

M.E DEGREE EXAMINATIONS: NOV/DEC 2014

(Regulation 2013)

Third Semester

STRUCTURAL ENGINEERING

P13SETE04:Design Of Bridges

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 2 = 10 Marks)

1. Classify bridges
2. What is 70R loading?
3. What are the disadvantages of skew alignment?
4. What is meant by impact allowance?
5. Where balanced cantilever bridges are preferred?
6. Why box girder bridges are economical?
7. What are the conditions of Courbon's method?
8. What are the advantages of using prestressed concrete for bridges?
9. Mention the types of bearings.
10. Write a note on well foundation.

Answer any FIVE Questions:-

PART B (5 x 16 = 80 Marks)

Q.No:11 is Compulsory

11. (i) How Pigeauds design curves are used in design of deck slabs? (8)
(ii) Name the methods by which the distribution of line load among the longitudinal girders of a Tee beam bridge can be estimated (8)
12. (i) Brief about arrangement of support in balanced cantilever bridges with neat sketches (8)
(ii) Write down the design procedure of a box culvert. (8)

13. Design the deck slab of a three span continuous reinforced concrete bridge with girders for the crossing of a National highway to suit the following data.
- Total length of bridge - 70m
 - Span lengths, end spans - 20m
 - Central span - 30m
 - Width of carriage way - 7.5m
 - Kerbs - 600mm on either side
 - Spacing of main girder - 2.9m
 - Spacing of cross girder - 4m c/c
 - Loading - IRC class AA tracked vehicle
- M25 grade concrete and Fe415 steel are used.
14. (i) Write down the precautions to be taken by the prestressed concrete bridge engineer. (8)
- (ii) Write down the recent trends in the design of prestressed concrete bridge (8)
15. Design a steel rocker bearing for transmitting a vertical reaction of 1000kN and a horizontal reaction of 100kN at the support of a bridge girder, assuming the permissible stresses according to IRC: 83 – 1982.
16. Explain the stability analysis and design of abutments for bridges.
