Total No. of printed pages = 3

CT-505/TE/5th Sem/2015/M

TRANSPORTATION ENGINEERING

Full Marks – 70

Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *five* questions.

1. (a) Discuss the second twenty year road plan of 1961-1981 and its salient features. 7

   (b) What are the uses of fact finding surveys ? How are these used and interpreted ? 7

2. (a) Briefly explain the engineering surveys needed for locating a new highway. 10

   (b) Explain obligatory points with sketch and discuss how these control the alignment. 4

[Turn over

3. (a) Explain the role of pavement surface characteristics in highway geometric design. 7

(b) Draw the typical cross-section of the following road indicating the width of pavement, roadway and land. 7

(i) O.D.R in cutting

(ii) NH in embankment in rural area.

4. (a) Derive an expression for calculating the overtaking sight distance on a highway. 7

(b) Calculate the length of transition curve and the shift using the following data : 7

Design speed = 65 kmph

Radius of circular curve = 220m

Allowable rate of introduction of superelevation pavement rotated about the centre line = 1 in 150

Pavement width including extra widening = 7.5m.

5. (a) What are different vehicular characteristics which affect the road design ? 7

(b) Enumerate the different methods of carrying out traffic volume studies. 7

6. (a) Explain the desirable properties of aggregate to be used in different types of pavement construction. 4

(b) Compare tar and bitumen. 2

(c) What are the various tests carried out on bitumen ? Briefly mention the principle and uses of each test. 8

7. (a) Discuss Westergaard's concept of temperature stresses in concrete pavement. 3

(b) Find the spacing between contraction joint for a 3.5m slab width having a thickness of 22 cm for 3

(i) Plain concrete slab

(ii) R.C.C slab.

(c) Briefly list the method of construction of gravel road. 8