Roll No. : .....

Total No. of Questions : **8**] [Total No. of Pages : **3**

23232

M.Tech. (Civil Engg.) 1st Semester Examination, March-2021

(Transportation Engg.)

(Elective-I)

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 any *five* questions. Assume any data if missing. All questions carry equal marks.

1. What are the Indian road congress bridges loading standards for different types of loading ? Explain with the help of neat sketches. 20

2. Explain why selection of bridge site is important and how investigation report effects the selection of bridge type. 20

3. Design the superstructure for one span foe a T-beam bridge to be built on a rural section of a state highway. The bridge consists of five spans of 1.45 m. Assume 'moderate' exposure and cement concrete wearing course :

   Clear roadway = 7.5 m

   Use M30 grade of concrete and Fe-415 steel. 20

4. Explain the following in detail :

   (a) Rocker-Roller bearing

   (b) Elastomeric pad bearing

   (c) Reinforced concrete rocker bearing 20

5. What are the factors that are considered in construction, inspection and maintenance of bridges ? Also write the tools which are used in inspection. 20

6. Write down the methods of construction of the following :

   (a) R.C bridges

   (b) Prestressed concrete bridges

   (c) Steel bridges fabrication 20

7. Design a prestressed concrete slab for the following data :

   Span clear – 5.00 mm, Live load – IRC Class AA, Road – National highway, Footpath – 1 m on either side, Material–M35 concrete and Fe-500 grade of steel.

   The compressive stress permissible in concrete during, during concrete = 20 mpa. 20

8. Write short notes on the following :

   (a) Secondary stressed in a truss bridges

   (b) Economic span for bridge

   (c) Check for diagonal tension

   (d) Stability analysis of piers 20