Total No. of Printed Pages—7

5 SEM TDC DSE GEO (CBCS) 2 (A/B) (H)

2024

(November)

GEOLOGY

(Discipline Specific Elective)

(For Honours)

Full Marks : 53

Pass Marks : 21

Time : 3 hours

The figures in the margin indicate full marks for the questions

Paper : DSE–2(A)

(River Science)

1. Answer the following :

(a) What is river discharge? Describe briefly how the river discharge is measured by velocity area method. 1+3=4

(b) Display and label the various components of a river hydrograph with the help of a neat diagram. State briefly about the application of unit hydrograph (UH) in hydrological analysis. 2+3=5

2. Differentiate the processes of weathering and erosion. Discuss the roles played by these processes towards the generation of sediment source that contributes to the sediment load and sediment yield of a river. 2+7=9

3. Write briefly on any *two* of the following : 4×2=8

(a) Role of drainage network in flux transfer

(b) Random Topology (RT) model of drainage network

(c) Different morphometric parameters used to determine the linear aspects of a drainage basin

4. Answer the following :

(a) Write about the morphological characteristics and the factors responsible for the development of a braided river. What is 'braiding index'? 5+1=6

(b) What is an anabranching alluvial river and how is it different from an anastomosing river? Write briefly about the geologic and geomorphic factors initiating the process of formation of anabranching rivers. 1+5=6

5. Answer the following :

(a) What are bedrock channels? Explain why and how a river accomplishes incision of the bedrock. 1+4=5

(b) Write elaborately about the river response to human disturbances. 4

6. State the factors that affect adversely the river ecosystem. Write briefly about the integrated approach for maintaining river ecology. 2+4=6

Paper : DSE–2(B)

(Surveying and Mapping)

UNIT—I

(Principles of Survey)

(*Marks* : 12)

1. Define any *five* of the following : 1×5=5

(a) Geoid

(b) Azimuth

(c) Vertical controls

(d) Indian surveying agencies

(e) Triangulations

(f) Cartography

2. Explain plan survey and geodatic survey. 4

3. Discuss the application of surveying in the field of planning and development. 3

UNIT—II

(Surveying and Levelling)

(*Marks* : 20)

4. Write True or False for the following statements : 1×5=5

(a) Barometric method is a levelling method.

(b) Infrared wave instrument is an electronic distance measurement tool.

(c) Contouring can be done without levelling data.

(d) The full form of DEM is Digital Elevation Machine.

(e) Total station is inferior to theodolite.

5. Write about how GPS works. 5

6. Describe in brief about the application of surveying in construction of a dam or tunnel. 5

7. Write short notes on any *two* of the following : $2\frac{1}{2} \times 2 = 5$

(a) Geological sample

(b) Litholog

(c) Theodolite

UNIT—III

(Mapping)

(*Marks* : 12)

8. Write True or False for the following statements : $1 \times 3 = 3$

(a) Some topographic maps are restricted documents.

(b) Wide gap between contours indicates steep slope.

(c) Geological Survey of India makes the topographic maps for India.

(Continued)

9. Write explanatory notes on any *three* of the following : 3×3=9

(a) Development of cartography

(b) Scale in map

(c) Cylindrical projection

(d) Modern tools for making maps

UNIT—IV

(Profile Section)

(*Marks* : 9)

10. Describe the basic procedure of making a profile section from a geological map. 5

11. Write short notes on any *two* of the following : 2×2=4

(a) Application of kink method

(b) Measurement of dip angle

(c) 3D model of geological map

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