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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'.

PART – B (5 × 16 = 80 marks)

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.