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3 (Sem-3/CBCS) GLG HC 2

2022

GEOLOGY

(Honours)

Paper : GLG-HC-3026

(Sedimentary Petrology)

Full Marks : 60

Time : Three hours

***The figures in the margin indicate
full marks for the questions.***

1. Answer the following in a word or a short sentence : 1×7=7
 - (a) Name the class of sedimentary rock whose more than 75% grain-size population is matrix.
 - (b) What is the unit of measurement of kurtosis in grain-size distribution data ?
 - (c) What are the characteristic features that differentiate a mudstone from a shale ?

Contd.

- (d) What causes bending of mica-grains in sedimentary rocks?
- (e) Which type of rock dominates the 'continental block provenance'?
- (f) Write the formula of 'graphic mean'.
- (g) Define a sedimentary bed.

2. Very briefly answers the following : $2 \times 4 = 8$

- (a) What is greywacke and in which type of depositional environment these rocks formed?
- (b) Write on the mode of transportation of clastic sediments.
- (c) Explain under what environmental conditions graded and inverse-graded sediment sequences are formed.
- (d) Explain the terms 'authigenic mineral' and 'authigenic overgrowth' and their identification features under petrological microscope.

3. Give short answers to the following :

(any three)

$5 \times 3 = 15$

- (a) Explain turbulent and laminar flows. What are the factors that define whether the flow will be turbulent or laminar.
- (b) Explain the process of formation of sediments through physical weathering.
- (c) Write on the types of cement in sedimentary rocks and their sources.
- (d) Give the classification of conglomerates and write on the environmental significance of each class of the conglomerates.
- (e) How dolomite is distinguished from limestone? Write on the process of dolomitization.

4. Answer the following : **(any three)** $10 \times 3 = 30$

- (a) Discuss the fabrics of sedimentary rocks. Use representative sketches to explain the fabrics.
- (b) Give the classification of limestones as given by Folk. Describe the components of limestones defined by Folk. Also write on the evidences of diagenesis in limestones.

- (c) Describe the tools used and methods applied for paleocurrent analysis. Also write briefly on the application of paleocurrent in sedimentary basin evolution.
 - (d) Give a detailed classification of sedimentary rocks.
 - (e) Discuss how bedforms are related to primary sedimentary structures.
 - (f) Write the different stages of diagenesis. Describe the role of intrastratal solutions in diagenetic changes. Also explain how diagenetic processes change the porosity of the sedimentary rocks.
 - (g) Discuss the process of ripple migration and mode of formation of type-I and type-II ripple drift laminations.
 - (h) Discuss the grain-size distribution statistical parameters as tools for identification of various depositional environments.
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