ET-505

B.Tech. Civil (Construction Management)/ B.Tech. Civil (Water Resources Engineering)

Term-End Examination

June, 2016

□□490

ET-505 : TRANSPORTATION AND TRAFFIC ENGINEERING

Time : 3 hours   *Maximum Marks : 70*

*Note : Attempt **all** questions. All questions carry equal marks. Assume missing data, if any. Use of scientific calculator is allowed.*

1. Answer any **two** of the following :   *2×5=10*

   (a) State the role of transportation in the development of a country.

   (b) Discuss the requirements of an ideal road aggregate.

   (c) State and discuss the desirable features of transportation system.

2. Answer any **two** of the following :   *2×5=10*

   (a) Calculate the safe stopping sight distance for a design speed of 50 kmph for two-way traffic on a two-lane road. Assume coefficient of friction as 0·37 and reaction time of driver as 2·5 sec.

(b) Calculate the safe overtaking sight distance on a double lane National Highway for a design speed of 96 kmph. Assume all other data suitably.

(c) State the factors governing camber. Classify camber and mention their values as per the IRC recommendations.

3. Answer any *two* of the following : 2×5=10

(a) State the construction technique of premix bituminous carpet over an existing WBM road.

(b) A wheel load of 70 kN is transmitted to a pavement, the tyre pressure being $0·7$ MN/m^2. The modulus of elasticity of pavement material is 200 MN/m^2 and that of the subgrade is 20 MN/m^2. Allowable settlement at the surface is $0·3$ cm. Poisson's ratio is $0·5$. Determine the pavement thickness. Take $F_W = 0·3$.

(c) List out the tests conducted on bituminous materials and discuss any one in detail.

4. Answer any *two* of the following : 2×5=10

(a) What is a turnout ? Draw a neat sketch of a turnout showing its components.

(b) What are road markings ? State the various types of markings on the road.

(c) State the points considered for selection of site for a Railway Station.

5. Answer any *two* of the following :   *2×5=10*

   (a) Draw a layout plan of an airport showing all its main components.

   (b) State the classification of sleepers and explain its functions.

   (c) State the functions of track ballast. Also state the reasons for renewal of ballast.

6. Answer any *two* of the following :   *2×5=10*

   (a) State the advantages and disadvantages of water transport.

   (b) State the advantages of pipeline transportation.

   (c) Discuss the salient features of Harbour.

7. Write notes on any *two* of the following :   *2×5=10*

   (a) Systems of Signalling in Railways

   (b) Airport Characteristics

   (c) Westergaard's Theory on Relative Stiffness

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