Roll No.	Total No. of Pages : 02
Total No. of Questions:08	
M.Tech(Civil Engg).	(Sem1)
PAVEMENT DE	SIGN
Subject Code:M	ГСЕ-203
M.Code:742	239
Date of Examination	: 20-01-23
Time:3 Hrs.	Max. Marks:100

INSTRUCTIONS TO CANDIDATES :

- 1. Attempt any FIVE questions out of EIGHT questions.
- 2. Each question carries TWENTY marks.
- 1. Discuss principles, applications and limitations of direct shear, triaxial and unconfined compression test.
- 2. Specify the material requirement for construction of bituminous concrete. Write down the construction steps for bituminous concrete road.
- 3. Calculate the warping stresses at interior, edge and corner for a concrete pavement of thickness 20 cm with transverse joints at 4.5 m spacing. The width of the slab is 3.5 m. For concrete $E=3 \times 10^5$ kg/cm⁵ and Poisson's ratio is 0.15 and coefficient of thermal expansion of CC is 10×10^{-6} per°C. K value for subgrade is 5 kg/cm³. Temperature differential is 0.9C per cm.



Fig.1

4. Briefly outline the IRC recommendations for determining the thickness of cement concrete pavement.

- 5. Briefly describe how aggregate properties can affect the performance of bituminous pavements.
- 6. List advantages of using modified bitumen in comparison to unmodified bitumen. Briefly describe the elastomers and plastomers used in modified bitumen binder.
- 7. Enumerate various elements of quality assurance system.
- 8. Briefly discuss various methods of pavement evaluation.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.