

Roll No.

Total Pages : 3

BT-8/D-19

38220

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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5/12

- (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/mm². 15

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2

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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