

23525

M.Tech. 3rd Semester (Civil Engg.)

Examination, December-2018

SPECILISATION IN STRUCTURAL DESIGN

(ELECTIVE-III)

Paper- MTSD-308

Design of Bridges

Time allowed : 3 hours]

[Maximum marks : 100

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

1. A reinforced concrete simply supported slab is required for the deck of a road bridge having the following data:
 - (i) Clear span = 5.5 m
 - (ii) Width of carriage way = 7.5 m
 - (iii) Footpath either side = 1 mType of loading IRC class AA. Use M 20 and Fe 415. Design the deck slab. Also show reinforcement detail. 20
2. Discuss different type of RCC bridge giving main feature of each type with neat sketch. 20
3. List the preliminary data to be collected by an engineer conducting investigation for a major bridge. Also derive the formula for economical span of bridge. 20

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[P.T.O.]

4. Design the intermediate beam of a prestressed concrete bridge of clear span 25 m. Assume the roadway width as 7.5 m. Loading IRC class 70 R tracked vehicle. 20
5. Discuss in detail the major cause of bridge failure. Indicate how these failure could be avoided. 20
6. Write a short note on (with diagram) 20
 - (i) Pier
 - (ii) Abutment
 - (iii) Wing wall
 - (iv) Approach
7. Why it is necessary to calculate afflux while designing the waterway of a bridge? Also Explain the class A and B loading as per IRC. 20
8. Explain different type of bearing and joints with help of neat sketch. 20

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