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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(CE) (2011 Onwards) (Sem.-6)
ELEMENTS OF EARTHQUAKE ENGINEERING

Subject Code : BTCE-602

Paper ID : [A2289]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION 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 has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.
4. Assume any missing data.

SECTION-A**1. Write briefly :**

- (a) Differentiate between static analysis and dynamic analysis of structures.
- (b) Explain soft story failure.
- (c) Enlist various codes of practice along with correct name related to earthquake engineering.
- (d) Give two virtue of good earthquake resistant design.
- (e) What is response spectrum analysis?
- (f) What is zone factor?
- (g) What are isoseismic maps?
- (h) Differentiate between P and S waves.
- (i) Give the expression used for distributing lateral force along the height of building.
- (j) Define Logarithmic decrement and give its expression.

SECTION-B

- 2 What are the lessons learnt from past earthquakes? Explain philosophy behind earthquake resistant design of structures.
- 3 Define shear wall. How are these classified?
- 4 Explain the equivalent lateral force procedure for evaluating base shear according to IS code 1893.
- 5 Explain ductile detailing of columns as per IS -13920. Also give limitation of this code.
- 6 Write a short note on floor diaphragm action.

SECTION-C

- 7 Derive the relation for response of damped forced vibration for SDOF system.
- 8 A platform of weight $W = 40001b$ is being supported by four equal columns which are clamped to the foundation as well as to the platform. Experimentally it has been determined that a static force of $F = 10001b$ applied horizontally to the platform produces a displacement of 0.10 inch. It is estimated that damping in the structures is of order of 5% of the critical damping.

Determine :

- a) Undamped Natural Frequency
 - b) Absolute Damping Coefficient
 - c) The number of cycles and the time required for the amplitude of motion to be reduced from an initial value of 0.1 in to 0.01 in
 - d) Logarithmic Decrement
- 9 Describe the two approaches followed for the prediction of earthquake. Name the major plates of the earth.