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

PAPER ID : 0024 Roll No. | | | | | | | | | | |

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 Graber

(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 Ritcher 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 landsides.

(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 restivity method of geophysical exploration and its application in the field of civil engineering.