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Reg. No. :

Question Paper Code : 52779

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Sixth Semester

Civil Engineering

CE 6604 — RAILWAYS, AIRPORTS AND HARBOUR ENGINEERING

(Regulation 2013)

(Common to PTCE 6604 – Railways, Airports and Harbour Engineering for
B.E. Part Time – Fourth Semester – Civil Engineering – Regulation 2014)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is coning of wheels and mention its advantages?
2. Illustrate the functions of ballast.
3. Differentiate between Gravitational yard and Hump yard.
4. Why sand hump is provided at the end of the sidings.
5. Illustrate the types of survey adopted for the site selection of an airport.
6. Why Zoning laws are necessary?
7. Define Hangar.
8. What is Taxiway and why it is provided in an airport?
9. Define Harbour.
10. What do you understand by the term dredging?

PART B — (5 × 13 = 65 marks)

11. (a) Describe the various important surveys adopted for the track alignment of a new railway project.

Or

- (b) (i) Explain the circumstances in which Equilibrium cant is provided in a railway track. (5)
- (ii) What are the requirements of an ideal permanent way. (8)

PART C — (1 × 15 = 15 marks)

12. (a) What are the operations and methods involved in driving a tunnel in rocks.

Or

(b) What are the types of marshalling yard? Also mention the equipments available in station yards.

13. (a) Illustrate the factors affecting the choice of selection of site for an Airport.

Or

(b) Compare the various aircraft parking systems along with its advantages and disadvantages.

14. (a) (i) The data for the hottest month of an year in the year of maximum daily temperature is 43.72°C and the mean of average daily temperature is 26.32°C , Then what is the airport reference temperature. (4)

(ii) The Turning radius for a Taxiway is to be designed for operating aircraft at A type airport having the following character.

1. Subsonic aircraft having wheel base = 17.70m
2. Tread of main landing gear = 6.62
3. Turning speed = 40kmph
4. Co-efficient of friction between tyre and pavement = 0.13 (9)

Or

(b) Runway length required for landing at sea level in standard atmospheric condition is 2100m. Runway length required for takeoff at a level site at sea level in standard atmospheric condition is 2500m. Aerodrome elevation is 200m and reference temperature is 24°C . Temperature in the standard atmosphere for 200m is 15°C and runway slope is 0.5%. Determine the length of the runway after applying correction to runway length.

15. (a) Explain about the following terms in detail.

- (i) Piers, Quays and Docks (4)
- (ii) Wharfs (4)
- (iii) Breakwaters (5)

Or

- (b) (i) What are the requirements of a good harbour? (6)
- (ii) Explain in detail about the classification of harbours. (7)

16. (a) Evaluate the capacity of 12 Gates which are exclusively used by three classes of aircraft with particulars as shown below. Assume gate utilization factor as 1.

AIRCRAFT TYPE	GATE GROUP	NO. OF GATES	MIX(%)	AVERAGE OCCUPANCY TIME IN MINUTES
A	I	2	15	25
B	II	4	35	45
C	III	6	50	60

Or

(b) Evaluate the equilibrium speed and design the cant to be provided on a BG curve of 3 degree if the speeds of several trains running on the line as follows.

No of trains	Velocity in kmph
15	50
12	60
8	70
3	80