

**Question paper for the post of Instructor/P.way in ₹. 9300-34800 with GP ₹.4600**  
**(ex.cadre – Tenure) in SRCETC/TBM – Engg. Dept.**

**Date: 20-07-2012**

**Max.Marks: 100**  
**Duration:3 hrs.**

- Note:** 1. Answer all question in Part –I (objective Type Questions).  
2. Answer any FIVE questions in Part –II (Descriptive type)  
3. Write legibly and draw neat sketches wherever required.  
4. Mention Question Numbers against the Answers correctly.

**PART –A (40 Marks)**

I. Choose the correct answer:

**10 x1= 10 Marks.**

1. Vertical curves are provided at the junction of the grades where algebraic difference between the grades is  
(a) 0.4% (b) 0.5% (c) 0.1% (d) 0.3%
2. Cant excess occurs when train travels on curve at  
(a) higher speed than equilibrium speed  
(b) on lower speed than equilibrium speed  
(c) at equilibrium speed  
(d) maximum sectional speed
3. The weightage of alignment index in the TGI based track recording is ..... Times.  
(a) two (b) six (c) four (d) three
4. Three long whistles given by the train driver means  
(a) Guard to apply the hand brake  
(b) call for Guard to come to the engine.  
(c) fouling mark not cleared  
(d) none of the above.
5. As per IRCA rules, the rejection limit for wheel flange thickness is ..... mm  
(a) 38 (b) 25.4 (c) 19 (d) 25
6. The 'P' Mark is provided for a  
(a) semaphore distant signal  
(b) colour light Stop Signal  
(c) Colour light distant signal  
(d) none of the above.

7. Flattening of inner rail table of a curve could be due to  
 (a) Cant excess (b) Cant deficiency (c) both a & b (d) none of the above
8. Maintenance operation in a LWR should be restricted to a temperature range of  
 (a)  $td +10^{\circ}$  to  $td-30^{\circ}$  (b)  $td +5^{\circ}$  to  $td-25^{\circ}$   
 (c)  $td$  to  $td-20^{\circ}$  (d)  $td +10^{\circ}$  to  $td-20^{\circ}$
9. As per Engineering Code, the boundary stones are to be provided at every  
 ..... metres  
 (a) 50 (b) 100 (c) 75 (d) 150
10. Through fastening renewal (TFR) is initiated if the toe load of 20% of the sample  
 recorded is below ..... kg.  
 (a) 600 (b) 800 (c) 400 (d) 500

**II. Fill in the blanks.**

**8x1= 8 Marks.**

1. The second summation of versine difference represents ..... at any station.
2. Longitudinal movement of rail is called .....
3. The dia of the ERC Mark-III is ..... mm.
4. The shape of transition curves on Indian Railways is .....
5. LWR/CWR may be continued through reverse curves not sharper than ..... metres of radius
6. In USFD, half moon cracks in AT welds are detected by ..... probe.
7. The height of BG high level platform from Rail level is .....
8. The pull out capacity (strength) of 52 kg glued joint (G3L) is ..... tonnes

**III. Say True or False**

**10x 1 = 10 Marks.**

1. PCEs are empowered to raise the sectional speed upto 130 kmph (True/False).
2. The de-stressing temperature is fixed lower than the mean temperature to prevent the buckling of track (True/False).
3. Medical category of Track Machine Operator is A3 (True/False).

4. Level crossing should not fall within the breathing length of LWR (True/False).
5. Slip Siding is provided when the gradient is steeper than 1 in 80 (True/False).
6. CRS sanction is required for the closure of Unmanned Level Crossings (True/False).
7. Whistle Boards with letter 'W' are provided at the approaches of all unmanned level crossings (True/False).
8. In a double or single line automatic block territory, the line may be provided with axle counters instead of continuous track circuiting (True/False).
9. The walking speed of Night Patrolman during his beat shall not exceed 5 km per hour (True/False).
10. The self propelled vehicle used for maintenance and repair of overhead equipment is called tower wagon (True/False).

**IV. Match the following:**

**5 x 1 = 5 marks**

1. Frequency of USFD testing of rails on BG routes having $GMT > 8 \leq 12$ .	a. Once in four months
2. Frequency of measuring SEJ gaps by sectional ADEN.	b. Once in three months
3. Frequency of Track Recording by TRC in Group A & B routes.	c. Once in nine months
4. Frequency of OMS testing of rails on BG with speed less than 100 kmph	d. Once in six months
5. Frequency of checking the equipments with Gateman by JE/SE/P.Way	e. Once in twelve months
	f. Once in a month
	g. Once in two months

**V. Expand the following abbreviations.**

**5 x 1 = 5**

1. CPDE (designation)
2. RVNL
3. MPLADS (scheme)
4. LASER
5. MCNTM (formula)

**VI. Translate the following words into Hindi (in devanagari script):**

**2 x 1 = 2**

1. Approved
2. urgent

**PART –B**

**(60 marks)**

**5x 12 = 60 Marks.**

**Answer any Five Questions.**

1. a. From a Broad Gauge Main line curve of  $2^{\circ}$ , a 1 in 12 turnout takes off in contrary flexure for a Branch line. Find out the permissible cant on Main Line and Permissible speed on Main Line (Presume 30 kmph speed on the Branch Line) **(7 marks)**  
  
b. Differentiate the Fan shaped layout with the conventional layout of points & crossings. **(5 marks)**
2. a. Explain the procedure for manual de-stressing of LWR. **(7 marks)**  
  
b. What are the advantages of improved SEJs over the conventional bent SEJs? **(5 marks)**
3. a. Explain in detail the procedure for reporting and analysis of rail/weld failures. **(7 marks)**  
  
b. What are the limitations of ultrasonic flaw detection of rails? **(5 marks)**
4. What is Track Management System (TMS) and how it is implemented?
5. a. What are the pre and post screening operations required for Ballast Cleaning Machine? **(6 marks)**  
  
b. What are the important guidelines for operation of Tamping Machine in Design Mode? **(6 marks)**
6. Write briefly on **any six** of the following: **2 x 6 = 12**
  - i. Elimination of unmanned Level Crossings.
  - ii. Liner biting in rails.
  - iii. CC+6+2 / CC+8+2 routes
  - iv. Accident Relief Train
  - v. Materials at site
  - vi. Minor penalties
  - vii. Child Care Leave
  - viii. ODC