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The Assam Royal Global University, Guwahati

Royal School of Environment & Earth Sciences
B.Sc Geology, 2nd Semester
Semester End Examination, June 2023
Course Title: Metamorphic Petrology
Course Code : GEOL162C212

Time: 3 Hours **Maximum Marks: 70**

Note: Attempt all questions as per instructions given.
The figures in the right-hand margin indicate marks.

Section – A

1. Attempt **all questions**. (Maximum word limit 50) **2 x 8**

   a. What are the components in a system which contains andalusite, corundum and quartz? Establish the phase rule in this system.
   b. What is the difference between isochemical and allochemical metamorphism?
   c. Elaborate on the pressure factor of controlling metamorphism.
   d. What is fault zone metamorphism?
   e. How are slate, phyllite, schist and gneisses differentiated?
   f. Differentiate between prograde and retrograde metamorphic reactions.
   g. Describe blueschist and eclogite, facies rocks.
   h. What are the pseudo components of AKF chemograghic diagram?

Section – B

2. Attempt **any two** of the following: **6 x 2**

   a. Pore fluids are generally believed to play an important role in some types of metamorphism. Explain.
   b. Write a note on the Depth Zone classification of metamorphic rocks.
   c. What are the three pseudo-components of an ACF diagram? Elaborate on the calculations of the pseudo- components.

3. Attempt **any two** of the following: **7 x 2**

   a. Eskola based his scheme of metamorphic facies classification on the assemblages of metabasites. Elaborate.
   b. Give a full description on the characteristic mineral assemblages and mineral reactions of pelitic rocks.
   c. What are the factors controlling regional metamorphism?

4 Attempt **any two** of the following: **7 x 2**

   a. Explain the different types of metamorphism.
   b. Write notes on khondalites and charnockites.
   c. What are migmatites? Give a full description of the different mesoscopic structures of migmatites.

5. Attempt **any two** of the following: **7 x 2**

   a. A rock has undergone regional dynamothermal metamorphism. What typical textural features will be developed?
   b. What are the textural features that develop in contact metamorphism?
   c. Elaborate the process of metasomatism.