

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

PAPER ID : 1114

Roll No.

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**B. Tech.****(Semester-I) Theory Examination, 2012-13****GEOLOGICAL SCIENCES***Time : 3 Hours]**[Total Marks : 80*

*Note:* Attempt questions from each Section as per instructions.

**Section-A**

Attempt *all* parts of this question.  $2 \times 8 = 16$

1. (a) Classify the rocks based on their origin.
- (b) Define the term 'stratification of rocks'.
- (c) Distinguish between outlier and inliers.
- (d) Name some rock forming minerals.
- (e) Specify any four chemicals used in grouting.
- (f) What is meant by plane of unconformity?
- (g) Enlist the types of landslides.
- (h) Mention the purpose of tunneling.

### Section-B

Attempt any *three* parts of this question.  $8 \times 3 = 24$

2. (a) Elucidate about the following with neat sketches :
- (i) Dip of an exposed bedding stratum.
  - (ii) Strike of a bed.
- (b) Discuss the engineering properties of foundation rocks that are to be determined prior to construction in an engineering project.
- (c) Enumerate the geological factors which influence the choice of site for a reservoir.
- (d) How the folds are classified based on the orientation of axis and axial plane ?
- (e) What are the effects of temperature, confining pressure and different stresses on the metamorphic minerals and textures of metamorphic rocks ?

### Section-C

Attempt *all* questions of this Section.  $8 \times 5 = 40$

3. Attempt any two question parts :  $4 \times 2 = 8$
- (a) Write on the stages of evolution of igneous rocks from fractionation of a basaltic magma.

(b) Distinguish petrographically the graphite and syenite.

(c) What are the factors controlling the metamorphism and its products?

4. Attempt any one question part :  $8 \times 1 = 8$

(a) Elaborate the physical properties of silicate minerals and clay minerals.

(b) Which elements of rock will involve in alkali aggregate reaction ? Explain its chemical reaction in detail.

5. Attempt any one question part :  $8 \times 1 = 8$

(a) Discuss the geometrical parameters of joints which are measured during a survey of rock joints.

(b) Describe about the essential qualities of a good building stone.

6. Attempt any one question part :  $8 \times 1 = 8$

(a) With the neat sketch explain the effects of faults on the inclined strata.

(b) Narrate the causes of landslides and its prevention with a case study.



7. Attempt any two question parts :  $4 \times 2 = 8$

- (a) Investigate about the geological investigations necessary for constructing tunnels in a highly sheared area.
- (b) Explain the essential parameters needed for evaluating the groundwater potentialities of an aquifer.
- (c) Briefly explain the artesian well with a neat diagram.