SECTION – D

8. (a) Calculate the cantt deficiency and permissible speed for a 4° curve on a B.G. track. 10

(b) What are the objects of providing transition curves on railways ? 10

9. (a) Write a short note on lining of tunnels. 10

(b) Write a short note on classification of tunnels. 10

Roll No. .....

24288

B. Tech. 5th Semester (Civil Engg.) Examination – December, 2016

TRANSPORTATION ENGG. - I

Paper : CE-303-F

Time : Three Hours] *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt ***five*** questions in all, selecting ***one*** question from each Section. Question No. **1** is ***compulsory***. All questions carry equal marks.

1. (a) What do you mean by carriage way ? 4

(b) Define superelevation. Explain with neat sketches types of superelevation. 4

(c) What are the causes of road accidents ? 4

(d) What are IRC specifications for suitability of aggregates ? 4

(e) Write a short note on fixure and fastening. 4

SECTION – A

2. (a) What do you mean by highway alignment ? Explain factors affecting alignment. 10

(b) Explain why the saturation system is considered a rational method to decide the final road network and for road development programme. 10

3. (a) An ascending gradient of 1 in 100 meets a descending gradient of 1 in 120. A summit curve is to be designed for a speed of 80 km/hr and overtaking sight distance of 470 m. 12

(b) Write a short note on sight distance at intersection. 8

SECTION – B

4. (a) Explain the factors on which the length of valley curve is designed. 10

(b) Calculate the length of transition curve for a design speed of 80 km/hr at horizontal curve of radius 300 m in rural area. 10

5. Discuss the various traffic studies and their importance. 20

SECTION – C

6. (a) Explain Marshall method of mix design. 10

(b) Write a short note on modified bitumen that can be used in bituminous mixes. 10

7. Find out the steepest gradient on a straight track for a train having 20 wagons :

Weight of each wagon = 18 tonnes

Rolling resistance of each wagon = 2.5 kg/tonne

Speed of train = 60 kmph

Locomotive Specification :

Weight = 120 tonnes

Tractive effort = 12 tonnes

Rolling resistance = 3.5 kg/tonne 20