Reg. No. : ⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜⬜

Question Paper Code : 40315

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Seventh Semester

Civil Engineering

CE 8702 — RAILWAYS, AIRPORTS, DOCKS AND HARBOUR ENGINEERING

(Regulations 2017)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   What is the purpose of ballast?

2.   Draw a neat cross section indicating the parts of a flat footed rail.

3.   Brief the importance of track drainage.

4.   Outline marshalling yard.

5.   What is the purpose of Hanger.

6.   Define ICAO.

7.   Mention the purpose of runway marking.

8.   Differentiate between runway lighting and taxiway lighting.

9.   Define quay

10. What is the purpose of fenders?

PART B — (5 × 13 = 65 marks)

11. (a)   List out the types of sleepers, and explain any four in detail.   (13)

Or

(b)   With neat sketches elaborate any four types of fittings and fastenings used in Railway track.   (13)

12. (a) Highlight the types and functions of signals in detail. (13)

Or

(b) How the railway stations are classified? Elaborate on any two types in brief. (13)

13. (a) Elaborate on various factors involved in site selection of an airport. (13)

Or

(b) With neat sketch elaborate on typical airport layout and highlight on the components. (13)

14. (a) Explain with a neat sketch, windrose type 1 and 2. (13)

Or

(b) How are the runway lengths fixed. Elaborate on the correction. (13)

15. (a) Describe the classification of harbours, and explain any four with their proposed functions. (13)

Or

(b) Elaborate on various types and functions of breakwaters with a neat sketch. (13)

PART C — (1 × 15 = 15 marks)

16. (a) A six degree curve branches off a three degree main curve in an opposite direction. Both tracks are intended to be laid in an MG yard. The speed on the branch line is restricted to 30 km/hr. Determine the restricted speed on the main line if the permissible cant deficiency is assumed to be 50 mm (Assume theoretical cant on the MG main line = 100 mm). (15)

Or

(b) Determine the values of equilibrium cant, maximum permissible speed, length of the transition curve and offsets for setting out the transition curve and salient elements of a combined curve consisting of a circular curve joined with a transition curve at both ends of a BG line. The required curve design inputs are as follows : (15)

(i) Angle of deflection between two tangents of the proposed combined curve = 65°

(ii) Speed considered for determining equilibrium cant = 80 km/hr;

(iii) Maximum section speed = 110 km/hr

(iv) Radius of the horizontal curve = 630 m.

Take the maximum permissible cant and cant deficiency as 165 mm and 100 mm, respectively.

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