

East Coast Railway

Question paper for selection of Section Engineer at MCS Workshop

(All questions carry equal marks. Answer any 5 questions from Part-A and any five questions from Part-B. Use of calculator is not allowed.)

Full Marks-100

Time-3 hours

PART-A

- 1) What are the different courses of administrative Hindi introduced by the department of official language under 'Hindi Teaching Scheme'? For who are these courses meant?
- 2) Write down the different steps involved in finalizing a major penalty charge sheet.
- 3) Solve the following.
 - (a) The circumference of the base of a circular cylinder is 132 cm and its height is 25 cm. Find the volume of the cylinder.
 - (b) A regular hexagon is inscribed in a circle with centre O. What angle does each side subtend at the center? What is the ratio between the area of the hexagon and area of the circle?

4) State the Following statements as True or False-

- (i) The journal diameter of the axle is greater than inner diameter of the Roller Bearing.
- (ii) The minimum permissible diameter of the journal of the axle is 130.068mm.
- (iii) The center pivot transmit vertical load to the Bogie.
- (iv) In a twin pipe graduated release Air Brake system the Control Reservoir is charged to a pressure of 5Kg/Cm².
- (v) Spherical Roller bearing can take more load than tapered roller bearing.
- (vi) The dimension 'e' of slack adjuster will increase as wear takes place at the brake shoe, wheels & pin joints.
- (vii) In AC coach, each battery is of 6Volts.
- (viii) Rolled channel is used in manufacturing of ICF coaches.
- (ix) In TIG welding electrode is a consumable.
- (x) A coach of built date 15/09/1993 can be sent for Mid Life Rehabilitation at BPL.

5) Fill in the blanks-

- (i) ----- prevents lateral thrust on Bolster spring.
- (ii) The mechanical advantage per bogie in under frame mounted Brake Rigging is -----.
- (iii) The roller bearing is heated maximum to a temperature of ----- to facilitate fitment with the axle.
- (iv) The permissible difference in diameter of wheels within a bogie is----- mm and within a coach is ----- mm.

- (v) ----- type of brake blocks are used in ICF coaches which have Bogie Mounted Air Brake System.
- (vi) The limit of 'A' dimension for 13t bogies is ----- and for 16.25t bogie is ---
-----.
- (vii) The leverage ratio of under frame-mounted brake rigging system is -----.
- (viii) Each Non-AC coach is fitted with ----- nos of batteries.
- (ix) Unit of capacity of the battery is -----.
- (x) Thickness of outer headstock of ICF coach is -----mm.

6) Fill in the blanks

- (i) In AC coach the generation source is_____.
- (ii) If the POH of a express fit coach is 26/6/07, it's R/Dt for POH is_____.
- (iii) In IRCA code RCCN stands for_____.
- (iv) The size of Brake Cylinder in Bogie Mounted Air Brake system is_____.
- (v) The surface finish of Journal of ICF axle is_____.

PART-B

- 7) Describe different types of wheel defects of a coaching stock wheel. Draw sketches showing the wheel defects and indicate limiting values wherever applicable.

8) Write short notes on the following

- a. Ride Index
- b. Composite Brake Block

9) Draw a standard Layout of a Coaching Depot handling 500 coaches. List out the machinery & plants & infrastructural facilities required for the same.

10) Write short notes on the following

- a. H.D.P.E.
- b. Modular Toilet

11) Answer the following

- a. What are the checks, gauging & repair practice, for over haul buffer components?
- b. What are the important checks to be carried out on UIC vestibules?

12) What is meant by passenger amenity fittings? Make a list for NON-AC & AC coaches.