Reg. No. : | | | | | | | | | | | | |

Question Paper Code : X20313

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020
AND APRIL/MAY 2021
Sixth Semester
Civil Engineering
CE 6604 – RAILWAYS, AIRPORTS AND HARBOUR ENGINEERING
(Regulations 2013)
(Common to PTCE 6604 – Railways Airports and Harbour Engineering for B.E. (Part – Time) – Fourth Semester – Regulations – 2014)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions.

PART – A **(10×2=20 Marks)**

1. What is meant by permanent way ?
2. What are the various types of gradients that are adopted in laying a railway track ?
3. A M.G. railway track is designed for a ruling gradient of 1 in 150 on a curve of 4°. What should be the compensated gradient in the alignment ?
4. Enumerate the various factors that govern the selection of various types of gauges.
5. Write a short note on hangar.
6. List the different types of aircraft parking systems.
7. What is meant by basic runway length ?
8. What is airport zoning ?
9. Distinguish between a 'harbour and a port'.
10. List the primary classification of harbours.

PART – B **(5×13=65 Marks)**

11. a) Discuss the components of a railway track. **(13)**

(OR)

b) Explain the following : **(13)**

i) Coning of wheels
ii) Gradient in railways
iii) Uniformity of gauges.

12. a) Explain with neat sketches any two methods of Plate Laying and state their relative merits and demerits. Which of those two methods are widely adopted by Indian Railways ?

(OR)

b) Draw self-explanatory sketches of the following.

i) A Crossing Station **(3)**

ii) A Junction Station **(5)**

iii) A Terminal Station. **(5)**

13. a) Draw an airport layout and explain its components.

(OR)

b) i) What are the facilities to be provided in the terminal building of an international Airport ? **(7)**

ii) What are the different systems of aircraft parking ? Explain the suitability of each system. **(6)**

14. a) The length of runway at standard condition is 2500m. Determine the required runway length at an airport site with the following particulars.

Mean maximum daily temperature	=	44.5°C
Mean average daily temperature	=	28.3°C
Elevation of site above MSL	=	350 m
Effective gradient of runway	=	0.21%

(OR)

b) Briefly explain the night time aids provided at airports.

15. a) i) Describe any four factors of site investigation for location of harbours and the significance of each one of them. **(6)**

ii) Explain any six factors, for which a harbour engineer must have consideration, while planning and designing a harbour. **(7)**

(OR)

b) i) Bring out the Environmental Concern of port operations focussing on any four impacts. **(6)**

ii) Illustrate with neat sketches any four types of Coastal Protection works. **(7)**

PART – C **(1×15=15 Marks)**

16. a) A train is moving from west to east and makes a left hand turnout. Draw the turnout and explain the concept and components. **(15)**

(OR)

b) An aircraft is to land at an airport. Discuss the normal landing and take off of the airctaft and also the landing and take off procedure under engine failure condition with suitable diagrams. **(15)**