



'সমানো মন্ত্র: সমিতি: সমানী'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 4th Semester Examination, 2022

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) Hornfelsic texture
 - (b) Mylonite
 - (c) Blue schist facies
 - (d) Index mineral
 - (e) Prograde metamorphism
 - (f) Bulk chemistry of a rock
 - (g) Dynamo-thermal metamorphism
 - (h) Migmatite

2. Answer any **three** questions from the following: 5×3=15
 - (a) Discuss the role played by fluids in metamorphism. 5
 - (b) Describe briefly the concept of Metamorphic zones with the help of Barrovian metamorphism. 5
 - (c) Briefly explain the role played by directed pressure in bringing about metamorphism of rocks. 5
 - (d) What do you mean by protolith of a metamorphic rock? If metamorphism results in changes in mineralogy and texture of a rock, then how do you determine the protolith of a metamorphic rock? 1+4
 - (e) What is Grade of metamorphism? What relation does grade of metamorphism have with Metamorphic facies and Metamorphic zones? 1+4

3. Answer any **two** questions from the following: 10×2 = 20
 - (a) Describe the regional metamorphism of mafic rocks in medium P/T conditions, mentioning the mineral changes, key reactions, and textural changes. 10

- (b) What is Metamorphic Facies? With the help of a diagram, show the different types of facies found on Earth. “Facies have no connotation regarding age or geographic situations and throws no light on the initial state of the rock.”— Explain this statement. 2+4+4
- (c) What is Metamorphic facies series and how did the concept evolve? What are the different types of Metamorphic facies series and how are they related to different tectonic settings? 5+5
- (d) Describe Eclogites and Granulites, mentioning their respective conditions of formation, typical mineralogy and texture and type of tectonic setting in which they are usually found. Why are Blue Schist facies rocks rare in the Archaen times? 6+4

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