I.F.S. EXAM-2016

GEOLOGY

PAPER—II

Time Allowed : Three Hours	Maximum Marks : 200

QUESTION PAPER SPECIFIC INSTRUCTIONS

Please read each of the following instructions carefully before attempting questions

There are EIGHT questions in all, out of which FIVE are to be attempted.

Question Nos. **1** and **5** are compulsory. Out of the remaining SIX questions, THREE are to be attempted selecting at least ONE question from each of the two Sections A and B.

Attempts of questions shall be counted in sequential order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off.

All questions carry equal marks. The number of marks carried by a question/part is indicated against it.

Answers must be written in ENGLISH only.

Neat sketches may be drawn, wherever required.

SECTION—A

1. Answer the following : 10×4=40

(a) Write symmetry elements shown by normal class in isometric system and that of orthorhombic system. Briefly write on the international system of crystallographic notation. 6+4=10

(b) Using crystallization behaviour of basic magma with the help of albite-anorthite system, explain normal and oscillatory zoning in plagioclase. 10

(c) Write brief notes on cross-beddings and their significance. 10

(d) Write notes on possible mineralogical changes observed during regional metamorphism of aluminous shale. 10

2. *(a)* Write a brief note on textures and structures of metamorphic rocks. 10

(b) How can 'hornblende' and 'augite' be distinguished based on their optical properties? Write the names of any three sulphide minerals and two carbonate minerals (with their chemical compositions). 10

(c) What is sedimentary facies? Narrate the important facies types that form in different parts of deltaic sedimentary environment. 2+8=10

(d) Write briefly on the origin of alkaline rocks. 10

3. *(a)* Write a brief note on prograde metamorphism of basaltic rocks. 10

(b) Give the classification scheme of limestone by Folk. Comment on the advantage and disadvantage of this classification. 10

(c) Write notes on porphyritic and poikilitic texture of igneous rocks (with suitable labelled sketches). Comment on their petrogenetic significance. 10

(d) Discuss how X-ray diffraction patterns are used for identification of minerals. 10

4. *(a)* Write a brief essay on diagenesis and lithification. 10

(b) Describe (with neat sketches) the following structures of igneous rocks : 10

(i) Pillow structure

(ii) Rapakivi structure

(c) What do you mean by extinction angles of minerals? Give your answer with suitable sketches. What are the petrographic changes that take place when a basaltic magma assimilates a granite country rock? 10

(d) Write briefly on 'granulite terrains' of India. 10

SECTION—B

5. Write on the following : 8×5=40

(a) ACF diagram

(b) Charnockite

(c) Beach placer deposit of India

(d) Marine pollution

(e) Cosmic abundance of elements

6. *(a)* How will you do ore-reserve estimation? 10

(b) Write a note on Malanjkhand copper deposit. 10

(c) Write on marine mineral resources. 8

(d) In a sketch map of India, show the distribution of petroliferous basins of India with proper labelling. Add a brief note on each of such basins. 12

7. *(a)* Briefly describe the iron ore deposits of Singhbhum region. 10

(b) Write short notes on common ore textures and structures. 10

(c) Discuss the environmental impacts of urbanization. 10

(d) What are the various causes responsible for landslides? What are the suggested measures to mitigate effects of landslides? 10

8. *(a)* Write in detail on different methods of geophysical prospecting. Illustrate your answer with suitable sketches. 20

(b) Discuss briefly on various types of chemical bonds that are found in minerals. 10

(c) Briefly discuss on the environmental impact caused due to dumping of mine waste and fly ash. 10

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