

## IFS 2002 GEOLOGY

### PAPER - I

#### SECTION A

1. Write critical notes, within 150 words each, on any four of the following:

(a) Island arcs

(10)

(b) Seismic Zones of India

(10)

(c) Causes of instability of hill slopes

(10)

(d) Geological uses of aerial photographs

(10)

(e) Superposed deformation

(10)

2. Enumerate the various methods of determining the age of the Earth. Give an account of the age determination of the Earth on the basis of radioactivity.

(40)

3 (a) Describe the application of geomorphology in mineral prospecting and for search of building and construction materials.

(20)

(b) Discuss briefly the Geographic Information System and its applications.

(20)

4. What are faults? Discuss in detail the classification of faults based on slip separation.

(40)

#### SECTION B

5. Write critical notes, within 150 words each, on any four of the following :

(a) Uses of fossils

(10)

(b) Age of the Panjal Volcanic Succession

(10)

(c) Permeability and transmissivity

(10)

(d) Evolution of the Himalayas

(10)

(e) Selection of a dam site in hard rocks.

(10)

6. With the help of neat sketches describe the morphology of brachiopods. Give four examples of fossil brachiopods from India mentioning their stratigraphic range.

(40)

7. (a) Discuss the problems associated with the Pliocene—Pleistocene Boundary in India.

(20)

(b) Write a note on lithostratigraphic classification of rocks. Describe the basis of classification of Supergroup, Group and Formation.

(20)

8. (a) What are various types of confined aquifers ? Illustrate your answer with suitable examples and diagrams.

(20)

(b) What are landslides? Describe their classification and causes.

(20)

## PAPER - II

### SECTION A

1. In about 150 words each, answer any four of the following :

(a) Dispersion in minerals.

(10)

(b) International systems of crystallographic notation.

(10)

(c) Heavy minerals studies and their significance.

(10)

(d) Mineral phase rule and its applicability.

(10)

(e) Crystallization of albite-anorthite system.

(10)

2. Describe the following:

(a) Hexagonal system and its symmetry classes.

(10)

(b) Chemical composition and Physical properties of five sulphide ore minerals.

(10)

(c) Physical and Optical properties and Chemical composition of alkali pyroxenes.

(20)

(d) Crystal defects and x-ray crystallography.

(10)

3. Explain the following :

(a) Petrography and petrogenesis of Anorthosite. (10)

(b) Petrogenetic significance of any five textures of igneous rocks. (10)

(c) Migmatites and their Petrogenesis. (10)

(d) Metamorphic facies of contact metamorphism. (10)

4. Write explanatory notes on the following:

(a) Sedimentary facies and their significance. (10)

(b) Petrography of feldspathic sandstones. (10)

(c) Okada's classification of sandstones. (10)

(d) Sedimentation pattern of Siwalik Basin. (10)

### SECTION B

5. Explain any four of the following in about 150 words each :

(a) Hydrothermal cavity filling process and character of ore deposits formed by such a process.

(10)

(b) Geobotanical prospecting method.

(10)

(c) Coastal erosion as natural hazard and its preventive measures.

(10)

(d) Crystal Chemistry and its role in distribution of elements.

(10)

(e) Geology of Gold deposits of Kolar Gold field, Karnataka.

(10)

6. Write explanatory notes on the following :

(a) Genetic classification of ore deposits.

(10)

(b) Textures and structures of ores.

(10)

(c) Geology and Potentials of oil and gas deposits of Assam and Gujarat states.

(10)

(d) Placer minerals and their process of formation.

(10)

7. Describe the following :

(a) Surface mining methods.

(10)

(b) Geophysical logging methods.

(10)

(c) Sulphide ore beneficiation by froth flotation process.

(10)

(d) Geological prospecting methods of ores.

(10)

8. Give an account of the following:

(a) Mineralogy of meteorites and their types. (10)

(b) Entropy and Enthalpy. (10)

(c) Landslides - their causes and mitigation measures. (10)

(d) Legislative measures for environment protection in India. (10)