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

## Question Paper Code: 45103

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

Fifth Semester

Civil Engineering

14UCE503 - RAILWAYS, AIRPORT AND HARBOUR ENGINEERING

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The sleepers which satisfy the requirements of an ideal sleeper, are

   (a) cast iron sleepers (b) R.C.C sleepers
   (c) steel sleepers (d) wooden sleepers

2. For points and crossings maximum size of ballast is

   (a) 50 *mm* (b) 40 *mm* (c) 30 *mm* (d) 25 *mm*

3. Public phones are provided in the following categories of railway stations

   (a) D (b) A, B, C (c) F (d) E

4. The quantity of stone ballast required per meter tangent length, is

   (a) $1.15m^3$ (b) $1.14\ m^3$ (c) $1.11\ m^3$ (d) $1.13\ m^3$

5. The meteorological to I.C.A.O the slope of transitional surface at right angles to the centre line of runway, is kept

   (a) 1 in 4 (b) 1 in 7 (c) 1 in 6 (d) 1 in 5

6. For the proposed airport, the survey project provides

   (a) Topographic plan (b) Grading Plan
   (c) drainage plan (d) all the above

7. Airport zone runs from edge of runway to a distance of

(a) 10km (b) 12km (c) 20km (d) 15km

8. The maximum length and pavement strength of the runway is that of

(a) A1 (b) B2 (c) B3 (d) G7

9. Location of soundings by two angles from the shore requires establishing

(a) one range line parallel to shore
(b) one range line perpendicular to shore
(c) two range lines mutually perpendicular
(d) no range line

10. The width of the entrances of the harbours is restricted to

(a) 100m (b) 125m (c) 150m (d) 180m

PART - B (5 x 2 = 10 Marks)

11. Define super elevation of railway track.

12. Define station yards.

13. Define cross wind component and wind coverage.

14. Define terminal building?.

15. Differentiate between wharf and Jetty.

PART - C (5 x 16 = 80 Marks)

16. (a) Explain the location survey for a new railway lines. (16)

Or

(b) A $5^{o}$ curve branches off from a main curve of $3^{o}$ in an opposite direction in the layout of a B.G.yard. Determine speed restriction on the main line if speed on the branch line is restricted to 35 kmph. Assume cant deficiency as 75mm. (16)

17. (a) What is meant by crossings? Discuss various types of crossings used in Indian Railways. (16)

Or

(b) Explain the various types of railway stations. (16)

18. (a) Describe the factors depends on location of exit taxiways. (16)

Or

(b) Mention the standards laid down by ICAO for the layout of the imaginary surfaces. (16)

19. (a) Length of a runway at MSL is 1600m. The site has an elevation of 320m, with a reference temperature 33.6$^{o}$C. The runway has to be constructed with an effective gradient of 0.25 . Determine actual length of runway. (16)

Or

(b) Briefly discuss the various geometric standards for the taxiway with special reference to the recommendations of the ICAO. (16)

20. (a) Discuss the different types of gravity wharves and the circumstances under which you will select each type. (16)

Or

(b) Write short notes on the following coastal structures

(i) Piers
(ii) Wharves
(iii) Jetties
(iv) Quays. (16)