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Total No. of Pages : 02

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**M.Tech. Civil Engg (2016 Batch) EL-I (Sem.-2)****ADVANCE BRIDGE DESIGN**

Subject Code : MTCE-210

M.Code : 74303

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. Any missing data may be assumed appropriately.

1.
  - a) What are the factors to be considered in the selection of a suitable bridge site?
  - b) How we do the choice of a bridge type?
2.
  - a) Explain impact effect for IRC class A or B loading and for IRC class AA loading.
  - b) What are the four standard types of live load considered in the code? Explain them in detail.
3.
  - a) How does a finite difference method differ from finite element method?
  - b) Explain different types of expansion bearings used in girder bridges.
4.
  - a) Differentiate abutment and pier. Enlist various forces which a designer must consider during analysis of these elements.
  - b) Differentiate well foundation and caisson foundation. Discuss cases where each of these two types of foundations are suitable.
5.
  - a) Describe Courbon's Method of loading in detail with the help of suitable example.
  - b) Write a short note on erection of bridge super structure.
6. A group of nine friction piles of 200 mm diameter spaced at 0.5 m transfer a load of 400 kN into a 10 m thick clay layer with sand below. It penetrates to a depth of 6 m in the clay layer. Estimate the probable settlement of the pile group. Assuming water table is at ground level. Take water content = 39%,  $G = 2.7$  and  $\gamma_{sat} = 20 \text{ kN/m}^3$ .



7.
  - a) Discuss in detail different types of bridge maintenance.
  - b) Write a short note on behavior of bridges under dynamic loads.
8. Explain briefly with suitable- sketches the component parts and structural actions of truss bridges, cable stayed bridges and suspension bridges.

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**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**