Roll No. ....

Total Pages : 3

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BRIDGE ENGG.

Paper : CE-402N

Time : Three Hours]   [Maximum Marks : 75

Note : Attempt *five* questions in all selecting at least *one* from each unit. All questions carry equal marks. Assume any data suitably, if missing, and state clearly. IS 456 : 2000 and IRC codes are allowed.

UNIT–I

1. (a) Define a Bridge. What are the components of a bridge ? Explain with suitable diagrams.   7

    (b) List the various factors to be considered for the selection of bridge site.   8

2. (a) List the various IRC live load considered for the design of Road and Railways bridges.   5

    (b) Explain IRC class tracked loading with appropriate sketches.   10

UNIT–II

3. (a) List the various types of R.C.C. bridges. Explain any *one* in detail.   8

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    (b) Differentiate between Box type culvert and Long span bridge.   7

4. Design a R.C.C. Road culvert over N.H. for the following data :

    (a) Loading– IRC class-A loading.

    (b) Span– 7.0 m

    (c) Carriage width– 7.5 m

    (d) Kerb width = 600 mm on both side. Use M-25 grade concrete and Fe-415 grade steel.   15

UNIT–III

5. (a) What are the advantages and disadvantages of Steel bridges over RCC bridges ?   5

    (b) List the various types of Steel bridges. Explain any *two* in detail.   10

6. Design a steel trussed bridge to suit the following data :

    Effective span = 30 m

    Road ways = 7.5 m (two lane)

    Kerb = 600 mm

    Loading = IRC class-AA tracked vehicle

    Material = • M-25 grade concrete and Fe-415 HYSD bar for deck slab

    • Rolled steel section with an yield stress 236 N/mm^2.   15

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UNIT–IV

7. (a) Explain the various types of Bearings commonly used in bridges. 8

    (b) Differentiate between Pier and Abutment with suitable diagram. 7

8. (a) Explain the necessary investigation and design criteria for well foundation. 7

    (b) Write down the function of joints and bearings in bridges. 8

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