C. U. SHAH UNIVERSITY Winter Examination-2019

Subject Name : Geology and Earthquake Engineering

Subject Code : 4TE06GEE1		Branch: B.Tech (Civil)	
Semester: 6	Date : 16/09/2019	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) IS 13920:2016 is allowed.

Q-1 Attempt the following questions:

- (a) Define the following terms:
 - 1) Earthquake intensity
 - 2) Single degree of freedom
 - 3) Seismograph
 - 4) Seismogram
 - 5) Inertia force
 - 6) Ductility
 - 7) Glacier
 - 8) Petrology
 - 9) Strike and Dip
 - 10) Volcanoes
- (b) Name on the left-hand side belong to some common igneous rocks 2 numbered (1) to (4). These contain has one definite mineral groups mentioned on the right-hand side from (A) to (D). Match the followings.

ROCKS

- (1) Gabbro
- (2) Granite
- (3) Diorite
- (4) Tonalite

Essential Mineral Groups

- (A) Orthoclase + Quartz
- (B) Plagioclase + Quartz
- (C) Soda-lime feldspars
- (D) Lime-soda feldspars
- (c) Where dowel bars are provided?
- (d) Draw the neat sketch of weathering cycle.



1

1

(**14**) 10

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

Q-2		Attempt all questions	(14)
	(a) (b)	Classify the types of fault and explain each type of fault in details. Define band? Why different bands are provided in masonry? Explain the mechanism of each band and draw neat sketch to support your answer.	7 7
Q-3		Attempt all questions	(14)
	(a) (b)	Write a note on "Metamorphic structure of rocs" Write a note on "Design philosophy of earthquake resistance building"	7 7
Q-4		Attempt all questions	(14)
	(a) (b)	Explain earth interior in details. What is liquefaction and how does it contributing into occurrence of earthquake?	7 7
Q-5		Attempt all questions	(14)
	(a) (b)	Derive a mathematical expression of damped force system. Write brief note on seismic dampers.	7 7
Q-6		Attempt all questions	(14)
	(a)	If a building is to be constructed on the slope of a hilly area, what precautions will have to be exercised during planning of the building to avoid twisting?	6
(b)	(b)	Enlist the physical properties of mineral and explain any two properties in details.	8
Q-7		Attempt all questions	(14)
	(a) (b)	Explain the travel path mechanisms of seismic wave? A model of two story RCC frame is shown in figure-1. Determine the natural frequency. Assuming the beam column joint to be rigid, for the following data:	7 7
		Column dimension is 250×250 mm and story height is 3m.	
Q-8		Attempt all questions	(14)
	(a)	Plan of five story building shown in figure-2. Dead load including self- weight of slab, finishes, etc. can be assumed as 3 kN/m^2 and live load as 4 kN/m^2 on each floor and 1.5 kN/m ² on the roof. Weight of partitions is 2 kN/m^2 . Determine the lateral forces and shears at different story levels. Story height 3.5 m, soil type = 2.	12

(b) Write the name of seven major tectonic plates. **02**









Figure-2, **Q-8** (a)

