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

Total No. of Questions : 08

M.Tech Structural Design (2016 & Onwards) (Sem.–2)

STRUCTURAL DYNAMIC & EARTHQUAKE ENGINEERING

Subject Code : MTSD-201

Paper ID : [74290]

Time : 3 Hrs. Max. Marks : 100

INSTRUCTIONS TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**

Q1 a) Differentiate between :

i) Intensity and magnitude of an earthquake

ii) P waves and S waves. (8)

b) What is Response Spectra? How is it obtained/applied for earthquake resistant design of structures? (12)

Q2 a) Define :

i) Centre of mass.

ii) Centre of rigidly.

iii) D' Alembert's Principle. (6)

b) Discuss in detail additional recommendations to take care of Torsional effects. (14)

Q3 a) What are shear walls? How are these designed? (8)

b) What are moment resisting frames? How are these designed? Where do we prefer to use moment resisting frames? (12)

Q4 a) Discuss IS codal provisions for ductile detailing in seismic design of structures. (7)

b) What is P-Δ effect? How do we account for is P- Δ effect in design of structures? (7)

c) Define : i) Ductility ii) Storey Drift iii) Design Spectrum. (6)

Q5 a) What do you mean by hydrostatic Pressure? What are the effects of Hydrodynamic effects due to reservoir? (10)

b) Discuss the stability considerations of Gravity Dams. (10)

Q6 a) '*Seismic strengthening of existing Buildings plays an important role from safety point of view*'. Discuss the procedures of Seismic strengthening of existing Buildings with the aid of a case study. (10)

b) What is Liquefaction Potential? Discuss the causes of Soil Liquefaction. (10)

Q7 a) Write the procedure for lateral load analysis of masonry buildings. (10)

b) Discuss the importance of Bands in masonry buildings. With the aid of sketch(s), show critical locations of Bands. (10)

Q8 Write short note on :

a) Design of Bands (10)

b) Rigid Diaphragms (10)