



‘সমানো মন্ত্র: সমিতি: সমানী’

**UNIVERSITY OF NORTH BENGAL**

B.Sc. Honours 3rd Semester Examination, 2022

**CC6-GEOLOGY**

**SEDIMENTOLOGY**

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.*

1. Answer any **five** of the following: 1×5 = 5
  - (a) A limestone contains 60% bioclast, 30% ooids and 10% peloids with sparite as binding materials — Name the rock.
  - (b) “All natural flows are turbulent” — Verify the statement.
  - (c) What are the basic differences of diagenesis and lithification?
  - (d) ‘Fluid gravity flows may not be gravity controlled’ — Explain.
  - (e) ‘All terrigenous sediments are clastic but all clastics are not terrigenous’ — Explain.
  - (f) Differentiate skewness from kurtosis of a sediment population.
  - (g) ‘ZTR (Zircon-Tourmaline-Rutile)-index for provenance identification is not suitable for Precambrian sediments’ — Explain.
  - (h) Differentiate syntaxial overgrowth from epitaxial one in quartz.
  
2. Answer any **three** from the following: 5×3 = 15
  - (a) Describe shortly how sandstone composition is helpful to reconstruct depositional setting.
  - (b) What are the basic controlling factors for carbonate precipitation? Describe different types of mixing of carbonates and siliciclastic sediments. 2+3
  - (c) ‘Most recent dune sand deposits are positively skewed’ — Justify the statement with reason.
  - (d) Differentiate the mechanism of dolomitization in evaporative model from the seepage reflux model.
  - (e) State the mechanism of formation of ‘flame structure’.
  
3. Answer any **two** from the following: 10×2 = 20
  - (a) What are the controlling factors for precipitation of low-Mg calcites and high-Mg calcites/aragonites? How ooids mineralogy changes throughout Phanerozoic and how it is related with sea-level changes? 2+8

- (b) State Bernoulli's equation for flowing fluids. Derive Bernoulli's equation, assuming that the fluid, with pressure (P), density ( $\rho$ ), dynamic viscosity ( $\mu$ ), moving through different cross-sectional areas (A) and at different heights (H). 2+8
- (c) How does the Nominal diameter of any grain is calculated? 'Grain size distribution of sandstones always follow a lognormal distribution' — Accept or reject the statement with justification. 5+5
- (d) 'Graywacke are not sedimentary rocks' — Explain. How strontium ratio ( $^{87}\text{Sr}/^{86}\text{Sr}$ ) useful for unravelling provenance of sediments. Describe the mechanism of formation of parting lineation. 3+2+5

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