

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

**Term-End Examination**

**December, 2016**

00862

**ET-505 : TRANSPORTATION AND TRAFFIC  
ENGINEERING**

*Time : 3 hours*

*Maximum Marks : 70*

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

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1. Answer any *two* of the following : 2×5=10
- (a) Discuss the various factors that are considered for road alignment.
  - (b) Describe the stages of road surveys in detail.
  - (c) Give the flow chart for the Urban Transportation Planning Process (UTPP).
2. Answer any *two* of the following : 2×5=10
- (a) Calculate the stopping sight distance on a highway at a descending gradient of 2% for a design speed of 80 kmph. Assume other data as per IRC recommendations.
  - (b) Derive an expression for mechanical widening of a road on a horizontal curve.
  - (c) State the types of gradients as per IRC and mention their values.

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

- (a) Describe the construction technique of a W.B.M. road.
- (b) An axle load of 130 kN is transmitted to a pavement through a tyre which is inflated to a pressure of  $0.7 \text{ MN/m}^2$ . Assuming Boussineq's condition to hold and  $E = 20 \text{ MN/m}^2$ . Calculate the deflection at the pavement surface. Take  $\mu = 0.4$ .
- (c) List out the tests conducted on pavement aggregates and discuss any one.

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

- (a) Calculate the radius of the turnout curve for a turnout 1 in  $8\frac{1}{2}$ . Calculate the value of lead. The heel divergence is 136 mm. The gauge is broad gauge. The front straight leg of vee-crossing is 864 mm. The switch angle is  $1^\circ 34' 27''$ .
- (b) State and classify traffic signs with neat sketches.
- (c) State and classify stations and yards.

5. Answer any *two* of the following :  $2 \times 5 = 10$

- (a) State the requirements of an airport pavement.
- (b) What is wear in rails ? How can it be minimised ? Explain.
- (c) Draw a neat labelled sketch of ballast profile. Explain how the thickness of ballast is calculated.

6. Answer any *two* of the following :  $2 \times 5 = 10$

- (a) What are docks and harbours ? State and explain their types.
- (b) Discuss the salient features of Ropeway Transportation.
- (c) What is Inland water transport ? State its merits and demerits.

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

- (a) Laying of Railway Track
  - (b) Runway and Taxiway of Airport
  - (c) Relaying of Railway Track
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