Reg. No. ☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 51255

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Fifth Semester

Civil Engineering

CE 2303/CE 52/10111 CEE 49 – RAILWAYS, AIRPORTS AND HARBOUR ENGINEERING

(Regulations 2008/2010)

(Common to PTCE 2303/10111 CEE 49 Railways, Airports and Harbour Engineering for B.E. – (Part-Time) Fourth Semester – Regulations 2009/2010)

Time : Three Hours   Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Define sleeper density.

2. Sketch the cross-section of the permanent way.

3. List the components of a switch.

4. Differentiate between 'loop' and 'siding'.

5. What are the factors influencing the runway length based on safety requirements ?

6. State the primary functions of an airport drainage system.

7. Define calm period.

8. Why is airport Zoning important ?

9. Write down the equation used for finding the harbour entrance.

10. Differentiate between a 'wharf' and a 'jetty'.

11. (a) What is a sleeper ? List the functions, types of sleepers and compare one another.

OR

(b) (i) What do you understand by 'cant deficiency' ? **(8)**

(ii) Explain the widening of gauge on curves with the formula. **(8)**

12. (a) Determine all the elements of a turnout, when the following data is given :

Heel Divergence   =   13.65cm

Angle of Switch   =   1° 34'27"

Gauge   =   1.676 m

Number of Crossing   =   8.5

OR

(b) What are the different systems of controlling the movement of trains ? Explain the working principle of the system(s) which has been widely used on Indian Railways.

13. (a) (i) Length of a runway at mean sea level, standard temperature and Zero gradients is 1600 m. The site has an elevation of 320 m, with a references temperature 33.6°C. The runway has to be constructed with, an effective gradient of 0.25%. Determine the actual length of the runway at the site. **(10)**

(ii) Write the construction procedure of the wind rose diagram. **(6)**

OR

(b) (i) Following are average wind data for 10 years when wind Intensity is above 6 Km/hr. An airport is to be designed for a single runway. Determine the best runway orientation and calculate total wind coverage and draw the wind rose diagram. **(8)**

Wind direction	N	NNE	NC	ENE	E	ESE	SE	SSE	S	SSW
Percentage of time	10.9	8.3	4.2	1.3	0.9	0.3	8.1	7.9	14.6	9.8

Wind direction	SW	WSW	W	WNW	NW	NNW
Percentage of time	5.6	1.8	0.3	0.2	7.5	5.7

(ii) Write short notes on :

(1) Airport drainage **(4)**

(2) Factors considered in taxiway design. **(4)**

14. (a) Enlist and explain the factors to be considered for the selection of site of an airport. Discuss the critical issues involved.

OR

(b) (i) What are the different types of terminals ? Explain its concepts with neat sketches. **(8)**

(ii) Describe the principle of operation of ILS with the help of a diagram. **(8)**

15. (a) Describe briefly the functions of fixed and floating signals with necessary sketches.

OR

(b) Explain the different types of wind-rose diagrams used for finding the harbour entrance.

———————