Printed Pages : 3 ECE603

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2456 Roll No. | | | | | | | | | | |

B.Tech.

(SEMESTER. VI) THEORY EXAMINATION, 2012-13

TRANSPORTATION ENGINEERING - II

Time : 2 Hours] *[Total Marks : 50*

SECTION – A

1. Attempt any **five** question parts : $5 \times 2 = 10$

(a) List the tests on ballast.

(b) Define the term interlocking.

(c) What is the necessity of geometric design of a railway track ?

(d) How do you define the superelevation ?

(e) What is cant deficiency ?

(f) Define the term retarders.

(g) How the railway stations are classified ?

(h) What are various methods for designing flexible airport pavements ?

(i) What are the differences between airport and highway pavements ?

(j) Differentiate between 'port' and harbour.

SECTION – B

2. Attempt any **three** question parts : $3 \times 5 = 15$

(a) Explain the historical development and modernization of Indian railways.

(b) Prove that the speed 'V' of a vehicle on a curve is related to curvature by a formula, $V = K\sqrt{R}$, where V is the speed and R is the radius, find the value of 'K' for safe speed on a B.G. track.

(c) Write short notes on :

(i) Important considerations in layout of wayside stations

(ii) Classification of signals

(d) Describe with the help of sketches of the following :

(i) Wind coverage

(ii) Pavement overlays

(e) Discuss critically various factors that determine the suitability or otherwise of any location as a place of a port or harbour.

SECTION – C

Attempt **all** questions : **5 × 5 = 25**

3. Attempt any **one** part : **5**

(a) Explain the necessity of sleepers in railway track. What is the desirable qualities or requirements of good sleepers ?

(b) Explain the characteristics of various rail types in tabular form with regard to their performance in the railway track.

4. Attempt any **one** part : **5**

(a) On a transitioned curve on B.G. track, the speed by railway board's speed formula : $V_s = (R\text{-}67)^{0.5}$ IS 1.25 times the maximum permissible speed obtained by the cant formula, after allowing the cant deficiency of 7.6 m. if the actual cant provided is the equilibrium cant for an average speed of 60 km/ph. Calculate :

(i) the radius of curvature

(ii) maximum speed (V_{max}) and

(b) Explain the necessity of gradients. Discuss all types of gradients giving their permissible values adopted on Indian Railways.

5. Attempt any **one** part : **5**

(a) Explain briefly the different types of Station yards. With the help of neat sketches, explain the functioning and types of a marshalling yard.

(b) Draw the neat and self-explanatory sketches of the following :

(i) A single line wayside station

(ii) Wayside stations with various signals

6. Attempt any **one** part : **5**

(a) Design a runway for an airport using the following data :

ESWL	-	2500 kg
CBR for completed sub-grade	-	4.5%
CBR for sub-base	-	25%
CBR for base	-	75%

(b) Plate bearing test with 70 cm diameter plate was carried out on soil sub-grade. The deflection at a pressure of 2 kg/cm^2 after 15 load repetitions was found to be 0.6 cm, it is required to design a runway pavement for a wheel load of 25000 kg with a pressure of 10 kg/cm^2.

7. Attempt any **one** part : **5**

(a) What is meant by dry area and wet area of a harbour ? It is said that a fair assessment of these two areas is very critical in the layout of a port. Explain.

(b) Explain in some detail the essential design elements of a harbour basin, harbour channel and harbour entrance.
