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320456(20)

B. E. (Fourth Semester) Examination, April-May 2021

(New Scheme)

(Civil Engg. Branch)

TRANSPORTATION ENGINEERING-I

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : *Attempt all questions. Part (a) of each question is compulsory. Attempt any two parts from (b), (c) and (d).*

Unit-I

1. (a) What are the various engineering surveys used for highways? 2

(b) Calculate overtaking right distance, minimum and desirable overtaking zone for a vehicle travelling at

a speed of 70 km/h to overtake a vehicle travelling at a speed of 30 km/h. Accelaration of overtaking vehicle is 0.99 m/sec^2. 7

(c) What is super elevation? Explain the procedure of design of super elevation. Also explain about the minimum and maximum super elevation. 7

(d) Write note on with diagram : 7

(i) Cross slope

(ii) Kerb

(iii) Right of way

(iv) Carriage way

Unit-II

2. (a) Explain traffic engineering. 2

(b) What are the different tects conducted on bituminous material? Explain any one of them with diagram. 7

(c) What is rotary intersection. Mention its advantages and disadvantages of rotary intersection. Also gives sketches of the various shapes of rotary. 7

(d) What are the types of traffic sign? Describe its function also. 7

Unit-III

3. (a) What is meant by the term pavement? 2

(b) What are the various factors to be considered in pavement design? Discuss the significance of each. 7

(c) Explain the CBR method of pavement design. How is this method useful to determine the thickness of component layers? 7

(d) Calculate stresses by wester gaard's theory at corner and edge, in of a concrete slab. Given the following data : 7

(i) Wheel load = 4080 kg

(ii) Modulus of elasticity of concrete = 2×10^5 kg/cm^2

(iii) Pavement thickness = 22 cm

(iv) Poisson's ratio = 0·15

(v) Modulus of subgrade reaction = 2·0 kg/cm^3.

(vi) Radius of contact area = 20 cm

Unit-IV

4. (a) What do you mean by prime coat and tack coat? 2

(b) Compare between : 7

(i) tar and bitumen

(ii) bituminous concrete road and cement concrete road

(c) Explain the various types of joints in pavement. 7

(d) What is WBM road? Enumerate its advantages and disadvantages. 7

Unit-V

5. (a) What do you mean by loading apron? 2

(b) What is wind rose diagram? What is its utility and what are its types? 7

(c) Write note on : 7

(i) Taxiway

(ii) Control zone

(iii) Air cargo

(iv) ILs

(d) What are the various factors which you would consider while selecting a suitable site for an airport? Explain each factor briefly? 7