

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0024

Roll No.

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**B. Tech.**

(SEM. IV) THEORY EXAMINATION 2010-11

**ENGINEERING GEOLOGY**

Time : 2 Hours

Total Marks : 50

**Note :** (i) Attempt all questions.

(ii) Marks are shown in the margin against each question.

(iii) Draw neat sketches wherever necessary.

1. Attempt any **four** parts of the following : (4×3.5=14)

(a) Define mineral. Give the distinguishing physical properties of the following minerals :

- (i) Quartz and Felspar
- (ii) Calcite and Barite
- (iii) Muscovite and Kyanite

(b) What are the parameters on the basis of which igneous rocks are classified ? Give the tabular classification of igneous rocks.

(c) How will you differentiate between texture and structure ? Give the texture/ structure, mineralogical composition, rock group and engineering uses of the following rocks :

- (i) Granite
- (ii) Sand stone
- (iii) Gneiss.

- (d) Describe the important structures of sedimentary rocks.
- (e) What are metamorphic rocks ? How are they formed ? Name four metamorphic rocks and indicate the original rocks (prior to metamorphism) in each case.
- (f) Explain dip and strike of strata with neat sketches. How are they expressed and specified ?

2. Attempt any **four** parts of the following : (4×3=12)

- (a) What are folds ? Describe the types of folds with suitable sketches.
- (b) What are the causes of folding and faulting ? Briefly discuss the importance of fold and fault in the field of civil engineering.
- (c) Differentiate between the following :
  - (i) Horst and Graben
  - (ii) Tension and Shear joint
  - (iii) Angular unconformity and disconformity
- (d) Explain the mode of propagation of seismic waves.
- (e) How will you differentiate between Richter magnitude and Mercalli intensity scale of earthquake ?
- (f) What is plate tectonics ? Explain the driving mechanism of plate movement with a neat sketch.

3. Attempt any **two** parts of the following : (2×6=12)

- (a) What are landslides ? Describe various types of landslides.
- (b) Differentiate between confined and unconfined aquifers. Briefly explain the various zones of underground water.

(c) Write short notes on any **two** of the following :

(i) Grouting or Prevention of landslide

(ii) Porosity and permeability

(iii) Alkali aggregate reaction.

4. Attempt any **two** parts of the following : (2×6=12)

(a) What are tunnels ? What are the uses of tunnels ? Discuss the various aspects of geological investigation to be undertaken to select a site for tunnel.

(b) Describe in brief, the significance of lithology and geological structure to be considered for the alignment of a road in hilly terrain.

(c) Describe the resistivity method of geophysical exploration and its application in the field of civil engineering.