

COMBINED COMPETITIVE EXAMINATION (MAIN)

GEOLOGY

Paper—II

Time : 3 hours

Full Marks : 200

Note : (1) The figures in the right-hand margin indicate full marks for the questions.

(2) Attempt **five** questions in all.

(3) Question No. 1 is compulsory.

1. Answer any ten questions :

4×10=40

- (a) What do you mean by volcanic glass?
- (b) What is cotectic line?
- (c) What is '2V' in biaxial mineral?
- (d) What are the faces, edges and solid angles in a crystal?
- (e) What is biproduct material?
- (f) What is graded bedding?
- (g) Comment on the significance of reconnaissance survey.
- (h) What is migmatism?
- (i) What is penecontemporaneous deformation?
- (j) What is Nicol prism?
- (k) What is schistose structure?

2. Answer any *eight* questions : 5×8=40

- (a) What are crystals? Is there any other form of mineral can occur?
- (b) Define the solid angle in crystals.
- (c) What is lattice?
- (d) Name the important twinning in crystal.
- (e) What is the difference between length-fast and length-slow minerals?
- (f) Distinguish between clastic and non-clastic rocks with examples.
- (g) What is gossan?
- (h) What are poikilitic and myrmekitic textures?
- (i) What is pseudomorphism in crystals?
- (j) Distinguish between optically positive and negative minerals.

3. Answer any *five* questions : 8×5=40

- (a) Mention the cold age and ice age in respect of geological time-scale.
- (b) Mention the concept of setting associated with various depositional environments.
- (c) Describe the geometrical procedure of determination of axial ratio in crystals.
- (d) What is Barrovian zone in metamorphic rocks?
- (e) What is the angle between optic axis and cleavage?
- (f) What is the sulphide enrichment under secondary enrichment of ores?
- (g) Discuss the petrogenesis of leptinite.

4. Answer any *four* questions : 10×4=40
- (a) Write the elements of symmetry and example for normal class of all the crystal systems.
 - (b) Give the CIPW norms classification of igneous rocks.
 - (c) Briefly mention the processes of mineral beneficiation.
 - (d) Describe with neat sketches the features developed during the sediment transformation by rivers.
 - (e) Describe the various intrusive and extrusive forms of igneous rocks.
5. Answer any *two* questions : 20×2=40
- (a) What is phase rule? How is it controlling the understanding of magma crystallization?
 - (b) Describe the sedimentary mineral deposits formed by the igneous and metamorphic processes.
 - (c) Give a detailed account of the elements of symmetry forms developed in minerals crystallizing in the system or monoclinic system.
6. Answer any *four* questions : 10×4=40
- (a) What are heavy minerals in sedimentary rocks? Discuss the procedure of separation of heavy minerals and comment on their significance.
 - (b) Describe the metamorphic processes along with the agents of metamorphism and types of metamorphism.
 - (c) Give an account of petroleum reserved in India.
 - (d) Discuss the metallic and non-metallic deposits in India.
 - (e) Describe the subfacies associated with greenschist and amphibolites facies in respect to mineral assemblage and PT.

7. Answer any *two* questions :

20×2=40

- (a) Describe the occurrence and distribution of iron-ore deposit in India.
- (b) Discuss the essentials of prospecting and exploration techniques.
- (c) Describe the occurrence and distribution of coal in India. Also comment on the occurrence and quality of coal found in North-East India.

8. Write an essay on origin of the various types of magma.

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9. Describe economic mineral deposit. Write in detail the classification of economic mineral deposit with the help of a neat sketch.

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10. Write the diagenesis and lithification of sandstone.

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