

Name:

Enrolment No:



End Semester Examination, December 2023

Program Name: B. Sc Geology

Semester : III.

Course Name: Metamorphic Petrology

Time : 3 hrs

Course Code: PEGS2029

Max. Marks: 100

Nos. of page(s):

Instructions: All questions are compulsory. Draw diagrams wherever necessary.

SECTION A (5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Differentiate impact and shock metamorphism	4	CO1
Q 2	Describe the primary processes and factors that lead to the creation of metamorphic rocks.	4	CO1
Q 3	Explain about prograde and retrograde metamorphism	4	CO1
Q 4	Explain about Migmatites and anataxis	4	CO3
Q 5	Differentiate Greenschist facies and Blueschist facies	4	CO2
SECTION B (4Qx10M= 40 Marks)			
Q 6	Illustrate metamorphic facies with label diagram. Describe Hornfels and Zeolite facies	5+5=10	CO2
Q 7	(a) Describe the role of pressure and temperature conditions in metasomatism. (b) Elaborate how do they influence the movement of fluids and mineral reactions.	10	CO2
Q8	Differentiate metamorphism from other geological processes such as weathering and erosion.	10	CO2
Q9	Discuss the relationship between tectonic forces and the creation of mountain ranges. Analyze how does mountain-building relate to regional metamorphism. OR At a subduction zone, oceanic crust is forced down into the hot mantle. But because the oceanic crust is now relatively cool, especially along its sea-floor upper surface, it does not heat up quickly, and the subducting rock remains several hundreds of degrees cooler than the surrounding mantle (Figure 1). A special type of metamorphism takes place under these very high-pressure but relatively low-temperature conditions, producing specific mineral. Discuss about the mineral, and the metamorphism process.	10	CO3

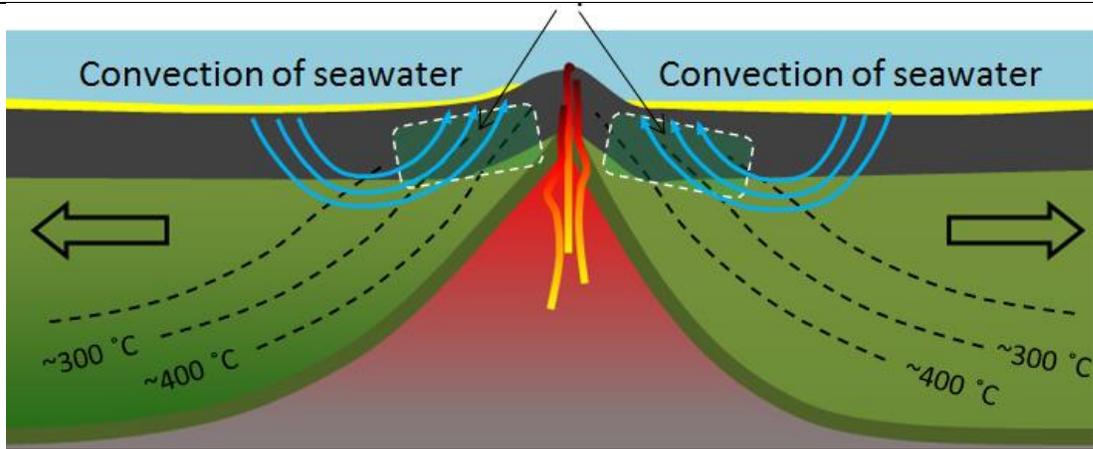


Figure 1

SECTION-C (2Qx20M=40 Marks)

10	(a) Explain the concept of metamorphic facies. (b) Elaborate how it helps geologists to interpret the geological history of a region.	5+15= 20	CO3
10	OR		
	(a) Draw the schematic profile of a deeply weathered copper sulphide ore deposit, displaying the supergene "secondary" zonation resulting from redistribution of elements. (b) Explain with chemical reaction process for copper sulphide ore formation.	10+10 =20	CO3
11	(a) Elaborate how does plate tectonics impact the distribution of tectonic boundaries and their role in causing metamorphism. (b) Provide examples of specific tectonic settings.	10+10 =20	CO4
