

KATHMANDU UNIVERSITY  
End Semester Examination  
September 2024

Marks Scored:

Level : B.E.

Year : I

Exam Roll No. :

Time: 30 mins.

Registration No.:

Course : MNEG 103

Semester : II

F. M. : 10

Date : 02 OCT 2024

SECTION "A"

[20Q. × 0.5 = 10 marks]

*Choose and encircle the most appropriate answer.*

1. Which crystal system has three mutually perpendicular axes of equal length?  
a. Cubic                      b. Orthorhombic              c. Monoclinic              d. Hexagonal
2. Which property is used to distinguish between different crystal systems?  
a. The color of the crystal  
b. The specific gravity of the crystals  
c. The arrangement and length of the lattice axes  
d. The solubility of crystal in water
3. Which of the following minerals crystallizes in the hexagonal crystal system?  
a. Quartz                      b. Feldspar                      c. Muscovite                      d. Gypsum
4. Which property of minerals refers to the way light interacts with their surface?  
a. Luster                      b. Hardness                      c. Streak                      d. Cleavage
5. What is the fundamental building block of silicate minerals?  
a. Silicate- Oxygen tetrahedron                      b. Calcium- Carbonate group  
c. Aluminum- oxygen octahedron                      d. Iron- oxygen tetrahedron
6. Which of the following minerals has a sheet- like structure and is known for its perfect cleavage in one direction?  
a. Quartz                      b. Feldspar                      c. Mica                      d. Olivine
7. Which mineral is a common example of sulfate mineral?  
a. Hematite                      b. Gypsum                      c. Magnetite                      d. Graphite
8. What is the term used for minerals that have the same optical properties in all directions?  
a. Anisotropic                      b. Isotropic                      c. Monoclinic                      d. Triclinic
9. In sedimentary petrology, what is a "Clast"?  
a. A minerals grain                      b. A type of sedimentary rock  
c. A fragment of rock or mineral                      d. A chemical precipitate
10. What type of sedimentary rock is formed from the accumulation of organic materials such as plant debris?  
a. Limestone                      b. Shale                      c. Coal                      d. Sandstone
11. Which term describes the gradual compaction and cementation of sediments into rock?  
a. Erosion                      b. Diagenesis                      c. Sedimentation                      d. Weathering



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2 OCT 2024

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Semester : II  
F. M. : 40

SECTION "B"

[10Q. × 2 = 20 marks]

1. Describe the difference between 'Plane of Symmetry' and 'Axis of Symmetry' in crystal symmetry.
2. What is a mineral? Describe the physical properties of talc.
3. Describe the following properties of minerals.  
a. Luster                      b. Hardness
4. How are sedimentary rocks formed? Write down the process involved.
5. Discuss the types of sedimentary textures based on the grain shape and sorting of the grains.
6. Describe the types of igneous rocks based on the chemical composition.
7. Discuss the texture of igneous rocks based on crystallinity and granularity.
8. What are the factors that contribute metamorphism?
9. Describe the following structures in metamorphic rocks.  
a. Foliation                      b. Schistosity
10. What is compressive strength of a rock? What are its significances in civil engineering?

SECTION "C"

[5Q. × 4 = 20 marks]

11. Explain how crystallographic axes and angles are used to classify crystals into different system. Include examples of minerals for each crystal system.
12. What are Silicate minerals? Briefly describe the types of Silicate minerals.
13. What are the major categories of the sedimentary rocks based on the size of sediments? Describe the types with examples.
14. Describe Bowen's reaction series including the significance of continuous and discontinuous branches.
15. What is metamorphism? Describe the types of metamorphism.

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