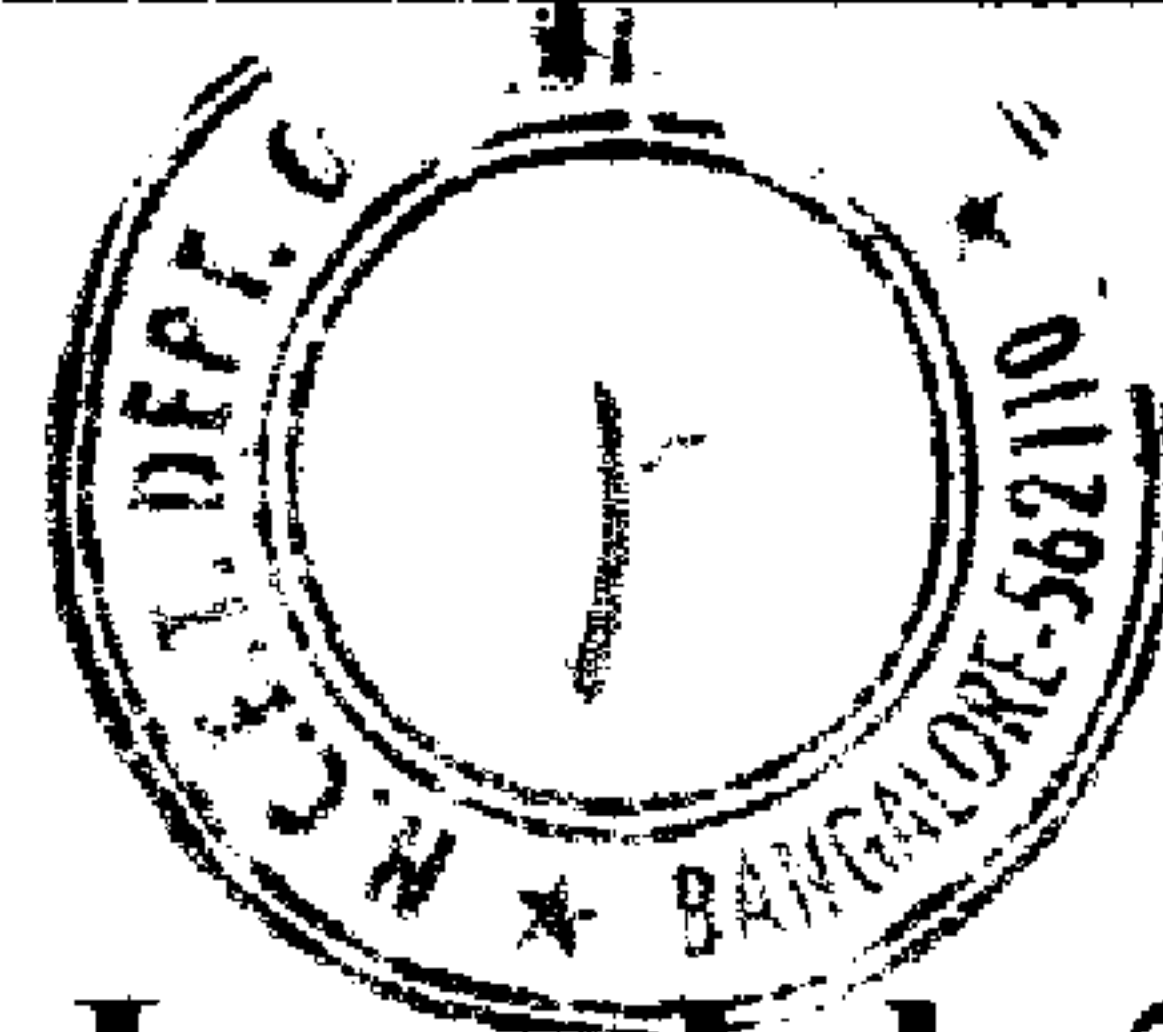


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**Sixth Semester B.E. Degree Examination, June-July 2009**  
**Transportation Engineering – II**

Time: 3 hrs.

Max. Marks:100

**Note: 1. Answer any FIVE full questions, selecting  
at least TWO questions from each part.  
2. Assume any missing Data suitably.**

**PART – A**

- 1 a. Draw neatly the cross section of a straight Broad Gauge 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 the possible causes and effects of creep? (08 Marks)
- 2 a. Explain with a neat sketch the important features of cast – iron sleepers. (06 Marks)
- b. For a rail of 11.89 metre length, calculate the quantity of materials required per km length of track. Assume Sleeper density to be equal to  $(1.0936n + 4)$ . (06 Marks)
- c. With neat sketches explain various types of spikes and also mention the requirements of a good spike. (08 Marks)
- 3 a. Explain the following  
i) Gradients; ii) Grade compensation; iii) Negative superelevation. (06 Marks)
- b. What are the objects of providing transition curves? Explain briefly the essential requirements of an ideal transition curves. (06 Marks)
- c. Determine the equilibrium cant on a 2 degree curve on a broad gauge, if 16 trains, 10 trains, 8 trains, 4 trains and 2 trains are running at a speed of 50 kmph, 60 kmph, 70 kmph, 80 kmph and 100 kmph respectively. Also, determine the derivation from maximum speed. (08 Marks)
- 4 a. Draw a neat sketch of a Left hand turnout and show various parts on it. (06 Marks)
- b. With a neat sketch explain the working of a semaphore signal. (06 Marks)
- c. Write short note on any TWO of the following.  
i) Turn table                      ii) Water columns                      iii) Buffer stops. (08 Marks)

**PART - B**

- 5 a. List and explain the aircraft characteristics which affect the planning and design of airports. (06 Marks)
  - b. Write a brief note on “Airport classifications”. (06 Marks)
  - c. Explain the factors which influence the airport site selection. (08 Marks)
  - 6 a. What is wind rose diagram? Explain briefly with a neat sketch any one method of orientation of runway. (06 Marks)
  - b. Calculate the actual length of runway from the following data. (07 Marks)
- |                                |            |
|--------------------------------|------------|
| Airport elevation              | : RL 100m  |
| Airport reference temperature  | : 28°C     |
| Basic length and runway        | : 900m     |
| Highest point along the length | : RL 97.00 |
| Lowest point along the length  | : RL 92.50 |
- c. Explain the principles adopted in the design of an exit taxiway connecting runway and a parallel taxiway. On a neat typical layout, indicate the various design elements. (07 Marks)
  - 7 a. Explain various shapes of tunnels with neat sketches. (06 Marks)
  - b. Mention the objects of tunnel lining. List the materials used for lining. (06 Marks)
  - c. Explain with neat sketches the operations involved in Needle Beam method of constructing a tunnel. (08 Marks)
  - 8 a. Explain with neat sketches the natural classification of harbours. (06 Marks)
  - b. Compare with sketches wall type break water with mound type break water. (06 Marks)
  - c. What is Dry Dock? Explain the construction and uses of Dry Dock. (08 Marks)