

**SYLLABUS FOR WRITTEN EXAMINATION FOR THE POST OF
TECHNICIAN-III/TL IN PAY BAND Rs.5200-20200 + GP:Rs.1900/-AGAINST
25% LDCE QUOTA IN ELECTRICAL (GS) DEPARTMENT ON SC DIVISION.**

01. Able to read/write English/Hindi letters, numerals and metric scales.
02. Able to read a foot-rule, Hydrometer, Voltmeter, Ammeter, Multimeter and other meters connected to his job for measurement of DC & AC voltages, currents, power, power factor, etc.
03. Principles about various symbols used in Electrical Circuits and Panel Boards.
04. Principles for use of care and maintenance of servicing tools, measuring instruments and gauges pertaining to his trade.
05. Principles of various electrical parameters like current, voltage, wattage, resistance, capacitance, etc. and their measuring units.
6. Types, sizes and current carrying capacity of various wires and fuses and be conversant with the use of switches, plugs, fuses, primary and secondary cells.
7. Principles of secondary cells, charging/discharging methods and testing procedures of various types of secondary cells.
8. Principles to use the common hand tools and equipments pertaining to his trade.
9. Drawing and make simple wiring diagrams in connection with his work.
10. Principles of repairing and maintenance of carriage fans, lights and fittings(FTL/IC) TL alternators and RRU/ERRU and other equipments/switch gears, existing in coaches connected with his job.
11. Principles of about safety checks to be conducted on Axle Pulley, suspension of alternators, earthing in coaches, etc.
12. The rules and regulations regarding artificial respiration.
13. Principles of DC & AC coach wiring used in coaches and also HB/SG type non-AC coaches like pantry cars, GS and SCN coaches and their wiring layout.
14. General knowledge of single phase motors used in fans, fridge/deep fridge, etc.
15. Must be able to identify coach wiring faults, earth leakage using test lamps, etc.
16. Must know about official language policy of Indian Government and use of Hindi in official correspondence.
17. Must be able to read Hindi words and small sentences used in Log Books and instructions given on the TL equipments.
18. Must know leave rules, pass rules, etc.

x

M. J. [Signature]
Sr. DEE(M)SC

वरिष्ठ मंडल विद्युत इंजीनियर (अनुरक्षण)
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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) Sulphuric acid and demineralized/distilled water
 - d) None of the above

2. When cell is fully charged, the positive plate becomes [a]
 - a) Lead peroxide
 - b) Spongy lead
 - c) Lead sulphate
 - d) None

3. When the lead acid cell is fully charged the negative plate becomes [c]
 - a) Lead peroxide
 - b) Spongy lead
 - c) Lead sulphate
 - d) None

4. The capacity of cell is measured in [a]
 - a) Ampere hour
 - b) Watt hour
 - c) Amperes
 - d) Watts

5. Internal resistance of lead acid cell is mainly due to [d]
 - a) Size of plates
 - b) Distance between the plates.
 - c) Nature of electrolyte
 - d) All the above

6. Trickle charging of storage battery help to [a]
 - a) Compensate for internal losses
 - b) Maintains proper electrolyte
 - c) Increase its capacity
 - d) None

7. The capacity of Battery used in 110V T.L system [a]
 - a) 120AH
 - b) 210Ah
 - c) 320Ah
 - d) 90AH

8. SPGR of fully charged cell [a]
 - a) 1.220
 - b) 1.180
 - c) 1.140
 - d) 1.100

9. SPGR of half charged cell [a]
 - a) 1.210
 - b) 1.175
 - c) 1.100
 - d) 1.140

10. SPGR of fully discharged cell is [d]
 - a) 1.210
 - b) 1.175
 - c) 1.200
 - 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 aposition. [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 c) Micro mhos/cm
b) Watt 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) Nickle iron battery
 - c) Nickle 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
36. When fully charged lead acid cell is discharged, the positive and negative plates becomes [c]
- a) Lead peroxide
 - b) Spongy lead
 - c) Lead sulphate
 - d) None
37. When the lead acid cell is recharged the specific gravity of the electrolyte [a]
- a) Increases
 - b) Decreases
 - c) As it is
 - d) None
38. Battery capacity depends upon [d]
- a) Size and no. of plates
 - b) Quantity of active material present
 - c) Quantity of electrolyte
 - d) All the above
39. The capacity of battery is expressed in terms of [b]
- a) Current rating
 - b) AH rating
 - c) Voltage rating
 - d) VH rating
40. The number of positive plates in a secondary cell is always less than the negative plates by [a]
- a) 1
 - b) 2
 - c) 3
 - d) None
41. Normal charge of battery is [a]
- a) $1/10^{\text{th}}$ of the rated capacity of the battery
 - b) $1/20^{\text{th}}$ of the rated capacity of the battery
 - c) $1/5^{\text{th}}$ of the rated capacity of the battery
 - d) $1/30^{\text{th}}$ of the rated capacity of the battery
42. Initial charge of the battery is [c]
- a) $1/10^{\text{th}}$ of the rated capacity of the battery
 - b) $1/20^{\text{th}}$ of the rated capacity of the battery
 - c) $1/30^{\text{th}}$ of the rated capacity of the battery
 - d) $1/5^{\text{th}}$ of the rated capacity of the battery
43. Batteries are provided in Train coach to provide [a]
- a) Amenities to public such as lights and fans
 - b) Separate excitation of alternator field
 - c) Self excitation of alternator field
 - d) None of the above
44. The capacity of Battery used in 110V T.L system [a]
- a) 120 AH
 - b) 210 AH
 - c) 320 AH
 - d) 90 Ah
45. Number of mono block batteries used in 110 V TL systems [a]
- a) 18
 - b) 12
 - c) 24
 - d) 9
46. Over charge results in [d]

- a) Higher temperature of electrolyte
c) Oxidation of the separators and loss of water
- b) Corrosion of plates
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. Inverters convert [b]
a) AC into DC
b) DC into AC
c) Both a & b
d) None
55. In 25 KVA inverter the 3 phase AC supply is achieved by boosting DC [b]
voltage 100/140 volts into
a) 230V DC
b) 650V DC
c) 415V DC
d) None
56. Out put PWM voltage of inverter section of 25 KVA inverter of RMPU AC coach is [d]
a) 650VDC
b) 220VDC
c) 24V DC
d) 3 phase 415 V AC
57. 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

58. Both field winding and 3 phase winding of AC coach alternator 120V are provided on _____ [a]
a) Stator c) Both a and b
b) Rotor d) None
59. TL/AC coach alternator 120V designed to have _____ [a]
a) Residual magnetism c) Both a and b
b) Permanent magnetism d) None of the above
60. Recommended Cut in speed of 4.5 KW TL alternator is by RDSO with MA RR unit _____ [a]
a) 357 rpm c) 1100 rpm
b) 600 rpm d) 2500 rpm
61. Minimum speed for full output of 4.5 KW 120V TL alternator, recommended by RDSO is _____ [b]
a) 357 rpm c) 1500 rpm
b) 600 rpm d) 2500 rpm
62. Maximum speed of TL/AC coach alternator is _____ [d]
a) 400 rpm c) 1500 rpm
b) 800 rpm d) 2500 rpm
63. Field coils of 120V TL/AC coach alternator are connected in _____ [a]
a) Series c) Star
b) Parallel d) Delta
64. Three phase windings of 120V TL/AC coach alternator are connected in _____ [a]
a) Star c) Series
b) Delta d) Parallel
65. Size of V belts used for driving 110V 4.5KW TL alternators _____ [a]
a) C122 c) C124
b) C118 d) None
66. Size of V belt used for driving 110V, 18, 22.5KW AC coach Alternators _____ [a]
a) C122 c) C124
b) C118 d) None
67. Number of V belts used for driving 110V 4.5KW TL alternator is _____ [a]
a) 4 c) 12
b) 6 d) None
68. Number of V belts used for driving 110V 18KW & 25KW AC alternator is _____ [c]
a) 4 c) 12
b) 6 d) None
69. DC output voltage of Alternator /Regulator of 110V TL/AC coach is _____ [a]

- a) (110-140) DC
b) (70-90) DC
- c) (90-120) DC
d) None
70. Rated DC output current of 4.5KW 110V Alternator is _____ [a]
a) 37.5A
b) 19A
c) 43A
d) None
71. Rated DC output current of 18KW 110V Alternator is _____ [c]
a) 193A
b) 175A
c) 135A
d) None
72. Rated DC output current of 25KW 110V Alternator is _____ [a]
a) 193A
b) 175A
c) 135A
d) None
73. Pitch circle diameter of Axle pulley of 110V TL system [c]
a) 200mm
b) 140mm
c) 572.6mm
d) None
74. Pitch circle diameter of Axle pulley of 110V AC coach system [a]
a) 200mm
b) 584mm
c) 572.6mm
d) None
75. As per the latest SMI, the voltage setting of alternator 4.5KW 110V for passenger train with flooded batteries is _____ [c]
a) 127V DC
b) 124V DC
c) 128.5V DC
d) None
76. As per the latest SMI, the voltage setting of ac alternator 18KW 110V with flooded batteries is _____ [c]
a) 129V DC
b) 124V DC
c) 128V DC
d) None
77. 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
b) 128.5+/-0.5V DC
c) 121+/-0.5V DC
d) None
78. 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
b) 128.5+/-0.5V DC
c) 121+/-0.5V DC
d) None
79. 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
b) 128.5+/-0.5V DC
c) 121+/-0.5V DC
d) None

80. 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 c) 126+/-0.5V DC
b) 127+/-0.5V DC d) None
81. 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
82. 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 c) 126+/-0.5V DC
b) 127+/-0.5V DC d) None
83. 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
84. The capacity of alternator used for BG coach 110V Train Lighting system. [b]
a) 3KW c) 12KW
b) 4.5KW d) None
85. The capacity of alternator used for BG coach 110V roof mounted AC coach [c]
a) 12KW c) 25KW
b) 18KW d) None
86. The capacity of alternator used for BG coach 110V under slung AC coach. [c]
a) 25KW c) 18KW
b) 12KW d) None
87. 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
88. 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
89. 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

90. 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
91. The insulation material recommended for alternator windings of 4.5 KW 110V shall be _____ class. [c]
- a) A
 - b) B
 - c) F
 - d) None
92. 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) ¼ rated capacity of the alt as load at 1000 RPM
 - c) Full rated capacity of alt as load at 2550 RPM
 - d) None
93. While measuring insulation resistance of 110V alternator/rectifier cum regulator the rating of megger is to be used is [b]
- a) 100V DC megger
 - b) 500V DC megger
 - c) Both a and b
 - d) None
94. 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
95. The field resistance of 25KW KEL alternator about [a]
- a) 9.7568 ohms
 - b) 8+/-0.5 ohms
 - c) 10.72 ohms
 - d) None
96. 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
97. Codal life of 4.5, 18, 22.75 & 25 KW alternator / RR unit [a]
- a) 12 years
 - b) 25 years
 - c) 15 years
 - d) None
98. Codal life of 120 AH VRLA Battery [b]
- a) 5 years
 - b) 4 years
 - c) 3 years
 - d) None
99. Codal life of 120 AH Flooded Battery [b]
- a) 5 years
 - b) 4 years

- c) 3 years
d) None
100. Codal life of Battery charger [a]
a) 12 years
b) 15 years
c) 25 years
d) None
101. Codal life of Coach wiring [b]
a) 12 years
b) 15 years
c) 20 years
d) None
102. Codal life of Carriage fans [a]
a) 10 years
b) 12 years
c) 15 years
d) None
103. 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
b) 240 mm
c) 145 mm
d) None
104. 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
b) 240 mm
c) 145 mm
d) None
105. 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
b) 240 mm
c) 145 mm
d) None
106. 'V' belt dropping/smoking/burning due to mechanical failure [c]
a) Brake block jamming
b) Guide cups of damper's have dropped
c) Both a and b
d) None
107. 'V' belt dropping/smoking/burning due to electrical failure [d]
a) Load on Alt is heavy
b) Wrong alignment
c) Loose/excessive tension
d) All of the above
108. The minimum insulation resistance to be maintained for 4.5KW alternator is [c]
a) 1 Mega ohm
b) 2 Mega ohm
c) 20 Mega ohm
d) None
109. The minimum insulation resistance to be maintained for 18 & 25 KW alternators [a]
a) 20 mega ohm
b) 2 Mega ohm
c) 5 Mega ohm
d) None
110. No. of ET's used in 25 KW RR Unit MA type [c]

- a) 2
b) 1
- c) Zero
d) None

111.No. of MA's used in 25 KW MA type RR Unit

[a]

- a) 2
b) 1
- c) Zero
d) None

112.Width of grooved axle pulley of 4.5KW alternator is

[]

- a) 200mm
b) 190mm
- c) 136mm
d) None

113.Width of grooved axle pulley of 18 and 25 KW alternator is

[]

- a) 200 mm
b) 190 mm
- c) 136 mm
d) None

114.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

115.Residual magnetism lost in the alternator core the reason is

[c]

- a) Field polarity changed
b) Alternator is in idle condition for long time
- c) Both a and b
d) None of the above

116.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%
b) 10%
c) 15%
d) None

117.ERRU stands for

[a]

- a) Electronic Rectifier cum Regulator Unit
b) Electromagnetic Rectifier cum Regulator unit
c) Electrostatic Rectifier cum Regulator Unit
d) None

118.IGBT stands for

[a]

- a) Insulated Gate Bipolar Transistor
- b) Injection Gate Bipolar Transistor
- c) Indicator gate Bipolar Transistor
- d) None

119.IGBT is

[a]

- a) Fast switching device
- b) Slow switching device
- c) Very fast switching device
- d) None

120.The size of capacity of fuses to be provided for 25kW ERRU in phase circuit

[c]

- a) 160A
- b) 200A
- c) 220A
- d) None

121.UVC used in ERRU must be

[c]

- a) Suitable to work with all capacities
- b) Suitable to work with all makes
- c) Both a and b
- d) None

122.The battery charging current limit with 4.5kW ERRU is to be set at

[a]

- a) 24A +/-2A
- b) 12A +/- 2A
- c) 36A +/- 2A
- d) None

123.TL alternator 4.5 KW 130 V is_____

[a]

- a) 4 V belts drive machine
- b) 6 V belts drive machine
- c) 12 V belts drive machine
- d) None of the above

124.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

125. 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
126. 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
127. 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
128. Field coils of 120V TL/AC coach alternator are connected in [a]
a) Series b) Parallel c) Star d) Delta
129. Three phase windings of 120V TL/AC coach alternator are connected in [a]
a) Star b) Delta c) Series d) Parallel
130. Field coils of TL coach alternators are located on [a]
a) Stator b) Rotor c) Both a and b d) None
131. 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
132. Size of V belts used for driving 110V 4.5 kw TL alternators [a]
a) C122 b) C118 c) C124 d) None
133. Number of V belts used for driving 110 V 4.5 kw TL alternator is [a]
a) 4 b) 6 c) 12 d) None
134. Numbers of alternator pulleys are available on 4.5 kw TL Alternator. [a]
a) 1 b) 2 c) 3 d) None
135. Numbers of Alternators pulleys are available on BG AC coach Alternator. [b]
a) 1 b) 2 c) 3 d) None
136. Residual magnetism retains in _____ [b]

- a) Rotor core b) Stator Core c) Rotor teeth d) None
137. 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
- 138.3 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
139. 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
140. 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
141. Rated DC output current of 4.5kw 110v Alternator is [a]
a) 37.5A b) 19A c) 43A d) None
142. Rated DC output current of 3kw 110v Alternator is [b]
a) 37.5A b) 19A c) 43A d) None
143. Rated DC output current of 25kw 110v Alternator is [a]
a) 193A b) 175A c) 135A d) None
144. Pitch circle diameter of Axle pulley of 110v TL system [c]
a) 200mm b) 140mm c) 572.6mm d) None
145. Pitch circle diameter of Axle pulley of 110v AC coach system [c]
a) 200mm b) 140mm c) 572.6mm d) None
146. As per the latest SMI, the voltage setting of alternator 4.5kw 110v for Express/ mail trains with flooded batteries is [a]
Express/ mail trains with flooded batteries is _____
a) 128.5v DC b) 124v DC c) 122v DC d) 120v DC
147. 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

148. 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
149. 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
150. The capacity of alternators are used for BG coach 110v Train Lighting system. [b]
- a) 3kw
 - b) 4.5kw
 - c) 12kw
 - d) None
151. The capacity of alternators are used for BG 110v-roof-mounted AC coach [c]
- a) 3kw
 - b) 18kw
 - c) 25kw
 - d) None
152. Number of Alternators are provided for AC sleeper, AC chair car, AC composite coach [b]
- a) 1
 - b) 2
 - c) 3
 - d) None
153. The AC winding/ Main winding of TL/AC coach alternator has _____ phase winding [c]
- a) Single
 - b) Double
 - c) Three
 - d) None
154. 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
155. NU 311 bearing is [a]
- a) Roller bearing
 - b) Ball bearing
 - c) Both a and b
 - d) None
156. 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

157. 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

158. Generally the voltage setting of the alternator is to be set at _____ [b]
At 1500rpm

- a) Full rated current
- b) Half rated current
- c) 2/3rd rated current
- d) None

159. 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

160. The mating of pulley with shaft of TL/AC alternator shall be [a]

- a) 80%
- b) 70%
- c) 60%
- d) 50%

161. The cleat of alternator is to be made of [a]

- a) Fibre glass in forced fire retardant DNC
- b) Bakelite
- c) Phenolic
- d) None

162. 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

163. Type of suspension bushes to be used while mounting alternators as per latest RDSO instructions are [b]

- a) Cast Nylon
- b) Nylon 66
- c) MS
- d) None

164. The insulation resistance of alternator when measured with megger the IR value should not be less than [a]

- a) 20 mega ohms
- b) 5 mega ohms
- c) both a and b
- d) None

165. In case of over voltage in 4.5kw 120v RR unit, the tripping voltage of relay may be set at [a]
a) 145+/-2 b) 150+/-2 c) 135+/-2 d) None
166. The number of safety chains provided for 18kw and 25kw alternator [b]
a) 2 b) 3 c) 4 d) None
167. The cut in speed of 25kw alternator is not more than [b]
a) 400rpm b) 600rpm c) 800rpm d) None
168. The MFO of 25 kw alternator is not more than [c]
a) 400rpm b) 600rpm c) 800rpm d) None
169. 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
170. To prevent breakage of shaft during service the following test should be Done as per RDSO SMI [a]
a) Non destruction dye-penetrant test
b) Shock pulse meter test
c) Ultrasonic test
d) None
171. 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
172. Before lifting coach body, the following electrical items as to be removed, otherwise coach body will not separate from trolley [d]
a) Belt tensioning mechanism d) all of the above
b) V Belts
c) Alternator cables
173. 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
174. 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
175. Field resistance of 25 kw alternator [a]
a) 9.75 ohms b) 4.5 ohms c) 10 ohms d) none

176. Codal life of 120 AH VRLA battery [b]
a) 5 yrs b)4 yrs c)3 yrs d) None
177. Codal life of 120 AH Flooded battery [b]
a) 5 yrs b)4 yrs c)3 yrs d) None
178. Codal life of Battery charger [a]
a) 12 yrs b)15 yrs c)25 yrs d) None
179. Codal life of coach wiring [b]
a) 12 yrs b)15 yrs c)20 yrs d) None
180. Voltage regulation of alternator with ERRU for all capacities of alternator. [c]
a) +/-5% b)+/-3% c)+/-2% d) None
181. Voltage ripples of output supply with ERRU should be less than [a]
a) 2% b)5% c)15% d)none
182. ISO pack power diode modulars are used for converting [a]
a) AC to DC b) DC to AC c) both A&B d) none
183. 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
184. The ERRU shall have the following protection [d]
a) a) Over voltage/surge protection b) DC output short circuit protection
b) Over charging current limit protection d) all of the above
185. UVC used in ERRU must be [c]
a) Suitable to work with all capacities b) suitable to work all makes
c) Both A&B d) none
186. The over voltage setting of OVP with ERRU should be set at [a]
a)140-145V b)125-130V c)135-140V d)none
187. 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

188. 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
189. OVP provided with ERRU shall latch before output voltage reaches to [c]
a) 145V b) 150V c) 135V+/-2V d) none
190. Hall senses are used to sense [c]
a) Total alternator load current b) battery charging current
c) both A&B d) none
191. 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
192. PWM stands for [a]
a) Pulse width modulation b) phase width modulation
c) both A&B d) none
193. EEPROM stands for [a]
a) Electrically erasable programmable read only memory
b) Electronically erasable programmable read only memory
c) Both A&B
d) None
194. Air delivery of fan can be measured by [a]
a) anemometer b)ammeter c) lux meter d) none
195. When insulation resistance test is carried out on railway carriage fan it's insulation resistance should not be less than [a]
a)20mega ohms b)10mega ohms c)2mega ohms d)none
196. The wattage of 110V DC 400mm sweep RC fan is [a]
a)32w b)25w c)19W d)none
197. The wattage of 110V DC 300mm RC fan is [b]
a)32w b)25w c)19W d)none

- c) Vibration of batteries
d) all of the above
209. 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
210. 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
211. The total number of V belts provided to the drive TL alternator 4.5KW are [a]
a) 4 b)6 c)2 d)3
212. The train lighting wiring is [d]
a) two wire earthed system b) two wire unearthed system
c) one wire earthed system d)none of the above
213. The insulation resistance of 110V coach when measured with 500V Megger during healthy weather condition [d]
a) 2mega ohms b) 1 mega ohms c)3 mega ohms d)0.5 mega ohms
214. 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
215. 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
216. 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
217. Double test lamps are connected in [a]
a)series b) parallel c) both a&b d)none

218. 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
219. When double test lamp is connected to EFTB, red lead lamp does not glow and blue lead lamp glows then coach is [b]
a) healthy b)having positive earth c)having negative earth d) both B&C
220. The insulation resistance of coach is to be measured with [a]
a) megger b)ohm meter c)continuity meter d)none
221. The instrument used to measure the current without disturbing the circuit is [a]
a) tong tester b) tacho meter c) photo meter d)none
222. Voltmeter is to be connected to the circuit in [a]
a)parallel b)series c)series and parallel d)none
223. Ammeter is to be connected to the circuit in [b]
a)parallel b)series c)series and parallel d)none
224. While measuring the earth leakages by double test lamp, lamps should have [a]
a) same wattage b) different wattage c)any wattage d)none
225. 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
226. 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
227. Cables used for wiring in coaches should have [a]

- a) minimum joints b) five joints c) maximum joints d) none

228. The level of illumination will be measured by [c]
a) photo meter b) lux meter c) both A&B d) none

229. 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

230. 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

251. 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

252. An electrolyte used in train lighting cell is the mixture of (c)
a. Sulphuric acid and tap water b. Sulphuric acid and mineral water
c. Sulphuric acid and de ionalized/distilled waterd. d. None of the above

253. The specific gravity of the concentrated sulphuric acid is (a)
a. 1.840 b. 1.200 c. 1.220 d. 1.180

254. The specific gravity of the electrolyte used in TL cells is (b)
a. 1.800 b. 1.200 c. 1.100 d. 1.180

255. The positive plate of lead acid cell is made of (a)
a. Lead peroxide b. Spongy lead c. Lead sulphate d. None

256. 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

257. When the lead acid cell is fully discharged, the positive plate becomes (c)
a. Lead peroxide b. Spongy lead c. Lead sulphate d. None

258. When fully charged lead acid cell is discharged, the positive and negative plates becomes (c)
a. Lead peroxide b. Spongy lead c. Lead sulphate d. None
259. When the lead acid cell is recharged, the specific gravity of the electrolyte (a)
a. Increases b. Decreases c. As it is d. None
260. The capacity of cell is measured in (a)
a. Ampere hour b. Watt hour c. Amperes d. Watts
261. Battery capacity depends upon (d)
a. Size and number of plates present b. Quantity of active material
c. Quantity of electrolyte d. All the above
262. The capacity of battery is expressed in terms of (b)
a. Current rating b. AH Rating c. Voltage Rating d. VH Rating
263. The number of positive plates in secondary cell is always less than the negative plate by (a)
a. 1 b. 2 c. 3 d. None
264. Trickle charging of storage battery helps to (a)
a. Compensate for internal losses b. Maintains proper electrolyte
c. Increase its capacity d. None
265. Normal charge of battery is (a)
a. $1/10^{\text{th}}$ of the rated capacity of the battery b. $1/20^{\text{th}}$ rated capacity of the battery
c. $1/5^{\text{th}}$ of the rated capacity of the battery d. $1/30^{\text{th}}$ rated capacity of the battery
266. Initial charge of battery is (c)
a. $1/10^{\text{th}}$ of the rated capacity of the battery b. $1/20^{\text{th}}$ rated capacity of the battery
c. $1/5^{\text{th}}$ of the rated capacity of the battery d. $1/30^{\text{th}}$ rated capacity of the battery
267. Batteries are provided in train coach to provide (a)
a. Amenities to public such as lights and fans field b. Separate excitation of alternator

c. Self excitation of alternator field

d. None of the above

268. The capacity of Battery used in 110V T.L. system

a. 120AH

b. 210AH

c. 320AH

(a)
d. 90AH

269. Number of mono block batteries used in 110 V TL system

a. 18

b. 12

c. 24

(a)
d. 9

270. SPGR of fully charged cell

a. 1.220

b. 1.180

c. 1.140

(a)

d. 1.100

271. Sulphation occurs due to

a. Cells kept under discharged condition

b. Cells kept under not fully charged

c. Cells over charged

d. All the above

(d)

272. Over charged results in

a. Irreversible Sulphation

b. Reversal of cells

c. Loss of the capacity

d. All the above

(d)

273. Reverse polarity is mainly due to

a. Deep discharge

b. RR unit setting is high

c. Battery kept in fully charged condition

d. None

(a)

274. Excessive gasing and high SPGR.

a. Alternator/Regulator setting high

b. Alternator/Regulator setting low

c. Lack of electrolyte

d. None

(a)

275. Hydrometer used in TL system is

a. Syringe type hydrometer

b. Suction hydrometer

c. Both (a) and (b)

d. None of the above

(a)

276. If water consumption in particular cell is more due to

a. Hermetically sealed joint leak

b. Higher charging current

c. Celluloid

d. All the above

(d)

- a) Residual magnetism
b) Permanent magnetism
c) Both a and b
d) None of the above
290. 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
291. Minimum speed for full output of 4.5 KW 120V TL alternator, recommended by RDSO is (c)
a) 357 rpm
b) 1500 rpm
c) 600 rpm
d) 2500 rpm
292. Maximum speed of TL/AC coach alternator is (d)
a) 400 rpm
b) 800 rpm
c) 1500 rpm
d) 2500 rpm
293. Field coils of 120V TL/AC coach alternator are connected in (a)
a) Series
b) Parallel
c) Star
d) Delta
294. Three phase windings of 120V TL/AC coach alternator are connected in (a)
a) Star
b) Delta
c) Series
d) Parallel
295. Size of V belts used for driving 110V, 4.5KW TL alternators (a)
a) C122
b) C118
c) C124
d) None
296. Size of V belt used for driving 110V, 18, 22.5KW AC coach Alternators (a)
a) C122
b) C118
c) C124
d) None
297. Number of V belts used for driving 110V, 4.5KW TL alternator is (a)
a) 4
b) 6
c) 12
d) None
298. Number of V belts used for driving 110V, 18, 22.5, 25KW AC alternator is (c)
a) 4
b) 6
c) 12
d) None
299. DC output volatge of Alternator /Regulator of 110V, TL/AC coach is (a)
a) (110-140) DC
b) (70-90) DC
c) (90-120) DC
d) None
300. Rated DC output current of 4.5KW 110V, Alternator is (a)
a) 37.5A
b) 19A
c) 43A
d) None
301. Rated DC output current of 18KW 110V Alternator is (c)

- a) 193A
b) 175A
- c) 135A
d) None
302. Rated DC output current of 25KW 110V Alternator is (a)
a) 193A
b) 175A
c) 135A
d) None
303. Pitch circle diameter of Axle pulley of 110V TL system (c)
a) 200mm
b) 140mm
c) 572.6mm
d) None
304. Pitch circle diameter of Axle pulley of 110V AC coach system (c)
a) 200mm
b) 584mm
c) 572.6mm
d) None
305. As per the latest SMI, the voltage setting of alternator 4.5KW 110V for passenger train with flooded batteries is (b)
a) 127V DC
b) 124V DC
c) 122V DC
d) None
306. As per the latest SMI, the voltage setting of ac alternator 18KW 110V with flooded batteries is (a)
a) 129V DC
b) 124V DC
c) 122V DC
d) None
307. 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
b) 124+/-0.5V DC
c) 121+/-0.5V DC
d) None
308. As per the latest SMI _____ the voltage setting of alternator 4.5KW 110V for mail/express trains with VRLA batteries is (a)
a) 123+/-0.5V DC
b) 124+/-0.5V DC
c) 121+/-0.5V DC
d) None
309. As per the latest SMI the voltage setting of alternator 4.5KW 110V for super fast trains with VRLA batteries is (c)
a) 123+/-0.5V DC
b) 124+/-0.5V DC
c) 121+/-0.5V DC
d) None
310. 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

311. As per the latest SMI the voltage setting of AC coach alternator 110V for Mail/express train with VRLA batteries is (a)
- a) 128 \pm 0.5V DC
 - b) 127 \pm 0.5V DC
 - c) 126 \pm 0.5V DC
 - d) None
312. As per the latest SMI the voltage setting of AC coach alternator 110V for super fast train with VRLA batteries is (a)
- a) 128 \pm 0.5V DC
 - b) 127 \pm 0.5V DC
 - c) 126 \pm 0.5V DC
 - d) None
313. 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
314. The capacity of alternator used for BG coach 110V Train Lighting system. (b)
- a) 3KW
 - b) 4.5KW
 - c) 12KW
 - d) None
315. The capacity of alternator used for BG coach 110V roof mounted AC coach (c)
- a) 12KW
 - b) 18KW
 - c) 25KW
 - d) None
316. The capacity of alternator used for BG coach 110V under slung AC coach. (c)
- a) 25KW
 - b) 12KW
 - c) 18KW
 - d) None
317. The PCD (pitch circle diameter) of 25KW 110V alternator pulleys is (b)
- a) 584mm \pm 0.4mm
 - b) 200 \pm 0.3
 - c) 100 mm
 - d) None
318. The field resistance of 4.5KW 110V TL alternator has (a)
- a) 4.5 \pm 0.5 ohms
 - b) 6.0 \pm 0.5 ohms
 - c) 10 \pm 0.5 ohms
 - d) None
319. The resistance between two phases of 4.5KW 110V TL alternator is (a)
- a) 0.4 \pm 0.05 ohms
 - b) 0.8 \pm 0.10 ohms
 - c) 4.5 \pm 0.5 ohms
 - d) None
320. 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

321. The insulation material recommended for alternator windings of 3&4.5 KW 110V shall be _____ class. (c)
- a) A c) F
b) B d) None
322. 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) ¼ rated capacity of the alt as load at 1000 RPM
c) Full rated capacity of alt as load at 2550 RPM
323. 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
324. The resistance between two phase of 25KW KEL alternator is about (a)
- a) 0.0530746 ohms c) 44.2 mille ohms
b) 0.034 to 0.038 d) None
325. The field resistance of 25KW KEL alternator about (a)
- a) 9.7568 ohms c) 10.72 ohms
b) 8+/-0.5 ohms d) None
326. The gap between two halves of axle pulley to be maintained is (a)
- a) 3.0 +/-0.5 mm c) 4mm +/- 0.5 mm
b) 6mm +/- 0.5 mm d) None
327. 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
328. Codal life of 120 AH VRLA Battery (b)
- a) 5 years c) 3 years
b) 4 years d) None
329. Codal life of 120 AH Flooded Battery (b)
- a) 5 years c) 3 years
b) 4 years d) None
330. Codal life of Battery charger (b)
- a) 12 years c) 25 years
b) 15 years d) None
331. Codal life of Coach wiring (b)
- a) 12 years c) 20 years
b) 15 years d) None

332. Coidal life of Carriage fans (b)
- a) 10 years
 - b) 12 years
 - c) 15 years
 - d) None
333. 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
 - b) 240 mm
 - c) 145 mm
 - d) None
334. 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
 - b) 240 mm
 - c) 145 mm
 - d) None
335. 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
 - b) 240 mm
 - c) 145 mm
 - d) None
336. 'V' belt dropping/smoking/burning due to mechanical failure (c)
- a) Brake block jamming
 - b) Guide cups of damper's have dropped
 - c) Both a and b
 - d) None
337. 'V' belt dropping/smoking/burning due to electrical failure (d)
- a) Load on Alt is heavy
 - b) Wrong alignment
 - c) Loose/excessive tension
 - d) All of the above
338. The minimum insulation resistance to be maintained for 4.5KW alternator is. (b)
- a) 1 Mega ohm
 - b) 2 Mega ohm
 - c) 20 Mega ohm
 - d) None
339. The minimum insulation resistance to be maintained for 18, 22.75 & 25 KW alternators (b)
- a) 20 mega ohm
 - b) 2 Mega ohm
 - c) 5 Mega ohm
 - d) None
340. No. of ET's used in 25 KW RR Unit MA type (c)
- a) 2
 - b) 1
 - c) Zero
 - d) None
341. No. of MA's used in 25 KW MA type RR Unit (a)
- a) 2
 - b) 1
 - c) Zero
 - d) None
342. Width of grooved axle pulley of 4.5KW alternator is (a)
- a) 200mm
 - b) 190mm
 - c) 136mm
 - d) None

343. Width of grooved axle pulley of 18, 22.5, 25 kW alternator is (a)
a) 200 mm c) 136 mm
b) 190 mm d) None
344. 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 c) MS bushes
b) Nylon 66 bushes d) All of the above
345. 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
346. 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 (a)
a) 5% c) 15%
b) 10% d) None
347. ERRU stands for (a)
a) Electronic Rectifier cum Regulator Unit
b) Electro magnetic Rectifier cum Regulator unit
c) Electrostatic Rectifier cum Regulator Unit
d) None
348. IGBT stands for (a)
a) Insulated Gate By polar Transistor c) Indicator gate By polar Transistor
b) Injection Gate By polar Transistor d) None
349. IGBT is (a)
a) Fast switching device c) Very fast switching device
b) Slow switching device d) None
350. The size of capacity of fuses to be provided for 25kW ERRU in pahse circuit (a)
a) 160A c) 220A
b) 200A d) None
351. UVC used in ERRU must be (a)
a) Suitable to work with all capacities
b) Suitable to work with all makes
c) Both a and b
d) None
352. The battery charging current limit with 4.5kW ERRU is to be set at (a)
a) 24A +/-2A c) 36A +/- 2A
b) 12A +/- 2A d) None

353. 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
354. The battery charging current limit with 18kW ERRU when both alternators are paralleled is to be set at (a)
- a. 80A
 - b. 160A
 - c. 240A
 - d. None
355. OVP provided with ERRU, shall latch before output voltage reaches to (a)
- a. Surge voltage
 - b. Over voltage
 - c. Both a and b
 - d. None
356. The rating of field fuse provided in HMTD ERRU (a)
- a. 10A
 - b. 20A
 - c. 15A
 - d. None
357. Matched set of 'V' Belts means (b)
- a) One belt drive
 - b) More than one belt drive length with in specified limits
 - c) More than one belt drive length not in specified limits
 - d) None of the above
358. Number of V Belts required for SG non AC coach of TL alternator (b)
- a) 3
 - b) 4
 - c) 2
 - d) None
359. The cross section of V belt is shaped roughly like (a)
- a) Isosceles Trapezium
 - b) Rectangle
 - c) Square
 - d) None
360. The gauge used for checking groove angle of axle and alternator pulley is (b)
- a) No go & go gauge
 - b) Pitch length gauge
 - c) Section gauge
 - d) None
361. The gauge used for checking pitch length of V belt is (b)
- a) No go & go gauge
 - b) Pitch length gauge
 - c) Section gauge
 - d) None
362. Capacity of Alternator of Train lighting 110V DC BG coach (b)
- a) 3KW
 - b) 4.5KW
 - c) 25KW
 - d) 18KW
363. 3 phase Bridge rectifier in R.R. box converts (a)
- a) AC to DC
 - b) DC to AC
 - c) Pulsating AC
 - d) None

364. Regulator controls

(e)

- a) Field voltages
- b) Field currents
- c) DC output voltage
- d) DC output current

365. Capacity of Phase fuse provided in 4.5kW R.R.Box

(a)

- a) 35A HRC
- b) 16A HRC
- c) 6A HRC
- d) 10A HRC

366. Capacity of Field fuse provided in the 4.5kW Rectifier cum Regulator box

(b)

- a) 35A HRC
- b) 6A HRC
- c) 16 HRC
- d) 10A HRC

367. Capacity of HRC fuse provided for negative circuit in Rotary junction box excluding alarm chain pulling indication light circuit.

(a)

- a) 35A HRC
- b) 16A HRC
- c) 6A HRC
- d) 10A HRC

368. Capacity of HRC fuses provided for positive circuit in RJB excluding alarm chain pulling indication light circuit.

(d)

- a) 16A HRC
- b) 35A HRC
- c) 10A HRC
- d) 6A HRC

369. Capacity of Limit switch provided for Alarm chain pulling indication light circuit is

(b)

- a) 10A
- b) 15A
- c) 35A
- d) 40A

370. Positive and Negative cables in roof run through on either side of coach to avoid.

(c)

- a) Earth leakages
- b) Over loads
- c) Short circuits
- d) None

371. Recommended level of minimum illumination to be attained in Second class compartment with F.T Fittings. (c)
- a) 30Lux
 - b) 40Lux
 - c) 16Lux
 - d) 60Lux
372. Recommended size of Aluminium cables for B +ve and B -ve in 110V coaches. (b)
- a) 16sqmm
 - b) 35sqmm
 - c) 4sqmm
 - d) 50sqmm
373. The wattage of TL Fan (a)
- a) 32W
 - b) 10W
 - c) 80W
 - d) 60W
374. The capacity of battery fuse for 110Volt SG TL coach is (a)
- a) 40A HRC
 - b) 16A HRC
 - c) 10A HRC
 - d) 4A HRC
375. 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
376. M.S. Rod/MS Flat provided in the battery boxes after loading cells. The purpose of M.S Rod/MS FLAT is. (d)
- a) Anti theft arrangement
 - b) To strengthen the battery box
 - c) Not to drop batteries on run
 - d) All the above
377. Total number of mono block batteries for one set of 110V TL coach are. (c)
- a) 9
 - b) 12
 - c) 18
 - d) 54
378. The voltage of monoblock battery of 110V coach is (c)
- a) 2V
 - b) 1.5V
 - c) 6V
 - d) 1V
379. Total voltage of one battery set (18 mono blocks or 54 cells) of 110V TL coach. (b)
- a) 24V
 - b) 108V
 - c) 120V
 - d) 110V
380. The insulation resistance of 110V coach when measured with 500V Megger during healthy weather condition. (a)
- a) 2 mega ohms
 - b) 1 mega ohms
 - c) 3 mega ohms
 - d) 0.5 mega ohms
381. The insulation resistance of 110V coach when measured with 500V Megger during adverse weather condition. (b)
- a) 2 mega ohms
 - b) 1 mega ohms
 - c) 3 mega ohms
 - d) None

382. Capacity of Rotary switches provided in Rotary junction box is (a)
a) 40A
b) 16A
c) 10A
d) 15A
383. For the protection of single-phase 1.5 kW motor, a MCB of rating [b]
should be provided.
(a) 10 A (b) 16 A
(c) 32 A (d) 63 A
384. The low power factor results in [a]
(a) Increased losses (b) Decreased losses
(c) No effect on losses (d) Better generating efficiency
385. Low power factor [b]
(a) Aids the voltage regulation (b) Increase the voltage regulation
(c) Decrease the voltage regulation (d) None of the above
386. The power factor of the AC supply can be improved by using [c]
(a) Synchronous generator (b) Universal motor
(c) Synchronous condenser (d) SCR
387. A distribution line of 440 V is classified as [b]
(a) LV (b) MV
(c) HV (d) EHV
388. Which of the following is not used as a overhead conductor [c]
(a) ACSR (b) Weasel
(c) PILCA (d) Zebra
389. Which of the following reduces the power factor [d]
(a) Motor on no load (b) Tube lights
(c) Fans (d) All of the above
390. Under high voltage test cable shall withstand an AC voltage of [b]
(a) 1.5 kV (b) 3 kV
(c) 5.2 kV (d) 7.2 kV
391. Under high voltage test cable shall withstand a DC voltage of [d]
(a) 1.5 kV (b) 3 kV
(c) 5.2 kV (d) 7.2 kV
392. Under water immersion test cable is immersed in a water bath at [c]
(a) 40° C (b) 50° C
(c) 60° C (d) 70° C
393. For water immersion test, cable is immersed in hot water at specified [d]
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
394. Unit of energy is [b]
 (a) Kilo volt hours (b) Kilo watt hours
 (c) Kilo watt (d) None of the above
395. As per Ohm's law [a]
 (a) $V = IR$ (b) $V = I/R$
 (c) $R = V \times I$ (d) None of the above
396. Unit of resistance is [c]
 (a) Ampere (b) Volts
 (c) Ohm (d) none of the above
397. In three phase 415 volts 50 Hz supply, the phase to phase voltage is [b]
 (a) 220 Volts (b) 415 volts
 (c) 440 volts (d) none of the above
398. In three phase 415 volts 50 Hz supply, the phase to neutral voltage is [b]
 (a) 220 volts (b) 230 volts
 (c) 440 volts (d) none of the above
399. In 4 sq. mm PVC wire, 4 sq. mm stand for [c]
 (a) Thickness of wire (b) Length of wire
 (c) The area of thickness of wire (d) none of the above
400. The instrument to measure the light is called [b]
 (a) Tong tester (b) Lux meter
 (c) Micro meter (d) none of the above
401. 10 hours use of 500 watt lamp will consume the energy [c]
 (a) 10 units (b) 20 units
 (c) 5 units meter (d) none of the above
402. No. of poles in MCB/TPN is [b]
 (a) 2 poles (b) 4 poles
 (c) 3 poles meter (d) none of the above
403. A.C. is converted into D.C. by [d]
 (a) Dynamo (b) Motor
 (c) Transformer (d) Rectifier
404. Farad is a unit of [b]
 (a) Flux (b) Capacitance
 (c) Mutual inductance (d) Resistance of a conductor
405. A kilowatt-hour is a unit of [a]
 (a) Energy (b) Electrical potential
 (c) Power (d) Electric current

406. An electric lamp is marked 100 watt. It is working on 200 Volts. [a]
The current through the lamp is given as
(a) 0.5 Amp. (b) 0.2 Amp.
(c) 5.0 Amp. (d) 1.0 Amp.
407. Before carrying out O/H maintenance following is due. [d]
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
408. In house wiring the red wire indicates the. [a]
(a) Phase (b) Neutral
(c) Earth wire (d) Dead wire.
409. In house wiring the black wire indicates the [b]
(a) Phase (b) Neutral
(c) Earth wire (d) Dead wire
410. In house wiring the green wire indicates the. [c]
(a) Phase (b) Neutral
(c) Earth wire (d) Dead wire.
411. In 4 wire electric circuit, the black conductor is used for [b]
(a) Phase (b) Neutral
(c) Earth wire (d) Armour
412. In cabling system the earth is connected with conductor having colour [d]
(a) Red (b) blue
(c) yellow (d) Armour
413. Unit of current is [b]
(a) Watt (b) Ampere
(c) Volt (d) ohm
414. Heater element is made up of [b]
(a) Tin (b) Nichrome
(c) Silver (d) Any above
415. Filament of incandescent lamp is made of [c]
(a) Tin (b) Nichrome
(c) Tungsten (d) Silver
416. An insulator should have [a]
(a) High resistance (b) High conductance
(c) High conductivity (d) All of the above
417. Which of the following is used to make electric connections [d]
(a) Solder (b) PG clamp

- (c) Thimbles (d) All-above
418. Instrument used for measuring the speed of rotating machines/ appliances is [b]
(a) Lux meter (b) Tachometer
(c) Micrometer (d) None above
419. Instrument used for measuring the thickness of wire/strip is [c]
(a) Lux meter (b) Tachometer
(c) Micrometer (d) None above
420. Instrument used for measuring the voltage across a circuit is [b]
(a) Ammeter (b) voltmeter
(c) Thermometer (d) None above
421. Instrument used for measuring the current is [a]
(a) Ammeter (b) voltmeter
(c) Thermometer (d) None above
422. Instrument used for measuring the temperature is [c]
(a) Ammeter (b) voltmeter
(c) Thermometer (d) None above
423. Illumination level is measured in terms of [a]
(a) Lux (b) Volt
(c) Ampere (d) Ohm
424. Insulating resistance is measured by using [b]
(a) Multimeter (b) Insulation Megger
(c) Voltmeter (d) Hydrometer
425. Which of the following is used for rectification of AC supply [a]
(a) Diodes (b) Transistors
(c) Capacitor (d) Resistors
426. Which preparation should be done starting a new wiring [a]
(a) Prepare a wiring diagram (b) Prepare for shock treatment
(c) Both a & b (d) None of the above
427. In wiring circuit the fuse will be placed on [a]
(a) Phase (b) Neutral
(c) Earth (d) Any of the above
428. Which of the following tests should be done before connecting a wiring to the main line. [a]
(a) IR test (b) Continuity test
(c) Polarity test (d) Any above
429. Which of the following is a common wiring fault [d]
(a) Short circuit (b) Open circuit
(c) Fuse blown (d) All above

430. Wattage rating range of electric kettle is [b]
(a) 50-500 W (b) 350-1000 W
(c) 1000-1500 W (d) 1200-1600 W
431. Device used for auto off an electric iron is [a]
(a) Thermostat switch (b) Overload relay
(c) Time delay switch (d) Any of the above
432. Can you repair an immersion rod. [a]
(a) No (b) Yes
(c) It depend on condition (d) None above.
433. A wire gauge is used to measure diameter of [a]
(a) Wire (b) cable
(c) OH conductor (d) Any above
434. To improve the power factor, capacitors are connected in the circuit as [a]
(a) Parallel path (b) Series path
(c) Any of a & b (d) None of the above
435. To switch ON or switch OFF the supply in accordance with day light, following is used [a]
(a) Light dependent resistor (b) Light emitting diode
(c) Any of a & b (d) None of the above
- 436 In order to draw more current from the electric source [a]
(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.
437. If a 60 W and 100 W lamps in series and are connected to a source of supply, which lamp will give more light [b]
(a) 100 W (b) 60 W
(c) Both will give same light (d) None of the bulb will glow.
- 438 Power is defined as [b]
(a) Capacity of doing work (b) Rate of doing work
(c) Product of force and distance (d) Energy dissipated by load.
- 439 Unit of electric Energy is. [c]
(a) Kilowatt (b) watt
(c) Kilowatt hour (d) watt hour
440. The internal resistance of battery is increased by [a]
(a) Increase in no. of cells
(b) Decrease in no. of cells
(c) None of the above
(d) Both a and b

441. A generator converts [c]
(a) Mechanical energy into light
(b) Electrical energy to mechanical energy
(c) Mechanical energy to electrical energy
(d) None of the above
442. Power factor of AC circuit is equal to [c]
(a) Tan of phase angle
(b) Sine of phase angle
(c) Cosine of phase angle
(d) None of the above
443. Resistance of open circuit is equal to [b]
(a) Zero
(b) Infinity
(c) Less than 1 ohm
(d) None above
444. Laminated core is used to reduce [b]
(a) Hysteresis loss
(b) Eddy current loss
(c) Copper loss
(d) iron loss
445. Which of the following is not a non conventional energy source [d]
(a) Solar
(b) Bio gas
(c) Wind
(d) Electricity
446. Solar energy is used for [d]
(a) Lighting
(b) Cooking
(c) Battery charging
(d) All above
447. Solar and wind hybrid system is [a]
(a) Becoming popular
(b) Not possible
(c) Conventional energy source
(d) None of the above
448. Bio gas depends on [b]
(a) Electrical energy
(b) Waste products
(c) Both a and b
(d) None of the above
449. Which of the following is not a constituent of a solar lighting system [d]
(a) Photo voltaic cell
(b) Back up batteries
(c) Charger
(d) Earth wire.
450. Which of the following is not a type of fuse [c]
(a) HRC
(b) Rewirable
(c) Ceramic
(d) None above.
451. Which of the following is not a type of generating station? [d]
(a) Thermal
(b) Nuclear
(c) Hydro
(d) Atmospheric
452. Which of the following is not a part of overhead distribution line [d]
(a) Conductor
(b) Insulator
(c) Cross arms
(d) Thimbles

- 453 Type of insulator not used in a 3 phase, 440 V overhead distribution line [c]
(a) Pin (b) Shackle
(c) Disc (d) None above
- 454 Instrument connected in the circuit with the ammeter (in panel) to facilitate the measurement of current is [a]
(a) Current transformer (b) Potential transformer
(c) Excitation transformer (d) None of the above
- 455 Capacitor opposes [a]
(a) Instantaneous change of voltage (b) Instantaneous change of current
(c) Instantaneous change in resistance (d) None of the above
- 456 Inductor opposes [b]
(a) Instantaneous change of voltage
(b) Instantaneous change of current
(c) Instantaneous change in resistance
(d) None of the above
- 457 Current is [a]
(a) Rate of flow of charge (b) Gradual change in resistance
(c) Linear change in capacitance (d) None of the above.
- 458 When resistances are connected in parallel, the equivalent resistance [a]
(a) Decreases (b) Increases
(c) No change (d) May increase or decrease
- 459 When resistances are connected in series, the equivalent resistance [b]
(a) Decreases (b) Increases
(c) No change (d) May increase or decrease
- 460 Diode allows the flow of the current [a]
(a) In one direction (b) In both the directions
(c) Flow of current not allowed (d) None of the above.
- 461 When capacitances are connected in parallel, the equivalent capacitance [b]
(a) Decreases (b) Increases
(c) no change (d) May increase or decrease
- 462 When capacitances are connected in series, the equivalent capacitance [a]
(a) Decreases (b) Increases
(c) No change (d) May increase or decrease
463. 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]
(a) 1A (b) 2A
(c) 3A (d) 4A

464. A 2 x 40 W box type fitting glows for 10 hrs in a day, units consumed per day will be [c]
(a) 0.72 (b) 0.04
(c) 0.8 (d) 1
465. 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. [c]
(a) 18 (b) 3.60
(c) 72 (d) 90
- 466 One ordinary ceiling fan works for 12 hrs in a day, units consumed per day will be [a]
(a) 0.72 (b) 0.04
(c) 0.8 (d) 1
- 467 One ordinary ceiling fan works for 12 hrs in a day, electric charges per day @ Rs. 2/- per unit will be [b]
(a) 0.72 (b) 1.44
(c) 0.8 (d) 1
- 468 One 20 inch desert cooler (150 W) works for 8 hrs per day, units consumed per day will be [a]
(a) 1.2 (b) 1.8
(c) 2.1 (d) 2.4
- 469 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]
(a) 111.6 (b) 110.2
(c) 90 (d) 115.3
- 470 A geyser of 25 ltrs., 1500 W remains ON for 2 hrs per day, units consumed for 6 months will be [a]
(a) 540 (b) 480
(c) 620 (d) 700
- 471 One 60 w lamp and 2 fans works for 10 hrs per day, units consumed per day will be [a]
(a) 1.8 (b) 2.1
(c) 1.7 (d) 3
- 472 A 10 hp pump works for 10 hrs per day, monthly consumption will be [d]
(a) 223.8 (b) 2.23
(c) 22.38 (d) 2238
- 473 A grinders in a factory, equipped with 1.5 hp motor, works for 6 hrs per day, the units consumed per day will be [b]
(a) 5.490 (b) 6.714
(c) 2388 (d) 1940
- 474 Internal resistance of a cell is 0.1 ohm and 10 cells are connected in [b]

- 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
- 475 The resistance of human body lies between [d]
(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
- 476 Instrument used to measure electric energy consumption is [c]
(a) Galvanometer (b) Potentiometer
(c) Energy meter (d) None of the above
- 477 Which of the following keeps the poles straight. [a]
(a) Stay rod (b) Cross arm
(c) Conductor (d) Insulator
- 478 Inside the geyser there is a [b]
(a) Filament (b) Immersion rod
(c) Any of a & b (d) None of the above
- 479 Which of the following is used for concealed wiring in a house [a]
(a) PVC conduit (b) GI pipe
(c) Spun concrete pipe (d) Any of the above.
- 480 The size of copper wire used for point wiring in sq mm is. [a]
(a) 1.5 (b) 2.5
(c) 4 (d) 10
- 481 The size of copper wire used for sub main in sq mm is. [b]
(a) 1.5 (b) 2.5
(c) 4 (d) 10
482. The size of Aluminium wire used for point wiring in sq mm is [c]
(a) 1.5 (b) 2.5
(c) 4 (d) 10
- 483 The combined Earth resistance of 33kV/11 kV receiving station should not exceed [a]
(a) 1 ohm (b) 2 ohms
(c) 10 ohms (d) 20 ohms
- 484 The combined earth resistance of 11 kV/415 V Sub-station should not exceed [b]
(a) 0.5 Ω (b) 2 Ω
(c) 10 Ω (d) 20 Ω
485. The integration time employed by supply authorities for recording [b]
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
- 486 While designing a sub-station anticipated future loads in the next ... years are taken [d]

- (a) 1 year
- (b) 2 years
- (c) 20 years
- (d) 5-7 years

487 As per the present Tariff the minimum power factor of sub-station should be [c]
(a) 0.8 (b) 0.85
(c) 0.90 (d) 0.95

488 The minimum clearance of lowest conductor from the ground of 33 Kv lines, across the road. [c]
(a) 3 M (b) 4 M
(c) 6.1 M (d) 14 M

489 The minimum clearance of lowest conductor from the ground of 33 kV lines, along a street. [a]
(a) 5.8 M (b) 3.0 M
(c) 4.0 M (d) 14 M

490. The minimum vertical clearance from 11 kV line to any part of building. [c]
(a) 2.0 M (b) 10.M
(c) 3.7 M (d) 6.0 M

491. The minimum Horizontal clearance of 11 kV lines from any buildings. [a]
(a) 1.2 M (b) 3.7 M
(c) 6.1 M (d) 10 M

492. The Visible, Audible, Partial discharge at the surface of conductor at high voltage is called – [b]
(a) Skin affect (b) Corona
(c) Creep (d) None of these

493. For maintaining power supply quantity the frequency variation of power supply are restricted to [b]
(a) $\pm 1\%$ (b) $\pm 3\%$
(c) $\pm 0.5\%$ (d) $\pm 10\%$

494. The 3 phase voltage unbalance in supply should not exceed [a]
(a) 2.5.% to 5% (b) 20%
(c) 25% (d) 10%

495. For maintaining power supply quality the rate of change of frequency should not exceed. [c]
(a) 5 Hz (b) 10 HZ
(c) 1 HZ (d) 3 Hz

496. In Thermal Power plants the generator used are [b]
(a) AC 3 Ø, Induction Generators.
(b) AC 3 Ø, Synchronous Generators.
(c) D.C. Shunt Generators.
(d) AC 1 Ø Synchronous Generators.

497. The highest system voltage of normal 33 kV System for the purpose of design of equipments is [b]
(a) 30 kV. (b) 36 kV.
(c) 33 kV. (d) 66 kV.
498. The Rod gap on the L.V. side of 11 kV/415, 250 kVA Transformer is [d]
(a) 300 mm. (b) 100 mm.
(c) 50 mm. (d) Rod gap L.A. is not provided for LV side of Transformer.
499. The rated voltage of L.A. for 11 kV/415V Transformer Protection is [c]
(a) 11 kV. (b) 12 kV.
(c) 9 kV. (d) 24 kV.
500. For medium sized 11 kV/415 v, 500 kVA Transformer sub-station, the type of L.A. used are [b]
(a) Station type. (b) Line type.
(c) Distribution type. (d) None of these.
501. The line type L.A. used for our 11 kV and 33 kV Sub-station are having a standard [a] normal discharge current (Peak).
(a) 5 KA. (b) 10 KA.
(c) 1.5 KA. (d) 2.5 KA.
502. The span of supports for 11 kV over head lines should not exceed. [c]
(a) 100 m. (b) 65 m.
(c) 30 m. (d) 27 m.
503. The testing of relays should be performed at a interval of [b]
(a) 6 months (b) 12 months
(c) 18 months (d) 24 months
504. If any live conductor in the circuit is entangled with tree branch _____ operates. [a]
(a) EFR (b) OVR
(c) OLR (d) Thermal relay
505. _____ relay operates if there is a heavy increase in load current. [c]
(a) EFR (b) OVR
(c) OLR (d) Thermal relay
506. _____ relay indicates the temperature rise of a transformer. [d]
(a) EFR (b) OVR
(c) OLR (d) Thermal relay
507. If the relay setting of 60/5 CT is at 3.75, then the tripping will be at [b]
(a) 60 Amp. (b) 45 Amp.
(c) 30 Amp. (d) 50 Amp
508. The normal SPG of electrolyte of lead acid battery should be. [c]

- (a) 1.160 (b) 1.180
(c) 1.220 (d) 1.240
509. The terminal voltage of a fully charged lead acid cell is [c]
(a) 1.8 V (b) 2.0 V
(c) 2.2 V (d) 2.4 V
510. The terminal voltage of a lead acid cell should not fall below. [b]
(a) 1.6 V (b) 1.8 V
(c) 2.0 V (d) 2.2 V
511. The normal charging rate of 120 AH lead acid battery set is. [c]
(a) 4 A (b) 8 A
(c) 12 A (d) 16 A
512. The ratio of distil water and acid used to prepare new electrolyte for lead acid cell is [d]
(a) 1 : 1 (b) 2 : 1
(c) 3 : 1 (d) 4 : 1
513. Following law is applicable in the working of lead acid cell. [c]
(a) Faradays law of self induction.
(b) Faradays law of mutual induction
(c) Faradays law of electrolysis.
(d) Newton's law of motion.
514. The capacity of storage battery is expressed as [d]
(a) No. of recharges it can take
(b) Time for which it can be used
(c) No. of cells it contain
(d) Ampere hour it can deliver.
515. Sedimentation in lead acid cell occurs due to [a]
(a) Overcharging at high rate.
(b) Slow charging at low rate.
(c) Over discharge at low rate.
(d) Non-utilization for long periods.
516. Even when not in use, a lead acid battery should be recharged once in [a]
(a) Six week (b) Six days
(c) Three months (d) Six months.
517. First step to be carried out before starting work starting work on faulty portion of overhead line is to [b]
(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
518. Before starting the work on faulty circuit it should be ensured that [a]
(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.

519. The electric overhead line on which work is to be carried out should be necessarily earthed on both the ends to [c]
(a) Dispense 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
520. One can protect himself from electric shock while working on live circuit by wearing gloves of good [b]
(a) Conducting material
(b) Insulating material
(c) Semiconductor material
(d) Any of the above.
521. Which of the following are principal safety precautions [d]
(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.
522. Which of the following is most effective method of artificial respiration [a]
(a) Mouth to mouth air pumping method
(b) To use bicycle air pump
(c) Both a & b
(d) None of the above
523. Which material is recommended as fire extinguisher in electrical cases [b]
(a) Carbon tetra chloride
(b) Carbon dioxide
(c) Sulphur hexafluoride
(d) Any of the above
524. Which of the following is to be necessarily kept in a electric substation [d]
(a) First aid box
(b) Stretcher
(c) Earthing rod
(d) All of the above
525. The warning board to be provided, on the switch of the line on which work is going on [a]
(a) Men at working
(b) Danger
(c) Keep away
(d) None of the above
526. Staff competent to work on overhead line of MV should be [c]
(a) Unskilled

- (b) Semi skilled
- (c) Highly skilled
- (d) Any of the above

527. Which of the following is a renewable source of energy? [d]

- (a) coal
- (b) oil
- (c) Natural gas
- (d) Solar

529. The law of conservation of energy states that energy [d]

- (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; But can be transform from one form to another form

530. Absolute pressure is [c]

- (a) Gauge Pressure
- (b) Atmospheric Pressure
- (c) Gauge pressure + Atmospheric Pressure
- (d) Gauge Pressure – Atmospheric Pressure

531. 100 kCals expressed as kilojoules would be [a]

- (a) 418.7 kJ
- (b) 4.187 Joules
- (c) 4.187 kJ
- (d) 41.87 kJ

532. When heat flows from one place to another by means of a liquid or gas, it is being transferred by [d]

- (a) radiation
- (b) conduction
- (c) sublimation
- (d) convection

533. How many watts are in a hp? [d]

- (a) 700
- (b) 725
- (c) 740
- (d) 746

534. The characteristic of an electrical circuit that forces current to flow is [d]

- (a) watts
- (b) amps
- (c) ohms
- (d) volts

535. Voltage and resistance in an electrical circuit are related by Ohm's law and determine [d]

- (a) resistance
- (b) voltage
- (c) the type of circuit
- (d) current

536. The characteristic of an electrical circuit that opposes current flow is [a]

- (a) resistance
- (b) voltage
- (c) friction
- (d) power

537. The instrument used to measure RPM is [d]
 (a) Fyrite (b) Pyrometer
 (c) Ultrasonic flow meter (d) Stroboscope
538. Which of the following terms does not refer to specific energy consumption [d]
 (a) Kwh/ton (b) kcal/kL
 (c) kJ/kg (d) kg
539. Which of the following will not motivate the employees for energy conservation ? [d]
 (a) Incentive (b) Recognition
 (c) Reward (d) Threatening
540. The heat input required for generating 'one' kilo watt-hour of electrical output is called as _____. [b]
 (a) Efficiency (b) Heat Rate
 (c) Calorific Value (d) Heat value
541. Which of the voltage is not available for Indian distribution system? [c]
 (a) 33 kV (b) 11 kV
 (c) 280 V (d) 433 V
542. The power loss in transmission/distribution line depends on _____. [d]
 (a) Current in the line (b) Resistance of the line
 (c) Length of the line (d) All
543. If distribution of power is raised from 11 kV to 66 kV, the voltage drop would lower by [b]
 (a) 6 times (b) 1/6 times
 (c) 36 times (d) 1/36 times
544. If the distribution voltage is raised from 11 kV to 33 kV, the line loss would be: [a]
 (a) Less by 1/9 (b) More by 9 times
 (c) No change (d) None of the above
545. 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 min is _____. [c]
 (a) 3600 kVA (b) 3000 kVA
 (c) 3300 kVA (d) 600 kVA
546. Presenting the load demand of a consumer against time of the day is known as _____. [b]
 (a) Time Curve (b) Load curve
 (c) Demand curve (d) Energy curve
547. The vector sum of active power and reactive power required is _____. [a]
 (a) Apparent Power (b) Power Factor
 (c) Load Factor (d) Maximum Demand
548. Power factor is the ratio of _____ and apparent power: [a]

- (a) Active power
(c) Load Factor
- (b) Reactive power
(d) Maximum Demand
549. 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]
 (a) 145 kVAR
 (b) 500 kVAR
 (c) 50 kVAR
 (d) 100 kVAR
550. The rating of the capacitor at motor terminals should not be greater than _____. [b]
 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
551. The percentage reduction in distribution losses when tail end power factor raised from 0.8 to 0.95 is _____. [a]
 (a) 29%
 (b) 15.8%
 (c) 71%
 (d) 84%
552. If voltage applied to a 415 V rated capacitors drops by 10%, its VAR output drops by _____. [c]
 (a) 23%
 (b) 87%
 (c) 19%
 (d) 10%
553. The ratio between the number of turns on the primary to the turns on the secondary of a transformer is know as: [a]
 (a) turns ratio
 (b) efficiency
 (c) winding factor
 (d) power factor
554. The ratio of overall maximum demand of the plant to the sum of individual maximum demand of various equipments is _____. [b]
 (a) load factor
 (b) diversity Factor
 (c) demand Factor
 (d) maximum demand
555. Core losses in transformer are caused by _____. [c]
 (a) Hysteresis loss
 (b) Eddy current loss
 (c) both a & b
 (d) None
556. The load losses in transformer vary according to _____. [b]
 (a) Loading of transformer
 (b) Square of loading of transformer
 (c) Cube of loading of transformer
 (d) None
557. 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]
 (a) 7 kW
 (b) 12 kW
 (c) 4.5 kW
 (d) 22 kW
558. The total amount of harmonics present in the system is expressed using _____. [c]
 (a) Total Harmonic Factor
 (b) Total Harmonic Ratio
 (c) Total Harmonic Distortion
 (d) Crest Factor

559. The 5th and 7th harmonic in a 50 Hz power environment will have: [c]
 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
560. The type of energy possessed by the charged capacitor is. [b]
 (a) Kinetic energy (b) Electrostatic
 (c) Potential (d) Magnetic
561. The energy stored in the bonds of atoms and molecules is called. [b]
 (a) Kinetic energy (b) Chemical energy
 (c) Potential energy (d) Magnetic energy
562. Active power consumption of motive drives can be determined by using one of the following relations. [d]
 (a) $\sqrt{3} \times V \times I$ (b) $\sqrt{3} \times \sqrt{2} \times I \times \cos\phi$
 (c) $\sqrt{3} \times V \times I \times \cos\phi$ (d) $\sqrt{3} \times V \times I \times \cos\phi$
563. The grade of energy can be classified as low, high, extra ordinary. In case of electrical energy it would fall under _____ category. (EM/EA) [c]
 (a) low grade (b) extra ordinary grade
 (c) high grade (d) none of the above
564. The portion of apparent power that doesn't do any work is termed as [c]
 (a) Apparent power (b) Active power
 (c) Reactive Power (d) None of the above
565. Power factor (PF) is the ratio of (EM/EA) [c]
 (a) Apparent power & Active power (b) Active power & Reactive power
 (c) Active Power & Apparent power (d) Apparent power & Reactive power
566. kVA is also called as. [b]
 (a) reactive power (b) apparent power
 (c) active power (d) captive power
567. The energy consumed by a 50 kW motor loaded at 40 kW over a period of 4 hours is [b]
 (a) 50 kWh (b) 160 kWh
 (c) 40 kWh (d) 2000 kWh
568. The ratio of maximum demand to the connected load is termed as [b]
 (a) Load factor (b) Demand factor
 (c) Contract demand (d) none of the above
569. A single phase induction motor is drawing 10 amps at 230 volts. If the operating power factor of the motor is 0.9, then the power drawn by the motor is [c]
 (a) 2.3 kW (b) 3.58 kW

(c) 2.07 kW

(d) 2.70 kW

570. The quantity of heat required to raise the temperature of 1 gram of water by 1 °C is termed as _____ [c]
 (a) Specific heat (b) Heat capacity
 (c) One Calorie (d) Sensible heat
571. Nameplate kW or HP rating of a motor indicates _____ [b]
 (a) input kW to the motor (b) output kW of the motor
 (c) minimum input kW to the motor (d) maximum input kW to the motor
572. The quantity of heat required to change 1 kg of the substance from liquid to vapour state without change of temperature is termed as _____ [b]
 (a) Latent heat of fusion (b) Latent heat of vaporization
 (c) Heat capacity (d) Sensible heat
573. The latent heat of condensation of 1 kg of steam at 100 °C to form water at 100 °C, it gives out the heat of _____ [b]
 (a) 580 kCal (b) 540 kCal
 (c) 620 kCal (d) 2260 kCal
574. The specific heat of _____ is very high compared to other common substances listed below [c]
 (a) Lead (b) Mercury
 (c) Water (d) Alcohol
575. The property of viscosity of liquid fuels: _____ [c]
 (a) decreases with decreasing temperature
 (b) increases with increasing temperature
 (c) decreases with increasing temperature
 (d) increases with decreasing temperature
576. The quantity of heat Q , supplied to a substance to increase its temperature depends upon the following. [c]
 (a) sensible heat added (b) latent heat of fusion
 (c) specific heat of the substance (d) heat capacity
578. Unit of specific heat in SI system is _____ [c]
 (a) joule /kg °C (b) kg/cm²
 (c) kcal/m³ (d) kcal/cm²
579. The change by which any substance is converted from a gaseous state to liquid state is termed as ----- [a]
 (a) condensation (b) Evaporation
 (c) Fusion (d) Phase change
580. The method of producing power by utilizing steam generated for process in the boiler is termed as ----- [b]

(a) Extraction
(c) Both a & b

(b) Cogeneration
(d) Neither a nor b

V Hindi portion for the post of Tech-III PM/TL/AC

V (i) Multiple choice questions:-

1. Electricity (a)
 (a) बिजली (b) टिकाऊ
 (c) प्रकाश (d) कमाई
2. Alternate Current (b)
 (a) बिजली करंट (b) वैकल्पिक करंट
 (c) सीधा करंट (d) वर्तमान करंट
3. Direct Current (c)
 (a) वैकल्पिक करंट (b) बिजली करंट
 (c) सीधा करंट (d) वर्तमान करंट
4. Temperature (a)
 (a) तापमान (b) ऊपर
 (c) तार (d) सामान
5. Accidents (d)
 (a) अघटित (b) घटना
 (c) अपसामान्य (d) दुर्घटना
6. Stores (a)
 (a) भंडार (b) सीधा
 (c) अनाज (d) पोटली
7. Danger (c)
 (a) क्रोध (b) खलनायक
 (c) खतरा (d) भय
8. Fire (b)
 (a) धुआं (b) अग्नि
 (c) शमन (d) ऊष्मा
9. Heat (d)
 (a) आग (b) शीतल
 (c) ठंडी (d) गरमी
10. Work (d)
 (a) कामगार (b) कार्यालय
 (c) कानून (d) काम

V (ii) Choose the correct answer:-

1. यात्री (a)
 (a) Passenger (b) Traffic
 (c) Transport (d) Train

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|-----|-------------------|--------------------|
| 2. | बिजली | (b) |
| | (a) Sunlight | (b) Electricity |
| | (c) Current | (d) Heat |
| 3. | गाड़ी | (d) |
| | (a) Coach | (b) Depot |
| | (c) Rake | (d) Train |
| 4. | कार्यालय | (a) |
| | (a) Office | (b) Department |
| | (c) Chamber | (d) Rest Room |
| 5. | पंखा | (c) |
| | (a) Tube light | (b) Cable |
| | (c) Fan | (d) Cooler |
| 6. | दुर्घटना | (b) |
| | (a) Party | (b) Accident |
| | (c) Meeting | (d) Inspection |
| 7. | अनुरक्षण | (d) |
| | (a) Cleaning | (b) Working |
| | (c) Washing | (d) Maintenance |
| 8. | गाड़ी प्रकाश | (d) |
| | (a) Air-Condition | (b) Safety |
| | (c) Comfortable | (d) Train Lighting |
| 9. | तापमान | (a) |
| | (a) Temperature | (b) Telegram |
| | (c) Heat | (d) Weather |
| 10. | कर्मचारी | (a) |
| | (a) Staff | (b) Farmer |
| | (c) Teacher | (d) Officer |

V (iii) Abbreviations:-

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|----|--------|-----------|--------------------------------|
| 1. | GM | जी.एम. | - महाप्रबंधक |
| 2. | DRM | मंरेग्र | - मंडल रेल प्रबंधक |
| 3. | Sr.DPO | वमंकाधि | - वरिष्ठ मंडल कार्मिक अधिकारी |
| 4. | Sr.DEE | वमंविइंजी | - वरिष्ठ मंडल विद्युत इंजीनियर |
| 5. | JE | कइंजी | - कनिष्ठ इंजीनियर |