Sub Code:**CET-606** ROLL NO……..

SEMESTER EXAMINATION,
2022-23 YEAR

Programme – Ist Yr. M.Tech – GEOTECHNICAL ENGINEERING

Earthquake Resistant Design of Structure

Duration : 3:00 hrs **Max Marks: 100**

Note:-Attempt all questions. All Question carry equal marks. In case of any ambiguity or missing data, the same may be assumed and state the assumption mad in the answer.

Q 1. Answer any four parts of the following.

a) Explain different ground motion characteristics.

b) Explain earthquake risk evaluation and mitigation.

c) Explain the concept of base isolation.

d) Explain application of base isolation in structure design with sketches.

e) Explain seismic design philosophy.

f) Write basic assumption made in analysis of earthquake resistant design of structure.

Q 2. Answer any four parts of the following.

a) Explain elastic rebound theory

b) Explain different types of damping devices.

c) Explain different types of plate boundries with sketch.

d) What is earthquake? Explain the earth and its interior.

e) Describe direct and indirect effects of an earthquake.

f) Explain seismic retrofitting techiques.

Q 3. Answer any two parts of the following.

a) What type of wave are generated during an earthquake? Distinguish between “body waves” and “surface waves”.

b) Explain magnitude and intensity as applied to an earthquake with a neat sketch write a note on earthquake seismograph.

c) Explain briefly the different method of seismic analysis of structure.

Q 4. Answer any two parts of the following.

a) Explain triparlite plot of response spectrum and significance of spectral regions.

b) Compute the seismic forces for each storey of a building situated in Zone-4 by equivalent lateral force method as per IS 1893-2002 with the following details:

Type of building : special moment resisting frame residential building foundation on hard soil.

No of storeys=3.

Height of first storey=4m

Height of second storey=3.2m

Height of third storey=3.2m

seismic weights :

First storey=1079.1kN, Second storey=1863.9kN, Third storey=294.3kN.

c) Write about different types of control system and their suitability.

Q 5. Answer any two parts of the following.

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a) What is floor diaphragm? Give types of floor diaphragms and distribution in a RC frame building.

b) Explain in brief the strength and stiffness irregularity in multistory RC building.

c) Differentiate between soft storey, weak storey and silt storey with the help of neat sketch.