

Subjective questions on MDT-01

1. Explain working of an I.C engine with a neat diagram. Describe scavenging action in reference to I.C. engines.
2. Describe working of a two stroke and four stroke I.C. engine.
3. What is tractive effort, what is adhesion ratio? What are the requirements of a locomotive for having good tractive effort?
4. Draw a layout of Alco locomotive and briefly explain various major equipments.
5. What is heat engine? Explain about different kind of I.C. engines.
6. Explain about different class of Alco locomotives used over Indian railways.
7. What are the various traction machines fitted on Alco locomotives, explain.
8. What are advantages of HHP locomotives over Alco locomotives in respect of tractive effort and speed characteristics?
9. What do you understand by supercharging, what is its various method and benefits describe in detail.
10. Explain construction and working of a turbo supercharger with neat diagram.
11. What is the overhauling procedure of a turbo supercharger? What are the common defects by which a TSC gets failed during service?
12. Compare advantages of air brake system over vacuum brake system in railways.
13. Which are the various valves fitted in IRAB1 brake system of Alco locomotives.
14. What is independent brake and what is automatic brake valve of loco, explain working of independent brake valve in Alco locomotive.
15. What do you understand by CCB, explain working of CCB system with block diagram?
16. What are the common defects of Air brake system fitted on Alco locomotives?
17. What are the common defects of CCB brake system fitted on GM locomotives, explain the corrective action to be taken.
18. Explain construction and working of fuel oil system of Alco locomotives.
19. What are the various defects of fuel oil system components for Alco locomotives, explain in detail.
20. What is orifice test for fuel system of loco? What are the reasons for injector failure?
21. What is the testing procedure of an Injector after overhauling?
22. Explain construction and working of fuel oil system of GM locomotives.

23. What are the various defects of fuel oil system components for Alco locomotives, explain in detail.
24. What is unit injector? Explain about construction detail and common defects of Mechanical unit injectors fitted on GM locos.
25. Explain construction and working of lube oil system of Alco locomotives.
26. Explain construction and working of lube oil system of GM locomotives.
27. What are the reasons of locomotive failures during working on line related to lube oil system for Alco locomotives?
28. What are the reasons of locomotive failures during working on line related to lube oil system for GM locomotives?
29. Explain overhauling and testing procedure of a lube oil pump provided in GM locomotives.
30. Explain overhauling and testing procedure of a lube oil pump provided in Alco locomotives.
31. Explain construction and working of water cooling system of GM locomotives.
32. Explain construction and working of water cooling system of Alco locomotives.
33. What are the defects of water cooling system of Alco locomotives?
34. What are the defects of water cooling system of GM locomotives?
35. Explain overhauling procedure of water pump fitted on Alco locomotives.
36. Explain overhauling procedure of water pump fitted on GM locomotives.
37. What are the items related to water cooling system which needs attention during summer drive.
38. Draw layout of a Diesel shed and briefly explain working of important sections.
39. What is the maintenance schedule for Alco locomotive? What is the importance of preventive maintenance?
40. What is the maintenance schedule for GM locomotive? What is the importance of preventive maintenance?
41. What are the main records which are being maintained at control room of a diesel shed?
42. What do you understand by outage target? Calculate the outage for holding of 150 locomotives.
43. What is super check? What are its advantages? What are the various parameters checked during super check by supervisors.
44. What are the various kind of bogies used on Alco locomotives.
45. What is suspension system, how load of locomotive is transferred to track in Alco locomotives.

46. What is suspension system, how load of locomotive is transferred to track in GM locomotives.
47. What is HTSC bogie, what are its advantages and what are its various components.
48. What are the various parameters checked during maintenance of bogie.
49. Explain fitment procedure of gear case of Alco locomotives.
50. Explain fitment procedure of gear case of GM locomotive, what precautions are required to avoid oil leakage from Gear case.
51. What are different safety fitting provided in bogies of locomotives.
52. What precaution should be taken for safe operation of bearings fitted at axle of locomotive?
53. What is REMMLOT, what are its advantages? What are the various reports generated by REMMLOT system.
54. What is VCD, in which conditions it becomes active. What is the procedure to reset VCD?
55. Write main featured and advantages of GE locomotives.
56. Why a transmission system is required in locomotive, what are the features of ideal transmission system?
57. Describe working of AC-AC transmission system fitted on locomotives.
58. What are the various major equipments of transmission system fitted on Alco locomotives?
59. Describe working of Hydraulic transmission system, what are its disadvantages.
60. Describe working of Electrical transmission system, what are its disadvantages.
61. What are the various electrical rotating equipments fitted on Alco locomotive.
62. What is the overhauling procedure of a traction motor?
63. Describe construction and working of a traction motor.
64. Explain working of transition system of Alco locomotive.
65. What is dynamic braking, what are its advantages? Explain working of dynamic braking in Alco locomotive.
66. What are various types of excitation system fitted on Alco locomotives?
67. What is transition system? Explain about working of transmission system fitted on Alco locomotive.
68. Explain the process, how the output of traction alternator is controlled in locomotives.
69. Explain the role of traction motor during dynamic braking in Alco locomotives.

70. Explain, why the output voltage of AG is fixed at 68~72 VDC at every notch despite of changing rpm of engine.
71. What is ECC, what is its working principle and what are common problems related to working of ECC.
72. What is CCEM, what is its role in locomotive? What precautions are to be taken to avoid failure related to CCEM?
73. Explain the working of grid blower motor, in event of dynamic braking.
74. What is APU, what are its advantages and what are the conditions in which it gets started.
75. What are the features of MEP 660 v.3 microprocessor system fitted on Alco loco?
76. What is DPCS, what are its advantages? Briefly explain working of DPCS system.
77. What are the types of governors fitted on Alco locomotives?
78. Explain construction and working of a wood ward governor.
79. Explain working of a MCBG governor.
80. What the main sections of wood ward governor section, explain basic working principle of any two sections.
81. What are the various amenities provided in loco cab for drivers, explain in brief.
82. Explain working and overhauling procedure of hand brake assembly.
83. What is sanding arrangement provided in locomotives, what are the precautions taken to ensure efficient working of sanders.
84. What is the various mechanical safety devices fitted on Alco locomotive?
85. What is the various electrical safety devices fitted on Alco locomotives?
86. What is load box test, when it is carried out? What are the various parameters recorded during load box test.
87. Compare features of water load box test and grid load box test.
88. What is dry run test, how it is done on locomotive.
89. What is blow by test? Explain the procedure of performing blow by test on locomotives.
90. What is multiple operation of locomotive, what are its advantages and disadvantages what are the connections which are made for making MU.
91. What are the remedial actions for prevention of failures related to fuel oil system in Alco locomotives?
92. What are the remedial actions for prevention of failures related to fuel oil system in GM locomotives?
93. What are the remedial actions for prevention of failures related to lube oil system in Alco locomotives?

94. What are the remedial actions for prevention of failures related to lube oil system in GM locomotives?
95. What are the remedial actions for prevention of failures related to water cooling system in Alco locomotives?
96. What are the remedial actions for prevention of failures related to water cooling system in GM locomotives?
97. Explain working of DPC in DEMU with block diagram.
98. What do you understand by distributed power control system, what are its advantages? In Indian railways in what type of rolling stock it is used.
99. Explain power distribution in Alco locomotive with help of diagram.
100. Explain power distribution circuit of GM locomotive with diagram.
101. What are the various rotating equipments fitted on GM locomotive, explain.
102. What are the common problems which may result as fuel pressure drop in Alco and GM locomotive during train operation?
103. What are the areas which are lube oil leakage prone in Alco locomotives, what precautions should be taken to avoid such leakages?
104. What are the various classes of Goods locomotives used in Indian Railway, describe. How they differ from passenger locomotives.
105. What do you understand by tractive effort, on which factors it depends on rolling stock explain about various characteristics of locomotive related to tractive effort.
106. What is the various traction equipment, which is fitted on Alco locomotive? What is the latest technology which is being adapted for operation of traction equipments in locomotive?
107. Explain the various features of High horsepower DEMU rake. How power is transferred from overhead cables to the traction motor.
108. Explain about the power distribution circuit of Mainline Electric Multiple Unit. How power is distributed for traction system and train lighting system and auxiliary equipments.
109. What are the various indications provided on MEMU rack in driver cable? Explain the various combination of EMU basic unit. What are the advantages of MEMU over conventional locomotive hauled train?
110. What do you understand by Distributed power control system? What are the various rolling stock operational in Indian Railways which work on concept of distributed power? What are the advantages of distributed power over conventional method of hauling a train?
111. What are the advantages of distributed power system? What are the design features which are being considered during designing a high speed train?
112. What is a DC link where it is provided in traction system? What is a chopper circuit? Explain working of freewheeling diode which is provided at output stage of the inverter circuit.

113. What are the precautions which are being taken to prevent the failure of water cooling system during summer season? What record is being maintained for successful implementation of the same at shed level?
114. What are the precautions to be taken to avoid lube oil system related failure in locomotive what are the main reasons of Lube oil system related failure in Alco and GM locomotives.
115. Explain the overhauling process of fuel injection pump, how it is tested at test bench after overhauling.
116. What is Record Keeping? Why it is important. What are the various records which are being maintained at shop floor level how it is effective for improvement of maintenance practices.
117. What is cattle guard and what is rail guard? Where these fittings are provided in locomotive what are the different type of cattle guard used in locomotive explain the fitment procedure of cattle guard in a locomotive.
118. What is a radiator fan? Where it is fitted on locomotive what precautions should be taken to avoid failure defect of radiator fan during locomotive operation. What parameters should be checked in case of low RPM of radiator fan?
119. What is vigilance control device? Why it is provided in rolling stock explain the reset procedure of vigilance control device provided in locomotive.
120. What is regenerative braking how it is done in case of 3-phase traction system having three phases AC traction Motors.
121. What do you understand by a three phase system? What are the advantages of three phase electrical machines over single phase electric machines?
122. What is a rectifier? Explain working of full wave rectifier circuit Why AC power is converted into DC power before feeding it too AC traction Motors.
123. What do you understand by insulated Gate bipolar transistor? How current is controlled by controlling the voltage of gate? What are the advantages of insulated Gate bipolar transistor over Gate turn off thyristor.
124. What is distributed power rolling stock? What are its advantages? What are the various rolling staff working in Indian Railways which are acting on the principle of distributed power?
125. What are the features of Train-18 which are effective during the movement of Train-18 at higher speed?
126. What is Hydraulic transmission system, explain the working of Hydraulic oil system in Diesel electrical multiple unit.
127. What are the various passenger amenities which are provided in mainline electrical multiple units explain some of them.
128. What is a Bogie? What are the various factors which affect the design of a Bogie? What are the various fittings which are helpful in a high speed bogie for operation of Rolling stock at higher speed?
129. What is Auxiliary Power Unit where it is located in a locomotive? What are its advantages what are the condition in which auxiliary power unit get started what systems are being supported by Auxiliary power unit in case of shutdown of main engine.

130. What are the various electric rotating machines fitted on locomotive, explain their roles.
131. What is insulation resistance how it is measured? What is its importance in electrical circuit of locomotive? what are the steps taken to improve the insulation resistance
132. What is a relay? What are the various relays fitted on Alco locomotive.
133. What is a power contactor? What are the various part of a power contactor explain the working of a power contactor. What are the steps to be taken to avoid flashover during movement of power contactor?
134. What is a plain bearing? At which locations plain bearing are used in locomotive. Explain the method to change the main bearing of locomotive, what are the important measurements to be taken while changing process of the main bearing.
135. What is a power assembly? What are its constituents explain the chemical composition of various component of a power assembly.
136. What is a power assembly? What are the steps which are taken during Failure investigation of a power assembly? What are the probable causes of failure of power assembly?
137. What is cranking in a locomotive? How it is carried out. Explain the cranking procedure of locomotive with circuit diagram.
138. What is the various section of Woodward governor? Explain the overhauling procedure of Woodward governor.
139. What are the advantages of microprocessor based control system? What are the various sub-systems which are controlled by a microprocessor in a locomotive?
140. Explain the features and advantages of MEP-660 microprocessor based control system fitted in Alco locomotive.
141. What are the electrical items which are to be checked before conducting load box test? What are the main electrical parameters which are being recorded during load box test?
142. What is a commutator? What precautions should be taken to avoid electrical flashover on commutator surface during operation of locomotive?
143. What is a low water switch how it works? Explain the working method of water level sensor and Indicator which is provided in place of low water switch.
144. What are the main reasons of failure of fuel booster pump? What are the advantages of providing it at under slung location in HHP locomotives?
145. What is ground relay, in which condition it operates? What precautions to be taken to avoid operation of ground relay.
146. What is wheel slip? What indications does a driver get in condition of wheel slip what are the various factors which causes wheel slip in a locomotive during train operation?