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M.Tech. (Structural Design) (2016 & onwards) (Sem.–1)

DESIGN OF BRIDGES

Subject Code : MTSD-105

M.Code : 74246

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) What are the different types of live loads considered in the design of RCC bridges?

2) What factors are taken into consideration for deciding the location of a bridge? Give the data needed for the design of the bridge.

3) Design a slab culvert over an effective span of 7.0 m for the following data :

Clear carriageway width 7.0 m, width of kerb- 650 mm on either side, Load-IRC class A, Thickness of wearing coat 80 mm, Use M25 and Fe415 grades.

4) Discuss the IRC recommendations for the design of piers and abutments.

5) Explain the various types of Plate Girder Bridges and their suitability.

6) As a project Engineer explain the procedure you would adopt for preparing plans and estimates of a major bridge.

7) Design the articulation of a balanced cantilever for the following data

Dead load reaction = 70000 kg Max. live load reaction = 50000 kg

Total depth of girder at articulation = 240 cm, Size of bearing plate = 30* 50 cm, Sketch your design.

8) Verify the stability of the abutment for the following data:

Top width: 1.5 m, Height: 4.0 m

Back batter: 1 in 6, Front face of abutment is vertical.

Type of material: Stone Masonry, Unit weight of soil: 18 kN/m3

Angle of repose: 30° Superstructure: T-beam bridge of span 15.0m

Loading- IRC class A-A (Tracked)

Assume suitable dimensions for the components of the superstructure.

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