

Reg. No. :

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

Question Paper Code: 1034396

B.E. / B.Tech. DEGREE EXAMINATIONS, NOV / DEC 2024

Fourth Semester

Civil Engineering

U20CE404 – TRANSPORTATION ENGINEERING – I

(Regulation 2020)

Time: Three Hours

Maximum: 100 Marks

Answer ALL questions

PART – A

(10 x 2 = 20 Marks)

1. How are roads classified as per Nagpur plan?
2. List the objectives of Highway planning?
3. Draw a typical transition curve and mark the salient features.
4. State the merits and demerits of parabolic camber.
5. What are the requirements of ideal pavement?
6. Define rigidity factor.
7. Define Flakiness index.
8. What is the significance of CBR test?
9. What do you mean by annual highway cost?
10. List the stages of bidding process.

PART – B

(5 x 16 = 80 Marks)

11. (a) List the types of highways as classified in the Indian context starting from the expressways up to Village also state the specification for each type. (16)

(OR)

- (b) Briefly explain the engineering surveys needed for locating a new highway. (16)

12. (a) Elaborate the factors affecting the geometric design of highway. (16)

(OR)

- (b) A road has a total width of 7.5 m including extra widening on curve and design speed of 65 kmph. Calculate the length of transition curve and its shift on this curve of 200 m radius. Allowable super elevation is 1 in 150 and pavement is rotated about center line. (16)

13. (a) Design the pavement for construction of new bypass with the following data:
(i) Two lane carriage way.
(ii) Initial traffic in the year of completion of construction = 400 CVPD (Sum of both directions).
(iii) Traffic growth rate = 7.5%
(iv) Vehicle damage factor based on axle load survey = 2.5 standard axle per commercial vehicle.
(v) Design CBR of Sub-grade soil = 4% (16)

(OR)

- (b) Explain the IRC design procedure for a rigid pavement. (16)

14. (a) Discuss the following tests which involved in determining the quality of aggregate and bitumen with a diagram:
(i) Crushing strength test
(ii) Softening point test (16)

(OR)

- (b) With a neat sketch explain the evaluation of pavement by Benkelman beam method for deflection measurements. (16)

15. (a) Elaborate about Highway financing methods and the responsibility of state and central government in highway financing in India. (16)

(OR)

- (b) Explain the various Highway cost and its analyzing methods. (16)