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**Question Paper Code: 45103**

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

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)

- Coning of wheels is provided to
  - check lateral moment of wheel
  - avoid damage to inner faces of rail
  - avoid discomfort to passengers
  - all the above
- The sleepers which satisfy the requirements of an ideal sleeper are
  - Cast iron Sleepers
  - RCC Sleepers
  - wooden Sleepers
  - Steel Sleepers
- Track construction involves preparation of
  - Sub grade
  - Plate laying
  - Ballasting
  - All the above
- The quantity of stone ballast required per meter tangent length, is
  - $1.15\text{m}^3$
  - $1.14\text{ m}^3$
  - $1.11\text{ m}^3$
  - $1.13\text{ m}^3$
- The meteorological to I.C.A.O the slope of transitional surface at right angles to the centre line of runway, is kept
  - 1 in 4
  - 1 in 7
  - 1 in 6
  - 1 in 5
- For the proposed airport, the survey project provides
  - Topographic plan
  - Grading Plan
  - drainage plan
  - all the above

7. The maximum length and pavement strength of the runway is that of  
(a) A1                      (b) B2                      (c) B3                      (d) G7
8. According to I.C.A.O all markings on the runways are painted white and on taxiways  
(a) Black                      (b) red                      (c) yellow                      (d) green
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. What are the different types of curves?
12. Define station yards.
13. Define cross wind component and wind coverage.
14. Why wind direction indicator is provided?
15. What do you understand by littoral drift?

PART - C (5 x 16 = 80 Marks)

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16. (a) Describe in detail the various surveys which are conducted before laying a new railway track. (16)

Or

- (b) A  $5^\circ$  curve branches off from a main curve of  $3^\circ$  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) Explain, with neat sketches, how surface and sub – surface water can be removed from a railway track. (16)

Or

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

18. (a) What are the factors which influence the location of an airport? (16)

Or

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

19. (a) Describe the various elements of the airport lighting. (16)

Or

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

20. (a) Explain the different types of harbours. (16)

Or

(b) Write short notes on the following coastal structures

(i) Piers

(ii) Wharves

(iii) Jetties

(iv) Quays. (16)

