Code No: **R41015** **R10** **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, Oct/Nov- 2018

EARTHQUAKE RESISTANT DESIGN
(Civil Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks
*****

1 a) Explain the different factors responsible for the occurrence of earthquakes. [6]
b) Explain the principle of seismograph and seismogram with sketch [6]
c) Explain the classification of earthquakes [3]

2 a) Derive an expression for the response of an damped SDOF system subjected to free vibrations. [12]
b) Explain the importance of under-damping system. [3]

3 Calculate the natural frequency and modes shape for the MDOF system as shown in figure.3

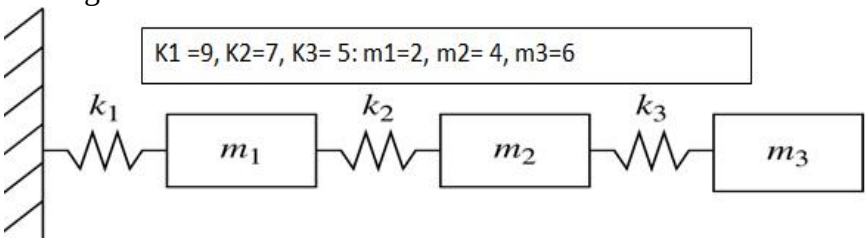

Figure.3 [15]

4 a) Derive the Formulation of equations of motion for the MDOF Systems. [12]
b) Explain rigid base isolation technique. [3]

5 a) Explain the design philosophy of earthquake resistant structures. [8]
b) Explain the step-by-step procedure for seismic analysis of RC building. [7]

6 a) Draw the ductile detailing provisions of an RC beam as per the IS code of practice and also explain the salient features. [8]
b) Explain design procedure for shear as per IS 13920:1993 [7]

7 a) What are various the vertical irregularities and explain them with a neat sketch. [12]
b) What is meant by weak storey? [3]

8 A shear wall of length 5 m and thickness 230 mm is subjected to the forces as given below:

Type of Load	Axial Force (kN)	Moment (kNm)	Shear Force (kN)
Dead Load and Live Load	2000	650	25
Seismic Load	300	4000	750

Design the RC shear wall using M30 grade of concrete and Fe415 steel and detail as per IS: 13920. [15]