Name: **Enrolment No:**	

UPES

End Semester Examination, December 2024

Course: Mineralogy & Crystallography **Semester: I**

Program: M.Sc Applied Geology **Time : 03 hrs.**

Course Code: PEAG7002 **Max. Marks: 100**

Instructions:

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Describe the various types of cleavages present in minerals, citing one example of each.	**04**	**CO1**
Q 2	Using a neat diagram illustrates the optical behaviour (with proper labeling and outcome) for an isotropic mineral.	**04**	**CO1**
Q 3	i. The distance and angle between two points known as ----- ii. A plane parallel to two axes but cutting the third axis at a length equal to one edge of a unit cell has Miller indices of ---- iii. Number of edges in cube is ----- iv. Three unequal axes at an angle 90 degree represent -------system	**04**	**CO2**
Q 4	Explain the general principles of Miller Indices	**04**	**CO2**
Q 5	Analyze the superiority of FEG over TIG in SEM.	**04**	**CO4**

SECTION B
(4Qx10M= 40 Marks)

Q 6	Using the given set of information, find out the Miller Indices 1. Atom as Origin & it's a 3-coordinate axis **2.** The intercepts of the planes along 3 axes given as 3A 2B and 3C.	**10**	**CO2**
Q 7	Analyze the suitability of garnet as an abrasive and refractory mineral.	**10**	**CO1**
Q 8	Each question carries 02 marks i. Explain Indicatrix ii. Define bi-axial positive mineral iii. Explain transformation twin in minerals iv. Describe the relationship between optic axis and birefringence v. Define retardation in optical microscopy	**02*5=10**	**CO2**

Q 9	Analyze the role of plate tectonics in mineralization/ mineral formation. Or Appraise the role of various geological processes in the formation of minerals	**10**	**CO3**
SECTION-C (2Qx20M=40 Marks)			
Q 10	Summarize the various sedimentary processes responsible for formation of mineral deposit	**20**	**CO3**
Q 11	With neat sketch, arrange the components of SEM and their role in image formation Or Path difference plays an important role in image formation in X-Ray diffraction, prove the same	**20**	**CO4**