



CBCS SCHEME

18CV733

Seventh Semester B.E. Degree Examination, Dec.2024/Jan.2025 Pavement Materials and Construction

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain in detail the desirable properties of road aggregate. (10 Marks)
- b. Explain Rothfutch's method for gradation of aggregates with the aid of graph. (10 Marks)

OR

- 2 a. Differentiate between Bitumen and Tar. (05 Marks)
- b. Explain the manufacturing process of Tar. List the different grades of tar with its application and also the tests conducted on road tar. (10 Marks)
- c. List the requirements and desirable properties of bitumen. (05 Marks)

Module-2

- 3 a. Explain Bituminous Emulsion? Explain the properties of Road emulsion on different tests. (08 Marks)
- b. Explain different types of Bituminous Emulsion. (04 Marks)
- c. Explain the methods of improving Adhesion. (08 Marks)

OR

- 4 a. Write short notes on cutback bitumen and types of cutback bitumen. (08 Marks)
- b. List the tests conducted on cutback bitumen. (04 Marks)
- c. Mention the types of adhesion test. Explain in brief Static Immersion test. (08 Marks)

Module-3

- 5 a. Explain the desirable properties of Bituminous mixes. (08 Marks)
- b. Explain the procedure of determining the optimum bitumen content for a bituminous mix by Marshall test method. (12 Marks)

OR

- 6 a. List the steps followed for the design of bituminous mix. (08 Marks)
- b. The specific gravities and weight proportion for aggregates and bitumen are as under the preparation of Marshall mix design. The volume and weight of one Marshall specimen was found to be 475 cc and 1100 gm. Assume absorption of bitumen in aggregate is zero. Find V_v , V_b , VMA and VFB.

| Item | A-1 | A-2 | A-3 | A-4 | Bitumen |
|------------------|------|------|------|------|---------|
| Weight (gm) | 825 | 1200 | 325 | 150 | 100 |
| Specific gravity | 2.63 | 2.51 | 2.46 | 2.43 | 1.05 |

(12 Marks)

Module-4

- 7 a. Discuss the need for construction of embankment. What are the important elements considered in embankment design? (08 Marks)
- b. Enumerate the steps in the construction of subgrade. What are the quality control checks for subgrade construction. (12 Marks)

OR

- 8 a. Briefly explain different types of rollers used in road construction with its suitability. (10 Marks)
b. Explain working principle of power shovel with a neat sketch. List its applications and limitations. (10 Marks)

Module-5

- 9 a. Explain the material specification and construction steps for Bituminous Macadam. (12 Marks)
b. Write short notes on :
i) Prime coat
ii) Tackcoat. (08 Marks)

OR

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- 10 a. Mention the advantages of providing Dry Lean Concrete (DLC) as subbase. (08 Marks)
b. Explain expansion joint and contraction joint. (08 Marks)
c. List the quality control test conducted on concrete road pavement. (04 Marks)

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