Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Summer Examination-2018

Subject Name : Geology and Earthquake Engineering

Subject Code : 4TE06GEE1 Branch: B.Tech (Civil)

Semester : 6 Date : 27/04/2018 Time : 02:30 To 05:30 Marks : 70

Instructions:

(1) Use of Programmable calculator & any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.
(5) IS code IS 1893:2002 and IS 13920:2002 is allowed.

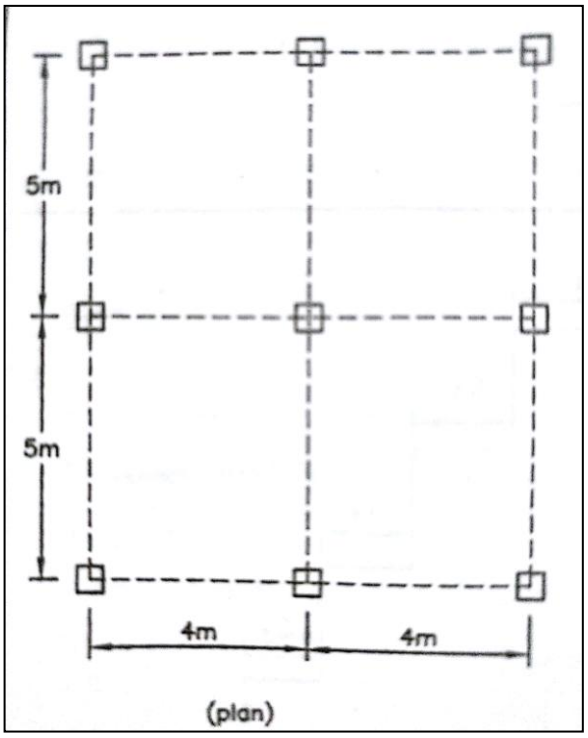
Q-1 **Attempt the following questions:** **(14)**

a)	Give a name of fastest seismic wave.	(1)
b)	Give name of the instrument used to measure earthquake.	(1)
c)	Write expression for a M_L scale.	(1)
d)	A building is located on the boundary of zone IV & V will the building be designed in zone IV & V?	(1)
e)	Write the equation of dynamic equilibrium.	(1)
f)	R.C frame building is more ductile as compared to Steel Frame Building. Is true or fall?	(1)
g)	Define Damping Ratio.	(1)
h)	Define Response Reduction Factor.	(1)
i)	Define Resonance.	(1)
j)	What is dip and strike?	(1)
k)	Define Fault.	(1)
l)	Give the Classification of Rocks.	(1)
m)	Define Crystal.	(1)
n)	Define Geology.	(1)

Attempt any four questions from Q-2 to Q-8

Q-2

The plan elevation of a three storey RCC school building is shown in figure. The intensity of dead load is 12 kN/m^2 (including columns, beams and walls) and floors are to cater an imposed load of 4 kN/m^2. The building is situated in zone IV. The type of soil encountered is medium soil and it is proposed to design the building with a special moment resisting frame. Determine the seismic forces and shears at each floor level using static coefficient method. **(14)**



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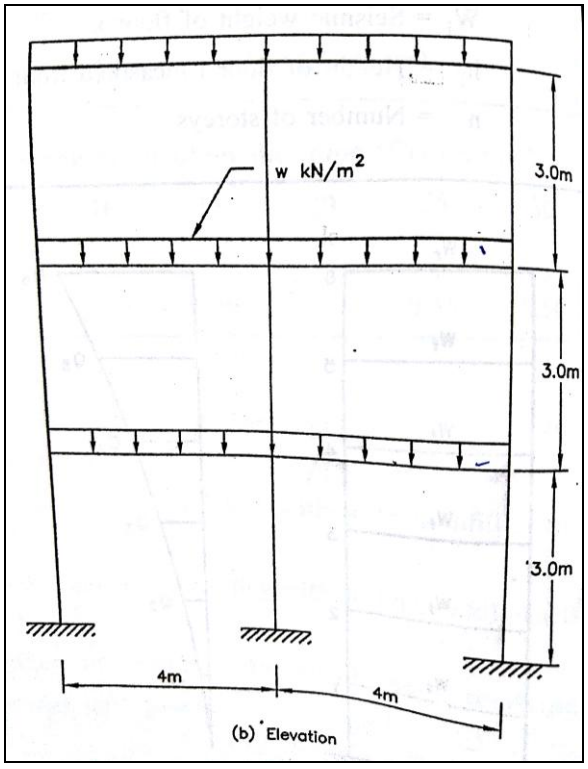

Q-3 **Attempt all questions** **(14)**

a) What is weathering? Give the types of weathering. And explain each in detail with examples. **(7)**

b) Explain logarithmic Decrement. **(4)**

c) Differentiate between magnitude and intensity. **(3)**

Q-4 **Attempt all questions** **(14)**

a) Give four virtues of Good earthquake resistant design. **(7)**

b) Describe the physical properties of Granite and Conglomerate. **(7)**

Q-5 **Attempt all questions** **(14)**

a) Explain various methods to improving ductility of a structure. **(7)**

b) Explain Elastic Rebound Theory. **(7)**

Q-6 **Attempt all questions** **(14)**

a) A vibrating system consists of a mass of 4.54kg and a spring of stiffness 3506 N/m is viscously damped so that the ratio of two consecutive amplitudes is 1.0 to 0.85. determine:- **(7)**

(1) The natural frequency of undammed system.
(2) The logarithmic decrement.
(3) Damping ratio.
(4) Damping coefficient.
(5) Damping natural period.

b) Explain with neat sketch 'Short column effect'. **(7)**

Q-7 **Attempt all questions** **(14)**

a) Explain Rigid Diaphragm and Flexible Diaphragm. **(7)**

b) Discuss behavior of brick masonry construction during Earthquake. **(7)**

Q-8 **Attempt all questions** **(14)**

a) Define Ductility. Explain different types of ductility. **(7)**

b) List the Physical properties of mineral. Describe each in detail. **(7)**