

Indian Institute of Technology, Kharagpur

Date FN/AN Time : 3hr Full Marks : 100 No of students : 24
End Spring Semester 2010 Dept : Geology and Geophysics Sub No :GG43002
1st yr of 2 yr M.Sc Geology Sub Name : Sedimentary Petrology

Gr-A (60 mark)

1. With the help of neat diagrams show the sequential development of (a) braided river (both L and T bar sequence) (b) tidal shelf (c) combined delta (d) meandering river
(5 x 4 = 20)

2. Write explanatory notes on (4 x 10 = 40)

- a. Methods of paleocurrent analysis and paleocurrent patterns in alluvial, deltaic, shoreline and marine shelf environment
- b. Methods of heavy mineral separation and provenance analysis
- c. Tidal flat sedimentation
- d. Origin of planar stratification
- e. Convolute lamination and its origin
- f. Models in sedimentary geology
- g. Mechanics of sediment transport in open channels
- h. Discuss the various causes for the growth of delta
- i. Gravity flow deposits
- j. Factors for the development of delta

Gr-B (40 marks)

Answer all questions

1. a) What are ooid and oncoid? Discuss the factors which control formation of ooid. (2+4)
- b) What is the difference between intraclast and extraclast? How will you explain occurrences of a micritic carbonate clast and limestone clast in a Himalayan foreland sandstone? (2+3)
2. a) What is the basic difference between Folk's and Dunham's classification of limestone? (3)
- b) Discuss the limitation of limestone classifications. (3)
3. a) Discuss different process which controls reef dynamics. (3)
- b) What is a carbonate platform? What is the difference between Epeiric platform and isolated platform? (1+2)
4. What is diagenesis? How to identify early diagenetic carbonate cemented sandstone (2+3)
5. a) Explain what will be the expected oxygen isotope ratio in unaltered marine limestone. (3)
- b) How do you explain spread in oxygen isotope ratio in carbonate cement of sandstone at same stratigraphic depth? (4)
- c) What is vital effect? Explain how vital effect controls carbon isotope ratio in carbonate. (2+3)