

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (Civil Engg.) III Year II-Semester Old Examinations, May-2019

Transportation Engineering-I

Time: 3 hours

Max. Marks: 70

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. What are the various requirements of an ideal highway alignment? Discuss briefly.
2. Discuss the effects of shape of camber and the effects of providing steep cross fall.
3. What are different vehicular characteristics which affect the road design? Briefly explain.
4. Write short note on "Desire lines".
5. Write the various properties of road aggregates used for road construction.
6. Write the different between bitumen and tar.
7. Explain the terms ESWL and EAL.
8. Differentiate between flexible and rigid pavements.
9. Write short note on bituminous concrete pavement.
10. What are the general causes of pavement failures?

Part-B (5 × 10 = 50 Marks)
(All sub-questions carry equal marks)

- 11.a) Briefly outline the highway development in India.
 - b) Calculate the super-elevation to be provided for a horizontal curve with a radius of 400 m for a design speed of 100 K.P.H, in plain terrain. Comment on the results. What is the coefficient of lateral friction mobilized if super-elevation is restricted to 0.07?
- 12.a) Discuss the various traffic studies and their importance.
 - b) What are the different causes of traffic accidents? Discuss briefly.
- 13.a) Describe the common tests carried out on aggregates for road construction.
 - b) How do you find softening point of bitumen? Explain in detail.
- 14.a) Present the design steps for design of flexible pavements as per IRC 37-2012
 - b) Discuss the object of the following types of joints; draw neat sketches:
 - i) Expansion joints
 - ii) Contraction joints
- 15.a) Enumerate the steps for the preparation of subgrade and granular sub base.
 - b) Explain the various failures of flexible pavements and present their treatment measures.

- 16.a) Enumerate the factors governing the width of carriage way. State the IRC specifications for width of carriage way for various classes of roads. Also, present the functional classification of roads as per IRC
- b) Explain origin and destination study. What are the various uses of O& D studies?
- 17. Answer any *two* of the following:
 - a) Marshall stability test.
 - b) Vehicle damage factor and super elevation.
 - c) Construction of dense bituminous macadam road.
