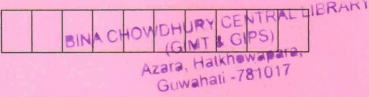Total No. of printed pages = 4

CE 131605

Roll No. of candidate

2018

B.Tech. 6th Semester End-Term Examination

TRANSPORTATION ENGINEERING – II

Full Marks – 100   Time – Three hours

The figures in the margin indicate full marks
for the questions.

Answer question No. 1 and any *six* from the rest.

1.   Fill up the blanks :   (10 × 1 = 10)

   (a)   The clear distance between the inner face of two rails in narrow gauge is ——————.

   (b)   The size of upper table and lower table in bull-headed rail is ——————.

   (c)   When the ends of adjoining rails slightly move in other direction —————— is formed.

   (d)   The number of railway sleepers required to be placed under the track per rail length is called ——————.

[Turn over

(e) For metal sleepers, the minimum center to center distance for BG in Indian Railway is ——————— mm.

(f) Grade compensation on BG track is ——————— percentage per degree of the curve.

(g) The relationship among super elevation, gauge, speed and radius of curve is ———————.

(h) The lift off distance is the distance along the center of the runway between the starting point and ———————.

(i) According to I.C.A.O, the slope of transitional surface at right angles to the center line of runway is kept as ———————.

(j) The difference of heights of the tunnels above rail tops of BG and MG track is kept as ———————.

2. (a) Define permanent way.

   (b) Draw the ideal cross-section of permanent way.

   (c) Write the requirements of permanent way.

   (5 + 5 + 5)

3. (a) What are the different types of rail, discuss them with figure and show the dimensions.

   (b) Write the requirements of ideal rail.

   (c) Explain the term "Coning of wheels" with proper figure.   (5 + 5 + 5)

4. (a) Why concrete sleepers are more advisable to be used over timber sleepers?

   (b) Define sleeper density

   (c) Find out the number of sleeper density required for the construction of a BG track 900m long using sleeper density. (7 + 3 + 5)

5. (a) Write the requirements of ideal material for ballast.

   (b) Explain in brief, the materials used as ballast and write their advantages and disadvantages.
   (5 + 10)

6. (a) Explain the different types of gradient.

   (b) What do you mean by the term "Grade Compensation on Curves"?

   (c) To what extent should a ruling gradient of 1 in 150 on B.G. line be downgraded to accommodate a 3 degree curve? (5 + 5 + 5)

7. (a) What are the different types of rail joints, explain each with proper diagram.

   (b) Write the conditions under which rail joints must be avoided. (10 + 5)

8. (a) Explain in details the various runway geometrics as recommended by I.C.A.O.

(b) An airport is proposed at an elevation of 400m above mean sea level where the mean of maximum and mean of average daily temperature of the hottest month are 44.8°c and 26.2°c respectively. The maximum elevation difference along the proposed profile of runway is 6.3m. If the basic length of runway is 1260m, determine the actual length of runway provided. (5 + 10)

9. (a) Define tunnels. State the advantages and disadvantages of tunnels. (2 + 5 = 7)

(b) Name the tunnel which is used for sewers. State three advantages and disadvantages of such type of tunnels. (2 + 6 = 8)

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