Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER – VI EXAMINATION – WINTER 2015

Subject Code:160605 **Date:10/12/ 2015**

Subject Name: Earthquake Engineering

Time:2:30pm to 5:00pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **IS 13920, IS 1893, IS 4326 IS 13835and IS 13828 are permitted.**

Q.1	**(a)**	Derive expression for the response of SDOF free damped structural system.	**07**
	(b)	Write short note on Logarithmic Decrement.	**07**
Q.2	**(a)**	Explain the term mathematical modeling with taking different examples of structures. Enlist the dynamic parameters of model also.	**07**
	(b)	Determine the natural frequency of a cantilever beam of span L, subjected to mass m on the free end of beam performing the δ displacement.	**07**
		OR	
	(b)	Determine the natural frequency of a cantilever beam with spring support at free end, subjected to mass m on the tip of beam performing the δ displacement. The length of beam is L.	**07**
Q.3	**(a)**	Explain Rigid diaphragm effect with neat sketch.	**07**
	(b)	Define the term: focus, epicenter, epicentral distance, magnitude of earthquake, intensity of earthquake, PGA and base shear.	**07**
		OR	
Q.3	**(a)**	Explain earthquake design philosophy for building.	**07**
	(b)	Elaborate on the seismic waves developed during earthquake and its effects on structure.	**07**
Q.4	**(a)**	Explain the salient feature of masonry structure constructed in earthquake prone zone.	**07**
	(b)	What is soft storey problem? Explain how soft storey problems can be eliminated in the existing buildings	**07**
		OR	
Q.4	**(a)**	Explain how ductile design is helpful for better earthquake resistance.	**07**
	(b)	What are the assumptions made in portal and cantilever method? State their limitations also.	**07**
Q.5	**(a)**	Explain the step wise procedure to find the base shear of multistory building with seismic coefficient method with codal provisions.	**07**
	(b)	Write short note on Liquefaction and remedial measures.	**07**
		OR	
Q.5	**(a)**	Explain the response spectrum method and differentiate this method with other methods also.	**07**
	(b)	Explain base isolation techniques in details.	**07**

****