

GANPAT UNIVERSITY

B.Tech. Semester VIII (CIVIL), Regular Examination – May/June 2012

C 805 DESIGN OF EARTHQUAKE RESISTANT STRUCTURE-II

Max.Time: 3 Hours

Max. Marks: 70

- Instructions: -**
- (1) Answer to the two sections must be written in **separate** answer books.
 - (2) Figures to the right indicate full marks.
 - (3) Assume suitable data if required.
 - (4) Only IS: 875 (part 3)-1987 is permitted.

Section – I

- Q-1 (A) Calculate wind force and draw pressure diagram for a multistoried framed building having following data. Use IS 875 :1987 12

Physical parameters:-

Length	: 50 m
Width	: 10 m
Height	: 60 m
Height of each storey:	4m
Spacing of frames	: 5 m along the length

Wind data:-

Basic wind speed	: 50 m/s
Terrain category	: 3
Life of structure	: 100 years.
Topography	: Flat that is upwind slope $< 3^\circ$

- Q-2 (A) Write Short note on “Idealization of turbo machine”. 6
- (B) A single degree of freedom system consists of a mass a weight of 2000 N and spring of stiffness 550 N/mm. By testing the system it was found that a force of 500 N produces relative velocity 304.8 mm/sec. 6
- Find,
- (i) Damping ratio & Damped frequency of vibration f_D .
 - (ii) Logarithmic decrement.
 - (iii) Ratio of two consecutive amplitudes.

OR

- Q-2 (A) Explain time history analysis. 6
- (B) An excitation force in a constant force excitation is 120 kN. The natural frequency of machine foundation is 6 Hz. the damping factor $\xi=0.381$. Determine the magnitude and transmitted force. An operating frequency of machine is 10 Hz. 6

- Q-3 (A) Steps for seismic retrofit with flow chart. 6
 (B) Write short note on ductility 5
 OR
 Q-3 (A) Goals and objective of seismic retrofit. 6
 (B) Retrofit versus Repair and Rehabilitation. 5

Section – II

- Q-4 (A) A machine weighing 550 kN, is mounted on a concrete block resting on soil. The base area of concrete is 30 m^2 and weight is 150 kN. The coefficient of elastic uniform compression of soil is $1.4 \times 10^5 \text{ kN/m}^3$. Calculate the natural frequency of system. 6
 (B) Explain Condition assessment of RCC building. 6
 Q-5 (A) Write RCC column retrofit techniques and explain retrofit by steel jacketing. 6
 (B) Draw structural detailing of RCC Beam-column with confining zones as per IS 13920:1987 6
 OR
 Q-5 (A) Explain Condition assessment of foundation. 6
 (B) Discuss about types of base isolation devices with its connection details. 6
 OR
 Q-6 (A) Explain in detail repair, retrofit and rehabilitations. 6
 (B) Short note on Viscous damper. 5
 OR
 Q-6 (A) Explain tune devices. 6
 (B) Short note on friction damper. 5

END OF PAPER