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3 (Sem-4/CBCS) GLG HC 1

2024

GEOLOGY

(Honours Core)

Paper : GLG-HC-4016

(Metamorphic Petrology)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Choose the correct option : $1 \times 7 = 7$

(a) The orthopyroxene-clinopyroxene-plagioclase mineral assemblage in metabasic rock is diagnostic of

- (i) Granulite facies
- (ii) Amphibolite facies
- (iii) Eclogite facies
- (iv) Greenschist facies

Contd.

(b) The characteristic rock of contact metamorphism is—

- (i) Hornfels
- (ii) Blueschist
- (iii) Eclogite
- (iv) Granulite

(c) In metabasic rocks, plagioclase is not stable in

- (i) Granulite facies
- (ii) Epidote-amphibolite facies
- (iii) Amphibolite facies
- (iv) Eclogite facies

(d) The assemblage staurolite + garnet + biotite + muscovite + quartz in pelites is stable in

- (i) Greenschist facies
- (ii) Amphibolite facies
- (iii) Granulite facies
- (iv) Pyroxene-hornfels facies

(e) Epizone is characterised by the presence of which of the following hydrous minerals?

- (i) Chlorite
- (ii) Quartz
- (iii) Andalusite
- (iv) All of the above

(f) Granoblastic texture is found in which of the following metamorphic rocks?

- (i) Schist
- (ii) Quartzite
- (iii) Gneiss
- (iv) All of the above

(g) Muscovite + Quartz =
K-feldspar + Sillimanite + H_2O is

- (i) Devolatilisation reaction
- (ii) Net-transfer reaction
- (iii) Exchange reaction
- (iv) None of the above

2. Answer the following questions : $2 \times 4 = 8$

(a) Define contact metamorphic aureole.

(b) What do you mean by metamorphic zone?

(c) Write briefly on relict or palimpsest metamorphic texture.

(d) Differentiate between continuous and discontinuous metamorphic reaction.

3. Write short notes on the following :
(any three) 5×3=15

- (a) Regional metamorphism
- (b) ACF-chemographic diagram
- (c) Amphibolite facies
- (d) Metasomatism
- (e) Eclogites

4. Answer the following questions : **(any three)**
10×3=30

- (a) Give a detailed account on metamorphic textures.
- (b) What are the controlling factors of metamorphism? Discuss on the types of metamorphism. 2+8=10
- (c) Define metamorphic facies. Write the classification of metamorphic facies. Add a note on zeolite facies. 2+3+5=10
- (d) Elaborate on the metamorphic mineral reactions.
- (e) How are migmatites formed? Write elaborately on migmatitic structures and textures. 2+8=10
- (f) Write briefly on schist and gneisses. 5+5=10