



'সমানো মন্ত্র: সমিতি: সমানী'

UNIVERSITY OF NORTH BENGAL
B.Sc. Honours 4th Semester Examination, 2023

CC8-GEOLOGY

METAMORPHIC PETROLOGY

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

1. Write short notes on any **five** of the following: 1×5 = 5
 - (a) Undulose extinction
 - (b) Blue schist facies
 - (c) Granoblastic texture
 - (d) Contact metamorphism
 - (e) Blasto-Porphyritic
 - (f) Migmatite
 - (g) Pressure Shadow
 - (h) Hornfels Facies.

2. Answer any **three** questions from the following: 5×3 = 15
 - (a) Geothermal gradient of a place will determine the type of metamorphism that can happen at that place. How is Metamorphism linked with Geothermal gradient of a place? 5
 - (b) With the help of a suitable diagram, briefly explain the ACF Chemographic diagram proposed by Eskola (1915). 5
 - (c) A Basalt at Place A undergoes metamorphism and shows a mineral assemblage of Hornblende + Plagioclase but this same variety of Basalt at Place B shows an assemblage of Chlorite + Epidote + Actinolite. If both are Basalts, why are they showing two different assemblages at Place A and B? Explain with reason. 5
 - (d) If Metamorphism involves complete change of an original rock, then how can we know what the original rock was? Explain with a suitable example. 5
 - (e) In field you got an exposure of the kind shown in the diagram, of Asymmetric crenulation. Explain with suitable diagrams the polydeformation phases from this polymetamorphosed rock. 5

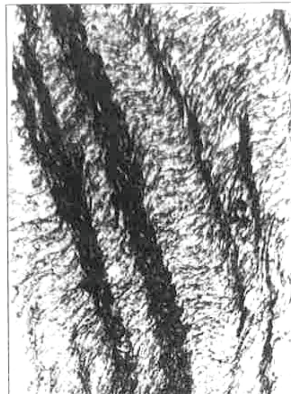


Fig: Question 2(e)

3. Answer any *two* questions from the following: 10×2 = 20
- (a) With the help of internal and external Schistosity in Garnet porphyroblast explain Pre-Syn-Post kinematic metamorphic texture. Also give suitable diagrams. 10
- (b) Describe the regional metamorphism of mafic rocks in medium P/T conditions, mentioning the mineral changes, key reactions, and textural changes. 10
- (c) Explain Pressure solution mechanism and how it affects the texture of a rock? Explain the inter-relationship between Metamorphic Grade, Metamorphic Zones and Metamorphic Facies. 5+5
- (d) What is Retrograde Metamorphism? Explain the P-T-t paths. 2+8

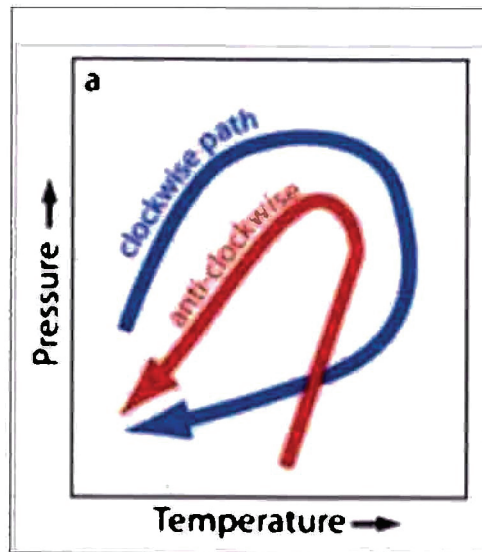


Fig: Question 3(d)

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