | C. 7
D. 14 | Ans: C |
| 08. The hardness limit of potable water ranges between: | A. 50 to 75 ppm
B. 75 to 115 ppm | C. 115 to 150 ppm
D. 150 to 200 ppm | Ans: B |
| 09. The permissible nitrites in public water supplies should be | A. Nil
B. 0.5 ppm | C. 1 ppm
D. 1.5 ppm | Ans: A |
| 10. Biological Oxygen Dem and (BOD) for safe drinking water must be | A. Nil
B. 5 | C. 10
D. 15 | Ans: A |
| 11. The bacteria which can survive with or without free oxygen is known as: | A. Aerobic bacteria
C. Facultative bacteria | B. Anaerobic bacteria
D. Pathogenic bacteria | Ans: C |
| 12. For controlling algae, the most common Chemical used is : | A. Copper Sulphate
C. Lime | B. Alum
D. Bleaching powder | Ans: C |
| 13. The permissible pH value of drinking water should be between: | A. 4.5 to 5.5
B. 5.5 to 6.5 | C. 6.5 to 8.5
D. 8.5 to 10.5 | Ans: C |
| 14. Aeration is done to remove: | A. Odor
B. Color. | C. Hardness
D. Turbidity. | Ans: A |
| 15. A plain sedimentation tank can remove suspended impurities up to | A. 60%
B. 70% | C. 80%
D. 90% | Ans: B |
| 16. Detention period for a plain sedimentation tank usually ranges from: | A. 2 to 4 hrs.
B. 4 to 8 hrs | C. 8 to 12 hrs.
D. 12 to 14 hrs | Ans: B |
| 17. the most common coagulant is_____ | A. Chlorine
B. Alum | C. Lime
D. Bleaching powder | Ans: B |
| 18. To remove very fine suspended particles from water , the method adopted is | A. Screening
B. Sedimentation | C. Titration
D. Filtration | Ans: D |
| 19. The maximum permissible loss of head in rapid sand filter is | A. 1
B. 2 | C. 3
D. 4 | Ans: C |
| 20. In rapid sand filter the air binding is caused due to | A. Negative pressure
C. Vacuum Pressure | B. Water Pressure
D. Atmospheric Pressure | Ans: A |

21. Rapid Gravity sand filter can remove bacteria upto
A. 50% B.60% C. 70% D. 80% Ans: D
22. Rapid Gravity can remove turbidity upto
A. 15 gms /ltr. B. 20 gms /ltr C.30 gms/ltr D.40 gms/ltr Ans: D
23. Disinfection of water is done by
A. Alum B. potassium permanganate C. Chlorine D. Zinc oxide Ans: C
24. The Chlorine gas is converted to liquid when subjected to a pressure of:
A.5kg/cm² B.6 kg/cm² C. 7 kg/cm² D. 8 kg/cm² Ans: C
25. Raw water when treated with only chlorine is known as:
A.Plane chlorination B.pre-chlorination
C.post- Chlorination D.Super Chlorination Ans: A
26. In plane chlorination the quantity of chlorine added is
A.0.25mg/lit B.0.30 m/lit C.0.45 m/lit D. 0.50 m/lit Ans: D
27. Hardness of water can be removed by boiling if it contains
A.Calcium bicarbonate B.calcium sulphate
C.calcium Chloride D.Calcium Fluoride Ans: A
28. One degree hardness means when water has a salt of amount
A.1.25 m/lit B.12.25 m/lit C.14.25 m/lit D.16.25 m/lit Ans: C
29. The maximum permissible hardness for public consumption is
A. 95 m/lit B. 105 m/lit C. 115 m/lit D. 125 m/lit Ans: C
30. Permanent Hardness of water can be removed by
A.Coagulation process B.chlorination Process
C.Filtration Process D.Zeolite Process Ans: D
31. The quantity of fluoride permitted in drinking water is
A.1m/lit B.2 m/lit C.3 m/lit D.4 m/lit Ans: A
32. The liquid waste from kitchen and bathroom is called as
A.sewage B.Sullage C.storm Water D. waste water. Ans: B
33. The gas which may cause explosion in sewers is
A.Carbondioxide B.Methane C.Carbon monoxide D.hydrogen sulphide Ans: B
34. In sludge digestion tank, the gas produced is
A.Oxygen B.nitrogen C.Carbondioxide D.methane Ans: C
35. The removal of oil and greaser from sewage is known as
A.Screening B.Skimmmg C.filtration D. Sedimentation Ans: B
36. The water having pH-value 5,is known as
A.Alkaline B.Acidity C.neutral D.all of the above Ans: B
37. Recuperation test is carried out to determine
A. water table in well B. Depth of water in Well C. yield of well D. none Ans: C
38. The presence of bi carbonates in water produce
APermanent hardness B.temporary hardness C.acidity D.Alkalinity Ans: B
39. The presence of carbonates in water produce
A. Acidity B. permanent Hardness C. Alkanity D. temporary hardness Ans: B
40. Chlorination is done for the removal of
A. Bacteria B. Hardness C. turbidity D Colour Ans: A
41. Alum is a good :
A.disinfectant B.coagulant C. Catalyst D. Oxydant Ans: B
42. Pathogenic bacteria in water may cause
A. typhoid B. cholera C. dysentry D.All the above Ans: D

43. The sludge from septic tank should be removed after a max .period of
A.2yrs B.3yrs C.4yrs D.5yrs Ans: B
44. The rate of accumulation of sludge per person per year is taken as
A.5ltrs B.10ltrs C.15ltrs D.20ltrs Ans: C
45. The average domestic consumption of water per capita per day is taken as
A.115ltrs B.125ltrs C.135ltrs D.150ltrs Ans: C

6. GENERAL KNOWLEDGE AND CURRENT AFFAIRS

1. What is the capital of USA ? (D)
A. New York B. San Francisco C. Chicago D. Washington D.C.
2. Which team Has the most number of IPL Wins ? (C)
A. Kolkata Knight Riders B. Chennai super kings C. Mumbai Indians D. Rajasthan Royals.
3. What is the average lifespan of Red blood cells ? (D)
A. 90 Days B. 100 Days C. 110 Days D. 120 Days
4. Kudankulam Nuclear power plant is located in which state? (C)
A. Kerala B. Karnataka C. Tamilnadu D. Andhra Pradesh
5. Which is the state fruit of Telangana? (C)
A. Apple B. Banana C. Mango D. Pineapple
6. The statue of Unity located in which state? (D)
A. Odisha B. Maharashtra. C. Chhattisgarh D. Gujarat
7. Vande Bharat express is also known as? (B)
A. Train 17 B. Train 18 C. Train 19 D. Train 20
8. Dutee Chand is associated with which Sports? (A)
A. Athletics B. Kabaddi C. Cricket D. Hockey
9. Which is the second longest river in India after Ganga? (C)
A. Cauvery B. Krishna C. Godavari D. Yamuna
10. In which City “Gateway of INDIA “is Located? (B)
A. Pune B. Mumbai C. New Delhi D. Ahmedabad
11. Most number of Double Hundreds in test cricket is by? (A)
A. Don Bradman B. Brian Lara C. Kumara Sangakkara D. Wally Hammond
12. First woman to become a chief minister of a state in India? (C)
A. Sheila Dixit B. Sushma swaraj C. Sucheta Kriplani D. Mamata Banerjee
13. Ramappa temple is located near ? (A)
A. Warangal B. Khammam C. Karimnagar D. Suryapet
14. Who is the Author of the Book ” The Discovery of India “? (C)
A. Motilal Nehru B. Mahatma Gandhi C. Jawaharlal Nehru D. Rabindranath Tagore
15. Kaziranga National park is located in which state? (D)
A. Sikkim B. Nagaland C. Arunachal Pradesh D. Assam
16. Which city is called the pink City Of India? (B)
A. Udaipur B. Jaipur C. Jodhpur D. Sholapur
17. What is the name of the Space mission to MARS launched by ISRO? (C)
A. Chandrayaan-1 B. Aditya C. Mangalyaan D. Chandrayaan-2
18. Harmanpreet Kaur is associated with which sports ? (B)
A. Hockey B. Cricket C. Kabaddi D. Archery
19. World Environment Day is observed on? (C)
A. June 7 B. June 5 C. June 10 D. June 3
20. Mohiniyattam is a famous classical dance of which state ? (C)
A. Karnataka B. Tamil Nadu C. Kerala D. Andhra Pradesh
21. Where is the United Nations headquarters located? (A)
A. New York. B. San Francisco C. Paris D. Geneva

22. Dandi March was also Known as ----- Satyagraha. ? (D)
 A. Pepper B. Indigo C. Cinnamon D. Salt
23. The study of Cancer is Called ? (D)
 A. Neurology B. Osteology C. Ornithology D. Oncology
24. Which one of the following river flows between Vindhyan and Satpura ranges?
 (a) **Narmada** (b) Mahanadi
 (c) Son (d) Netravati
25. The Central Rice Research Station is situated in?
 (a) Chennai (b) **Cuttack**
 (c) Bangalore (d) Quilon
26. Who among the following wrote Sanskrit grammar?
 (a) Kalidasa (b) Charak
 (c) **Panini** (d) Aryabhata
27. Which among the following headstreams meets the Ganges in last?
 (a) Alaknanda (b) Pindar
 (c) Mandakini (d) **Bhagirathi**
28. The metal whose salts are sensitive to light is?
 (a) Zinc (b) **Silver**
 (c) Copper (d) Aluminum
29. Patanjali is well known for the compilation of –
 (a) **Yoga Sutra** (b) Panchatantra
 (c) Brahma Sutra (d) Ayurveda
30. River Luni originates near Pushkar and drains into which one of the following?
 (a) **Rann of Kachchh** (b) Arabian Sea
 (c) Gulf of Cambay (d) Lake Sambhar
31. Which one of the following rivers originates in Brahmagiri range of Western Ghats?
 (a) Pennar (b) **Cauvery**
 (c) Krishna (d) Tapti
32. Tsunamis are not caused by
 (a) **Hurricanes** (b) Earthquakes
 (c) Undersea landslides (d) Volcanic eruptions
33. Chambal river is a part of –
 (a) Sabarmati basin (b) Ganga basin
 (c) **Narmada basin** (d) Godavari basin
34. D.D.T. was invented by?
 (a) **Mosley** (b) Rudolf
 (c) Karl Benz (d) Dalton
35. Indus river originates in –
 (a) Kinnaur (b) Ladakh
 (c) Nepal (d) **Tibet**
36. The hottest planet in the solar system?
 (a) Mercury (b) **Venus**
 (c) Mars (d) Jupiter
37. With which of the following rivers does Chambal river merge?
 (a) Banas (b) Ganga
 (c) Narmada (d) **Yamuna**

38. Where was the electricity supply first introduced in India –
 (a) Mumbai (b) Dehradun
(c) Darjeeling (d) Chennai
39. Amravati, Bhavani, Hemavati and Kabini are tributaries of which one of the following rivers?
 (a) Mahanadi (b) Godawari
(c) Cauvery (d) Krishna
40. Which of the following is related to Bharat Nirman Scheme?
 (a) Foodgrain production self sufficiency (b) Family welfare programme
(c) Infrastructure development (d) Employment generation program
41. Which peninsular river is least seasonal in flow?
 (a) Narmada (b) Krishna **(c) Godavari** (d) Cauvery
42. Which one of the following ports is the oldest port in India?
 (a) Mumbai Port **(b) Chennai Port**
 (c) Kolkata Port (d) Vishakhapatnam Port
43. At which one of the following places do the rivers Alaknanda and Bhagirathi merge to form Ganga?
(a) Devprayag (b) Rudra Prayag
 (c) Karnaprayag (d) Vishnuprayag
44. Which of the following is not a nuclear power center?
 (a) Narora (b) Kota
(c) Chamera (d) Kakrapar
45. Galileo was an Italian astronomer who
 A.developed the telescope
 B.discovered four satellites of Jupiter
 C.discovered that the movement of pendulum produces a regular time measurement
D.All of the above
46. Hitler party which came into power in 1933 is known as
 A.Ku-Klux-Klan B.Democratic Party
 C.Labour Party **D.Nazi Party**
47. Gulf cooperation council was originally formed by
A.Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates
 B.Second World Nations
 C.Third World Nations
 D.Fourth World Nations
48. Grand Central Terminal, Park Avenue, New York is the world's
 A.highest railway station B.longest railway station
C.largest railway station D.None of the above
49. Friction can be reduced by changing from
 A.rolling to sliding **B.sliding to rolling**
 C.dynamic to static D.potential energy to kinetic energy
50. Exposure to sunlight helps a person improve his health because
 A.resistance power increases
 B.the infrared light kills bacteria in the body
C.the ultraviolet rays convert skin oil into Vitamin D
 D.the pigment cells in the skin get stimulated and produce a healthy tan

51. Entomology is the science that studies
A. The origin and history of technical and scientific terms
B. Behavior of human beings
C. Insects
D. The formation of rocks
52. Dumping is
A. selling of goods abroad at a price well below the production cost at the home market price
B. the process by which the supply of a manufacture's product remains low in the domestic market, which
C. prohibited by regulations of GATT
D. All of the above
53. Fire temple is the place of worship of which of the following religion?
A. Taoism **B.** Shintoism
C. Judaism **D. Zoroastrianism (Parsi Religion)**
54. Golf player Vijay Singh belongs to which country?
A. India **B. Fiji**
C. UK **D.** USA
55. Film and TV institute of India is located at
A. Pune (Maharashtra) **B.** Pimpri (Maharashtra)
C. Perambur (Tamilnadu) **D.** Rajkot (Gujarat)
56. Garampani sanctuary is located at
A. Gangtok, Sikkim **B.** Kohima, Nagaland
C. Diphu, Assam **D.** Junagarh, Gujarat
57. Each year World Red Cross and Red Crescent Day is celebrated on
A. June 8 **B.** June 18
C. May 8 **D.** May 18
58. First human heart transplant operation conducted by Dr. Christian Bernard on Louis Washkansky, was conducted in
A. 1958 **B.** 1922
C. 1967 **D.** 1968
59. For which of the following disciplines is Nobel Prize awarded?
A. Literature, Peace and Economics **B.** Physics and Chemistry
C. Physiology or Medicine **D. All of the above**
60. Famous sculptures depicting art of love built some time in 950 AD – 1050 AD are
A. Konark Temple **B. Khajuraho temples**
C. Mahabalipuram temples **D.** Sun temple
61. The United Nations Organization has its Headquarters at
a) Bali **b)** Hague
c) New York, USA **d)** Washington DC
62. Objects at the surface of water can be viewed from a submarine under water by using this instrument.
a) Stethoscope **b) Periscope**
c) Kaleidoscope **d)** Telescope
63. Professor Amartya Sen received the Nobel Prize in this field.
a) Literature **b)** Electronics
c) Economics **d)** Geology

64. Which of the following musical instruments is played by Amjad Ali Khan?
 a) Veena b) Tabla **c) Sarod** d) Guitar
65. Greta Garbo is associated with
 a) Classical dance
 b) Music
c) Acting
 d) Literature
66. Dr. V. Kurien is famous in the field of _____.
 a) Atomic power
b) Dairy development
 c) Economic reforms
 d) Poultry farms
67. Who created the famous Rock Garden of Chandigarh?
 a) Gaudi
 b) Saarinen
 c) Krishnarao Jaisim
d) Nek Chand
68. The 'Lady with the Lamp' was the name given to?
 a) Vijayalakshmi Pandit
 b) Queen Elizabeth
c) Florence Nightingale
 d) Princess Diana
69. The biggest part of the brain is
 a) Spinal cord
 b) Cerebellum
c) Cerebrum
 d) Brain Stem
70. NASA's most famous space telescope goes by the name?
 a) Muble Satellite Telescope
b) Hubble Space Telescope
 c) Humble Space Telescope
 d) Galaxy Satellite Telescope
71. At room temperature, which is the only metal that is in liquid form?
 a) Iron
 b) Aluminum
 c) Mercury
d) Silver
72. This scientist is well known for his theory of relativity. Who is he?
 a) Thomas Alva Edison
b) Albert Einstein
 c) Marconi
 d) James Watt
73. A change of the DNA of an organism resulting in a new trait is known as a _____.
 a) Mitosis
 b) Meiosis
c) Mutation
 d) Morphosis

74. Which is the country which has the Great Barrier Reef?
 a) London
b) Australia
 c) Ireland
 d) New Zealand
75. Which of the following Company buy eBay's Indian operation?
 a) Amazon
b) Flipkart
 c) Snapdeal
 d) PayTM
76. Of the following diseases which one is caused by insect bite?
a) Dengue
b) Scurvy
 c) Pneumonia
 d) Asthma
77. Which organ of the human body does the Alzheimer's disease affect?
 a) Ear
b) Brain
 c) Eye
 d) Stomach
78. Which of the following countries has approved world's first dengue vaccine?
 a) United Kingdom
 b) Canada
c) Mexico
 d) France
79. 'Per drop more crop' is the key goal of—
a) Micro Irrigation Fund under NABARD
b) Long Term irrigation fund under NABARD
 c) Pradhan Mantri Sinchai Yojana
 d) National Watershed Development Programme
80. Which of the following is not an infection in the body?
 a) RBC
b) WBC
 c) Blood Plasma
 d) Hemoglobin
81. Anthophobia is fear of which of the following?
 a) Boss
 b) Fire
c) Flowers
 d) Dogs
82. Which of the following is the largest air pollutant?
 a) Carbon dioxide
b) Carbon monoxide
 c) Sulphur dioxide
 d) Hydrocarbons
83. In binary code, the number 7 is written by—
 a) 110 **b) 111** c) 101 d) 100

84. The Atomic Nucleus was discovered by—
a) Rutherford
b) Dalton
c) Einstein
d) Thompson
85. Clove is obtained from—
a) Root b) Stem c) Fruit **d) Flower bud**
86. Deficiency of which of the following vitamins causes the disease of slow blood clotting?
a) Vitamin C
b) Vitamin D
c) Vitamin E
d) Vitamin K
87. An United. Nations report entitled, “Leave no one behind specially deals issues related to—
a) Women & girls
b) Children
c) Refugees
d) Persons with different abilities
88. Which is the famous International dance?
a) Romantic Dance
b) Bibhu
c) Odissi
d) Chau
89. Samba dance is famous in—
a) Brazil
b) Peru
c) Argentina
d) Mexico
90. Rouff is a folk dance. It has its original in?
a) Assam
b) Mizoram
c) Kashmir
d) Himachal Pradesh
91. DRDL stands for
A. Defence Research and Development Laboratory
B. Differential Research and Documentation Laboratory
C. Department of Research and Development Laboratory
D. None of the above
92. Heavy Water Project (Talcher) and Fertilizer plant (Paradeep) are famous industries of
A. Orissa
B. Kerala
C. Tamil nadu
D. Andhra Pradesh
93. Fathometer is used to measure
A. Rainfall
B. Ocean depth
C. Sound intensity
D. Earthquakes

94. Gabriel Daniel Fahrenheit was
 A. a German Physicist
 B. devised temperature scale
 C. developed the mercury thermometer in 1714
D. All of the above
95. Who was the first Indian Chief of Army Staff of the Indian Army ?
A. Gen. K.M. Cariappa
 B. Gen. Maharaja Rajendra Singhji
 C. Vice-Admiral R.D. Katari
 D. None of the above
96. For galvanizing iron which of the following metals is used?
 A. Lead
 B. Aluminium
 C. Copper
D. Zinc
97. Headquarters of UNO are situated at
 A. Paris
 B. Geneva
 C. Hague (Netherlands)
D. New York, USA
98. Coral reefs in India can be found in
 A. Waltair
 B. Trivandrum
 C. the coast of Orissa
D. Rameshwaram
99. For safety, the fuse wire used in the mains for household supply of electricity must be made of metal having
 A. low specific heat
 B. high melting point
 C. high resistance
D. low melting point
100. Dr. Zakir Hussain was
 A. first vice president of India
 B. first speaker of Lok Sabha
C. the first Muslim president of India
 D. first president of Indian National Congress
101. Firdausi was
 A. a poet
 B. well known for his epic 'Shahnama'
C. Both option A and B
 D. None of the above
102. Golden Temple, Amritsar is India's
A. largest Gurdwara
 B. oldest Gurudwara
 C. Both option A and B are correct
 D. None of the above

103. Himalayan Mountaineering Institute is at
 A.Dispur
 B.Marmago
 C.Dehradun
D.Darjeeling

104. What is the name of the first cruise ship ever built in India? (a)
 a. MV GANGA VILAS b. MV JAMUNA VILAS
 c. MV BRAHMAPUTRA VILAS d. MV GODAVARI VILAS

105. Who won the Australian Open men title-2023? (c)
 a. Roger Federer b. Rafael Nadal
 c. Novak Djokovic d. Stefanos Tsitsipas

106. Which country's president was the chief guest at the Republic Day parade 2023? (b)
 a. Algeria b. Egypt c. Jordan d. Qatar

107. Name the device which is approved by railways in rail budget to avoid collision of trains? (a)
 a. Anti Collision Device b. Antiballistic Device
 c. Anti Combining Device d. Anti Power Device

108. Who was the first Railway Minister who resigned due to a train accident? (a)
 a. Lal Bahadur Shastri b. John Mathai c. Asaf Ali d. none of these

109. Where is the Railway Staff College located? (c)
 a. Pune b. Delhi c. Vadodara d. Allahabad

110. Who of the following was the first Railway Minister of independent India? (a)
 a. John Mathai b. Lal Bahadur Shastri c. Jawaharlal Nehru d. Shanmugam Shetty

111. Who was the Governor General of India when Railways were first introduced in India? (b)
 a. Lord Canning b. Lord Dalhousie c. Lord William Bentick d. Lord Ripon

112. What is the tenure of individual Rajya Sabha members? (d)
 a. 3 Years b. 4 Years c. 5 Years d. 6 Years

113. Which of the following articles grant the 'Right to Equality' to citizens of India? (b)
 a. Article 13-17 b. Article 14-18 c. Article 16-20 d. Article 15-19

7. GENERAL ENGLISH

Direction: In the following questions, select the correct passive voice.

1. Rahul will pass the message.
A) The message will passed by Rahul.
B) The message would be passed by Rahul.
C) The message will pass by Rahul.
D) **The message will be passed by Rahul.**
2. He stole that watch.
A) **That watch was stolen by him.**
B) That watch stolen by him
C) That watch stole by him.
D) That watch had stolen by him.
3. His hard work satisfied me.
A) I was satisfied for his hard work.
B) I was satisfied by his hard work.
C) **I was satisfied with his hard work.**
D) I was satisfied at his hard work.
4. Who can count the stars in the sky?
A) **By whom can the stars in the sky be counted?**
B) By whom can be stars in the sky counted?
C) By whom could the stars be counted in the sky?
D) By whom could the stars in the sky be counted?
5. His comment hurt me deeply.
A) **I was hurt deeply by his comment.**
B) I could be hurt deeply by his comment.
C) His comment was hurtful.
D) I should not be hurt by his comment

Direction: Find synonyms of the following:

- | | | | | |
|----------|--------------|--------------|----------------|--------------------|
| 6. BRIEF | A. Limited | B. Small | C. Little | D. Short |
| 7. ALERT | A. Energetic | B. Observant | C. Intelligent | D. Watchful |

Direction: Find antonyms of the following

- | | | | | |
|------------------|-----------------|----------------|--------------|----------------------|
| 8. FICTITIOUS | A. Fatal | B. Suspicious | C. Imaginary | D. Novel |
| 9. ENORMOUS | A. Weak | B. Tiny | C. Soft | D. Average |
| 10. COMMISSIONED | A. Closed | B. Started | C. Finished | D. Terminated |

Direction: Choose the correct articles

11. New York is _____ large city
A. **a** B. the C. no article D. an

□: □)1967

□□)1963

□□)1964

□□)1976

5.

$$(\square)$$

What are all the three regions classified under Official Language Rules ?

□:□)‘□’, ‘□’□□) □, □, □, □□) □□, □□, □□□□) □□□□

‘A’, ‘B’ and ‘C’ Regions.

6. □□□□□ ‘□□□□□□□□□’ □□□□□□□□□□□□?

$$(\square)$$

When is 'Hindi Day' celebrated every year ?

□: □) □□□□□ 14 □□) □□□□□ 26 □□) □□□□□ 24 □□) □□□□□ 14

7. □□□□□□□□□□□□□□□□□□,

[illegible] $(\square)$

According to Official Language Rules, under which region Andaman & Nicobar Islands come?

□: □) ‘□’ □□) □ □□) □ □□) □

□) 'A' Region.

8. □□□□□□, □□□□□□□□□□□□□□□□□□□□□□□□□□□□?

$$(\square)$$

Which are the Union Territories classified under Region 'B' ?

[illegible][illegible][illegible][illegible]

☐ Union Territory of Chandigarh, Dadra & Nagar Haveli and Daman & Diu.

9. □□□□□□□□□□□□□□□□□□□□? (□)

What is the Official Language of Arunachal Pradesh?

□: □) □ □ □ □ □ □ □ □ □ □) □ □ □ □ □ □ □) □ □ □ □ □ □ □) □ □ □ □ □ □ □ □

10 -[illegible]
$$(\square)$$

What is the Act passed to give legal form to the assurances given to Non-Hindi speaking people?

□: □)□□□□□□ (□□□□□□)□□□□□□-1967 □□) □□□□□□ (□□□□□□)□□□□□□-1963

□□)□□□□□□ (□□□□□□)□□□□□□-1957 □□) □□□□□□ (□□□□□□)□□□□□□-1976

□)Official Languages Act (Amended) –1967.

11. □□□□□□□□□□□□□□□□□□□□ 3(3) □□□□□□□□□□□□□□? (□)

From when did the Section 3(3) of Official Languages Act take effect?

□:□) 26 □□□□ 1965 □□) 26 □□□□ 1966 □□) 26 □□□□ 1972 □□) 26 □□□□ 1959

□)26 January 1965.

12. □□□□□□□□□□ 1963 □□□□□ (IV) □□□□□□□□□□?

$$(\square)$$

With which Section (IV) of Official Languages Act 1963 is concerned?

☐ : ☐

[illegible]

18. 'B' Region

()

Please mention the states coming under 'B' Region.

() , , , ,

() , ,) , .

() , ,

() Gujarat, Maharashtra, Punjab, Chandigarh, Dadra & Nagar Haveli and Daman & Diu.

19. ?

()

At present how many languages are enlisted in the Eighth Schedule of the Constitution?

() 22 () 24 () 25 () 28

20. V- - ?

()

In which Article is the provision regarding OL Policy available in Part-V of the Constitution?

() 120 () 240 () 100 () 90

A) Article 120 B) Article / 240 C) Article / 100 D) Article / 90

21. -

()

Name the article in which the provision of the Eighth Schedule of the Constitution is available.

() 344(1) 351 () 342(1) 350 () 244(1)

251

() Article/ 344 (1) and 351.

22. (1963) ? ()

Why was the OL Act 1963 passed?

() 1965

() 1965

()

()

To use English along with Hindi even after 1965.

23. ?

()

When was the Official Language Rules passed?

() 1976. () 1963 () 1981 () 1952

24. XVII ?

()

How many Articles are there in Part XVII of the Constitution?

() () () ()

25. 344, ?

()

In compliance of Article 344, when was the Official Language Commission formed?

() 1955 () 1956 () 1963 ()

1976

26. ?

()

□: □)□□□□□□.□□. □□□ □□) □□□□□□.□□□□□□□□ □□) □□□□□□.□□.□□□□□□)

[illegible]

□: □)□□□□□.□□. □□□ □□) □□□□□□.□□□□□□□□ □□) □□□□□□.□□.□□□□□□)

Shri. G.B.Pant.

As per the Constitution, who is translating the statutory rules, regulations and orders? (□)

□: □) □ □ □ □ □ □ □ □ □ □ □ □) □ □ □ □ □ □ □ □ □ □ □ □) □ □ □ □ □ □ □ □ □ □ □ □ □ □

□ □) □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □

☐) Law Ministry

[illegible][illegible]

Which was the main language and co-official language used for the Official Purpose of the Union of India upto 1965?

[illegible][illegible][illegible][illegible]

☐ English was the main language and Hindi was the co-official language.

30. □□□-VI □□□□□□-□□□□□□□□□□□□□□?

Which Article comes under Part-VI?

□: □)□□□□□□□ 210□□) □□□□□□□□370 □□) □□□□□□□□375 □□) □□□□□□□□ 209

[illegible]
$$(\square)$$

Who chaired the First Railway Hindi Salahkaar Samiti constituted in 1973?

□: □)□□□□□□□□□□□□□□□□ □□)□□□□□□□□□□□□□□□□ □□)□□□□□□.□□.

[illegible]

32. □□□□ 1976 □□□□□□□□□□□□□□□□□□□□□□□□□□□□□? ()

Who was the Chairman of the Parliamentary Committee on Official Language constituted in the year 1976?

[illegible]

□□) □□□□□□□□□□□□□□□□□□□□

□□) □□□□□□□□□□□□□□□□

□□)□□□□□□.□□.□□□□□□

□) **The then Home Minister Shri. Om Mehta.**

33. □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□? (□)

Which Committee of the Committee of Parliament on Official Language prepares the draft?

[illegible][illegible]

□ □) □ □ □ □ □ □ □ □ □

□ □) □ □ □ □ □ □ □ □

41. कौनसा मूलभूत हिन्दी पाठ्यक्रम केन्द्र सरकार के कर्मियों के लिए निर्धारित है?

(□)

Which is the elementary Hindi course prescribed for Central Govt. employees?

(□) प्रबोध (□) प्रमोद (□) प्रमोद (□) प्रबोध) **Prabodh.**

42. कौनसे केन्द्र सरकार के हिन्दी समिति के अध्यक्ष हैं?

(□)

Who is the Chairman of Central Hindi Committee?

(□) प्रधानमंत्री (□) उपप्रधानमंत्री (□) वित्त मंत्री (□) स्वास्थ्य मंत्री

(□) **Prime Minister.**

43. कौनसा समिति हिन्दी प्रचार के प्रगति की समीक्षा करता है?

कौनसा समिति हिन्दी प्रचार के प्रगति की समीक्षा करता है? (□)

Which Committee reviews the progress made in the propagation of Hindi in particular Ministry/Department?

(□) हिन्दी सलाहकार समिति (□) हिन्दी प्रचार समिति
(□) हिन्दी प्रचार समिति (□) हिन्दी प्रचार समिति

(□) **Hindi Salahkar Samiti.**

44. वर्तमान हिन्दी समिति की स्थापना कब हुई?

When was the present Parliamentary Committee on Official Language constituted? (□)

(□) जनवरी 1976 (□) जनवरी 1956 (□) जनवरी 1977 (□) जनवरी 1982

(□) **January 1976.**

45. हिन्दी समिति में कितने सदस्य हैं?

(□)

How many members are there in the Parliamentary Committee on Official Language?

(□) 30 (□) 40 (□) 50 (□) 70

46. हिन्दी समिति में लोकसभा के कितने सदस्य हैं?

(□)

How many Lok Sabha members are there in the Committee of Parliament on Official Language?

(□) 20 (□) 31 (□) 42 (□) 65.

47. वर्तमान में हिन्दी समिति में उपसमितियों की संख्या क्या है?

(□)

At present, how many Sub-Committees are there in the Parliamentary Committee on Official Language ?

(□) 3 (□) 2 (□) 01

(□) उपसमितियाँ

(□) **3 Sub-Committees.**

48. हिन्दी समिति का मुख्य कार्य क्या है?

(□)

What is the main duty of the Committee of Parliament on Official Language?

(□) हिन्दी प्रचार (□)

हिन्दी प्रचार के प्रगति की समीक्षा करना

(□) हिन्दी प्रचार (□) हिन्दी प्रचार के प्रगति की समीक्षा करना

(□) **To review the progressive use of Hindi.**

49. कौनसे केन्द्र सरकार के हिन्दी समिति के अध्यक्ष हैं?

(□)

Who is the Chairman of the Town Official Language Implementation Committee constituted in major cities ?

(□) प्रधानमंत्री

() □□□□□□□□□□□□□□□□

50. □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□? ()
What is the periodicity of the meeting of Town Official Language Implementation Committee?

[illegible][illegible]

Who prepares the Annual Programme on Official Language?

[illegible]

52.

What are the Hindi courses prescribed for Central Govt. Employees?

[illegible]

53.

□□□□□□□□? (□)

Which is the final Hindi course prescribed for clerical cadre employees of Central Govt.?

□) □□□□□□(Pragna) □□) □□□□□□ □□) □□□□□□ □□) □□□□□□

54.

□ □ □ □ □

[illegible]

What are the training facilities available to a Central Govt. employee to get trained in the Hindicourses?

() (), (), ()) () ()
()

☐ Regular, Intensive, Correspondence and Private.

55. □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□? ()

How many times are the Regular Hindi examination conducted in a year?

□)□□□□□ □□)□□□□□ □□)□□□□□ □□) □□□□□

56. □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□? ()

In which months, Regular Hindi examinations are conducted?

□)□□□□□□□□ □□)□□□□□□□□ □□) □□□□□□□□□□ □□)□□□□□□-

□ □ □ □ □ □

57. हिंदी पाठ्यक्रमों में प्रशिक्षित होने के लिए कौन पात्र हैं? (ए)

Who are eligible to be trained in the Hindi courses ?

[illegible][illegible][illegible]

☐ All the Central Govt. employees in Class III and above.

Who are all the employees classified under Category 'A' ?

[illegible][illegible][illegible]

□) Those employees whose mother tongue is Hindi or Hindustani or its dialect.

Who are all the employees classified under Category 'B' ?

☐)☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐, ☐☐☐☐, ☐☐☐☐☐☐, ☐☐☐☐.

[illegible][illegible]

)

☐ Those employees whose mother tongue is Urdu, Punjabi, Kashmiri, Pushto, Sindhi or other allied languages.

Who are all the employees classified under Category 'C' ?

□) □□□□□□□□□□□□□□□□, □□□□□□, □□□□□□, □□□□□□□□□□□□□□□□

[illegible][illegible][illegible]

☐ Those employees whose mother tongue is Marathi, Gujarati, Bengali, Oriya or Assamese.

Who are all the employees classified under Category ‘D’?

[illegible][illegible][illegible][illegible]

☐ **Those employees who speak a South Indian Language or English.**

$$(\square)$$

From which course a Category 'C' employee is required to be trained?

□) □□□□□□ □□) □□□□□□ □□) □□□□□□ □□) □□□□□□

□)Praveen.

From which course a Category 'D' employee is required to be trained ?

□) □□□□□□ □□) □□□□□□ □□) □□□□□□ □□) □□□□□□

What is the lumpsum award for passing Pragya ?

☐) ☐ 2400/- ☐) ☐ 2800/- ☐) ☐ 3200/- ☐) ☐ 4600/--

Amount of lump sum award for passing Prabodh, Praveen and Pragya by private study? ()

Amount of lump sum award for passing Prabodh, Praveen and Pragya by private study.

() /Prabodh 1600/- /Praveen 1500/- /Pragya 1200/-

() /Prabodh 1200/- /Praveen 1300/- /Pragya 1100/-

() /Prabodh 800/- /Praveen 850/- /Pragya 600/- For each.

74.

What is the lump sum award for passing Hindi Typewriting Examination by private study? ()

What is the lump sum award for passing Hindi Typewriting Examination by private study?

() 1600/- () 1400/- () 1300/- () 1100/-

75.

What is the Foreign Language included in the Eight Schedule? ()

() () () ()

() **Nepali.**

76.

Which Ministry /Office is conducting the exams. for the Central Govt. employees? ()

Which Ministry /Office is conducting the exams. for the Central Govt. employees ?

()

()

()

() **Hindi Teaching Scheme under Home Ministry.**

77. /who is eligible for lump sum award? ()

()

()

()

()

() **Those employees who pass the Hindi exams by private efforts.**

78. ()

In which order are the Station announcements made ?

() ()

()

()

()

() **Trilingual (Regional, Hindi & English)**

79. ()

In which proportion the Roof Board has to be displayed?

() ()

()

()

()

() **In equal proportion-Trilingual (Regional, Hindi & English).**

☐ **Personal Pay equivalent to 2 increment for a period of 12 months.**

86. □□□□□□□□□□ /

[illegible]

What is the quantum of Hindi Typing work to be done by typist/Steno to become eligible for Hindi incentive allowance?

[illegible]

□□) □□□□□□□□□□□□□□ 01□□□□□□□□□□□□□□ 100□□□

□□) □□□□□□□□□□□□□□□□ 03 □□□□□□□□□□□□□□□□ 200 □□□ □□) □□□□□□□□

☐ 5 Notes in Hindi in a day or 300 notes in Hindi in a quarter.

[illegible]

□□□□□□□□□□□□□□□□□?

What is the amount of Cash Award for passing Hindi Typing with 90% or more but less than 95% marks ? (□)

□) □□ 400/- □□) 600 □□/- □□) 700/- □□ □□) □□□□□□□□

[illegible]

What is the amount for passing Hindi Stenography with 95% or more marks? (□)

☐) 1200/- ☐) 1500 /- ☐) 1800/- ☐)

[illegible]

What is the honorarium amount given to Part-time Hindi Librarian?

□) □□ 500/-□□□□□□□□ □□) 1000/- □□□□□□□□□□ □□) 200/- □□□□□□□□□□ □□) □□□□□□□□

90.

$$(\square)$$

What is the lump sum award given for passing Hindi Stenography Examination?

□) □□□□□□□□□□ 1500/-□□) □□□□□□□□□□ 1100/- □□) □□□□□□□□□□ 2000/-□□)

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☐ **Hindi Stenography Rs. 1500/-**

THE END