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## C.U.SHAH UNIVERSITY

 Summer Examination-2019
## Subject Name : Geology and Earthquake Engineering

Subject Code : 4TE06GEE1
Semester : 6

Date :30/04/2019

Branch: B.Tech (Civil)
Time : 10:30 To 01:30
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) Allow IS 13920, IS 1893 in examination.

Attempt the following questions:
a) What is PGA?
b) Define focus.
c) What is magnitude?
d) Define damping ratio.
e) Enlist four virtues of earthquake resistant structures.
f) What is ductility?
g) What is aftershocks?
h) Define center of stiffness.
i) What is the function of main longitudinal bars and stirrups in a beam?
j) Enlist various methods of improving ductility of a structures.
k) Write any two difference between shear wall and flexural wall.
l) Define crystal.
m) What is meant by geology?
n) Define mineralogy.

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

## Q-2 Attempt all questions

(A) Explain " elastic rebound theory"
(B) Discuss various effects of earthquake.

## Q-3 Attempt all questions

(A) Can my building withstand a magnitude 7.0 earthquake? Discuss.
(B) Write a note on 'Richter magnitude scale'.

## Q-4

## Attempt all questions

(A) What is fault? Explain various types of faults.
(B) What is degree of freedom? Explain with some examples.

## Q-5 Attempt all questions

Explain ' Strong column - weak beam' design concept.
Write calculation procedure of portal method.

## Q-6 Attempt all questions

(A) List out the physical properties of minerals.
(B) Write the principles of correlation.

## Q-7 Attempt all questions

(A) What is meant by weathering? Explain its types.
(B) Write the classification of folds, faults and joints.

## Q-8 Attempt all questions

A five storeyed building has size of $40 \mathrm{~m} \times 40 \mathrm{~m}$. It is located in Bhuj and resting on hard soil. The weights of floors and height of the floors are $2000 \mathrm{kN}, 2500 \mathrm{kN}, 2500 \mathrm{kN}, 2500 \mathrm{kN}$ and 2000 kN and $4.5 \mathrm{~m}, 3.5 \mathrm{~m}, 3.5 \mathrm{~m}$, 3.5 m and 3.5 m respectively from slab no. 1 from bottom. Assuming the building as special moment resisting office building, calculate the horizontal shear force acting at the each slab level by equivalent lateral forced method.

