SECTION – D

8. (a) What do you understand by box girder and explain its design principles ? 10

(b) Which type of damping devices used in bridge designing, explain briefly ? 10

9. Explain the following : 20

(a) Site investigation for bridge design

(b) Skew slab

Roll No. .....

23232

M. Tech. 1st Semester (Civil Engg.) Transportation Engg. (Elective-I) Examination – February, 2022

BRIDGE ENGINEERING

Paper : CE-617

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* questions in all, selecting *one* question from each Section. Question No. 1 is *compulsory*. All question carry equal marks.

1. Describe the following : 4 × 5 = 20

(a) Design of well foundation

(b) Sliding bearing

(c) Functions of bearing

(d) Articulation

(e) Bow string Girder Bridges

SECTION – A

2. (a) How do you classify bridges ? What is an ideal Bridges ? 10

(b) Discuss influence of impact and wind loads on the design of permanent bridges. 10

3. (a) Discuss different types of RCC bridges giving main features of each type 10

(b) Design a RC slab culvert to be constructed over a NH if clear span is 6.5 m. Footpath of 1.2 m width is to be provided on both sides. Also sketches reinforcement details. 10

SECTION – B

4. Design an exterior longitudinal girder of a T-beam bridge for the following data : 20

Effective span = 25 m

Clear width of roadway = 7.5 m

Footpath = 0.80 m wide on either side

Live load : IRe class AAA Tracked vehicle

Slab thickness = 0.24 m

Also sketch details of reinforcement.

5. Design one of the post tensioned prestressed concrete T-Beam and slab deck to suit the following data : 20

Effective span = 24 m spacing of main girder = 2.0 m

Spacing of cross girder = 4.0 m carriageway = 7.5 m

Kerbs = 0.60 m wide on either sides of the road

Loading = IRC class AA tracked vehicle loading

Use M45 Grade concrete and High tensile steel strands

Confirming to IS : 6006

LOS ratio = 0.85

SECTION – C

6. (a) What are caissons and write its types with suitable diagrams ? 10

(b) Write down the difference between Shallow and Deep foundation of bridges. 10

7. (a) Write the various types of bearing of bridge appurtenances. 10

(b) What are the drainage system and how it works in bridge designing ? 10