

2017

GEOGRAPHY

Paper : 405

FLUVIAL GEOMORPHOLOGY

Full Marks: 80

Time: 3 hours

The figures in the margin indicate full marks for the questions

1. Multiple choice questions (answer all): 1X 10=10
- (i) What is the average slope of Brahmaputra valley
- a) 13 cm/ Km b) 12 meters/ Km
- c) 30 cm/Km d) 10 cm/ Km
- (ii) In terms of average flow discharge at the mouth, Brahmaputra ranks among all rivers in the world.
- a) 4th b) 1st
- c) 22nd d) 2nd
- (iii) Brahmaputra receive large proportion of its discharge from its tributary
- a) Dihang b) Lohit c) Manas d) Jia Bhoroli
- (iv) Which one of the following is not a natural process of river channel transformation
- a) River piracy b) Meandering

- c) Construction of bridge d) Formation of anabranches
- (v) Which of the following pairs of dams and river on which they are built is not correct?
- a) Bhakra - Satluj b) Damodar - Brahmaputra
- c) Hirakundi - Mahanadi d) Tungabhadra - Krishna
- (vi) Landform not associated with floodplain
- (a) Levee (b) Point bar
- (c) Yazoo steam (d) Hume
- (vii) Reffles is characterized with
- (a) Erosion site (b) Outer edges of channel
- (c) Finer sediment (d) Non of the above
- (viii) Identify the dependent landscape variable.....
- (a) Geology (b) Climate
- (c) Human (d) Stream discharge
- (ix) Flood frequency analysis do not analyse.....
- (a) Volume (b) Mean Sediment size
- (c) Mean peak discharge (d) Annual peak discharge
- (x) Negative water balance in a river basin refers
- (a) Greater input and Lower output
- (b) Lower input and greater output
- (c) Equal input and output
- (d) None of the above

2. Answer in brief (any four) : 2X4=8
- (i) What is Annabranh?
- (ii) What is braided channel?
- (iii) Differentiate between Thalweg and river channel.
- (iv) What is point modification of channel?
- (v) What is Antecedent River?
- (vi) What is a misfit river?
- (vii) How levees are formed?
3. Answer in brief (any four) : 5X4=20
- (i) What is grade in river channel? Give benefits of grade control structure.
- (ii) What is channel morphology?
- (iii) What is Fluvial Geomorphology? Write its domain of study.
- (iv) How the average monthly suspended sediment load varies with season in Brahmaputra River? What is the reason for recent decline in the fraction of fine sediments carried by the river?
- (v) Explain the geomorphology of Brahmaputra floodplain.
- (vi) What are the characters of first order, second order and third order channels of Brahmaputra?
4. Answer in detail (any two) : 9x2=18
- (i) Define channel pattern, classify river channel pattern with suitable diagram. 2+5+2

- (ii) What is the relation between fluvial geomorphology and hydrology? Explain. 9
- (iii) What are the reasons for recurring flood in Brahmaputra valley? What are the modes of occurrence of flood in the valley? 9
- (iv) What is watershed management? Why is it important? What are the various programmes and policies taken under watershed management? 9
5. Answer in detail (any two): 12x2=24
- (i) Explain Channel bed topography and Channel types, with suitable diagrams. 5+5+2
- (ii) What is flood plain? Explain the formation of flood plain and its importance as geomorphic agent. Give suitable diagrams. 3+7+2
- (iii) Explain the various fluvio geomorphic hazards with special reference to river Brahmaputra.
- (iv) Write a note on use of remote sensing, GIS and computer applications in fluvial geomorphic studies.
