

Integral Coach Factory – Chennai – 600 038

Question paper for selection of Assistant Electrical Engineers
through Departmental Examination

Date: 27.3.2017

Time: 3 hours
Max. Marks: 150

NOTE: Answer any EIGHT questions from Part-A, any FOUR questions from Part B and ALL questions from Part-C

PART-A

(Each question carries 10 marks – 5 marks for each sub question)

1. (a) Compare the radial system of power distribution with Ring Main System giving the advantages and disadvantages of each system.
(b) Briefly explain the SCADA system proposed for ICF.
2. Write short notes on any two the following:
 - (a) Variable voltage, variable frequency drive system.
 - (b) AWS
 - (c) Power factor Improvement
3. Write short notes on any two of the following
 - (a) Parallel operation of transformers in a substation
 - (b) Eco friendly refrigerants
 - (c) RMPU
4. (a) What are the various protective arrangements for a transformer?
(b) Explain the functioning of a buchholz relay.

5. (a) What measures have been taken at ICF for energy conservation and what is the annual consumption of energy of ICF and your proposal to reduce the same in future?
- (b) What do you understand by Green Energy? What are the measures, already taken or to be taken towards green energy in ICF? .
6. Write short notes on any two of the following:
- (a) Electronic Regulator cum Rectifier Unit
- (b) Valve regulated Lead Acid Batteries
- (c) The schedule of maintenance of Diesel Generating sets used as a stand-by power supply arrangement in ICF.
7. a) What are the different types of insulating materials used in electrical equipments and what are their temperature ratings?
- b) Why D.C. series motors were preferred earlier for traction purposes? Now, which motors are being used & why?
8. a) Explain and furnish relative advantages of various modes of generation in coaches.
- b) What is co-efficient of adhesion? What are the factors which affect adhesion & how it can be improved?
9. a) Calculate the air-conditioning capacity required for a BG AC first class coach duly making & stating suitable assumptions.
- b) What are typical defects in lead acid batteries & what remedial measures are taken?
10. a) Discuss salient features of 3 phase propulsion system and drives for AC EMU.
- b) State five distinct advantage of 3 phase propulsion over conventional DC propulsion drives.
11. a) What are the distinct features of Train control and management system (TCMS) provided in 3 phase AC EMUs for Mumbai?
- (b) Discuss advantages of TCMS over conventional system with a neat schematic.

12. a) What are the various inspections, tests and commissioning processes involved in AC EMUs.
- b) Explain the features of new metro Rolling Stock for Kolkata Metro with 3 phase electrics.

PART-B

(Each question carries 10 marks – 5 marks for each sub question)

- (1) a. Briefly explain the difference between open tender, Limited tender and Special Limited Tender.
- b. Write short notes on cannons of financial propriety.
- (2) a. What is meant by Inventory control? Briefly explain ABC Analysis and its advantages
- b. Briefly explain the difference between Purchase preference and Price preference.
- (3) a. What is meant by WMS? How is it being maintained and cleared?
- b. Briefly distinguish between Exchequer control and budgetary control?
- (4) a. What are the major penalties? What are minor penalties?
- b. Rules to be followed before imposing major penalty?
- (5) Write short notes on any two of the following:
- i. Workmen's Compensation Act
 - ii. Incentive scheme
 - iii. Leave Rules
- (6) Write short notes on any two of the following:
- iv. Pass Rules
 - v. Factories Act
 - vi. Industrial Disputes Act.

PART-C

(Each question carries 2 marks)

1. What is permitted tail end voltage drop in TL coaches?
a. 5V b. 10V c. 3V d. None of the above.
2. What is the fresh air setting (in m³/min/person) in air-conditioning coaches (2T/3T)?
a. 1.5 b. 0.5 c. 0.35 d. 0.25
3. HP and LP cut out settings in a RMPU type AC coach
a. 420 PSI and 35 PSI
b. 500 PSI and 45 PSI
c. 480 PSI and 35 PSI
d. 420 PSI and 50 PSI
4. What is the designed value of start up tractive effort in MUTP II AC EMU?
a. 750 KN b. 600 KN c. 525,5 KN d. 555.5 KN
5. Heat required to raise the temperature of one kg of water through 1 degree C
a. 100 calorie b. 1 Kcal c. 10 Kcal d. 200calorie
6. Minimum illuninataioin level perescribed for SCN coaches by RDSO with FL lights:
a. 30 lux b. 60 lux c. 110 lux d. 150 lux
7. What is the air delivery of a 450mm sweep railway carriage fan?
a. 65 cum/min. b. 60 cum/min c. 95 cum/min d. 80 cum/min
8. What is half load setting of 25 kw alternator for AC coaches at 1500 rpm.
a. 124V b. 126V c. 128 \pm 0.5V d. None of the above
9. Standard form _____ is used for placing a Railway servant under deemed suspension?

10. Which Rule of the Railway Services (Conduct) Rules, 1966 prohibits sub-letting of Government accommodation?
11. While issuing passes, what is the maximum number of dependent relatives which could be included at a time?
12. For the transfer of a Railway servant to a new station situated within 1000 kms, the Maximum number of days permissible as Joining time is.....
13. Maximum of days, as Leave Not Due, can be sanctioned to a Railway servant during the entire service.
14. 'Draft Para' is issued by
 1. Accounts
 2. Audit
 3. Vigilance
15. Service Tax is a indirect tax -- True / False.

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The following question is optional and not compulsory.

- Part B (6) (vii) ✓
~~(7) (a)~~ What is meant by 'Notified Office' as per the Official Languages (5 marks)
(Use for Official Purposes of the Union) Rules, 1976
- (7) ~~(b)~~ Explain in detail about the communications from a Central (15-10 marks)
Government office to States or Union Territory, or to other Central
Government Offices situated in different regions, as per the Official
Languages (Use for Official Purposes of the Union) Rules, 1976.

