

Printed Pages : 2

ECE404

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

PAPER ID : 0024

Roll No.

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B.Tech.

(SEMESTER IV) THEORY EXAMINATION, 2012-13.

ENGINEERING GEOLOGY

Time : 2 Hours ]

[ Total Marks : 50

## SECTION – A

10 × 1 = 10

1. Attempt all question parts :
- Define a Mineral, a Rock and an Ore.
  - Write short note on structure of Minerals.
  - Write a note on Magma, its constitution and crystallization to form rocks.
  - What do you understand by the terms texture and structure of rocks ?
  - Write short note on stratification and greywacke.
  - What we understand by “structures” of sedimentary rocks ?
  - What is the difference between free groundwater and artesian water ?
  - Write short note on perched water table.
  - Distinguish between Earthquakes and Tsunamis.
  - Write short note on seismogram and seismograph.

## SECTION – B

5 × 3 = 15

2. Attempt any three question parts :
- Explain the difference between
      - colour and luster
      - cleavage, parting and fracture
      - hardness and tenacity
    - Explain important physical properties of minerals that are commonly studied for their identification.
  - Explain various forms in which igneous rock masses occur in nature. Illustrate your answer with neat sketches.
  - Explain the various effects imposed on the pre-existing rocks due to metasomatic processes. How they differ from changes brought about by metamorphic processes of other types ?
  - Explain various geological characters that have to be established before a water supply project from an artesian source is approved.

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- (e) Explain the following terms :
- (i) epicenter
  - (ii) Isosismal
  - (iii) L – waves
  - (iv) S-P interval
  - (v) zone of highest seismic intensity

### SECTION – C

Attempt all questions :

5 × 5 = 25

3. Attempt any one part : 5
- (a) There are more than two thousand minerals occurring in nature. What are the most important characters which can help in their identification ? Discuss any four of such features with examples.
  - (b) Explain various structure exhibited by minerals in their natural habits. How far any of them can be taken as diagnostic in their identification ?
4. Attempt any one part : 5
- (a) Explain various processes which are believed to be responsible for formation of a great variety of igneous rocks from the same type of magma.
  - (b) Explain classification of sedimentary rocks giving suitable examples.
5. Attempt any one part : 5
- (a) Explain basic difference between the terms metamorphic facies, metamorphic grade and metamorphic zone. Give examples in each case.
  - (b) Explain, with the help of neat sketches, important textures of igneous rocks and also possible causes for their formation.
6. Attempt any one part : 5
- (a) Write an essay on “Ground water and Engineering practice”
  - (b) Write brief notes on :
    - (i) Water – table
    - (ii) cone of depression
    - (iii) drawdown curve
    - (iv) piezometric surface
    - (v) descending spring
7. Attempt any one part : 5
- (a) Give an account of important factors to be considered for evolving seismic designs in a seismic region.
  - (b) Explain the following :
    - (i) Intensity of Earthquakes
    - (ii) Recording of Earthquakes
    - (iii) Assessment of Seismic risks