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B. Tech. (Civil) 6th Semester (G Scheme)

Examination, July-2022

HIGHWAY ENGINEERING-II

Paper-PCC-CE-306-G

Time allowed : 3 hours]

[Maximum marks : 75

*Note : Question No. 1 is compulsory. Students have to attempt five questions in total at least one question from each section. All questions carry equal marks.*

1. (i) What is ESWL ?
- (ii) Mention the types of joints in rigid pavements.
- (iii) Enlist the various types of bitumen and its quality tests.
- (iv) What are the pavement roughness index ?
- (v) State the desirable properties of road aggregate.
- (vi) Mention the desirable properties of soil as a highway material.

**Section-A**

2. (i) Discuss the advantages and limitations of CBR method of design.
- (ii) Enumerate the various methods of flexible pavement design. Briefly indicate the basis of design in each case.

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3. (i) Design the CC pavement thickness, expression and contraction joint spacing, dowel and tie bars for a wheel load of 4500 kg. Assume all data suitably.
- (ii) Compare warping stress and frictional stress in rigid pavement.

**Section-B**

4. Explain with sketches the requirements of joints filler and sealer. Discuss the desirable properties and various material in use.
5. Explain briefly the method of Wet Mix Macadam Construction of Roads. What are the uses and limitations of this type of road ?

**Section-C**

6. Explain the various types of failure in cement concrete pavement and their causes and prevention measures with sketches.
7. Explain in detail :
  - (i) Types of overlays
  - (ii) Benkelman Beam Test

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**Section-D**

8. (i) Discuss the maintenance problems in hill roads.
  - (ii) Discuss how the problem of road construction in water logged areas may be solved.
9. Explain in brief :
    - (i) Highway user benefits and cost
    - (ii) Highway Finance
    - (iii) Economic Evaluation

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