Roll No. ....

Total No. of Questions : 09]　　　　　　　　　　　　[Total No. of Pages : 02

Paper ID [CE404]

(Please fill this Paper ID in OMR Sheet)

B.Tech. (Sem. - 8th)
EARTHQUAKE RESISTANT STRUCTURES (CE - 404)

Time : 03 Hours　　　　　　　　　　　　　　　　Maximum Marks : 60

Instruction to Candidates:

　　1)　Section - A is **Compulsory**.

　　2)　Attempt any **Four** questions from Section - B.

　　3)　Attempt any **Two** questions from Section - C.

Section - A
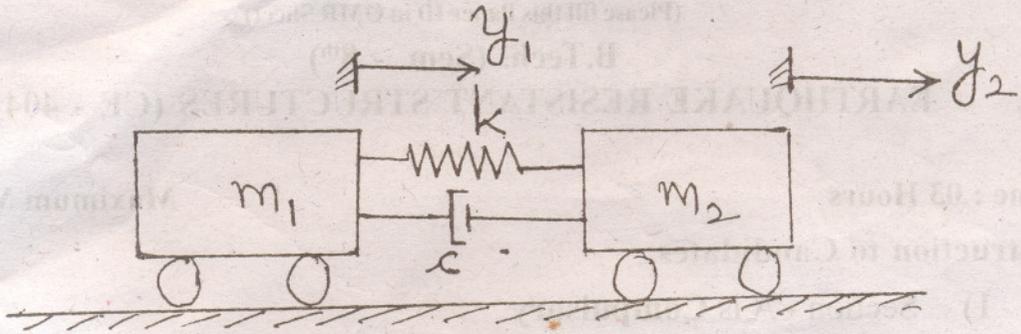
Q1)　　　　　　　　　　　　　　　　　　　　　　　　　　($10 \times 2 = 20$)

　　a)　Distinguish between Rayleigh waves and Love waves.

　　b)　Name any three approaches for developing governing equation of a vibrating system.

　　c)　What is Transmissibility Ratio?

　　d)　Give the expression used for distributing lateral force along the height of building.

　　e)　Name any two methods for modal combination.

　　f)　List two factors affecting ductility of a structure.

　　g)　What is a shear wall?

　　h)　What do you mean by fundamental mode?

　　i)　What is effective weight in context of earthquake design?

　　j)　Write any two empirical formulae to estimate time period of buildings.

Section - B

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Q2)　(a)　What is Tsunami earthquake? Define Tsunami velocity.

　　　　(b)　Define Peak Acceleration.

Q3) A system is modeled by two freely vibrating masses m_1 and m_2 interconnected by a spring and a damper element as shown in Fig 1. Determine for this system, the differential equation of motion in terms of the relative motion of the masses, $u = y_2 - y_1$.

Q4) Establish flexibility equations for a single bay, three storied shear building.

Q5) Write various steps to compute dynamic response of a structure by Model superimposition Techniques with Response spectrum method.

Q6) Discuss detailing of columns, beams and joints in context of earthquake resistant RCC buildings. Write codal provisions (salient only) for the same.

Section - C

$(2 \times 10 = 20)$

Q7) Discuss classification of shear walls. Derive formula to compute moment of resistance for rectangular shear walls.

Q8) Design a simple masonry structure for a single room of plan size 3m × 6m. The height of room is 3m. Design as per provisions of IS 4326.

Q9) Write short notes on :

(a) Diaphragm action.

(b) Intensity of earthquake.