

**QUESTION PAPER FOR THE POST OF JUNIOR ENGINEER/WS
(MECHANICAL DEPARTMENT)**

**Date : 31/01/2018
Time: 3 Hrs.**

INSTRUCTIONS

PART - A

1. Common to all candidates
2. Consists of 50 Objective type questions
3. Each question carries one mark
4. All questions are compulsory. 50 x 1 = 50 Marks
5. No Negative Mark for wrong answer.
6. Select the most appropriate answer.

PART - B

Section - I Common to all candidates
Answer any FOUR questions 4 x 5 = 20 Marks

Section - II Trade questions
Answer any THREE questions 3 x 10 = 30 Marks

PART - A

**Answer all questions
Choose the correct answer.**

50 Marks

1. Wheel base of FIAT bogie is
(a) 2000 mm (b) 2560 mm (c) 2896 mm (d) 2100 mm
2. In EMU coaches, air springs are used in
(a) Primary Suspension (b) Secondary Suspension
(c) Both (d) None of the above
3. Corrosion resistant structural steel used in coach buildings, are procured to _____ specification.
(a) IRS:M-41 (b) IS:2062 (c) IRS:M-44 (d) IS:1875
4. Non- stocked stores are procured by submitting _____ indents.
(a) S1813 (b) S 1313 (c) S1539 (d) S 1302
5. WPS refers to
(a) Welding Process Specification (b) Welding Process Shell
(c) Welding Procedure Schedule (d) Welding Procedure Standard.
6. The negative camber of MUTP motor coach underframe is
(a) 6 – 15 – 6 mm (b) 10 – 25 – 10 mm
(c) 10 – 15 – 10 mm (d) 15 – 25 – 15 mm

7. The effective resistance (R) of two resistors of R1 and R2 when connected in series is
 (a) $R = R1 + R2$ (b) $R = 1/R1 + 1/R2$ (c) $1/R = 1/R1 + 1/R2$
 (d) $R = R1 - R2$.
8. AAR H type tight lock centre buffer coupler is fitted in
 (a) LHB coaches (b) MUTP EMU coaches (c) DEMU coaches
 (d) None of the above.
9. Heat treatment is the process of heating and cooling of steel in ____ state.
 (a) Liquid (b) Solid (c) Gaseous (d) None of the above.
10. Shot blasting of ICF shells are done in paint shop for
 (a) Improve strength of shell (b) Surface preparation
 (c) Heat treatment (d) None of the above.
11. ICF conventional coaches currently are fitted with
 (a) Twin pipe air brake system (b) EP brake system
 (c) Vacuum brake system (d) None of the above.
12. Resistance spot welding is used in sidewall manufacture of
 (a) LHB coaches (b) ICF conventional coaches
 (c) Both (d) None of the above.
13. Welding Manipulators are used in bogie frame manufacture to ensure
 (a) Down hand welding (b) Over head welding
 (c) Plug welding (d) None of the above
14. In hardening of steel, Quenching is the process of cooling the steel at
 (a) Moderate cooling rate (b) High cooling rate
 (c) Normal cooling rate (d) Slow cooling rate
15. The following leave is not a recorded leave
 (a) Casual Leave (b) LAP
 (c) LHAP (d) Hospital leave
16. In Wheel turning lathe, _____ tools are used for machining
 (a) High speed steel tools (b) Medium carbon steel tools
 (c) Carbide tipped tools (d) Carbide brazed tools.
17. The bearing used in ICF coach wheel set is
 (a) Self aligning spherical roller bearing (b) Cartridge roller bearing
 (c) Double row needle bearing (d) Double row ball bearing
18. In ICF, flux cored wire is generally used in joining
 (a) MS to corten steel (b) Stainless steel to stainless steel
 (c) Corten steel to stainless steel (d) Corten steel to corten steel

19. Point angle or cutting angle of general purpose standard drill is
(a) 130 degree (b) 120 degree
(c) 118 degree (d) 110 degree
20. Coach lifting jack threaded spindle for lifting & lowering the load is provided with
(a) Buttress thread (b) Square thread
(c) Trapezoidal thread (d) ACME Thread.
21. _____ are used where a large speed reduction is desired
(a) Helical gear (b) Bevel gear (c) Worm gear
(d) Herring bone gear.
22. In MRVC/ MUTP AC EMU rakes manufactured by ICF is fitted with electric traction manufactured by _____
(a) M/s. Medha (b) M/s. Bombardier (c) M/s. Siemens
(d) All of the above.
23. Flexi coil springs are used in
(a) Primary suspension system of EMU Bogie
(b) Secondary suspension system of EMU Bogie
(c) Primary suspension system of FIAT Bogie
(d) Secondary suspension system of FIAT Bogie.
24. Purpose of hot air welding in PVC flooring is
(a) to prevent water seepage (b) to give better appearance
(c) to reduce wear resistance (d) None of the above.
25. The occupier of LHB unit of ICF is
(a) CWE/Shell (b) CWE/Fur (c) CME/QA (d) CPM
26. SS trough floor is manufactured by _____
(a) Hot rolling (b) Cold rolling (c) Spinning (d) None of the above.
27. Which one of the following D& AR punishment is disqualification for future employment?
(a) Removal from service (b) Suspension
(c) Compulsory retirement (d) Dismissal from service
28. ERP is
(a) Enterprise Resource Planning
(b) Energy Renewal Plant
(c) Energy Resource Planning
(d) Energy Renewal Procedure

29. Integrated Communication coach (ICC) is produced at ICF for
 (a) Indian Railways (b) MUTP
 (c) Defence Services (d) None of the above.
30. Yaw Damper is provided in
 (a) MUTP EMU coaches (b) DEMU coaches
 (c) LHB coaches (d) ICF Conventional coaches.
31. Cartridge roller bearing (CTRB) is used in wheel sets of
 (a) FIAT bogies (b) EMU Bogies
 (c) DEMU Bogies (d) ICF AC bogies.
32. Vertical Restrictor is to be provided in CBC of front end of _____ coach.
 (a) LWLRRM (b) LACCN (c) LWS (d) LS DD
33. An employee will be under deemed suspension when he/she is under detention by the police or a criminal court for a period exceeding
 (a) 24 hours (b) 48 hours (c) 36 hours (d) 72 hours
34. Maximum percentage of incentive that can be earned by ICF employee is
 (a) 50% (b) 60% (c) 70% (d) no limitation
35. The vertical load of conventional / EMU coach body is transmitted to bogies through
 (a) Centre pivot (b) Side bearer (c) Anchor link
 (d) Enhanced screw coupling
36. The tread diameter of wheel of ICF bogie, when new is
 (a) 1000 mm (b) 915 mm (c) 985 mm (d) 860 mm.
37. SPART is used for
 (a) Ultrasonic testing of rails. (b) Inspection of OHE equipments
 (c) Accident relief operations (d) Regular track inspections
38. The most popular firing order in case of four cylinder in-line IC engine is
 (a) 1-2-3-4 (b) 1-3-2-4 (c) 1-3-4-2 (d) 1-2-4-3
39. The device used to reduce exhaust noise in automobile is called
 (a) Exhaust Pipe (b) Exhaust manifold (c) Muffler (d) Tail pipe.
40. Cold working
 (a) increases fatigue strength
 (b) decreases fatigue strength
 (c) has no influence on fatigue strength
 (d) None of the above.

41. The function of a washer is to
(a) provide cushioning effect
(b) provide bearing area
(c) absorb shocks and vibration
(d) act as a locking device.
42. Turn buckle has
(a) right hand threads on both ends
(b) left hand threads on both ends
(c) No thread
(d) left hand thread on one end and right hand thread on other end.
43. Spring stiffness is
(a) ratio of coil diameter to wire diameter
(b) load required to produce unit deflection
(c) its ability to absorb shock
(d) its capacity to store energy.
44. The assembly of Wheel seat of axle and wheel disc bore produces
(a) clearance fit
(b) running fit
(c) interference fit
(d) transition fit
45. A cold chisel is made of
(a) HSS
(b) Cast iron
(c) Mild steel
(d) High carbon steel
46. Solder is an alloy consisting of
(a) tin, antimony and copper
(b) tin and copper
(c) tin and lead
(d) lead and zinc.
47. Carburising flame has
(a) one zone
(b) two zones
(c) three zones
(d) four zones
48. S curve is connected with
(a) combustion
(b) cutting tools
(c) corrosion
(d) heat treatment
49. Stretch forming is a process of
(a) forging
(b) extraction
(c) cold drawing
(d) spinning
50. The C.L.A value is used for the measurement of
(a) metal hardness
(b) surface roughness
(c) sharpness of tool edge
(d) machinability
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PART - B

Section - I

Answer any Four questions.

20 Marks

1. List out any five documents coming under Section 3 (3) of Official Language Act 1963. (5)
2. List out IMS Policy of ICF. (5)
3. Write short note on "Factories Act" (5)
4. Spell out any five kinds of Leave due to a railway servant with details of entitlement, duration etc., (5)
5. Write a note on "Official Language Implementation Committee". (5)
6. Describe the action to be taken for the imposition of Major penalty to a railway servant , step by step. (5)
7. Write short notes on "Workmen Compensation Act". (5)
8. Explain the Incentive Scheme adopted at ICF. (5)

Section - II**Answer any THREE questions****30 Marks****TRADE: ELP**

1. (a) Describe the process of electroplating with a neat sketch (8)
(b) List any four materials suitable for electroplating. (2)

2. (a) What are the benefits of electroplating ? Discuss in detail. (8)
(b) State Ohm's Law. (2)

3. (a) Describe seven tank hot phosphating process. (8)
(b) List out coach components that are hot phosphate. (2)

4. (a) Describe process of Galvanizing. (5)
(b) Write short notes on Anodizing. (5)

5. (a) Write short notes on Lead – Acid Cell. (5)
(b) What is PPE ? List out five PPEs and its uses. (5)