

Roll No. ....

**23525**

**M. Tech 3rd Semester (Civil Engg.)  
(Specialization in Structural Design)**

**(Elective - III)**

**Examination – May, 2018**

**DESIGN OF BRIDGES**

**Paper : MTSD-308**

*Time : Three Hours ]*

*[ Maximum Marks : 100*

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Attempt *five* question in all. All question carrying equal marks. Use of reference books and relevant codes of practice are permitted in the examination.

1. (a) Give classification of bridges in details. 10
- (b) What are the special features of prestressed concrete bridge ? Also explain various types of prestressed concrete bridge. 10

2. (a) Explain stress distribution in the end block in the prestressed concrete beam. 10
- (b) Compute the bursting force and Design suitable anchorage zone reinforcement according IS 1343. The end block is size of 200mm wide by 300mm deep is post tensioned with two Freyssinet anchorage each of 100mm diameter with their centers located at 75mm from the top and bottom of the beam. The force transmitted by each anchorage being 2000 kN. 10
3. Explain IRC class A and Class 70 RR loading in detail with neat sketch. <http://www.HaryanaPapers.com> 20
4. Design a box culvert having inside dimension 4m x 4m for the following data.  
Dead load = 12 KN/m<sup>2</sup>, Live load = 46 KN/m<sup>2</sup>, Density of soil = 18 KN/m<sup>3</sup>. Use M20 and Fe 415. 20
5. What is the design procedure for a plate girder bridge? Explain steps by step. Also list various type of steel bridge. 20
6. Enumerate the forces to be taken into account when designing an abutment of bridge. Also explain salient feature of solid bridge piers. 20

7. Explain Different type of bearing and joints with help of neat sketch. 20
8. Explain the following (with diagram) : 20
- (i) Wing wall
- (ii) Approaches
- (iii) Truss bridge
- (iv) Scour depth and linear waterway

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