

2010

**INTEGRAL COACH FACTORY, CHENNAI 600 038**

**DATE OF EXAM:16/05/2015**

**DURATION:03 HOURS  
TOTAL MARKS: 100**

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**QUESTION PAPER FOR WRITTEN EXAMINATION FOR THE POST OF  
SENIOR INSTRUCTOR/ELECTRICAL (EX-CADRE)  
IN PAY BAND Rs.9300-34800 + 4600 GP**

**General Instructions:**

- i. The question paper consists of Part 'A' and Part 'B'.
- ii. Part 'A' consists of objective type questions. All objective type questions are compulsory.
- iii. Part 'B' contains descriptive type of questions. The marks are indicated against each question.
- iv. Employee's name should not be written anywhere in the Answer book except in fly-leaf.

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**PART 'A'**

**Marks 50 x 1 = 50**

**1) Choose the correct answer:**

- i) The accuracy of micrometers, callipers, dial indicators can be checked by a  
A) Feeler gauge      B) slip gauge      C) ring gauge      D) plug gauge
- ii) Static electricity is produced by  
A) Chemical reaction      B) Friction  
C) Induction      D) Both friction and induction
- iii) Ampere-hour is a unit of  
A) Quantity of electricity      B) Strength of the current  
C) Energy      D) Power
- iv) The cosine of angle between voltage and current is called  
A) Power factor      B) Form factor      C) Peak factor      D) Phase difference
- v) The purpose of choke in tube light is to  
A) Improve power factor      B) Give starting kick of high voltage  
C) Reduce flicker      D) None of them
- vi) The total installed capacity of ICF Windmill is  
A) 7MW      b) 15MW      C) 10MW      D) 10.5MW
- vii) Unit of work done is  
A) Newton-M      B) Joules      C) HP      D) Newtons
- viii) ESMON in EMU is used for  
A) Energy measurement      B) Speed measurement  
C) Both (A) and (B)      D) None of them

- ix) The contact strip of pantograph is made up of.....  
 A) Copper                      B) Aluminium                      C) Brass                      D) Carbon
- x) The 3 Phase EMUs have  
 A) EP brakes                      B) Parkings brakes  
 C) Regenerative brakes                      D) All of these

2) Match the following:

Q.No.		Ans.No.	
a.	Thermostat	1.	Quality policy
b.	Dead man's handle	2.	Capacitor
c.	DC shunt motor	3.	160 kmph (160)
d.	Continual improvement	4.	Constant speed
e.	E-beam	5.	EMU
f.	Power factor improvement	6.	Cable type
g.	L-C	7.	Insulation type
h.	LHB coaches	8.	Bimetallic principle
i.	PVC	9.	Green energy source
j.	Hydro turbines	10.	Filter

3. Write True or False:

- i. For proper tightness of nut and bolts torque wrench of desired value should be used.
- ii. The rating of main battery fuse in GSCN Coach is 45A.
- iii. High voltage transmission is used for reducing the size of conductor but it increases corona loss.
- iv. Power factor is unity means the circuit is capacitive.
- v. Voltmeter is nothing but galvanometer with a high resistance in parallel.
- vi. Two heater coils of 1000W connected in parallel will give 2000W of power for same voltage.
- vii. In Kolkata Metro rake of 8 coaches; number of motor coaches is 4.
- viii. Supply voltage received at MRS from TNEB for ICF is 11KV.
- ix. LWRRM is a power car.
- x. There is one alternator of 25kw in SGAC coach.

4. Answer in one word/sentence:

- i. What is the difference between speed and velocity?
- ii. What is the unit of magnetic flux density?
- iii. What does UL (or) PL number pertains to?
- iv. What is the full form of DETC?
- v. What is the relationship between density and volume?
- vi. What is ELCB?
- vii. Why is rubber mat provided in front of control panel of a substation?
- viii. Why is DC series motor preferred in traction?
- ix. What is the purpose of crimping tool?
- x. Why DC voltage is used for control in EMU/DEMU coaches?
- xi. What is main advantage of MCB over fuse?
- xii. Why earth resistance should be as low as possible?
- xiii. Three phase bridge rectifier will have how many diodes?
- xiv. Write ohms law?
- xv. ISO 14001 pertains to?

5. **Expand the following:**

- i. MTBF
- ii. CNC
- iii. OVP
- iv. VPI
- v. IROAF

**PART B**

**All questions are compulsory**

1. Write short notes on any FIVE Marks 5 x 4 = 20
  - a. Types of leave available to a Railway employees
  - b. Working of moving coil ammeter.
  - c. Working of PNP transistor
  - d. EP brakes in EMU
  - e. VVVF control.
  - f. VRLA battery
  - g. PAPIS in EMU coaches
2. a) Principle of working of RRU with diagram. (MARKS 10)  
**OR**  
 b) Explain electric supply system of LHB coaches, both AC and non-AC. (MARKS 10)
3. a) What is renewable energy? What are the steps taken by ICF in this direction? (MARKS 10)  
**OR**  
 b) Explain in brief starters used for AC motors. (MARKS 10)
4. a) Write steps taken in ICF to promote use of official language in day to day working and also list of states in A, B and C category as per Official Language Act. (MARKS 10)  
**OR**  
 b) Explain working of RMPU with diagram. (MARKS 10)  
**OR**  
 c) Write detail note on energy auditing in a factory like ICF. (MARKS 10)

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