Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 08

M.Tech.(CTM) (E-I) (Sem.–1)

BRIDGE ENGINEERING

Subject Code : CT-510

Paper ID : [E0810]

Time : 3 Hrs. Max. Marks : 100

INSTRUCTION TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**
3. **Assume missing data suitably.**

1. a) Using a flow chart, outline the historical development of bridges. (10)

   b) Write a brief note on any major bridge built in India, indicating special features *w.r.t* design and construction. (10)

2. a) What is the importance of subsoil exploration in the design of a major bridge? List the data to be obtained from such an exploration. (14)

   b) Write a short note on *"Traffic Projection"*. (6)

3. a) Describe IRC Standard loadings and indicate the conditions under which each should be used. (14)

   b) Write a note on *'Deformation Stresses'*. (6)

4. a) Describe briefly the use and advantages of Balanced Cantilever type of bridges. (10)

   b) Sketch a suspension bridge and show its components. Briefly describe the function of each component. (10)

5. a) What are the advantages and disadvantages of Reinforced Concrete Continuous girder bridges over simply supported girder bridges. (12)

   b) List the different type of steel bridges and indicate the span range applicable to each type. (8)

6. a) State the principles of design of a pile foundation for a bridge pier and sketch the details of a typical foundation. (14)

   b) Indicate the forces acting on an abutment, with the aid of sketch. (6)

7. a) What is the purpose of bearing in bridges? (6)

   b) Describe the various types of fixed bearings. (7)

   c) How would you provide kerbs for a submersible bridge? (7)

8. a) List the trouble spots to be checked during Bridge Inspection. (8)

   b) Discuss the major causes of bridge failures. Explain how these failures could be avoided. (12)