

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



VI SEMESTER B.TECH (CIVIL ENGINEERING)

END SEMESTER EXAMINATIONS, MAY/JUNE 2016

SUBJECT: TRANSPORTATION ENGINEERING-2 [CIE-306]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ✤ Answer any FIVE FULL questions.
- Missing data may be suitably assumed

| 1A. | Illustrate permanent-way' with the help of a neat figure. What at are-the requirements | 4 |
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| | of an ideal permanent way? | |
| 1 B . | What is cant deficiency? Give the permissible values of cant deficiency in India. | 3 |
| 1C. | What are transition curves and explain the different types of transition curves? | 3 |
| 2A. | Calculate the maximum permissible train load that can be pulled by a locomotive having four pairs of driving wheels carrying an axle load of 24 tons each. The train has to run at a speed of 80km/h on a straight level track (BG). Also calculate the reduction in the speed a) If the train has to climb a gradient of 1 in 200 and in addition b) If the train climbs the gradient with a 2° curve. | 4 |
| 2 B . | Discuss the factors on which the sleeper density depends and how the sleeper density is expressed | 3 |
| 2C. | Explain the concept of minimum depth of the ballast cushion for the railway track. | 3 |
| 3A. | Explain the classification of signals according to their location in station yards along with suitable sketches. | 5 |
| 3B. | Explain what is widening of Gauge on curves? If the wheel base of a vehicle moving on a B.G. track is 6m, the diameter of wheel is 1.5m and depth of flanges below the top of rail is 3.17cm, determine extra width to be provided on gauge, if the radius of curve is 160m | 5 |
| 4A. | If an 8° curve track diverges from a main curve of 5° in an opposite direction in layout of a B.G. yard, calculate super elevation and speed on branch line, if maximum speed permitted on main line is 45kmph. | 4 |
| 4B. | Write a note on a)Approach zone b)Surveillance radar c) Minimum circling radius d) Piston engine of Aircraft | 6 |
| 5A. | The monthly mean temperature of the atmosphere at a particular site where airport has to be developed are given below. Determine the airport reference temperature. If the site is at an elevation of 150m, determine the actual runway length assuming an effective gradient of 0 to 25 $\%$ | 5 |

| Reg. No. | | | | | | | | | |
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| | Month | Mean value of avg. daily emp. in °c | Mean value of max. daily temp. in °c | Month | Mean value of avg. daily temp. in °c | Mean value of max. daily temp. in °c | | | |
| | Jan | 3 | 5 | July | 32 | 37 | | | |
| | Feb | 15 | 17 | Auq | 30 | 35 | | | |
| | Mar | 20 | 23 | Sep | 27 | 31 | | | |
| | Apr | 25 | 32 | Oct | 22 | 28 | | | |
| | May | 35 | 47 | Nov | 12 | 18 | | | |
| | June | 40 | 50 | Dec | 6 | 9 | | | |
| 5B. | What is Runway Orientation? Explain how the orientation of runway is done by the wind rose diagram? | | | | | | | | |
| 6A. | With a neat sketch describe how the exiting taxiways can be improved for supersonic Aircrafts. | | | | | | | | |
| 6B. | Explain the Approach lightening system of a Runway | | | | | | | | |
| 6C. | Describe noise- in parking configuration system of Aircraft | | | | | | | | |