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BT-8/D-18 38042

BRIDGE ENGINEERING

CE-402-E

Time : Three Hours] [Maximum Marks : 100

Note : Attempt any *Five* questions. All questions carry equal marks. Assume suitable data, if necessary. All relevant codes are allowed.

1. Explain the meaning of Economic Span and derive the same.

2. Design a slab culvert for the following data :

   Effective span = 4.5 m

   Clear width of carriage way = 7.5 m

   Thickness of wearing coat = 70 min

   Provide footpath of 750 mm wide on either side, Loading IRC Class A. Use M 20 concrete and Fe 415 steel.

3. Explain the various types of IRC loadings in the design of highway bridges with the help of suitable sketches.

4. Design the longitudinal girder of a T beam slab bridge for the following data :

   Effective span = 17 m

Width of carriage way = 7.5 m

Thickness of wearing coat = 80 mm

Width of kerb = 600 mm on either side

Live load : IRC Class AA tracked vehicle.

Use M 25 concrete and Fe 415 steel, Assume 3 longitudinal girders and 7 class girders. Use Courbon's method.

5. Discuss in detail Design consideration for abutments and piers.

6. Enlist the types of bridge bearing and explain any *two* of them in detail.

7. Sketch the details of components of a well foundation. Briefly discuss the function of staining and curbe in a well foundation.

8. Design a plate girder bridge for a broad guage track :

   Effective span = 20 m

   Level of railway embankment = 115 m

   Bed level of stream = 100 m,

   Ground level of foundation = 98 m

   Stream bund top level = 101.50 m.