

GANPAT UNIVERSITY

B.Tech. 7th Semester (Civil),
Regular Examination : Nov- Dec : 2011

Instructions: - (Use IS : 1893 - 2002)

- (1) Answer to the two sections must be written in separate answer books.
- (2) Assume suitable data if required.
- (3) Figures to the right indicate full marks.

C – 705 : Design of Earthquake
Resistant Structures

Invigilator's Sign.: _____

Exam. No. of the candidate:

Max. Marks: 70

Max. Time: 3 Hours

Section - I

1 Attempt any Five:

25

- (A) Detail explanatory note of ductile design of shear walls as per IS 13920 -1993.
- (B) Design of lintel bands. Also explain as per Indian standards.
- (C) Give Classification of earthquakes.
- (D) How to make an earthquake resistant features of stone masonry building?
- (E) Explain: (I) Elastic rebound theory and (II) Seismic zones of India
- (F) Discuss various repair materials used for repairs of the earthquake damaged structures.
- (G) Write a short note on: (I) Base isolation and (II) Seismic dampers

2 Attempt any Two:

10

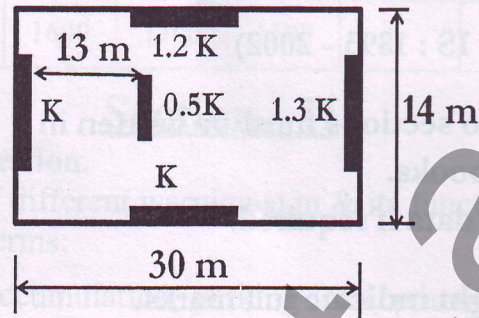
- (A) Derive the equation for the single degree of free undamped vibration system.
- (B) Explain torsionally uncouple and couple system.
- (C) Assumption made in the portal frame method.

Section - II

3 Attempt any One:

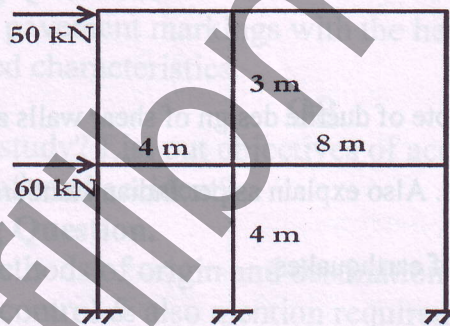
10

- (A) Calculate the lateral force in the walls of the one storey building due to the lateral force of 250 kN applied in Y direction and passing through the centre of mass. The roof diaphragm is rigid in its own plane and mass at the roof is uniformly distributed. Refer fig.1.



[Fig.1]

- (B) Analyse the frame shown in fig.2 by Cantilever method and draw SFD, BMD and AFD.

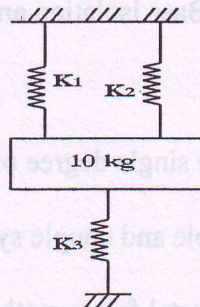


[Fig.2]

- 4 (A) Find the natural frequency of the system of the system as shown in Fig.3

7

Take $K_1 = K_2 = 2000 \text{ N/m}$, $K_3 = 3000 \text{ N/m}$ and $m = 10 \text{ kg}$.



[Fig.3]

- 5 (A) For G + 2 residential building frames, lumped mass storey stiffness of floors are as given below in table. Using response spectrum method, find lateral forces at each floor level for the fundamental mode only and draw mode shape. Use Is 1893 – 2002. 18

<u>Storey</u>	<u>Lumped Mass</u>	<u>Stiffness</u>
1 st	5 Tones	$5 \times 10^5 \text{ N/m}$
2 nd	5 Tones	$5 \times 10^5 \text{ N/m}$
3 rd	4 Tones	$5 \times 10^5 \text{ N/m}$

“End of Paper”