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Total No. of Pages : 02

Total No. of Questions : 08

M.Tech(Civil Engg). (2016 Batch) (Sem.-1)

PAVEMENT DESIGN

Subject Code : MTCE-203

Paper ID : [74239]

Time : 3 Hrs.

Max. Marks : 100

INSTRUCTION TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWENTY marks.

- Q1. What is PMS? What are the purposes of the network-level and project level activities? Show the process of both the network level and project level by diagrams.
- Q2. What are the various types of road making aggregates available in India? Explain various laboratory tests carried out on aggregates.
- Q3. Define bitumen. Give elemental and chemical composition of bitumen. What is the need of modified binders? What is the impact of use of modifiers?
- Q4. Design a dowel bar system for a cement concrete slab for the following conditions :
1. Design wheel load : 4100 kg
 2. Design load transfer : 40%
 3. Slab thickness, $h = 20\text{cm}$
 4. Joint width, $z = 2.0\text{cm}$
 5. Permissible flexural stress in dowel bar = 1400 kg/cm^2
 6. Permissible shear stress in dowel bar = 1000 kg/cm^2
 7. Permissible bearing stress in concrete = 100 kg/cm^2
 8. K value of subgrade = 8 kg/cm^3
 9. $E = 3 \times 10^5 \text{ kg/cm}^2$
 10. $\mu = 0.15$

- Q5. What is highway inventorying? How is highway inventorying accomplished?
- Q6. List the various elements which the quality assurance system constitutes? List various preliminary tests to be conducted on soils and other pavement materials incorporated in the design to check if these materials meet the specified quality requirements or not.
- Q7. Describe the construction techniques for Bituminous Macadam and Penetration Macadam along with grading and requirements of aggregates and binder quality.
- Q8. What is the need of joints in concrete pavements? Explain various types of joints in concrete pavements.

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