Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(Civil Engineering) (2011 Onwards E-I & II) (Sem.–7, 8)

SOIL DYNAMICS AND MACHINE FOUNDATION

Subject Code : BTCE-811

M.Code : 71870

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Answer briefly :

a. Define Frequency and damping.

b. What are the different types of dynamic loads?

c. A mass supported by a spring has a static deflection of 0.5mm. Determine its natural frequency of oscillation.

d. What are the types of soil constants?

e. What is block vibration test?

f. Define Vibration Isolation.

g. Write any two special requirements of apparatus for dynamic tests.

h. Draw a sketch to illustrate transient test.

i. Draw the figures of two types of machine foundations.

j. How will you define "*Two-mass spring analogy for hammer foundation*"?

SECTION-B

2. What is 'Logarithmic Decrement'? Derive expression for its determination.

3. How can we find the soil constants? What are the codal provisions for determination of soil constants?

4. How do you analyze the rocking vibrations of block foundation?

5. What are the different methods of vibration isolation? Explain briefly.

6. Explain the terms damped natural frequency and magnification factor.

SECTION-C

7. Write a note on free vibrations and forced vibrations starting from fundamentals. Discuss the equations of motion for under damped systems and over damped systems.

8. Determine the natural frequency of a machine foundation that has a base area of $6m^2$ and a weight of 175 kN including weight of machine. The co-efficient of elastic uniform compression of soil is $4 \times 10^4 kN/m^3$. Use Barkan's method.

9. Write briefly about the following :

   a) Types of Machines

   b) Types of Machine foundations

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.