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**10CV63**

**Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019**  
**Transportation Engineering - II**

Time: 3 hrs.

Max. Marks:100

**Note:** 1. Answer any FIVE full questions, selecting atleast TWO questions from each part.  
 2. Missing data can be suitably assumed.

**PART — A**

- 1
  - a. Draw neatly the cross section of a straight Broad railway track in cutting for a double lane. (06 Marks)
  - b. Mention the requirements of an ideal Permanent way. (06 Marks)
  - c. Define Creep. What are possible cause effects of creep? (08 Marks)
- 2
  - a. What are the requirements of the good ballast? Mention the different types of ballast used in Permanent way. (08 Marks)
  - b. Calculate the quantity of material required for the construction of B.G track of length 19500m, with rail section 52kg per metre and standard length 13m. Take sleeper density  $[n + 4]$ . (06 Marks)
  - c. A locomotive on M.G track has three pairs of driving wheels each carrying 20 tones. What maximum load can it pull on level track with curvature of  $2^\circ$  at 50 kmph? (06 Marks)
- 3
  - a. Explain the following : i) Ruling gradient ii) Momentum gradient iii) Grade compensation on curve. (06 Marks)
  - b. With usual notation, derive the expression for super elevation for B\_G , M.G and N.G track. (06 Marks)
  - c. A  $5^\circ$  curve diverges from a  $3^\circ$  main curve in the layout of B.G yard. If speed of the branch line is restricted to 30 kmph, find out the speed on the main line. Allowable cant deficiency may be assumed as 76mm. (08 Marks)
- 4
  - a. Draw neat sketch of a left hand turn out and show various parts on it. (06 Marks)
  - b. With a neat sketch, explain the working of a semaphore signal. (08 Marks)
  - c. Write short notes on any two of following :  
 i) Turn table ii) Water column iii) Buffer stops. (06 Marks)

**PART — B**

- 5
  - a. Explain the factors which influence the airport site selection. (08 Marks)
  - b. Write a brief note on Airport classification. (06 Marks)
  - c. Mention the various assumptions made in basic length of runway. (06 Marks)
- 6
  - a. Explain the various factors which affect the location of Exit taxiway. (08 Marks)
  - b. Design an exist taxiway joining a runway and parallel main taxiway. The total angle of turn  $30^\circ$  and the turn off speed' is 80 kmph. Draw a neat sketch and show there in all design elements. [Assume  $R1 = 73.1m$  for 80 kmph speed]. (12 Marks)

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- 7 a. Explain various shapes of tunnels, with neat sketches. (06 Marks)  
b. Mention the objects of tunnel lining. List materials used for lining. (06 Marks)  
c. Write short notes on :  
i) Tunnel lining i') Tunnel drainage. (08 Marks)
- 8 a. Explain with neat sketches, the Natural classification of harbours. (06 Marks)  
b. What is Break water? Explain with neat sketch, wall break water. (08 Marks)  
c. What is Dry dock? Explain the construction and uses of dry dock. (06 Marks)

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