Name: **Enrolment No:**	

UPES

End Semester Examination, December 2024

Course: Metamorphic Petrology
Semester: III
Program: B.Sc. Geology
Time : 03 hrs.
Course Code: PEGS2046 **Max. Marks: 100**
Instructions:

I. Draw neat diagram if necessary, with proper labeling to explain the answer

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	**Mark true or false** ii. Contact metamorphism occurs primarily over large regions. iii. Index minerals are used to determine the grade of metamorphism.	**2*2=4**	**CO1**
Q 2	**Correct the Statement** i. Isograds are lines marking different types of fault zones in metamorphic rocks. iii. Chemographic projections show the distribution of tectonic plates.	**2*2=4**	**CO2**
Q 3	**Fill in the Blanks** i. _____ is a type of metamorphism associated with high temperatures near igneous intrusions. ii. Metamorphic rocks with coarse banding are known as _____.	**2*2=4**	**CO3**
Q 4	ii. Explain flux melting process? iii. Explain the paleosome.	**2*2=4**	**CO4**
Q 5	i. Explain the difference between prograde and retrograde metamorphism. **OR** **ii.** Discuss the importance of the mineral garnet in determining metamorphic conditions.	**1*4=4**	**CO4**

SECTION B
(4Qx10M= 40 Marks)

Q.6	i. Explain types of metamorphism with specific temperature and pressure ranges. **ii.** Describe the role of index minerals in defining metamorphic grades.	**2*5=10**	**CO1**
Q.7	i. Explain how mineral stability is affected by changes in pressure and temperature. ii. Describe how metamorphic zones are defined using index minerals.	**2*5=10**	**CO2**
Q.8	**i.** . Explain Exsolution process. **ii.** Define progressive metamorphism with an example.	**5*2=10**	**CO3**
Q.9	**Answer any two** **i.** Explain the concept of isograds and their importance in defining metamorphic zones. **ii.** Compare the blue schists and eclogites. **iii.** Mention definition and formation process of migmatites.	**5+5=10**	**CO4**
SECTION-C (2Qx20M=40 Marks)			
Q.10	**Answer any four** **i.** Explain type metamorphism observed in different tectonic settings. **ii.** Describe how P-T-t paths help in understanding metamorphic processes. **iii.** Discuss the formation and characteristics of migmatites. **iv**. Explain enantiotropic and monotropic polymorphism with suitable example. **v.** Describe Albitization and its suitable condition.. **vi.** Explain the role of fluid infiltration in developing metamorphic textures.	**5*4=20**	**CO3**
Q.11	**Answer any two** **i.** Describe the mineralogy, textures, and geological significance and distribution of charnockites. **ii.** Explain prograde and retrograde metamorphic reactions, their effects on rock composition, and mechanisms of mineral reactions.	**10*2=20**	**CO4**