21I703 (Pages: 2) Name: .....

Reg.No: .....

SEVENTH SEMESTER M.Sc. INTEGREATED GEOLOGY DEGREE EXAMINATION, NOV. 2024

(CBCSS)

(Regular/Supplementary/Improvement)

CC20 GLO7 IB14 - ADVANCED IGNEOUS AND METAMORPHIC PETROLOGY

(Geology)

(2020 Admission onwards)

Time : Three Hours Maximum : 80 Marks

Credit : 4

(Draw neat sketches, wherever necessary)

Section A

I. Answer in one or two sentences. Answer any ***ten*** questions. Each question carries 2 marks.

1. Sources of Heat inside the earths interior.
2. Vesiculation.
3. Eutaxitic.
4. Norm.
5. Phase.
6. Phase Traingle.
7. Isothermal section.
8. List the possible three phase mineral assemblages that can result from the crystallization of MgO-Al_2O_3-SiO_2 system.
9. Define Protolith, name any two protoliths and its metamorphic rocks.
10. Give an example for dehydration reaction.
11. Define Decussate and nodular textures with figure.
12. Distinguish A in ACF and AKF diagrams.

(10 × 2 = 20 Marks)

Section B

II. Write short notes on any ***five*** of the following. Each question carries 8 marks.

13. IUGS classification.
14. Basalt.
15. Forsterite - Diopside - Silica system.
16. Diopside - Anorthite – Albite.

17. Draw the equilibrium reaction line for Aluminium silicate polymorphs.

18. Explain metamorphic facies diagram.

19. Apply plate tectonis in forming paired metamorphic belts with proper diagram.

(5 × 8 = 40 Marks)

Section C

III. Write long essay on any ***two*** of the following. Each question carries 10 marks.

20. Write an essay on Pottasum - Argon and Rubidium - Strontium dating techniques in Igneous Petrology.

21. Write a brief essay on the Diopside - Anorthite – Albite - Forsterite System.

22. Imagine a metamorphic terrain in which you have a metapelite with garnet and biotite. a) Identify the agents of metamorphism involved and detect the facies. b) Summarize the possible textures and structures of the rocks. c) Conclude the type of rocks. d) Let's consider, at 799°C the initial garnet composition of X Fe=0.9 was combined with biotite of X Fe=1.0. The composition of the garnet in each run must then have changed by 2/98 times the change in the corresponding biotite. Then find out the final garnet composition.

23. Discuss the application of thermodynamics in metamorphic rock formation.

(2 × 10 = 20 Marks)

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