P. Pages : 1 Time : Three Hours			GUG/W/10 * 3 6 5 5 * Max. Ma	<b>GUG/W/16/3973</b> Max. Marks : 70	
	Notes :	1. 2. 3. 4. 5. 6.	All questions carry equal marks. Answer <b>any five</b> questions. Due credit will be given to neatness and adequate dimensions. Assume suitable data wherever necessary. Illustrate your answers wherever necessary with help of neat sketches. Non programmable calculator is permitted.		
1.	Do sti re	etermi iffness sponse orce	The the response of a single degree of freedom system having mass 150 kg and 60 kN/m when subjected to a triangular pulse loading as shown in fig. 1. The sare required at an interval of 0.10 S upto 0.20 S. 110  kN 60  kN 0.15  0.25 Duration Fig. 1	14	
2.	a) Ez	xplain	in detail about the free and forced vibration two degrees of freedom system.	8	
	b) D	Describe the different methods of determining the damping in a structure.			
3.	D	Determine the first two frequencies of the cantilever beam of Rayleigh - Ritz method by assuming $\phi = \begin{bmatrix} 1.0 & 1.0 \\ 0.45 & -0.55 \\ 0.25 & -0.10 \end{bmatrix}$			
4.	a) Ez	xplain	how mathematical modelling can be done for a multi degree freedom system.	8	
	b) Ex	Explain about the free and forced vibration of continuous systems.			
5	٨	thrac	storey building has saismic weights of 180 kN 200 kN and 120 kN at L H and H	т 14	

- A three storey building has seismic weights of 180 kN, 200 kN and 120 kN at I, II and III 14 storeys respectively. The corresponding stiffnesses are 20000 kN/m, 25000 kN/m, and 30000 kN/m. Determine the model frequencies and mode shapes.
- 6. a) Write down step by step procedure of numerical integration techniques.
  7
  b) Enlist salient features of IS 1893 applicable to water tanks.
  7