Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. Sem. – II[nd] - Examination – June/July- 2011

Subject code: 1721504

Name: Analysis & Design of Bridges

Date:27/06/2011 **Time: 10:30 am – 01:00 pm**

Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Draw neat and clean sketches.**
5. **IRC 21, IS 1343 and Pigeaud's curve are permitted.**

Q.1 Design a RCC tee beam girder bridge for the following criteria. **14**

1. Clear width of road way = 7.5 m
2. Span = 16 m
3. Live load = IRC class AA tracked vehicle
4. Thickness of wearing coat = 80 mm
5. Use M25 – Fe 415

Design deck slab and main girder. Draw typical sketches.

Q.2 **(a)** Classify the types of live load with neat sketches. **07**

(b) Explain the criteria for the selection of type of bridge. **07**

OR

(b) Write short note on "Economical span of Bridge". **07**

Q.3 Design a post tensioned prestressed concrete bridge for following data. **14**

1. Clear span = 10 m
2. Width of bearing = 400 mm
3. Clear width of road way = 7.5 m
4. Foot path = 1 m on either side
5. Kerbs = 600 mm
6. Thickness of wearing coat = 80 mm
7. Live load = IRC AA tracked vehicle
8. Type of structure = class I type
9. M40 grade of concrete and ultimate tensile strength of wires 1500 MPa
10. Fe 415 for other reinforcement
11. Loss ratio = 0.8 and compressive strength at transfer = 35 Mpa

OR

Q.3 **(a)** Elaborate the design steps of pier and pier cap **07**

(b) Explain parts of sub structure with neat sketch and write types of sub structure. **07**

Q.4 **(a)** Write in short "Articulation of Bridge" **07**

(b) Explain the codal provision for deflaction and cracking of super structure. **07**

OR

Q.4 **(a)** Elaborate the design steps of well. **07**

(b) Explain the design of balanced cantilever bridge. **07**

Q.5 **(a)** Explain Hendry Jaeger method **07**

(b) Write the advantages of prestressed concrete bridges. **07**

OR

Q.5 **(a)** Explain Courbon's method **07**

(b) Write the short note on Pigeaud's curve. **07**

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