

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.