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**Sixth Semester B.E. Degree Examination, Dec.2016/Jan.2017**  
**Transportation Engineering - II**

Time: 3 hrs.

Max. Marks:100

**Note:** Answer any FIVE full questions, selecting atleast TWO questions from each part.

**PART – A**

- 1 a. Define the term “Permanent way”. With neat sketch, mention the requirements of permanent way. (10 Marks)
- b. Define the term “Creep in rails”. With neat sketch, explain how creep is measured. (10 Marks)
- 2 a. Explain the various types of spikes, with neat sketches. Mention its requirements. (10 Marks)
- b. With the help of neat sketches, explain
  - i) Reinforced cement concrete sleeper
  - ii) C.S.T. 9 sleeper. (10 Marks)
- 3 a. Write short notes on :
  - i) Momentum gradient
  - ii) Cant deficiency
  - iii) Negative cant. (10 Marks)
- b. On a  $8^\circ$  M-G track the average speed of different trains is 50 kmph and allowable cant deficiency is half that of maximum cant deficiency, determine permissible speed on curve. (10 Marks)
- 4 a. With the help of neat sketch, explain the working principle of “Marshalling Yard”. (10 Marks)
- b. Calculate all the necessary elements required to set out 1 in 8.5 turnout taking off from a straight B-G track with its curve starting from the toe of switch i.e tangential to the gauge face of the outer main rail and passes through the TNC. Given heel divergence 11.40cm. (10 Marks)

**PART – B**

- 5 a. Define the term “Runway Orientation”. Explain any one method of determination of best orientation of runway, with neat sketch. (10 Marks)
- b. Explain the various factors to be considered in selection of suitable site for airport. (10 Marks)
- 6 a. With neat sketches, explain the following :
  - i) Normal landing case
  - ii) Normal take – off case
  - iii) Engine failure case. (10 Marks)
- b. Design an exit taxiway joining the runway and a parallel main taxiway. The total angle of turn is 30 degrees and turnoff speed is 80 kmph. Assume radius of entrance curve as 731m. Draw a neat sketch and show all elements. (10 Marks)
- 7 a. With neat sketch, explain the method of transferring the centre line into the tunnel. (10 Marks)
- b. Write short notes on :
  - i) Pilot tunneling
  - ii) Drilling pattern in hard rock. (10 Marks)
- 8 a. Define the term “Harbour”. Explain the various factors considered in location of site for harbor. (10 Marks)
- b. Differentiate between :
  - i) Dry docks and wet docks
  - ii) Ware house and Transit shed. (10 Marks)

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