

## APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

### Scheme for Valuation/Answer Key

*Scheme of evaluation (marks in brackets) and answers of problems/key*

**EIGHTH SEMESTER B.TECH DEGREE EXAMINATION, MAY 2019**

**Course Code: CE468**

**Course Name: STRUCTURAL DYNAMICS AND EARTHQUAKE RESISTANT DESIGN**

Max. Marks: 100

Duration: 3 Hours

**IS 1893, IS 13920 & IS 4326 are permitted in the exam hall.**

#### PART A

*Answer any two full questions, each carries 15 marks.*

		Marks
1	a) Lumped mass(1.5) Continuous mass(1.5)	(3)
	b) Under damped (4) Critically damped (4) Overdamped (4)	(12)
2	a) Equation (2) Response at $t=5$ s (3)	(5)
	b) Define Plus examples(3)	(3)
	c) Proof (7)	(7)
3	a) SDOF –SHM MDOF- SHM only when initial profile matches mode shape	(3)
	b) Formulation of mass matrix (2) Formulation of stiffness matrix ( 2) Find natural frequencies (4) Find mode shapes (4)	(12)

#### PART B

*Answer any two full questions, each carries 15 marks.*

4	a) Plate rupture because scale of plate strained in very much larger	(3)
	b) Seismogram(2) accelerogram. (2)	(4)
	c) Briefly explain the classification (8)	(8)
5	a) Magnitude same (1.5) intensity lesser (1.5)	(3)
	b) Assumptions (4)	(4)
	c) Steps in RSM (8)	(8)

- 6 a) Calculation of design seismic coefficient (4) (12)  
 Design base shear (2)  
 Base shear distribution (2)  
 Lateral force diagram (2)  
 Story shear diagram (2)
- b) ordinary moment resisting frame (1.5) (3)  
 special moment resisting frame. (1.5)

### PART C

*Answer any two full questions, each carries 20 marks.*

- 7 a) i) plan irregularities (5) (15)  
 ii) vertical irregularities (5)  
 iii) structural irregularities (5)
- b) soft storey (2.5) (5)  
 weak storey. (2.5)
- 8 a) Centre of mass (2) (7)  
 Centre of rigidity (2)  
 Explain torsion (3)
- b) i) strength (1) (5)  
 ii) stiffness (1)  
 iii) ductility.(3)
- c) Shear wall (1) (8)  
 Code classification (1)  
 Behaviour squat shear wall (3)  
 Behaviour slender shear wall (3)
- 9 a) i) Cross section proportioning and Minimum grades of reinforcing steel and concrete(4) (20)  
 ii) longitudinal reinforcement(6)  
 iii) transverse reinforcement(6)  
 iv) development/ anchorage length requirements.(4)

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