AQ – 2940

Second Semester M. E. (Geotechnical Engg.) Examination

SOIL DYNAMICS AND MACHINE FOUNDATION

Paper - 4 SFGE 1

P. Pages : 2

Time : Three Hours]   [Max. Marks : 80

Note : (1) Answer any **five** questions.
(2) Due credit will be given to neatness and adequate dimensions.
(3) Assume suitable data wherever necessary.
(4) Diagrams and Chemicals equations should be given wherever necessary.
(5) Illustrate your answer necessary with the help of neat sketches.
(6) Use pen of Blue/Black ink/refill only for writing the answer book.

1. (a) How will you approximate the nonlinear force deformation behaviour ?   8

   (b) What is oblique coordinate system ? What is its utility in soil dynamics?   8

2. (a) Discuss with illustration of neat sketch, vibratory motion for a damped system under forced vibration, and hence obtain the solution for the equation of motion for such system.   8

   (b) Explain with illustration of sketch the vibratory system due to motion of support and hence deduce the value of Dynamic magnification factor for such system with respect to relative motion.   8

3. (a) What are the various methods for handling a dynamic bearing capacity problem ?   8

   (b) What are various types of body waves and surface waves in elastic half space ? Explain their salient features.   8

4. (a) Classify the machine foundation and mention the appropriate example for every type.   8

AQ – 2940   P.T.O.

(b) Which type of machine foundation is represented by the system given below :

(i) Undamped–two degree freedom system under forced vibration.

(ii) Single–mass–spring under free vibrations. 8

5. (a) How the geometrical properties affect the machine design ? Explain with suitable example. 8

(b) Explain design criteria as per IS code for the foundation of the reciprocating type and impact type machines. 8

6. (a) Describe different methods employed in isolating the existing machine foundation. 8

(b) A resilient pad is supporting a machine having operating frequency of 800 rpm. If it has undergone a static deflection of 0.6 cm under the weight of machine determine the transmissibility and percentage reduction of the transmitted vibrations. 8