

दक्षिण मध्य रेल्वे
SOUTH CENTRAL RAILWAY

नगिथ मंडल विद्युत इंजिनरिंग
का कार्यालय, विद्युत लोको शेंड,
लालागुडा,
सिकन्दरा बाद - 500017



Office of the
Sr.Divl. Elec. Engineer,
Electric Loco Shed/ Lallaguda,
Secunderabad-500017.

email: elsgd12@gmail.com Ph/ Fax: 040-27003715

No.C/E.150/ELS/LGD/Selection

Date: 27.03.2018

Sr.DPO/SC
(Elect Cadre)

Sub: Supply of update syllabus and question bank for issuing notification
for Conducting selection to the posts Junior Engineer against 25% LDCE
quota at ELS/LGD.

Ref: Sr.DPO/SC 's LrNo.SCR/P-SC /210(a)/EL/Elect/TRS/JE/LGD,
dt 19.03.2018

<<<<>>>>

With Reference to the above, to issue the notification for selection to the posts
of Junior Engineer against 25% LDCE quota at ELS/LGD. The updated syllabus
question bank and key is sent in two sets (Xerox copies).

This is for your information and necessary action please.

Encl: As above.

(T.Naga Raj)
DEE/ELS/LGD
For.Sr.DEE/ELS/LGD

**QUESTION
BANK FOR
JE-II
SELECTION
RANKERS
AND
LDCE QUOTA**

Choose the right answer.

1.	Current is collected from OHE to A.C.loco through (a)Transformer (b) circuit breaker (c)Pantograph (d) servo motor	()
2.	Taps on auto winding of TFP are provided for (a) speed control (b)protection from surges (c)shorting of windings (d)avoiding overloading of TFP	()
3.	QOP relay is used to detect (a)Earth fault in auxiliary circuit (b)Over current (c)Earth fault in power circuit (d)Surges	()
4.	For converting a.c. to d.c., following equipment is used in locos (a)Transformer (b)Smoothing reactor (c)Silicon Rectifier (d)Circuit breaker	()
5.	Which one of the following is not a safety item (a)ACP Unit (b)Hand brake (c)Head Light (d)Corridor Light	()
6.	The maximum rpm of a Hitachi Traction Motor is (a) 895 rpm (b) 1000 rpm (c) 1100 rpm (d) 1250 rpm	()
7.	MVRH is a (a)D.C.Motor (b)A.C.Motor (c)Universal Motor	()
8.	Wheel slipping occurs a) due to Down gradient b) due to poor brake power c) if applied tractive effort is more than adhesive weight of loco d) none of the above	()
9.	KVA rating of TFP used in WAG-7 & WAP4 locos is a) 3460 KVA b) 3900 KVA c) 5400 KVA d) 6000 KVA	()
10.	In Traction Transformer a) A33-A0 is Auto Transfer Winding b) A34-A0 is Primary Winding c) a0 - a1 is Auxiliary Winding d) All are correct	()
11.	ARNO is used for a) cooling T.M. b) Converting 1Φ to 3Φ a.c. c) cooling TFP oil d) converting a.c. to d.c.	11.

12.	For changing direction of loco movement, following is used a) CTF c) Shunting contactor	b) Reverser d) Pantograph	()
13.	In WAP-4 loco _____ type of SL is used a) SL-30 b) SL-40 c) SL-42 d) None		()
14.	Twin Beam Head Light bulb has twin filament of a) 100 and 110 watts c) 100 and 90 watts	b) 100 and 120 watts d) 80 and 100 watts	()
15.	BA are used for powering a) ARNO convertor c) Cab heater	b) Traction Motor (TM) d) Auxiliary compressor (MCPA)	()
16.	Hydrometer is used for measuring a) level of electrolyte in BA c) specific gravity of electrolyte	b) total charge stored in BS d) terminal voltage of BA	()
17.	Maximum air pressure in electric loco brake cylinder with A9 application with cast iron brake blocks a) 2.5 kg/cm ² c) 1.8 kg/cm ²	b) 3.5 kg/cm ² d) 5.0 kg/cm ²	()
18.	Disturbance of neutral axis of rocker ring in a DC motor will result in a) poor commutation (b) increase in voltage (c) jamming of bearing		()
19.	Gear ratio of WAP4 loco is _____ a) 18 : 14 c) 17 : 57	b) 23 : 58 d) 16 : 65	()
20.	Maximum allowed wheel dia variation in service for WAP4 locomotives a) on same axle is 1.5 mm c) Both (a) & (b)	b) one same bogie is 8 mm d) None	()
21.	The requisition No. for a N.S.item is a) S 1313 c) S 1315	b) S 1302 d) S 1305	()
22.	Maximum Tractive effort of a loco is the a) maximum power developed by the loco b) maximum torque developed by the loco at 50 KMPH c) maximum starting torque developed by the loco without wheel slipping d) None is correct		()

23.	Relay to detect abnormalities in TFP is (a)QRSI (c)QLM	(b)QOP (d)QOA	()
24.	For protection of traction motors against over voltage, following relay is used (a) QOP (c) QD	(b) Q20 (d) QRSI	()
25.	AFL circuit works in case of a) train parting c) brake application	b) chain pulling d) both (a) & (b)	()
26.	The insulation class of an auxiliary motor is (a)H Class (c)F Class	(b)B Class (d)C Class	()
27.	Panto raising time is adjusted between (a)6 to 10 sec. (c)5 to 8 sec.	(b)5 to 10 sec. (d)None	()
28.	For creating vacuum required for pneumatic brake system following equipment is used a) compressor c) VA-1B valve	b) exhauster d) ARNO	()
29.	In a WAP4 loco, the no. of brake cylinders are (a) 8 (b) 10 (c) 12 (d) 16		()
30.	Bolster is used in the following class of locos a) WAG5 c) WAP4	b) WAM4 d) WAG7	()
31.	MU2B and F1 Selector Valves are used to isolate a) rear loco c) RSI block in MU operation	b) A9 and SA9 of rear loco d) None of the above	()
32.	DP Test is done to detect (a)Acetylene content in oil (c)inside void in axle	(b)Methane level (d) surface crack	()
32.	DP Test is done to detect (a)Acetylene content in oil (c)inside void in axle	(b)Methane level (d) surface crack	()

33.	Field shunting in loco is done to (a)increase tractive effort (b)increase power of loco (c)increase speed (d)both (b) & (c) are correct	()
34.	QLM setting of WAP4 loco is (a).9 Amp. (b). 8 Amp. (c). 7 Amp. (d). 10 Amp.	()
35.	Noise / vibration level of bearing is measured in (a).DB (b). dB (c). GB (d). BD	()
36.	EFDG coil of DJ in WAG-7 loco isR4 (a).holding coil (b). Closing coil (c). None (d). Both (a) & (b)	()
37.	Hitachi Traction Motor is a (a).4 Pole DC Motor (b).6 Pole AC Motor (c).4 Pole AC Motor (d).6 Pole DC Motor	()
38.	In MVMT bearing used is (a). 6313 with C3 clearance (b). 6312 with C4 clearance (c). 6312 with C3 clearance (d). 6313 with C4 clearance	()
39.	Minor penalties can be imposed to withhold (a). 2 sets of passes (b). 2 increments for one year (c). promotion for one year (d). all the above	()
40.	Opening of the AAL Make VCB is done through (a). air pressure (b). charged spring (c). both (a) & (b) (d). none of the above.	()
41.	What type of bearing is used in WAP4 loco axle box? (a). ball bearing (b). roller bearing (c). tapered bearing (d). needle bearing	()
42.	In a failed WAP-4 loco, it is found that in TM5 carbon brush was touching to the TM body, which relay would have been operated (a). QLM (b). QRSI (c).QOP1 (d).QOP2	()
43.	What is the voltage of OHE feeding power to WAG-9 loco (a). 25 KV AC (b). 1500 V DC (c). 11 KV AC (d). 440 V AC	()
44.	MVRH is provided to cool the (a). Traction Motor (b). RSI block (c). TFP Radiator (d). Compressor	()

45.	What is the time interval between IA and IB schedule of WAP-7 loco is days (a). 45 (b). 60 (c). 90 (d). 30	()
46.	Loco brake applieskg pressure (a). 2.0 (b). 3.5 (c). 1.5 (d).7.0	()
47.	“Back lash” term is related to..... (a). TFP (b). Battery (c). CBC (d). Gears	()
48.	There are nos. of main poles (MP) in a Hitachi TM. (a). 6 (b). 4 (c). 2 (d).12	()
49.	The lubricant used in suspension bearing of a HITACHI motor is..... (a). 170-T (b). SP57 (c). Servo RR3 (d). Mineral oil	()
50.	Multimeter is used to measure (a). voltage only (b). current only (c). resistance only (d). all of the above	()
51.	WAG-9 loco is using type of bogies (a). flexicoil co-co (b). fabricated co-co (c). trimounted co-co (d). any of the above	()
52.	Loco TFP has Nos. of taps for voltage control (a). 16 (b). 32 (c). 12 (d). depending upon the type of loco	()
53.	What are the time delays of Q118, Q44 and QTD Relays? (a). 5 sec, 5 sec, 1 sec (b). 5 sec, 5 sec, 5 sec (c). 5 sec, 0.6 sec, 5 sec (d). 1 sec, 0.6 sec, 5 sec	()
54.	Sand is used in locomotives to avoid..... (a). wheel skidding (b). wheel slipping (c). brake failure (d). all the above	()
55.	Leakage Test is conducted to find out leakage in (a). CP (b). MR (c). BP (d).all the above	()

Fill in the blanks

1. Pinion and bull gear ratio of a WAP 7 loco is -----
2. The axle load of WAG 9 is -----
3. The energy is consumed by an electric loco per thousand GT KM is ---- KWh
4. Capacity of battery provided in conventional electric loco is _____ A.H.
5. Full form of MVRH is _____
6. Primary Helical Spring is used in _____ type of loco.
7. Thickness of Flange at 3 mm Flange wear is _____
8. RPS is used to _____ field of Traction Motor.
9. IP Coil is used to improve _____
10. Higher gear ratio is used for _____ starting torque.
11. Bibby Coupling is provided to couple _____.
12. DGA stands for _____
13. Equivalent resistance of 5Ω Resistor and 3Ω Resistor connected in parallel is _____
14. Type of Pantograph used for WAG-9 loco is _____
15. RSI block is _____ Wave Rectifier.
16. Q-20 Relay is a _____
17. Bo-Bo bogies have _____ no. of axles in each bogie.
18. In DBR operation, traction motor works as _____
19. AM12, AM92 are the types of _____
20. Every loco should be provided with _____ nos. of Fire Extinguishers
21. Brake application and release timing through A-9 should be ____ to ____ sec.
While dispatching the loco from shed.
22. Through SA9 the BC pressure is _____
23. BC Piston travel should be _____ to _____ mm for WAP4 locos.
24. Leak hole test is conducted for _____ brake system.
25. With two CPs in working loco alone, the BP pressure should reach within _____ secs.
26. _____ switch is provided to switch off signaling lamp of rear loco in MU.
27. Rating of HS15250A is _____ KW
28. Minimum air pressure required to raise the panto is _____ kg/cm²
29. Opening time of VCB should be less than _____ ms.

Descriptive Questions:

1	Draw a schematic diagram of WAP4 loco power circuit from pantograph to rectifier block
2.	What are the things to be checked for trouble shooting of following (Attempt any 2) 1.MP and EEC failure 2.BP not building up in a loco 3.Pantos not raising 4.All auxiliaries not working 5.ICDJ 6.DJ tripping after 6 th notch
3.	Answer any two of the following 1.Testing procedure for BP drop 2.SMGR stuck up on ½ notch - what are the things to be checked 3.Testing procedure for LT Test 4. Batteries showing low voltage as soon as load is put on. How to rectify it? 5. Brakes not applying in a loco through A-9. Identify the possible troubles. 6.Testing procedure for HT Test
4.	Give IOH schedule of any two of the following equipment in WAP4 loco 1.Transformer 2.Traction Motor 3.SMGR 4.GR 5.Safety Relays
5.	(a) What are the normal type defects in WAP4 bogies and its brake rigging? (b) Explain overhauling procedure of a Hitachi motors with mounting and dismounting of pinion
6.	(a) Explain complete procedure for changing of CBC of a locomotive and name all parts of CBC with a sketch. (b) What are side wall filters and what is their use in a loco?
7.	(a) Explain with a neat diagram the probable causes of DJ Tripping at 5 th notch while starting. (b) Also explain the action required to troubleshoot the loco in such situation.
8.	Because of earth fault in traction motor, QOP1 is acting. Explain with a neat diagram the working of the QOP Relay, its troubleshooting and isolation of the defective traction motor from the locomotive.
9.	What are the safety items to be checked in traction locos before sending for service?
10.	Discuss in detail all probable causes for Autoregression with LSP in MU locos specially WAG7 MU.
11.	List out causes of fire in AC locos. Explain the methods and modifications for prevention.

12.	Explain the process of brake application in a WAP4 locomotive through A-9. Name all valves used for brake application and give a simple sketch also.
13.	(a) What are the normal type defects in WAP4 locos and discuss the action to be taken to minimize them. (b) Explain overhauling procedure of a Hitachi motors with mounting and dismounting of pinion
14.	(a) Explain the procedure of initial charging of batteries of a locomotive. (b) Explain principle of working of battery charger. What are the troubles of a charger?
15.	(a) What are the troubles normally experienced in reversors? What is done during its overhauling in AOH? (b) What are the benefits in a 1500 Amps line contactors over 1000 amps. L.C. and explain overhauling of line contactor?
16.	What are the drawbacks experienced in the ARNO fed auxiliary supply system? How and upto what level the provision of Static Converter will overcome those limitations
17.	What is the importance of Spring Testing Machine? How much it is helpful in Primary Helical Spring breaking cases in WAG-7 locos? What are the other arrangements suggested to avoid PHS breaking of WAG-7 locos?
18.	Explain the meaning and usefulness of Motorized Bogie and its limitations to cut down the AOH & IOH schedule time for each class of locomotive?
19.	Write short note on the following: 1. Additional Sander 2. Nylon Washer 3. Modified Trunion 4. Composite Brake Block 5. Swan Neck Sander
20.	Write down the procedure and steps for trouble shooting electric locomotives in the following conditions. <i>Attempt any two.</i> 1.ICDJ 2.All auxiliaries not working 3.DJ tripping after 6 th notch.
21.	What happens if OHE supply goes while using DBR? Discuss the present system available in electric locomotives and its limitations.
22.	What are the instructions to be followed for energizing, denenergizing and in case of fault of electric locomotive with Static Inverter?
23.	In case of cattle run over, what the problems being faced by driver in the locomotive. Discuss the modification done by our sheds and it's usefulness.

24	Match the following:			
	Group - A		Group - B	
	a.	Rocker arm	1.	Head Light
	b.	Breather	2.	Gear Case
	c.	Mounting Pad	3.	Pantograph
	d.	Servomotor	4.	Twin Beam Head light
	e.	Felt	5.	Relays
	f.	Plunger	6.	Traction Motor
	g.	RTPR	7.	Bogie
	h.	DC-DC Converter	8.	Transformer
	i.	RF	9.	DBR
	j.	Tel-Tel Fuse	10.	RSI
25.	What is the function of ARNO? Describe with the help of diagram how it generates 3-phase AC supply?			
26.	Draw the Auxiliary power circuit diagram of WAP4 loco and explain the function of each component in this circuit?			
27.	A WAP4 loco has come with QOP1 dropping; write the steps to trouble shoot the loco.			
28.	List out the WAP4 bogie components.			
29.	What is ICDJ? Enumerate the reasons for ICDJ in brief?			
30.	What are the auxiliaries used in WAG-7 loco, list them and explain their functions.			
31.	What are the various methods/ tests to detect the cracks in steel parts of the loco? Describe the procedure of Ultra Sound Testing to detect the cracks in loco axle?			
32.	How to investigate the fire accident loco? Write the steps.			
33.	Describe the functions of the following: (any three) <ol style="list-style-type: none"> a. Selsyn Transformer (TFP) b. Voltage Stabilizer for Headlight (RTPR) c. Rheostatic Braking Unit (DBR) d. Motor Suspension Unit e. Center Pivot in WAG-7 loco 			
34.	Write the overhauling procedure of the following equipments: (Any three) <ol style="list-style-type: none"> a. TM b. Bogies of WAG-7 loco c. Compressor d. GR & SMGR e. DBRs f. Pantograph 			

35.	Write short notes on the following: (Any three) a. QLM b. C3W Valve c. Brake rigging d. VCB e. Pantograph f. SL
36.	Draw diagram of Traction Motor power circuit of WAP4 locomotive with TM connected in parallel and provided with field weakening resistances.
37.	Indicate the function and setting of the following safety / protection relays in WAP4 locomotive a) QRSI b) QE c) QD d)Q-30 e) QLM
38.	a) What are the types of maintenance and overhauling schedules followed for WAP4 locomotives? b) Name the different sections and activities done in each section as followed in your shed.
39.	Indicate the attention given during IC for the following (any two) a).Tap Changer b).Pantograph c).Wheel and axles d).Axle Boxes e).Traction Motor f).Main Compressor

Questions on DAR, Stores, Personnel & General matters

1.	(a) Describe various steps for procurement of non-stock item of value (i) less than Rs. 1,00,000/- (ii) more than Rs. 1,00,000/- (b) Describe the steps for imposition of 'minor penalty'.
2.	(a).As a Enquiry Officer in SF-V case, how will you proceed? (b) What are the various types of Passes over Indian Railways?
3.	Write short notes on any two of the following a. Non-stock item procurement procedure b. Scrap disposal c. Raising a special demand d. Imprest stores
4.	What is the difference in stock and non-stock items? Describe the procedures for procurement of stock and non-stock items?
5.	Write short notes on a).Minor Penalty b).Continuous Category as specified in HOER c).Imprest stores d).Procurement of T&P items.

Questions on Official Language

1.	(a).How use of Hindi can be popularized amongst running staff. (b). Write the full form of the following in Hindi (i) ADRM (ii) APO (iii) DME (iv) Sr.DSO (v) Sr.RBA
2.	What is the Official Language of India? Under which region, does the state of Andhra Pradesh fall?
3.	(a) Write suitable English words for the following (i) gauNava%ta - (ii)]pyaaogata - (iii) AnaurxaNa - (iv) AnauYaaMigak - (v)]WoXya - (b) Write correct Hindi designations for the following (i) ADRM - (ii) Sr.DAO - (iii) Sr.DPO- (iv) Sr.DSO - (v) Dy.CEE -
4.	(a).rajaBaaYaa AiQainayama, 1963 (yaqa saMSaaoiQoat 1967) kl Qara 3 (3) maom ikna ikna sarkarl p`yaaojanaaoM ko ilae AMg`aojal ko saaqahndl ka p`yaaoga Ainavaaya- hO ? (b) Write correct Hindi designations for the following 1.SDGM- 2.COM - 3.CSO - 4.CSTE - 5.Dy.CEE -
5.	Translate into English (i).ivaVut saMrxaa (ii).AnaurxaNa (iii).Aaga du-GaTnaa (iv).]pisqat rijasTr (v).prlxaa
6.	Translate into Hindi (i).Electrical Chargeman (ii).Earthing (iii).Divisional Railway Manager (iv).Approved (v).Casual Leave

DESCRIPTIVE QUESTIONS:

1.	Draw neat circuit diagram of power circuit of WAP-7 loco with all components ratings.
2.	Explain the purpose of earthing of battery -ve intentionally and the problem of battery -ve cable?
3.	Draw the DJ control circuit of WAP4 loco and explain how DJ will hold in HT.
4.	Write the procedure for overhauling of Hitachi TM?
5.	Explain the purpose of providing earths fault protection relay and also explain how earth fault relay energizes, with a diagram and action to be taken by driver if QOP or QOA acts and also the preventive measures to be taken during normal maintenance schedules?
6.	Write the charging and discharging procedure to be followed for commissioning of new batteries?
7.	Write about all the safety relays of WAP4 locomotive, their ratings and how they cause tripping of DJ in the event of abnormality in loco?
8.	Draw the tap changer circuit of WAP-4 loco to explain how progression coil will be energized and how the notch-by-notch progression takes place?
9.	What are the major defects in TFP of WAP4 loco and describe briefly the cause and their remedial action?
10.	What are the major failure in Hitachi traction motor and describe briefly the causes and their remedial action?
11.	What are the major improvements in Hitachi Traction motor design?
12.	What are the major failures of Auxiliary motors? What is the process for VPI to Aux. Motors and the advantages of VPI?
13.	What are the advantages of microprocessor based control system of locomotive than the conventional control system?
14.	Draw flow chart of the Hitachi Traction Motor overhauling and what are the various tests to be done after over hauling of TM?
15.	What do you mean by the condition monitoring of the equipment. Discuss briefly the various condition monitoring techniques?
16.	What are the reasons for ICDJ and discuss their remedial measures?
17.	List out the reasons for auto regression and their remedial action?
18.	What do you mean by destructive and non-destructive tests. Describe briefly the various destructive and non-destructive tests?
19.	Describe the trouble shooting during the CCPT melting?
20.	Describe the trouble shooting for QOP and QOA?
21.	Draw the flow chart of ARNO overhauling. What are the checks to be done during overhauling of the ARNO?
22.	In WAP4 locomotive describe the function of the following valves? a).A9 & SA9 brake valve b).C2 (BP & BC) relay valve
23.	Draw the neat diagram of pantograph indicates the part. Give the reason for panto entanglement and explain its remedies

24.	Why Air dryer is provided in locomotives and explain its function and advantages in loco?
25.	Draw the pneumatic circuit of A9, SA9, C2W (BP & BC) in WAP4 locomotive and explain it briefly
26.	What are the improvement measures which should be taken in shed to avoid the pneumatic failures?
27.	Explain briefly about the various schedule maintenance done during IA, IB, IC1 & IC2.
28.	Explain briefly about the various schedule maintenance done for WAP7 locomotives during AOH&IOH
29.	What are the must check pneumatic items of three phase locomotives at the time of dispatch?
30.	How to weld a bogie frame crack?
31.	What is trip inspection and its periodicity.
32.	What attention will be paid during Trip Inspection of WAP4 locomotives on Bogie items such as Brake gear, T.M axle suspension bearings, T.M gear case, Axle roller bearings, and Suspension springs?
33.	What is the procedure to be adopted to weld a wear plates on the Bogie?
34.	What is meant by Co-Co bogie?
35.	What is the length of the WAG9 locomotive?
36.	What is the Gear ratio of a wheel set?
37.	What is the diameter of the new wheels sets?
38.	What is the lower limit of the wheel diameter for condemnation/Re-discing?
39.	What are the limits of the Flange wear and Root wear of WAP7 locomotives?
40.	What is the distance to be maintained between wheel disc and the brake block?
41.	What is 'L' type of brake blocks & Advantages?
42.	What is wheel to wheel distance of wheel set?
43.	What is the height of the sandwich mounting pad of WAP4 locomotives?
44.	What is the journal dia of an axle of WAP4 locomotives?
56.	What are the axle box clearances of a bogie?
57.	What is the allowable wheel diameter difference on the same axle for WAP4 locomotives?
58.	Wheel diameter difference on two axles of the same bogie for WAP4 locomotives?

--	--

59.	Wheel diameter difference on bogie to bogie for WAP4 locomotives?
60	What is the height of the buffer for WAP4 locomotives?
61.	What is the height of the rail guard for WAP4 locomotives?
62.	What is Brake cylinder piston travel when brakes are in applied condition?
63	What is the MSU? Explain with major dimensions?
64	What is CBC?
65	What is the type of suspension in Co-Co bogie?
66	What are the purchase powers of officers direct and through tender committee?
67	Is there any powers for condemnation of major rolling stock procurement without replacement. If so furnish details.
68	What is meant by M&P programme at GM's level? Furnish the stages.
69	What is meant by M&P programme at R.Board's level? Furnish the stages
70	What are the items defined as capital space of loco and through which programme such items are to be procured?
71	What are the types of Rolling Stock programme and the process to be followed?
72	What is Rate Contract?
73	What are the items to be procured under Non-stock?
74	What is meant by proprietary article item and its schedule of powers of indenting officer?
75	What is the categorization of items?
76	As a Supervisory official what are the techniques for conducting an inquiry in D & A Rules, 1968?
77	Explain the procedure for imposition of Major penalty under D&A Rules 1968?
78	What are the minor penalties that can be imposed by an independent supervisor in respect of staff working under him?
79	The provision of factory Act, 1948 are not applicable to running sheds on Indian Railways. The staff working in Sheds are governed by the provisions of HOER. Specify various categories under HOER with periodic rest and duty roster hours applicable to them.
80	What are the constitutional provisions in respect of official language?
81	Please specify the documents under section 3.3 of O.L. Act. 1963?

82	Please specify the rules applicable for implementation of Raja Bhasha ?
83	In working places for progressive use of Hindi, what are the suggestions you can suggest that can be implemented?
84	What are the deductions from wages of an employee that can be made?
85	What are the provisions under rule 14 of D & A Rules, Act 1968
86	What are the various types of records being used for maintenance of electrical locos at loco sheds?
87	What are the various sections in Electric Loco Shed for carrying out various inspections and repair activities on Electrical locos?
88	How to report accidents?
89	How accident enquires are conducted?
90	What is the periodicity of various schedules for freight and coaching locos and what is the periodicity of schedules adopted by SC.Rly?
91	If there was any fault in the QPH/QVSL1/QVS12 /QVMT1/QVMT2 or concerned motor is defective which relay de-energizes first and how much time will be taken for tripping DJ.
92	During wheel slipping which relays acts in WAP4 locomotives and what indications will be observed?

OBJECTIVE TYPE QUESTIONS:

1.	Safety Relays are a) All DI type c) All DI & DU type	b) All DU type d) Some are DU type and some are DI type.
2.	DI Type safety relays are a) QOP, QOA c) QOP, QPDJ	b) QRSI, QLA, QLM d) Q44, Q118
3.	DU type safety relays are a) QOP, QOA c) Q44	b) QLM, QRSI d) Q118
4.	CT ratio of RSILM: _____	

	a) 1000 : 5 c) 4000 : 5	b) 2000 : 5 d) 1000 : 15
--	----------------------------	-----------------------------

5.	CT ratio of TFILM a) 50 : 5 c) 250 : 5	b) 100 : 5 d) 200 : 5		
6.	Pick up voltage of Q20 in WAP4 locos: a) 790 V c) 865 V	b) 800 V d) 850 V		
7.	While RB is in service which relay will act if any earth fault occurs in the power circuit in WAG-7 loco. a) QOP1 c) QOA	b) QOP2 d) QLM		
8.	The resistance value of RU in WAP4 locos is a) 88 k Ω	b) 100 k Ω	c) 120 k Ω	d) 220 k Ω
9.	The resistance value of RQ20 in WAP4 locos or 6P locos a) 2.4 k Ω	b) 13.2 k Ω	c) 24k Ω	d) 10 k Ω
10.	The setting value of Q44 is a) 1 sec	b) 2 sec	c) 5 sec	d) 0.6 sec
11.	The setting value of Q118 is a) 2.5 sec	b) 5.0 sec	c) 0.6 sec	d) 1.5 sec
12.	In twin Beam headlight the rating of bulb is _____ a) 24V, 70/75W c) 110V, 70/75W	b) 24V, 90/100W d) 110V, 90/100W		
13.	The input / output voltage ratings of the DC-DC converter are: a) 110V / 110V c) 110V / 24V	b) 110V/50V d) 110V/20V		
14.	In a twin beam Headlight, what is the voltage of bulb in "dimmer" operation. a) 110V	b) 55V	c) 24V	d) 12V
15.	What is the advantage of twin beam headlights system: a).Headlight glows while passing on neutral section. b).Headlight focusing is good. c).Even one bulb fuses also, it will not effect the running of loco to destination. d).All the above			
16.	The rating of a cab heater is. a) 500 Ω , 500W	(b) 400 Ω ,500W	(c) 100 Ω ,500W	(d) 50 Ω ,500W
17.	How many CPs are required for Air brake loco:			

	(a) Minimum 2 CPs (c) Minimum 3 CPs	(b) Maximum 2 CPs (d) Maximum 3 CPs
18.	What is class of Insulation specified for 180 degree temperature: (a) B class (b) A class (c) H class (d) Y class.	
19.	The object of sanders is to (a) Improve the adhesion (b) Avoid wheel slipping (c) To have momentum (d) All the above	
20.	The specific gravity of Electrolyte of a lead acid battery at 27 °C should be (a) 1.250 (b) 1.200 (c) 1.100 (d) 1.180	
21.	Specific gravity of electrolyte is measured using. (a) Thermometer (b) Hygrometer (c) Hydrometer (d) Lactometer	
22.	DC series motor is used for traction purpose because: (a) High speed (b) High starting torque (c) Low starting torque (d) Constant torque at all speeds.	
23.	Size of each cable connected to Traction Motor is (a) 120 Sq.mm (b) 150 Sq.mm (c) 300 Sq.mm (d) 170 Sq.mm	
24.	Size of each cable connected to MVMT1/MVMT2/MRH in AC locomotive is a).3 sq.mm (b) 10 sq.mm (c) 25 sq.mm (d) 50 Sq.mm	
25.	Size of each cable connected to MCP/MPH is (a) 3 Sq.mm (b) 10 Sq.mm (c) 25 Sq.mm (d) 50 Sq.mm	
26.	Size of cable used in control circuits is (a).3 Sq.mm (b) 10 Sq.mm (c) 25 Sq.mm (d) 50 Sq.mm	
27.	Size of cable connected to Arno (a).100 Sq.mm (b) 150 Sq.mm (c) 120 Sq.mm (d) 150 or 120 Sq.mm	
28.	Braking excitation transformer purpose is to. (a).Excitation of armature (b). Excitation of field (c). Excitation of both (d). Excitation of TFP	
29.	BP1 DJ is <i>pressed</i> (a)To starts the loco (b) To stop the loco (c) To close DJ (d) To trip DJ	
30.	HQOP & HQOA are (a).Earth fault relay by pass switches (b) Earth fault relay isolation switches (c).Earth fault relays (d) All the above.	
31.	Flasher light is provided in loco/MEMU (a).To communicate with the loco driver coming in the opposite direction about any difficulty. (b).To communicate with the loco driver coming in the same direction, about any Difficulty. (c).To inform the opposite coming loco driver about the abnormality noticed	

	about OHE/Track. (d).All above.
32.	EM contactor pressure is (a) 650 to 800 gms (b) 600 to 700 gms (c) 600 to 750 gms (d) 800 to 1100 gms
33.	Electrolyte used in a lead acid battery is (a) Concentrated sulphuric acid (b) Diluted sulphuric acid (c) Nitric acid (d) None of above
34.	The fuse rating of CCPT is (a) 6 AMPS (b) 10 Amps (c) 16 Amps (d) 35 Amps
35.	CHBA function is normally a) To supply the DC charging current to batteries b) To supply the D.C. load current to various control circuits c) To supply the current to Auxiliary motors d) Both (a) & (b)
36.	The purpose to RSI Block is (a) To convert AC to DC (b) To convert DC to AC (c) To generate AC (d) To generate DC
37.	Battery negative is connected to loco body through (a) HQOP (b) HQOA (c) HOBA (d) HQCVAR
38.	MVMT1/MVMT2 are meant for cooling of (a) Armature of TM (b) Field coils of TM (c) Stator of TM (d) All of these
39.	Shunting contactors are provided in the loco for the purpose of (a) Increasing the speed (b) To decrease the speed (c) To stabilize the speed (d) to stop the train.
40.	The speed control method used in AC locomotive/MEMU (a) Voltage control (b) Current control (c) Rheostatic control (d) Regenerative control
41.	The type of Electric braking system used in WAP4 locomotive is (a) Regenerative (b) Rheostatic (c) Both (d) none
42.	Instrument used to measure contact resistance a) Whetstone bridge b) Multi meter c) Micro ohmmeter. (d) none
43.	Action in lead acid cell a).Reversible b) Irreversible c) Both a&b (d) none
44.	Purpose of inter pole in the traction motor

	a).To avoid sparking on the commutator c). To divert field current d). both a & b.	b).To avoid bad commutation
45.	During rheostat braking traction motor works as a a).Generator b) Converter c) Motor d) Inverter	
46.	The relay QOP/QOA is the relays of sensing a) Voltage b) Current c) Resistance.	
47.	In WAP-4 locomotive, BP pressure not building up a) A9 defective b) C3W defective c) SA9 defective d) R6	
48.	In WAP-4 locomotive, MR pressure not building up a) A8 cock closed condition b) Bogie cocks closed condition c) VEAD cock closed d) MR cock drain cock open	
49.	In WAP-4 locomotive, MCPA pressure not building up on run a) VESA air leaking b) VEAD air leaking c) IP (E) air leaking d) DJ oil separator drain cock open	
50.	In MU loco driver experienced rear loco brakes are not applying found the following trouble a) MU2B leading loco in leading b) MU2B tailing loco in leading c) A1 differential cock closed d) SA9 problem e) None	
51.	Duplex check valve defective in WAP4 loco which resulted to a) Horn/wiper not working b) Horn / sanders not working c) Horn/FP not working d) All the above	

52. Voltage operated relays are _____ type.

53. Current operated relays are _____ type.

54. Setting value of QRSI relay _____ in WAP4 locos.

55. The purpose of SL is to remove _____ pulses in DC output of the rectifier.

56. The resistance value of RPGR is

57. The resistance value of RGR is
58. The HP of MVSL is
59. LECE is provided in the loco to indicate.....
60. LSCHBA is provided in the loco to indicate.....
61. _____ is provided to protect batteries from fire.
62. DC-DC converter provided to use head lamps of loco insection
63. Over charging of batters results
64. Under charging of batters results.....
65. Tan delta being measured to monitor
66. DGA being measured for insulating oil.....
67. Transformer breather used for
68. Traction Motor natural axis set bymethod
69. Current transformers are used to measurein AC systems.
70. The _____Equipment offers protection against safety for equipment as well as human in the locomotive.
71. The number of auxiliary motors starts along with ARNO-----
72. SJ is connected in series with.....
73. Tolerance for output voltage in static converter
74. _____oil is used as insulation and coolant in the transformer of conventional locomotives.
75. Tan delta test to detect.....
76. FRPCPY -.....
77. Effective value of RC-network across a_3, a_4, a_5 & a_6 in WAP- 4 loco
78. Type of traction motor bearing
79. Shock pulse meter to.....
80. Class of insulation for auxiliary motors winding
81. UA is connected to phases to read auxiliary power voltage.
82. is used to estimate moisture content in transformer oil.
83. Water content allowable in the transformer oil max in service new filtered oil
84. Specific resistance at 90° C (OHM-cm)new oil 35x 10 ohm Cm (min)
85. Di-electric dissipation factor (Tan delta) at 90°c (IS-6267 -71)for in service oil new filtered oil.....
86. Acidity 0.5 mg KOH / Gm (max) in service for new filtered oil KOH/gm.
87. Sediments and perceptible sludge allowable in TFP oil
88. Transformer oil flash point minimumfor serviceable oil andfor new filtered oil.
89. Interfacial tension at 27° for new filtered oil
90. Oxidation inhibitorby mass (max)
91. Specified Arc horn gap for Hitachi Traction Motor is
92. The purpose of star delta starter for induction motor is toon line.
93. VCB pressure switch setting cut in.....in M/s Schneider make VCBs.
94. PHGR oil strokes
95. Tightness (torque) of GR segments
96. Minimum thickness of GR segments
97. Main contact pressure of reverser/CTF

98. Effective value of CAPTFP 3, 4, 5&6
99. EM contact pressure
100. EM contactor main contact air gap
101. C118 contactor pressurecontact (C118) air gap_.....
102. CGR contactor pressure.....
103. Transformer oil used to.....
104. Pyrometer is used to measure.....
105. The electrolyte used in lead acid battery.
106. Specific gravity of fully charged cell
107. Contact used for AC MVRF
108. Hydrometer is used to measure.....
109. CGR contacts thickness
110. CGR contacts opening gap
111. The rating of ATFEX
112. The current through RGR flows whenare closed.
113. Fully charged cell gives offat cathode andat anode.
114. The input supply of CHBAoutput
- 115.....class insulation material can with stand highest temperature.
116. TFVT inputoutput 110 V A.C
117. The air gap between stator and rotor of MVRH
118. The air gap between stator and rotor of MVMT is
119. The size cable connected to ARNO
120. Two pole synchronous motor runs at rpm
121. Un serviceable scrap is placedon the form(DS dead stock)
122. Class of insulation and temperature
 $Y= 90^{\circ}c$: $A=105^{\circ}c$: $E=120^{\circ}c$: $B=130^{\circ}c$: $F= 155^{\circ}c$. $H=180^{\circ}c$, $C=225^{\circ}c$
123. RGR Resistance value
124. RQOP resistances valve
125. R118 resistance
126. RHOBA resistance
127. QOP/QOA coil resistance value
128. Q30 coil resistance
129. Q44 /Q118 coil resistance value
130. QLM/QE/QF/QRSI relays resistance.....
131. RPS permanent field weakening resistance.....
132. Continuous current permissible through RPS
133. Meter used to check inter turn shorts in EP coils
134. Rating of HRC fuses used in series with RPS.....
135. When MPS in 1 position what is the resistance value applied in parallel to the Field.....
136. When MPS in 2 position what is the resistance value applied in parallel to the field
137. When MPS in 3 position what is the resistance value applied in parallel to the field
138. FYFR
139. In WAP4 loco the standard setting of QPH is cut in/cut out
140. In WAP4 loco the standard setting of RGAF is cut in/cut out
141. In WAP4 loco the standard setting of P1 is cut in/cut out

142. In WAP4 loco the standard setting of P2 is cut in/cut out
143. RDSO SMI NO 197 is tells about.....
144. RDSO SMI NO 11 is for the
145. Types of maintenance schedules being carried out in Electrical loco shed:
146. Types of maintenance schedules being carried out in trip sheds:
147. RDSO issues for Reliability of equipments for maintenance of different equipments:
148. Types of maintenance schedules being carried out in workshops:
149. Periodicity of TOH schedule for WAG9 locos:
150. Periodicity of IOH schedule for WAG9 locos:
151. Periodicity of POH schedule for WAG9 locos:
152. Periodicity of IC schedule for WAG9 locos:
153. Periodicity of IB schedule for WAG9 locos:
154. Periodicity of POH schedule for WAP7 locos:
155. Periodicity of IOH schedule for WAP7 locos:
156. Periodicity of AOH schedule for WAP7 locos:
157. Periodicity of IC schedule for WAP7 locos:
158. Periodicity of IA schedule for WAP7 locos:
159. Periodicity of IB schedule for WAP7 locos:
160. Trip inspection is carried out after.....**Kms** for pass &...**Kms** for freight locos.
161. Maintenance of transformer & Tap changer is being done by... ..section in electric loco sheds.
162. Over hauling of pneumatic equipments is carried out by section by electric loco sheds.
163. Heavy repairs of bogies & mechanical complaints are being carried out by Section in electric loco sheds.
164. Planning & dispatch of locos being done by section in electric loco sheds.
165. Specification and drawings preparation is done bysection in electric loco sheds.
166. Loco failures and analysis is being done by section in electric loco sheds.
167. Troubleshooting & investigation of unusual occurrence is being done by... .. Section in electrical loco sheds.
168. Wheel set Measurements are being measured during Schedule.
169. Traction Motors over hauling is being carried out bysection in electrical loco sheds.
170. Electronic PCBs & components are checked bysection in electrical loco sheds.
171. Under frame inspection is carried out bysection in electrical loco sheds.
172. Full form of the following abbreviations.
 - 1.CLW -
 - 2.COFMOW -
 - 3.DGS&D -
 - 4.M&P Items -
 - 5.RSP -
 - 6.PAC -
 - 7.PL No. -

8.RITES

173. What is the purchase powers of AMM @ COS -
174. What is the purchase powers of SMM @ COS -
175. What is the purchase powers of Dy.CMM @ COS -
176. NS Indent form No. S1302 is used for value up to
177. For indent above Rs. 10,000/-, form No..... to be used
178. To draw the stocked item form No. to be used
179. For which value indent is to be got vetted above Rs.....
180. What is the sign power of PAC upto Rs.75,000/-
181. What is the sign power of PAC upto Rs. 5,00,000
182. What is the sign power of PAC upto Rs. 15 Lakh
183. What is the sign power of PAC above Rs. 15 Lakh
184. Category - A value.....
185. Category - B value
186. Category - C1 value.....
187. Category - C2 value.....
188. During the suspension period, the suspended employee is entitled for subsistence allowance instead of monthly salary. For drawal of subsistence, the charged employee is required to submit to Disciplinary authority a non-employment certificate in prescribed form. The form No. is _____.
189. The Disciplinary Authority desires to appoint an inquiry officer to inquire into misconduct / misbehavior of the charged employee after issue of majority penalty charge sheet and on consideration of written statement of defense of CE, the communication of nomination of inquiry officer ordered in form No.-----
190. For Imposition of major penalty, a charge sheet is issued to Railway Servant. What is standard form No. _____
191. A Rly.Servant was convicted by a Court of law and sentenced him for imprisonment for a period exceeding 48 hours. But he has not informed his conviction to the immediate Controlling officer. After a week local police informed the whereabouts of the Railway servant. The Railway Servant shall be placed under Deemed Suspension from the date of his conviction. The standard form _____ is to be issued to place a Railway servant under Deemed suspension.
192. One technician Gr.I entered the working premises in a state of intoxication. The supervisor observed and reported the matter to higher authorities. It is deemed that the employee violated the Rule No. _____ of Railway Services (Conduct) Rules, 1966
193. The Railway servant while attending AOH locos, he has not devoted his attention fully. As a result, a failure had taken place owing to his negligence. Such negligence on the part of a Railway servant can be taken up under rule No. _____
194. The period of LAP/LHAP sanctioned by an independent supervisory official in scale Rs. 5500-9000 and above to the staff of safety categories per annum shall not exceed _____ days.
195. The State Railway Provident Fund (SRPF) rules will not apply to Railway servants entering into service on or after _____.
196. Powers of Suspension to an Assistant Officer in respect of Group C & D staff upto and including pay scale of Rs. _____

197. Suspension is not a _____
198. Out of minor penalties under D&AR, the lowest penalty shown in Rule 6 is _____
199. An order passed by an inquiring authority in the course of an enquiry under Rule 9 against which _____ appeal lies.
200. The D&AR Rules have come into force on _____
201. Should a Government servant require obtaining prior permission to join a chit fund?
202. A Railway servant holding Group C&D post enters into a transaction in respect of moveable property either in his own name or in the name of his family member shall report to Government within one month from the date of transaction, if such property value exceeds Rs. _____
203. A Railway servant holding Group A & B post enters into a transaction in respect of moveable property either in his own name or in the name of his family member shall report to Government within one month from the date of transaction, if such property value exceeds Rs. _____
204. The limitation of time for an appeal in D&A Rules, 1968 is _____
205. The inquiring officer is nominated by _____ in D&A Rules, 1968.
206. _____ Days time is to be allowed to the charged employee for submitting his
207. Written statement of defense.
208. If the charged official does not appear before the Inquiry officer, the inquiry may be held _____
209. The inquiry officer during inquiry has to first examine witnesses of _____
210. What is full form of D&AR? .
211. The inquiry officer should normally complete inquiry from the date of his appointment?
212. If on the date of retirement of an employee, he is neither suspended nor charge sheet issued to him, then proceedings against him can be instituted only with the approval of _____
213. The charge sheet on behalf of the President cannot be issued to a retired Railway employee in respect of offence, which had taken place more than _____ years before issue of charge sheet.
214. The recommendations by the complaint committee in respect of offence of sexual harassment of working women in her work place is _____ on D.A.
215. If an employee, after his retirement, is found guilty in judicial proceedings for an offence committed during his service a cut in pensionary benefits can be imposed by the _____
216. Hindi Diwas is celebrated every year on _____
217. Under the Hours of Employment Regulations, the artisan staff working in ELS is classified as _____.
218. How many languages are included in the VIII Schedule of the Constitution of India?
219. For the purpose of implementation of official language, the Union of India is divided into _____ regions.
220. What is the qualifying service for a Railway servant to retire from service voluntarily?
221. Grant of "leave not due" in entire service to a Railway Servant is limited to _____
222. Who is the appointing authority in respect of group C & D in grades raising pay

up to Rs. 4590/-

223. Special casual leave on sports account for participation in international events can be sanctioned by DRM is _____ days.
224. The powers for transfer of Group C&D staff on Inter Railway basis lies with _____
225. The powers for transfer of Group C &D staff in case of inter divisional transfer lies with _____
226. The total deductions including payment to co-operative societies from an employed person shall not exceed _____% of such wages.
227. The wage period under the Payment Wages Act shall not exceed _____
228. The over-time allowance is payable in case of beyond rostered hours _____ time of ordinary wages
229. _____ the ordinary wages will be paid to an employed person, if he employed more than statutory hours.
230. Temporary exemption in respect of non-gazetted staff can be ordered by an officer not less than the rank of _____ .
231. An independent supervisory official can institute DAR proceedings against the staff working under him who are in _____ grades below.
232. Amplify the abbreviation "S.O.P." _____ .
233. Amplify the abbreviation "ACR": _____ .
234. Conducting of an inquiry is not necessary under D&A Rule No. _____
235. The Appellate Authority is _____ than DA.
236. In case the penalty in a case is adequate, the appellate authority _____ the penalty imposed by the DA.
237. If the penalty ordered is severe with reference to the nature of misconduct, the
238. Appellate authority can _____ the penalty imposed by DA.
239. If the penalty imposed by DA is inadequate, the Appellate Authority can _____ the penalty ordered. .
240. The Railway Servant's Discipline and Appeal Rules were made as per the provision to Article _____ of the Constitution.
241. The D&A Rules are not applicable to _____ staff.
242. The D&A Rules are not applicable to any person who is in _____ employment.
243. Holding of inquiry is _____ necessary in case the charged employee admitted all the articles of charges framed against him.
244. In D&A Rules, the Commission means _____
245. R.R.T.: Amplify _____ .
246. Revisionary powers on an appeal at zonal level can be exercised without restriction of any time limit by _____ .
247. The Railway Servant may for the purpose of his defence submit the written statement of defence and a list of _____ to be examined on his behalf.
248. What is the standard form to be issued to a Railway Servant for imposing minor penalty charge sheet.
249. The Inquiry officer should be sufficiently _____ in rank to the charged official.

Three Phase Locomotives

1. Type of three phase locomotive available on Indian Railways
 - a) WAP1/WAP5/WAP4
 - b) WAG7/WAG9/WAP7
 - c) WAP5/WAP7/WAG9
2. Type of motor used in 3 phase locomotives
 - i) DC series motor
 - ii) Three phase IM
 - iii) Single phase IM
3. Advantage of three phase locos.
 - a) Regenerative basis
 - b) UPF
 - c) Both a & b
 - d) None of the above.
4. In 3 phase locomotives, three phase indicates?
 - a) Three phase OHE supply system
 - b) Three phase supply to the motor
 - c) Both a & b
 - d) None of the above
5. Higher horse power locomotive available with type of locomotive on Indian Railways.
 - a) WAG9
 - b) WAP7
 - c) Both
 - d) WAP4
6. Important power device used in three locomotive for power conversion
 - i) IGBT
 - ii) GTO
 - iii) Transistor
 - iv) IGCT
7. Type of Pantograph used in 3 phase
 - a) AM12
 - b) AM92
 - c) IR03
 - d) Both b & c

ANSWER THE FOLLOWING QUESTIONS:

1. Describe the improved technical features available in three phase locos over

- conventional locos?
2. Describe the types of brakes available in three phase locos?
 3. Describe the advantages of three phase locos over conventional locos?
 4. Describe the positions of automatic train brake (A-9) handle in three phase locos?
 5. Write the trouble shooting procedure for fault message "F01 04 P1" i.e. "catenary voltage out of range" even though OHE voltage is available within the range?
 6. Draw the schematic diagram of fiber optic cables layout in 3 phase locos?
 7. Draw the schematic diagram of WAG-9 loco power circuit?
 8. Describe the sub-systems available in three phase locos?
 9. Name the various maintenance schedules being followed for three phase locos and indicate their periodicities for WAG9 & WAP7 locos?
 10. Draw and explain briefly the BP charging through A9 in three phase loco?
 11. Describe the loads of auxiliary converters and their load sharing when auxiliary converter No.1 is isolated?
 12. Name the various rotary switches available in SB-1 panel? Indicate their positions and significances?
 13. Draw the line diagram of Potential Transformer (PT) circuit and explain briefly?
 14. Name the various major and minor maintenance schedules being followed in three phase locos and indicate their periodicity for WAG-9 and WAP-7 locomotives?
 15. Draw the line diagram of oil cooling arrangement (TFP & SR) in three phase locos and explain briefly?
 16. a) How many Bus stations are there in three phase locos and what are they?
b) How many processor cards available in 3 phase locos and indicate the processor cards available in power converter and vehicle converter unit-1
 17. a) How many sub-systems are available in three phase locos and what are they?
b) Name the rotatory switches available in SB-1 panel? Indicate their positions and its significance?
 18. Write the trouble shooting procedure for the following?
a) BUR-1 and further BUR-2 are getting isolated sequentially with inverter over current/DC link over current and further main power is getting isolated?
 19. In how many ways a traction converter can be isolated, indicate?
 20. Describe the procedure for viewing the background data in the DDS?
 21. What are the different types of speed sensors used in WAG9/WAP7 (GTO) locomotives? Briefly explain their features and relative merits and demerits?
 22. Briefly explain the working of AFI in WAG9/WAP7 locomotives with E70 brake system?
 23. Briefly explain the role of E70 relay valve in E-70 brake system? How many different ways the message "Brake Electronics Fail" can be generated in 3Ø

- locomotives? Briefly explain any three possibilities with root cause?
24. What are the key differences between the maintenance of HS15250A and FRA6068?
25. What do you understand by following DDS messages?
- i. ASC1:0081-PS Fault Storage CGP
 - ii. ASC2:0053-Error Tacho generator 2
 - iii. FLG1: 0040-S/R Interlock-main res. low
 - iv. BUR2:0020-Bat. Charger current below 10A
 - v. ASC2:0082-PS fault storage GBC
26. What are the different ways of resetting Vigilance cycle of VCD in 3Ø locomotives? What action takes place when BPEMS switch is pressed?
27. How many different ways emergency braking can take place in 3Ø locomotives?

Match the following (3Ø)

- | | |
|---|--|
| <p>1. <u>Sub System</u></p> <p>a).BUR3</p> <p>b).SR2</p> <p>c).HF</p> <p>d).FDU</p> <p>e).Brake Electronics</p> | <p><u>Sub System Number</u></p> <p>1)3</p> <p>2)2</p> <p>3)10</p> <p>4)8</p> <p>5)9</p> <p>6)4</p> <p>7)15</p> |
| <p>2. <u>Contactor Number</u></p> <p>a).8.1</p> <p>b).12.3/1</p> <p>c).8.41</p> <p>d).15.5/2</p> <p>e).14/2</p> | <p><u>Description</u></p> <p>1) Contactor converter pre. Charging</p> <p>2) Harmonic filter contactor</p> <p>3) Capacitor bank DC link</p> <p>4) Pre charging resistance of converter</p> <p>5) Contactor for discharging resistor</p> |
| <p>3. <u>Sensor Number</u></p> <p>a).6.1</p> <p>b).3</p> <p>c). 18.5</p> <p>d).18.2</p> <p>e).15.7</p> | <p><u>Description</u></p> <p>1) Current sensor drive inverter</p> <p>2) Primary current transformer</p> <p>3) Primary voltage transformer</p> <p>4) Voltage indicator DC link</p> <p>5) Current sensor line converter</p> |
| <p>4. <u>MCB</u></p> <p>a).59.1</p> <p>b).53.1</p> <p>c).56.1</p> <p>d).47.1</p> <p>e).63.1</p> | <p><u>Corresponding Auxiliary</u></p> <p>1) MCB of Scavanger for MRB</p> <p>2) MCB for OCB</p> <p>3) MCB for TMB</p> <p>4) MCB for TFP-MPH</p> <p>5) MCB for MCP</p> |

6) MCB for SRMP

5). Component

- a).WRE Module
- b).Wandler Module
- c).NSR
- d).ASR
- e).GG Module

Description

- 1) Drive converter for SR
- 2) Primary Voltage Transformer
- 3) Rectifier Module for BUR
- 4) Inverter module for BUR
- 5) Line converter for SR

6). MCB

- a).100
- b).110
- c). 112.1
- d).112
- e).310.4

Description

- 1) MCB for loco control electronics
- 2) MCB for Battery charger input
- 3) MCB for Machine room lighting
- 4) MCB for Battery
- 5) MCB for Battery charger output

7).Component

- a).FDU
- b).MCR
- c).Wandler Module
- d).Aux Transformer 415/110v
- e).Earth Fault Relay Aux

Location

- 1) HB2
- 2) HB1
- 3) SB2
- 4) SR
- 5) SB1

8).Component

- a).ZTEL
- b).ZK
- c).LSCE
- d).ZLI
- e).ZLDA

Description

- 1) Asst. Loco pilot desk Lamp
- 2) Switch for Max. Traction Limitation
- 3) DC link
- 4) Switch Instrument lighting
- 5) Indication lamp for over temp. CEL

9). Pneumatic Component

- a).70 coc
- b).74 coc
- c).47 coc
- d).136 coc

Description

- 1) FP charging coc
- 2) BP charging coc
- 3) Emergency exhaust coc
- 4) Dead loco AR charging coc

10).Pressure Switch

- a).172.2
- b).269.4
- c).269.6
- d).269.1
- e).269.2

Description

- 1) Pressure switch emergency brake
- 2) Pressure switch low MR
- 3) Pressure switch main compressor (8Kg)
- 4) Pressure switch loco brake
- 5) Pressure switch brake cylinder

11).Bearing type

- a).NU330
- b).NJ320

Location

- 1)CE bearing for HS15250A
- 2)PE bearing for HS15250A

- c).NJ324
- d).NU2236

- 3)DE bearing for FRA6068
- 4)NDE bearing for FRA6068

12). <u>No. of BURs working</u>	<u>Condition of Load sharing contactors</u>
a).All BURs in service	1) 52/3, 52/4 & 52/5 closed
b).Only BUR1 Isolated	2) 52/1, 52/3 & 52/5 closed
c).Only BUR2 Isolated	3) 52/4, 52/2 & 52/5 closed
d).Only BUR3 Isolated	4) 52/1, 52/3 & 52/4 closed

13). <u>Component</u>	<u>Location</u>
a).MCP	1) Machine Room
b).Filter block resistance	2) under gear item
c).FDU	3) CAB item
d).DBC	4) Roof item

14). <u>Condition of BURs in ELS/LGD</u>	<u>Number of Aux. Load</u>
a).Total Aux. loads on all BURs	1) 6
b).Total Aux. loads on BUR2 when all BURs are working	2) 13
c).Total Aux. loads on BUR2 when only BUR1 isolated	3) 8
d).Total Aux. loads on BUR3 when only BUR1 isolated	4) 7

15). <u>Node Number</u>	<u>Action</u>
a).570	1) After raising PT
b).550	2) After closing DJ
c).596	3) After selection of direction
d).504	4) Self-Test complete
e).590	5) After taking Throttle

16). <u>Equipment Number</u>	<u>Description</u>
a) 47	1) Contactor for MCP
b) 47.1	2) MCP
c) 47.2	3) MCB for MCP
d) 47.2A	4) Snubber circuit for contactor

CHOOSE THE CORRECT ANSWER

1. Different gear ratios in WAG-9 loco is

- a.15:77, 18:64
- b.15:77, 20:72
- c.15:77, 21:107
- d.15:77, 17:77

2. Maximum braking effort of WAP-7 Loco is

- a.260KN
- b.160KN
- c.182KN
- d.None of the above

3. ZV-ZV Valve sets consists of
 - a.2 GTOs and 2 Diodes
 - b.4 GTOs and 4 Diodes
 - c.5 GTOs and 3 Diodes
 - d.5 GTOs and 3 Diodes
- 4.Voltage applied to Traction Motors (Phase to Phase) in WAG-9 loco is
 - a.2180 Volts
 - b.2800 Volts
 - c.750 Volts
 - d.None of the above
- 5.If ZBAN is switched "ON"
 - a.FP drops to zero
 - b.Over charging of BP takes place
 - c.BP drops to zero
 - d.BP & FP drops to zero
- 6.Machine Room blower-I receives supply from
 - a.BUR-1
 - b.BUR-2
 - c.415 Volts directly from Transformer
 - d.110Volts directly from Transformer
- 7.Machine Room blower works
 - a.In cooling mode
 - b.In driving mode
 - c.In cooling and Driving modes
 - d.In Driving and self hold mode
- 8.Minimum Voltage relay in 3 phase locos is for
 - a.Sensing of OHE Voltage in driving mode
 - b.Sensing of OHE Voltage in cooling mode
 - c.Voltage protection in self hold mode
 - d.Over voltage protection in simulation mode
- 9.Purpose of using single phase machine Room blower in 3 phase locos
 - a.Facilitating to work in driving mode for cooling machine room
 - b.Facilitating to work in self hold mode for cooling machine room
 - c.Facilitating to work in simulation mode for cooling machine room
 - d.Facilitating to work in cooling mode for cooling machine room
- 10.Minimum voltage relay in three phase locos
 - a.86 in SB-2
 - b.78 in SB-1
 - c.86 in SB-1
 - d.78 in SB-2
11. For working in cooling mode BL is to be operated from
 - a.D-OFF-C
 - b.OFF-C
 - c.D-OFF-C-OFF-C
 - d.b & c
- 12.Continuous glowing of LSFI indicates
 - a.Any of the sub-system is isolated
 - b.A priority-II fault
 - c.Any auxiliary motor is isolated
 - d.None of the above
- 13.DC Link voltage of Traction Converter is
 - a.1172 Volts
 - b.2180 Volts
 - c.2800 Volts
 - d.None of the above
- 14.Traction Motors in three phase loco are
 - a.3 Phase slip ring induction motor
 - b.3 Phase synchronous motor
 - c.3 Phase squirrel cage induction motors
 - d.DC series motor

15. Battery charger rectifier in 3 phase locos:
a. Half Wave
b. Bridge Full wave
c. Full Wave center tap
d. Both b & c
16. BUS STATION cooling fans work on
a. 110Volts
b. 48Volts DC
c. 24Volts DC
d. 110Volts AC
17. MUB acts when DC link Voltage reaches:
a. 2800 Volts
b. 2100 Volts
c. 3200 Volts
d. 3000 Volts
18. VCB trips when transformer oil temperature rises to
a. 80 degrees
b. 84 degree
c. 75 degrees
d. 70 degrees
19. Output of Auxiliary winding is
a. 415Volts
b. 1000Volts
c. 2100Volts
d. 1200Volts
20. In three phases locos Priority-II message means
a. Trips VCB
b. Shut down loco
c. Isolates sub-system
d. Allows normal functioning
21. "ASC:0081-PS Fault Storage CGP" message is logged in three phases based on
a. Differential voltage
b. Differential current
c. Differential earth fault
d. None of the above
22. VCB trips when auxiliary circuit current exceeds
a. 280Amps
b. 400Amps
c. 500Amps
d. 1000Amps
23. Output frequency of a Traction Converter is
a. 60-120HZ
b. 62-132HZ
c. 50-100HZ
d. None of the above
24. ZTEL switch is used in
a. Banking mode
b. Inching mode
c. Simulation mode
d. None of the above
25. Type of batteries used in three phase locos
a. NiCd
b. Both a & c
c. Lead Acid
d. None of the above
26. Primary over current relay is
a. 89.7
b. 78
c. 89.6
d. 86

27. Time delay of Timer relay in MR Blower
- a.08 Sec
 - b.10 Sec
 - c.12 Sec
 - d.05 Sec
28. Current rating of OCB MCB is
- a.40 Amps
 - b.63 Amps
 - c.80 Amps
 - d.16 Amps
29. In STB-1 signal "AMSB 0102 LVCB" "L" indicates
- a.Action of the loco driver
 - b.Message
 - c.Command order
 - d.None of the above
- 30.The brake application time through DBC in WAG-9 locos is
- a.06 to 09 secs
 - b.10 to 15 secs
 - c.15 to 20 secs
 - d.none of the above
- 31.Number of electronic cards available in E-70 panel
- a.4
 - b.6
 - c.2
 - d.3
- 32.The pressure switch associated with working of Baby compressor is
- a.Pn 26
 - b.n 60
 - c.Pn 59
 - d.Pn 6
- 33.The number of PBU available in WAP-7 locos is
- a.04
 - b.12
 - c.02
 - d.08
- 34.The number of sanders to be kept in service in WAP-7 locos is
- a.08
 - b.12
 - c.04
 - d.None
- 35.In E-70 brake system locos the coc-47 is used for
- a.Moving the loco dead
 - b.Application of brakes through A9
 - c.Operation/Isolation of PBU
 - d.Operation/Isolation of sanders
- 36.The size of choke available in sander circuit in WAG-9/WAP-7 locos is
- a.5.5mm
 - b.2mm
 - c.3 mm
 - d.4mm
37. The switch used for isolation of vigilance control device is
- a.125
 - b.154
 - c.160
 - d.237.1
- 38.The operating pressure of contactors in TC1, 2 & HF
- a.10kg/sqcm
 - b.6kg/sqcm
 - c.5kg/sqcm
 - d.8kg/sqcm

- a.4, 4 b.4, 2 c.2, 4 d.1, 2
52. BUR 1 & 2 operate at _____ Frequencies.
- i)37 Hz ii)50 Hz iii) 44 Hz
- a.I & II b.I, II & III
c.II only d.I & III

- 53.Consider following activities
- 1.SR changing
 - 2.SRMPH changing
 - 3.OCB radiator changing
 - 4.VCB changing
- Which of the above activities requires roof lifting?
- a.1 & 4 b.2 & 3
c. 2 & 4 d.1 & 3

- 54.Consider following activities
- 1.TM changing
 - 2.Wheel Set changing
 - 3.Axle damper changing
 - 4.PHS changing
- Which of the above activities requires loco lifting?
- a. 1 & 4 b.3 & 4
c. 2 & 3 d.1 & 2

55. Correct arrangement of foot switches in 3Ø locomotives from Left to right in loco cab is_____.

- | L | M | R |
|---------|------|------|
| a. PVCD | PVEF | PSA |
| b. PSA | PVCD | PVEF |
| c. PVEF | PSA | PVCD |
| d. PSA | PVEF | PVCD |

- 56.In SR1 rack of 3Ø locomotives, speed sensor connected to Sub-D "C" senses speed of_____.
- a.TM 3 b.TM 2
c.TM 1 d.TM 4

- 57.Following combinations of gear ratios are used for WAG9 locomotive_____.
- a.23:58 & 20:72 b.23:72 & 20:58
c.20:72 & 21:107 d.15:77 & 21:107

- 58.For performing shunting _____switch to be kept in _____position and the speed limit is _____kmph.
- a.154, 'I', 10 kmph
b.152, '0', 5 kmph
c.160, 'I', 15 kmph

d.162, '0", 5 kmph

59. While working loco in _____ mode, VCD need not be acknowledged.

- a. Shunting
- b. Constant Speed
- c. Inching mode
- d. Braking mode

60. Which of the following statement is correct.

- a) Teeth of bull gear of WAG9 \leq Teeth of bull gear of WAP7
- b) Teeth of pinion of WAG9 $>$ Teeth of pinion of WAP7
- c) Teeth of bull gear of WAG9 $>$ Teeth of bull gear of WAP7
- d) None of the above

61. The number of teeth on the M/s ARC make Hall effect speed sensor ring are _____.

- a. 30
- b. 120
- c. 60
- d. 90

62. If the TM rotates at a speed of 600 rpm then the frequency of pulse generated by ARC make speed sensor is _____.

- a. 1.8 KHz
- b. 0.6 KHz
- c. 0.3 KHz
- d. 2 KHz

63. Consider following statements

- 1. No Inductance variation between different phases of motor
- 2. Low IR value
- 3. Low Temp. rise above ambient during run test
- 4. Low dB level recorded during run test

Which of the above statements indicates healthy motor?

- a. 1, 2 & 3
- b. 2, 3 & 4
- c. 1, 3 & 4
- d. 1, 2 & 4

64. Contactor 52/2 in auxiliary circuit is used for redistribution of _____.

- a. MRB
- b. SCTMB
- c. TMB
- d. Battery Charger

65. If any one the BURs isolated which of the following indicates correct position of 52.4/1, 52.4/2, 52.5/1 & 52.5/2 Contactors.

52.4/1 52.4/2 52.5/1 52.5/2

- a. close close close open
- b. close open close open
- c. close open close close
- d. close open open close

66. Which of the following statements is correct?

- a.89.5 – Earth fault relay in auxiliary converter and it is located in HB1 panel
- b.89.5 – Earth fault relay in 415/110v and it is located in HB2 panel
- c.89.5 – Earth fault relay in auxiliary converter and it is located in HB2 panel
- d.89.5 – Earth fault relay in 415/110v and it is located in HB1 panel

67.24V and 48V DC-DC converter feeds _____ and _____ respectively.

- a.Electronic rack cooling fan & Indication lamps
- b.Indication lamps & Electronic rack cooling fan
- c.Indication lamps & Head light
- d.Head light & Indication lamps

68.Transformer in 3Ø locomotives is having _____ number of windings.

- a.5
- b.6
- c.7
- d.8

69.MCB for machine room lightning is _____.

- a.310.1/1
- b. 310.7
- c.338.1
- d.310.4

70. _____ number of change over contactors are provided in auxiliary circuit of 3Ø locomotives.

- a.6
- b. 9
- c.10
- d.8

71.Which of the following is not a valid zinfo for “ASC1:0082 PS fault storage GBC”.

- a.1106
- b. 120D
- c.130E
- d. 1406

FILL IN THE BLANKS

- 1.In STB1 signal “AMSB_0102 LVCB on” “L” Stands for _____
- 2.Horse power of a WAG-9 loco is _____
- 3.Gear ratio in WAP-7 loco is _____
- 4.Type of Traction motors used in WAG-9 locos _____
- 5.Maximum tractive effort of a WAG-9 loco is _____
- 6.Maximum speed of a WAG-9 loco is _____
- 7.Maximum braking effort of a WAG-9 loco is _____
- 8.Maximum tractive effort of a WAP-7 loco is _____
- 9.Maximum braking effort of WAP-7 loco is _____
- 10.Ampere- Hour capacity of a WAG-9 loco battery is _____
- 11.Parking brakes are provided on wheel no _____ in WAG-9 loco
- 12.Lubricant used in gear cases of three phases locos is _____
- 13.Number of Bus stations available in three phase locos is _____
- 14.For isolating VCD, switch no _____ is to be placed on _____

15. Switch no 154 has _____ positions.
16. ZV-MV valve set consists of _____ number of GTOs and _____ number of Diodes.
17. Axle load of WAP-7 loco is _____
18. Periodicity for POH of a WAP-7 loco is _____
19. Purpose of oil cooling blowers in three phase locos is to _____
20. IN SGCI Labyrinth, SGCI stands for _____
21. Traction motor mounting arrangements in three phase locos is _____
22. For raising PT-1 only from both cabs, _____ switch is to be placed in _____ position.
23. For switching over to failure mode operation _____ switch is to be placed in _____ position.
24. Constant speed (BPCS) activates at _____ KMPH and above.
25. Parking brakes will not apply through 'BPPB' if speed is more than _____ KMPH.
26. On throwing the reverser from '0' to forward (F) the node number changes from _____ to _____.
27. Number of DC to DC converters available in a three phase loco are _____
28. VCB trips when SR oil temperature rises above _____ degrees.
29. In three phase locos cable index "DG" indicates _____
30. In three phase locos cable index "DA" indicates _____
31. In FTIL locos feed pipe coc number is _____
32. While moving a three phase loco as dead the position of following cocs shall be COC-47 _____, COC-70 _____, COC-74 _____ & COC-136 _____.
33. Maximum BC pressure applied when DBC is kept in full service position is _____
34. During changing cab rear cab SA9 (DDBV) is isolated through _____
35. The brake release time through DBC in WAG-9 is _____ Seconds.
36. Anti-compounding valves are located near _____
37. The pressure switch used for vigilance control is _____.
38. The settings of compressor governors in WAG-9 locos are _____ and _____
39. In MU operation, when SA-9 is operated brakes are applied in rear loco through _____
40. The number parking brakes units available in WAG-9 locos is _____ and available on wheel no.s _____
41. In release position of DBC BP is charged upto _____
42. KW rating of a Oil Cooling Blower motor in three phase loco is _____
43. On throwing the reverser from '0' to forward the node number changes from _____ to _____.
44. Instrument lamps works on _____ volts.
45. Rating of head light lamp in three phase locos is _____ volts and _____ Watts.
46. Capacity of a battery in three phase loco is _____ AH.
47. Over current relay in three phase locos is _____.
48. Power converter is isolated by switch No. _____
49. Sub-system '06' corresponds to _____
50. Power factor in three phase locos is _____

51. Input and output of potential transformer is _____ and _____ respectively.
52. In an electronic card "PPB622 A01", 'PPB622' stands for _____ 'A' stands for _____ and '01' stands for _____.
53. Oil used in gear case of WAG9 & WAP7 locos _____.
54. "NSC2: 0082 PS fault storage GBC" with Zinfo:1312 hex indicates defect in _____ valve set.
55. Two locomotives of ELS/LGD are provided with TCN/VCU. The acronym TCN stands for _____.
56. In M/s BHEL make IGBT locomotives, TM1 firing is controlled by _____.
57. 25A8 module is controlled by _____ M/s BHEL make IGBT SR.
58. Pre charging contactor in SR is used for _____.
59. When MCB 63.1/2 is tripped, It will consequently lead to _____.
60. 411 location indicates _____.
61. Limits of OHE voltage during working of WAG9 locomotive is _____ kV to _____ kV.
62. If temperature of SR exceeds _____ degrees then TE/BE is reduced to '0' and exceeds _____ degrees VCB will be off.
63. The letters V-O-F on cab buzzer indicates _____.
64. Self hold mode means _____.
65. The fault message F0101p1 results in _____.
66. S/R interlock activates after attaining a speed of _____ kmph.
67. In _____ mode, working of VCD can be tested on standstill position in 3Ø locomotives.
68. ZBV stands for _____.
69. Number of GTO Gate units available in SRs of locomotive are _____.
70. The brake rigging arrangement of WAP7 locomotives is similar to _____ locomotive.
71. The grease used for lubrication of bearings of FRA 6068 is _____.

SYLLABUS FOR PROMOTION AS JE-II IN SCALE Rs. 9300-34800+4200(GP) IN TRS ORGANISATION AGAINST 25% RANKERS QUOTA & 25% LDCE Quota.

I.

1. Study of Electricity ohms Law Magnetism Flemings R.H. Rule, L.H. Rule, Lenz's Law, BM Induction Parameters of D.C circuits, working principles of D.C. Machines, Characteristics, speed control.
2. Study of Characteristics, Armature, Reaction, Commutation Improvements for commutation and suitability of D.C. Series Motor for traction duty - study of Traction Motor used in A.C. Locomotives WAP4/5/7 & WAG5/7/9 Maintenance, repairs, overhaul.
3. A.C. Circuits, parameters of A.C. circuits, Simple calculations, study of power supply arrangements of A.C. traction.
4. Study of current collection in A.C. Locomotive, study of roof equipment of A.C. Loco.
5. Study of Transformer principle, overhaul and maintenance of Transformers, Auto-Transformers, conditions for parallel operation of transformer, study of transformer used in A.C. Loco WAP4/5/7 & WAG5/7/9 Maintenance and overhauling tests to be conducted on the transformer, study of tap changer, operation method for voltage control, Testing of transformer.
6. Study of fuse protectors, switches and isolators, construction and working detail of circuit breakers of A.C. Loco (DL).
7. Study of various type of contractors and relays, study of relays and contractors used in the A.C. Loco, B Drum, contractors. Function of blow out coil and arc chutes.
8. Study of Batteries, commissioning (initial charging) maintenance and reclamation and battery charging procedures.
9. Study Rectification methods, filters, study of Silicon rectifier, smoothing reactor in the Loco study of semi-conductor devices, battery charger.
10. Safe working on the locomotive precautions to be taken, Fire preventive measures in the locomotive and study of fire fighting.
11. Study of transmission lines and distribution lines and under ground cables, study of erecting the lines determination of conductor size and re-cabling of locomotives.
12. Study of 3 phase induction motors principle, maintenance and overhauling, study of Induction generator, working principles, study of Arno, Aux, machines of A.C. Loco. **Maintenance of Three phase traction motor FRA 6068 and its cooling arrangement. Speed sensor and temperature sensor of traction motor and their**

importance in Three phase locomotives.

13. Study of Earth testing procedure, insulation test for various equipments and testing of insulators.
 14. Study of power factor and the improvement methods demand and economy in installation of Electrical energy.

 15. Study of circuit, analysis of WAP4/5/7 & WAG5/7/9 locomotive i.e study of circuits, cabling Index and other drawings. **Cooling circuit of WAP7 and WAG9 locomotives.**
 16. Three Phase locomotives: **Battery charging arrangement in 3Ø locomotives. Auxiliary power supply and load sharing between BURs during normal condition and during isolation of one BUR. Understanding the working of various contactors associated with Harmonic filter. Understanding of various MCBs provided in HB and SB panels and their importance in trouble shooting various faults.**
 17. Three Phase locomotives-Pneumatic system: **understanding of BP charging in 3Ø locomotives in E70 brake system. Brake application and release using A9 and SA9. Different kinds of braking available in three phase locomotives. Overview of Brake electronics. Understanding the E70 tri-plate panel-various cocs, valves and their location and position.**
 18. Three Phase locomotives - Features: **Protective functions in three phase Locomotive (ABB document 3EHP 541526), working of VCD, Failure mode operation, Inching mode operation, Constant speed control, Traction Interlock, SR Interlock and Indication of faults using BPFA & LSFL.**
 19. Measurements of Resistance, current voltage, power study of various types meters and equipment used, megger, diode tester, ammeter, Voltmeter etc., Uses of shunts, multipliers.
 20. Study of WAP4/5/7 & WAG5/7/9 Bogie, wheel arrangements, suspension arrangements and all mechanical features like elements of Vibration, Oscillation, Damping devices, Elasticity etc.
 21. Study of Sander gear and Brake rigging, various types of brake systems in A.C Loco.
 22. Study of Pneumatic circuitry of WAP4/5/7 & WAG5/7/9, Study of various Pneumatic Valves, braking system (E System)
 23. Study of stores and accountal correspondence.
 24. Study of maintenance schedules for various equipment in the A.C. Locomotive, its periodicity.
 25. Study of Locomotive, testing, engine fitness and trouble shooting procedure.
 26. RDSO modification and SMIs implementation and maintenance of various records.
 27. New equipments in loco such as MPCS, SIV, VCD and WMUCS and **understanding basic features of M/s BHEL make IGBT locomotives.**
- II.a). Railway service conduct Rules, Pass Rules, D&A Rules, Hours of employment regulations, payment of wages Act, WC Act.

b).Procurement of stores – stocked items and non-stocked items – Imprest stores
Disposal of unserviceable stores – stock verification.

c).Rules and Regulations about Official Language.-

I. Choose the right answer

1. (c) 2. (a) 3. (c) 4. (c) 5. (d)
6. (a) 7. (b) 8. (c) 9. (c) 10. (d)
11. (b) 12. (b) 13. (a) 14. (c) 15. (d)
16. (c) 17. (c) 18. (a) 19. (b) 20. (a)
21. (b) 22. (c) 23. (c) 24. (b) 25. (d)
26. (c) 27. (a) 28. (c) 29. (c) 30. (c)
31. (b) 32. (d) 33. (c) 34. (a) 35. (b)
36. (b) 37. (d) 38. (a) 39. (d) 40. (a)
41. (b) 42. (d) 43. (a) 44. (c) 45. (c)
46. (b) 47. (d) 48. (a) 49. (c) 50. (d)
51. (b) 52. (b) 53. (c) 54. (b) 55. (d)

II. Fill in the blanks:

1. 20:72
2. $20.5 \pm 2\%$ tones
4. 75
5. Blower for cooling transformer oil
6. WAP-4
7. 29mm
8. Parallel
9. Commutation
10. Higher
11. Main compressor and motor
12. Dissolved gas analysis
13. 1.875Ω
14. AM-12
15. Full wave Bridge
16. TM over voltage relay
17. Two
18. Generator
19. Pantographs
20. 04
21. 20/25 to 25/30
22. 3.5 kg/cm^2
23. 58 to 68 mm
24. Proportional

- 25. 150
- 26. ZLS
- 27. 630
- 28. 6.5
- 29. 45

III. Match the following:

- | | | | | | | | | | |
|----|---|----|---|----|---|----|---|----|----|
| a) | 6 | b) | 8 | c) | 7 | d) | 3 | e) | 2 |
| f) | 5 | g) | 1 | h) | 4 | i) | 9 | j) | 10 |

Questions on DAR, Stores, Personnel & General matters

2) SF-V to be used when it is proposed to take up an employee for imposition of major penalty.

Question of Official Language

3.

- (i) Quality
- (ii) Useful
- (iii) Maintenance
- (iv) Auxiliaries
- (v) Purpose

5. Translate into English

- (i) Electrical protection/Safety
- (ii) Maintenance
- (iii) Fire accident
- (iv) Attendance register
- (v) Examination

OBJECTIVE TYPE QUESTIONS:

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

52. DU
53. DI
54. 5A
55. AC pulses
56. One lakh ohms
57. 1.6Ω
58. 3HP
59. Continuity of fuse
60. Charger working
61. Addl. CCBA
62. Neutral
63. Gassing
64. Sulphation
65. Di-electric heat disipation factor
66. to monitor the health of TFP
67. To give dry air and absorb the moisture in the oil
68. Kick
69. High currents
70. HOM
71. 5
72. RS Shunting Resistor
73. $415V \pm 5\%$
74. Inbuilt mineral oil (IS 12463)
75. Di-electric strength of the equipment (health of insulation)
76. Failure rate percentage per year
77. Resistance 1.5Ω , capacitance : 50 micro fard $\pm 5\%$
78. Cylindrical Roller bearings
79. Check the vibration levels of bearings
80. H
81. ARNO U&V
82. BDV test
83. 35 PPM, 25 PPM
84. 1×10^{12} cm
85. 1.0 Max, 0.002 Max
- 86.
87. 0.10% by mass
88. 140°C , above 140°C
89. 0.04 n meters
- 90.
91. 11.5 – 13.5mm
92. Reduce starting
93. 4 to 4.5 kg/cm²
94. 40-60 per minute
95. 3.5 kg-m
96. $7.8 \pm 20\%$
97. 10 ± 1 kg
98. 0.83 micro fard
99. 800 to 1100 gms
100. 8.5 ± 1 mm

101. 5 to 8 kg contact (C118) air gap 16 to 18 mm
102. 7.8 \pm 20% kg
103. Cooling & insulation
104. Temperature
105. Sulphuric Acid
106. 1240
107. C108
108. Specific gravity
109. 46/36 mm (New/Condemned)
110. 29-33 mm
111. 60 KVA
112. CGR 1 - 2 closed
113. Water, Electronics
114. 380 to 415V output 110V
115. C
116. 230V AC
117. 2mm
118. 2mm
119. 120 sq mm
120. 3000 rpm
121. DS - 8
122. Y= 90°C : A=105°C : E=120°C : B=130°C : F= 155°C. H=180°C, C=225°C
123. 1.6 Ω
124. 3 X 3200 Ω
125. 0.4 Ω
126. 210 Ω
127. 0.03m Ω
128. 1250 Ω
129. 0.03 Ω
130. 0.03 Ω /0.03 Ω /0.03 Ω /0.03 Ω
131. 0.285 Ω
132. 216A
133. Surge comparison tester
134. 75A
135. 0.0765 Ω
136. 0.0464 Ω
137. 0.0321 Ω
138. First year failure report
139. 0.6/0.4 kg/cm²
140. 4.0/3.5
141. 4.8/4.6
142. 4.6/4.4
143. Driving technique and use of Proportionate brake application to prevent cases of wheel skidding on electric locomotives.
144. Procedure for cleaning the pneumatic pipe lines of electric locomotives by “Blowing through”
145. IT, IA, IB, IC 2nd IC, AOH, MOH, IOH
146. Trip shed and IT
147. Modification sheet and Technical circular
148. POH and MTR

- 149. 2 years.
- 150. 6 years
- 151. 12 years
- 152. 9 months
- 153. 6 months
- 154. 9 years
- 155. 4.5 years
- 156. 1.5 years
- 157. 9 months
- 158. 3 months
- 159. 6months
- 160. 2500
- 162. E5
- 163. M6
- 164. PPO
- 165. Drawing
- 166. Investigation
- 167. Investigation
- 168. all minor schedules
- 169. Traction motor
- 170. E2
- 171. Mechanical inspection (M1)
- 172.
 - 1. Chittaranjan Loco works
 - 2. Central organization for modification of work shops
 - 3. Director general of supply & disposal
 - 4. Machinery & plant
 - 5. Rolling stock programme
 - 6. Proprietary article certificate
 - 7. Part list no.
 - 8. Rail India Technical Economic Services Ltd
- 173. 2 Lakhs
- 174. 5 Lakhs
- 175. 10 Lakhs
- 176. 10,000/-
- 177. S-1302A
- 178. S-1830
- 179. 70%
- 180. JS/SS Officer
- 181. JAG Officer
- 182. HOD
- 183. PHOD
- 184. > 40 Lakhs
- 185. 5.75 - 40 Lakhs
- 186. 25,000 - 5.75 lakhs
- 187. up to 25,000/-
- DAR & Suspension related rules
- 188. S.F.III
- 189. S.F.VII
- 190. S.F.V

191. S.F.I
192. 3.1- i ii iii
193. Rule 22 (RS.Rules 66)
194.45 Days
195.
196.G.P.1800/- (Gr.D)
197.Penalty
198.CENSURE
199.Rule - 6
200.01.10.1968
201.Yes
202.Rs.10,000/-
203. which exceeds two months' basic pay of the railway servant,
204. 45 days
205.D.A
206.10 days
207.10 days
208.Exparte desion
209.Charges employee
210.Disciplinary Appeal Rules 1968
211.30 days
212.DRM
213.5 Years
214.3.C (Railway service conduct rules 1966)
215.President of India (Union Public Service Commission)
216.September 14th
217.Continuous
218.22 languages
219. A, B, C, D
220.20 Years
221.05 Years
222.Sr.DPO
223.120 Days
224.DRM
225.DRM
226.30%
227.30 Days
228.Double
229.1½ times
230.DRM
231.G.P 2800/-
232.Schedule of powers
233.Annual Confidential report
234.Rule 9 to 13
235.Reduce/Enhance
236.Reduce
237.Enhance
238.Enhance
239.Enhance
240.309

- 241.RPF Staff
- 242. All India Services
- 243.Not
- 244. Union Public Service Commission
- 245.Railway Rate Tribunal
- 246.General Manager
- 247.List of Witness
- 248.S.F.11
- 249.Higher

Three Phase Locomotives

- 1. (c) 2. (ii) 3. (a) 4. (b) 5. (a) 6. (i)
- 7. (a)

Match the following (30)

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

CHOOSE THE CORRECT ANSWER

- 1. (b) 2. (b) 3. (b) 4. (a) 5. (c) 6. (c)
- 7. (c) 8. (b) 9. (d) 10. (c) 11. (d) 12. (a)
- 13. (c) 14. (c) 15. (b) 16. (c) 17. (c) 18. (b)
- 19. (b) 20. (d) 21. (b) 22. (b) 23. (c) 24. (b)
- 25. (a) 26. (b) 27. (b) 28. (b) 29. (a) 30. (d)
- 31. (a) 32. (a) 33. (a) 34. (a) 35. (a) 36. (c)
- 37. (d) 38. (d) 39. (c) 40. (d) 41. (c) 42. (c)
- 43. (d) 44. (d) 45. (c) 46. (c) 47. (c) 48. (b)
- 49. (a) 50. (a) 51. (b) 52. (a) 53. (d) 54. (d)
- 55. (d) 56. (b) 57. (c) 58. (c) 59. (c) 60. (c)
- 61. (b) 62. (d) 63. (c) 64. (d) 65. (d) 66. (d)
- 67. (b) 68. (c) 69. (d) 70. (b) 71. (d)

FILL IN THE BLANKS

1. Line voltage CKT
2. 6000 HP
4. 3Ø slipring Induction motor
5. 47 tonnes
6. 100 kmph
13. 7
15. 4
16. 4 number of GTOs and 4
17. 20.5+2%
18. 9 years \pm 6 months
24. 5
27. 4
28. 50°C
46. 190
48. 154
49. BUR-1
51. 25KV/200V
54. 12/2
55. Train Communication Network
56. DCU2
57. DCU3
58. Reducing inrush current
59. Bogie isolation due to high converter oil temperature
60. VCU1 rack
61. 17.5 kV and 30 kV
62. 64, 80
63. Vigilance, Over speed and Fire
64. CEL will remain active for 10 mins.
65. Main power off
66. 10 kmph
67. Simulation
68. MU train bus
69. 30
70. WAG7
71. SHC 120