№ 000449

I·F·S-2009

B-JGT-J-HMB

GEOLOGY

Paper II

Time Allowed : Three Hours | *Maximum Marks : 200*

INSTRUCTIONS

Candidates should attempt questions 1 and 5 which are compulsory, and any THREE of the remaining questions selecting at least ONE question from each Section.

The number of marks carried by each question is indicated at the end of the question.

Answers must be written in ENGLISH.

Neat sketches may be drawn, wherever required.

SECTION A

1. In about 150 words each, answer any ***four*** of the following : *4×10=40*

(a) Explain Double Refraction bringing out its significance and how it is determined.

(b) Describe Ophitic and Sub-Ophitic textures and bring out their petrological significance.

(c) Describe Amphibolite Facies. Write diagnostic petrological characters of one of its representative rocks.

(d) Mention four rocks belonging to Peridotites. Explain in detail the petrological characteristics of one of them.

(e) Define 'heavy minerals'. Add a concise note on their significance in sedimentary studies, particularly the minerals ZTR.

2. (a) Explain Nesosilicates. Write an account of one of the mineral groups which belongs to nesosilicates with reference to their general chemical formula, diagnostic physical characters and mode of occurrence. *20*

(b) Describe the term Twinning of minerals. Explain the following Twin Laws in detail, with suitable sketches : *20*

(i) Carlsbad Twins

(ii) Baveno Twins

(iii) Polysynthetic Twins

(iv) Manebach Twins

3. (a) How do you explain Carbonatite ? Describe in detail its petrological characters. Add a detailed account on its petrogenesis. Support your answer with suitable examples. *20*

(b) Describe ACF and AKF diagrams. Explain their utility in working out mineral assemblages of metamorphic rocks. *20*

4. Write explanatory notes on the following : *4×10=40*

(a) Micrite and Sparite.

(b) Cementing materials in Sedimentary rocks. Add examples.

(c) Arkose and Graywackes

(d) Mudstone and Shale

SECTION B

5. Answer any ***four*** of the following in about 150 words each : *4×10=40*

(a) Distinguish between Metallogenic Epochs and Metallogenic Provinces. Cite Indian examples.

(b) List the various geometrical methods of estimation of ore reserves. Briefly explain any two methods.

(c) Explain Isomorphism and Polymorphism with two examples each.

(d) Write briefly on coastal erosion and prediction of earthquakes. Explain measures for mitigating their impacts.

(e) Comment on the chromite ore deposits of Sukinda, Orissa, with a note on its genesis.

6. (a) Explain in detail the formation of ore deposits by Hydrothermal Replacement Process. How do you differentiate these from Hydrothermal Cavity Filling ore deposits' diagnostic characters ? *20*

(b) Describe in detail the Tertiary Coals of Tamil Nadu. *20*

7. (a) Elaborate on sub-surface mining methods used for mining of coal seams. *20*

(b) Describe Geophysical Logging methods, giving a brief account of every method. *20*

8. (a) Describe Meteorites. Explain in detail their unique mineralogy. Add examples. *20*

(b) Explain various causes of the natural hazards of floods and landslides. Add a detailed account of the measures to mitigate their impacts. *20*