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**B. TECH.**  
**(SEM VIII) THEORY EXAMINATION 2017-18**  
**EARTHQUAKE RESISTANT OF DESIGN OF STRUCTURES**

Time: 3 Hours

Total Marks: 100

**Note:** Attempt all Sections. If require any missing data; then choose suitably.

**SECTION A**

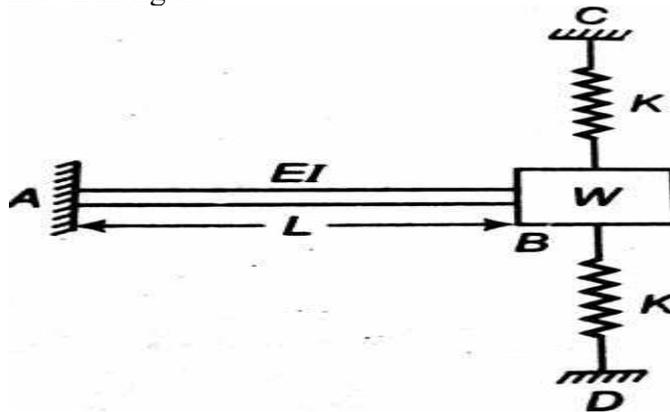
**1. Attempt all questions in brief. 2 x 10 = 20**

- a. Draw the figure of Mantle.
- b. What is the body wave magnitude?
- c. What is the basic element of Vibrating system?
- d. Write types of Damping.
- e. How the T-sunami is different from a normal sea wave?
- f. Define MM scale.
- g. What do you understand Soft Storey Failure?
- h. Define Non Structural Elements.
- i. What most common modes of masonry failure?
- j. What factors affecting the Ductility?

**SECTION B**

**2. Attempt any three of the following: 10 x 3 = 30**

- a. Differentiate between strike slip fault and dip slip fault.
- b. Determine the natural period , assuming that the beam and spring are massless shown in figure



- c. What is the effect of Structural Irregularities ? Explain with neat sketches.
- d. What is the advantages and disadvantages of Masonry Construction?
- e. For a circular column of dia=300 mm, Design the confining spiral ties . Assume M20 and Fe415 steel.

## SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

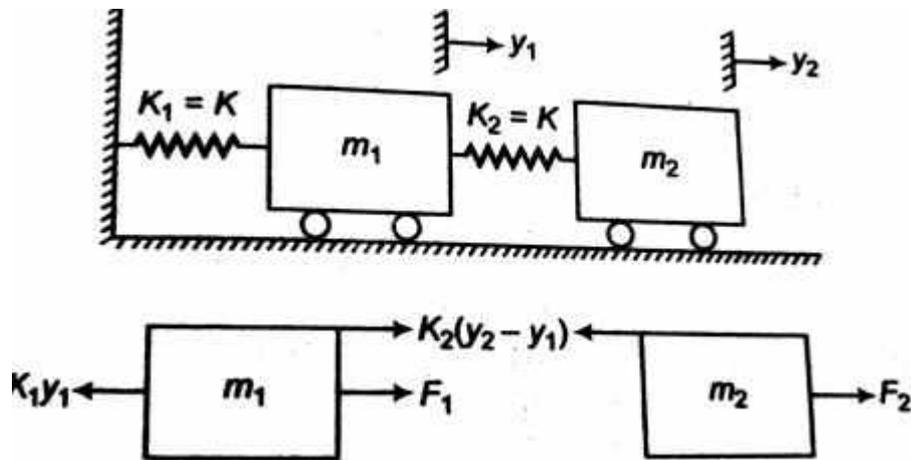
- (a) Write a short note on types of seismic waves along with neat diagram of each.  
 (b) Explain Tectonic Plate Theory, Enumerate seven major Tectonic Plate.

4. Attempt any *one* part of the following: 10 x 1 = 10

- (a) In an experiment of free vibration. It is found that the maximum amplitude has reduced to 0.4 times its value in 3 complete cycles. Determine the damping in the system.  
 (b) Write short note on (i) Causes of Earthquake (ii) Characteristics of Earthquake

5. Attempt any *one* part of the following: 10 x 1 = 10

- (a) Determine the natural frequency of vibration if  $m_1=m_2=m=8 \times 10^3$  kg and  $K_1=K_2=10 \times 10^7$  N/m



- (b) What is two Degree of Freedom Explain for two storey Building.

6. Attempt any *one* part of the following: 10 x 1 = 10

- (a) How the earthquake Damage and failure of bearing walls? Show with neat diagram.  
 (b) How you will be improve the seismic behaviour of Masonry Buildings?

7. Attempt any *one* part of the following: 10 x 1 = 10

- (a) Differentiate between In-plane and Out-of-plane failure of Masonry walls.  
 (b) What do you understand Mass Irregularity? Also explain Vertical Geometric Irregularity.