CBCS SCHEME

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18CV733

Seventh Semester B.E. Degree Examination, June/July 2023
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 the desirable properties of Aggregates to be used in different types of pavement construction and state the tests to be conducted for each property. **(10 Marks)**

b. Explain in detail :
i) Aggregate Impact Test ii) Stripping and Water Sensitivity Test. **(10 Marks)**

OR

2 a. Explain with neat sketch Manufacturing of Bitumen. **(10 Marks)**

b. Enumerate the general properties of Bitumen. **(10 Marks)**

Module-2

3 a. Compare the salient features and characteristics of Cutback and Emulsions. **(10 Marks)**

b. What is stripping? What are the Adverse effects? **(06 Marks)**

c. Explain any one test on Bitumen adhesion. **(04 Marks)**

OR

4 A specimen of Asphatic concrete has a height of 6.20 cms and a diameter of 10.16cm. The weight of the compacted specimen (uncoated) in air is 1174.4 gms and in water the weight is 668.4 gms. When coated with paraffin, its weight in air is 1220.9 gms and its weight when immersed in water is 664.4 gms. The specific gravity of paraffin is 0.90. The analysis of the specimen yielded the following data:

Material	Specific Gravity	Mix. Composition (% by wt. of total mix)	Aggregate composition (% by wt. of total Aggregate)
1. Asphatic cement	1.02	6.0	-
2. Coarse Aggregate	2.58	52.0	55.3
3. Fine Aggregate	2.72	34.6	36.8
4. Mineral filler	2.70	7.4	7.9
		100.0	100.0

a. Calculate
i) Bulk density of specimen by uncoated specimen procedure and immersion test.
ii) Bulk density of specimen from specimen dimensions
iii) Bulk density of specimen by paraffin coated sample procedure
iv) Average Specific Gravity of aggregates. **(10 Marks)**

b. Also calculate
i) Max theoretic density
ii) Bulk density as percent of max density.
iii) Percent voids in compacted mix
iv) Percent volume occupied by Asphalt
v) Percent Volume in Mineral Aggregates (VMA)
vi) Percent aggregate voids filled with Asphalt for the problem 4(a). **(10 Marks)**

Module-3

5 a. What is Clamp Shell? Explain its operation and application with neat sketch. **(08 Marks)**

b. What are the different types of Compacting Equipments used in Pavement Construction? **(06 Marks)**

c. Explain the functions and operation of Rollers in Road Construction. **(06 Marks)**

OR

6 a. Describe the construction method and Quality Control tests on Granular Subgrade Soil? **(12 Marks)**

b. Explain the circumstances in which embankment becomes necessary. **(08 Marks)**

Module-4

7 a. Describe the suitability of following in bitumen pavement construction:
i) Surface Dressing ii) Penetration Macadam
iii) Primixed Coat iv) Built up grout **(10 Marks)**

b. Explain the material specification and construction steps in Builtup Spray grout. **(10 Marks)**

OR

8 a. Draw a neat sketch showing various components layers of cement concrete pavement structure mention the functions of each layers. **(10 Marks)**

b. Write notes on :
i) Contraction joints ii) Expansion joints
iii) Construction joints iv) Longitudinal joints. **(10 Marks)**

Module-5

9 a. Explain Compaction and Finishing of cement concrete pavement. **(10 Marks)**

b. Explain the specification of materials and construction method of cement concrete pavement. **(10 Marks)**

OR

10 Write note on:
a. Requirements of Bitumen
b. Shape Tests on Aggregate
c. Specific Gravity and Water Absorption of Aggregates
d. Road Pavers **(20 Marks)**

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