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**Question Paper Code : 40313**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Sixth Semester

Civil Engineering

CE 8604 — HIGHWAY ENGINEERING

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write short notes on Highway Research Board.
2. List out the salient features of Macadam roads.
3. List the types of pavement maintenance.
4. Write a short note on pavement strengthening.
5. Enlist the elements involved in highway geometric design.
6. State the various engineering surveys to determine the highway alignment.
7. Give the significance of providing camber in road.
8. Mention the uses of polymer modified bitumen.
9. List the failure criteria of rigid pavements.
10. Define flexible pavement.

PART B — (5 × 13 = 65 marks)

11. (a) Explain in detail about Lucknow developmental plan in the phase of highway planning. (13)

Or

- (b) Discuss in detail about the obligatory points controlling highway alignment. (13)

12. (a) Design the rate of super elevation for a horizontal highway having a curve of radius 450 m with a design speed of 120 kmph. (13)

Or

- (b) Elaborate how PIEV theory is linked with reaction time of a driver? (13)

13. (a) Write a design procedure of IRC for Rigid pavement. (13)

Or

- (b) Explain about the different types of cracks in flexible pavements. (13)

14. (a) Elaborate the viscosity and penetration laboratory test on bituminous materials. (13)

Or

- (b) Elaborate any three quality controls testing on road aggregates with its IRC recommendations. (13)

15. (a) Describe structural and non-structural method of evaluation of pavements. (13)

Or

- (b) Describe the criteria that are followed during a highway project formulation. (13)

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PART C — (1 × 15 = 15 marks)

16. (a) Explain the different effects on Environment and Ecology of the surroundings due to a highway project. (15)

Or

- (b) What you understand by privatization of highways? Explain with its advantages. (15)