FACULTY OF ENGINEERING
B.E. 3/4 (Civil) I-Semester (Main) Examination, November 2013

Subject : Transportation Engineering

Time : 3 Hours   Max. Marks: 75

Note: Answer all questions of Part - A and answer any five questions from Part-B.

PART – A (25 Marks)

1. Explain the necessity of highway planning. (2)
2. Explain (i) Off tracking (ii) overtaking sight distance (iii) superelevation (3)
3. Define (i) Spot speed (ii) Spacemen speed (iii) Time-mean speed (3)
4. Explain the need of grade separated interjections. (2)
5. What are the characteristics of good road aggregates? (3)
6. Explain the different types of joints in cement concrete pavements. (2)
7. Mention the causes of creep and explain briefly. (3)
8. Draw the cross section of permanent way with details. (2)
9. Explain the necessity of correction needed for runway. (3)
10. Mention different types of aircrafts. (2)

PART – B (50 Marks)

11.(a) Draw the typical cross section of a highway in cutting and embankment with all
   the details. What are the basic requirements of ideal alignment. (5)
   (b) Find the safe over taking sight distance for a high way having a design speed of
   100 kmph. Maximum acceleration of overtaking vehicle can be assumed as
   1.6 kmph/sec. Assume all other data suitably. (5)

12.(a) Enumerate the various traffic surveys conducted to collect traffic data. Explain
   briefly O & D study. (5)
   (b) Explain the various methods of presenting traffic volume data. (5)

13.(a) What are the various tests for judging the suitability of road stones? Discuss the
   objects of carrying out each of these tests and their limitations. (5)
   (b) Explain (i) ESWL (ii) EALF and (iii) Vehicle damage factor (5)

14.(a) Draw the typical diagram of a left hand turnout showing the various components.
   (b) What is cont deficiency? A 6 degrees curve branches off from a 3 degree main
   curve in an opposite direction in the layout of a B.G.Yard. If the speed on branch
   line is limited to 35.5. kmph., determine the speed restriction on the main line.
   Given cant defienciency = 7.62cms.

15.(a) Write short notes on :
   (i) Cross wind component
   (ii) Wind coverage
   (iii) Calm period
   (iv) Basic runway length
   (b) The length of a runway under standard conditions is 1500m. The airport into be
   provided at an elevation of 100m above m.s.l. The airport reference temperature
   is 20°C. The construction plan includes the following data:

End to End of runway	Grade (%)
0 to 300	+1/2%
300 to 900	-0.35%
900 to 1500	+0.40%
1500 to 1800	+1.1%
1800 to 2100	-0.20

   Determine the actual length of runway to be provided. Apply the usual
   corrections.

16.(a) Derive the equation required for super elevation. What is equilibrium
   superelevation?
   (b) Explain highway capacity and level of service concept as per HCM 2000.

17. Explain
   (a) Engineering surveys needed for highway location
   (b) Advantages of Rotary
   (c) IRC cumulative standard axles method
   (d) Orientation of runway

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