

**D 4004**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Third Semester

Civil Engineering

AG 1201 — APPLIED GEOLOGY

(Regulation 2004)

Time : Three hours

Maximum : 100 marks

Use neat sketches wherever necessary.

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define the term *Aquifer* and mention its types.
2. What is meant by subduction zone? What is its significance?
3. With examples from the mineral kingdom, describe the characteristics of Orthorhombic system and list its symmetry elements.
4. What is Moh's scale of hardness of minerals?
5. What are the factors controlling the specific gravity, porosity and strength of rocks?
6. Describe the composition, texture, characteristics, occurrence and uses of '*Black Granite*'.
7. List at least four differences between anticlines and synclines.
8. Describe the Wenner's configuration of electrodes in electrical resistivity surveys.
9. Explain the terms parallax and overlap in aerial photographs.
10. List at least four methods to prevent landslides.

PART B — (5 × 16 = 80 marks)

11. (a) Elaborate on the causes of earthquakes and the seismic zones in India. Add a note on the requirements for the construction of earthquake resistant buildings.

Or

- (b) Describe in detail the constructional and destructional work of the sea with special reference to the coast. Add a note on coastal protection structures.
12. (a) Describe the various physical properties of minerals. Give examples from the mineral kingdom for each of the property.

Or

- (b) What are the feldspar group of minerals? Describe their composition, properties, uses and engineering significance.
13. (a) Describe the following rocks in detail : granite, limestone, phyllite, gneiss.

Or

- (b) Describe the various field and laboratory test to be carried out to determine the various parameters of rock strength and other mechanical properties.
14. (a) Give a detailed account of the various geological structures and their role in selection of sites for engineering projects.

Or

- (b) Explain the seismic methods of geophysical surveys for civil engineering investigations.
15. (a) What are the various geological factors to be considered for the construction of dams and reservoirs? Explain each factor in detail with examples from India and abroad.

Or

- (b) Explain in detail the role of aerial photographs and satellite images in planning and execution of civil engineering projects.