

MA/ M.Sc. GEOGRAPHY  
FOURTH SEMESTER  
SURFACE & SUB-SURFACE HYDROLOGY  
MGE - 402B

**SET  
A**

[USE OMR FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 20 min.

( Objective )

Marks: 20

*Choose the correct answer from the following:*

**1×20=20**

- Which Indian rivers are not seasonal or non-perennial?
  - Luni and Narmada
  - Sabarmati and Mahi
  - Mahanadi and Godavari
  - Yamuna and Burhi Gandak
- Consider the following statement (s) is/are related to the delta
  - It is triangular deposits made by the rivers at their mouth
  - Ganga and Brahmaputra, Krishna, Kaveri and Mahanadi form delta.Which of the above statement (s) is/are correct?
  - Only I
  - Only II
  - Both I & II
  - Neither I nor II
- Consider the following statement (s):
  - The combined effects of climate and geology on the catchment topography yield an erosion pattern, which is characterized by a network of streams.
  - Frequently observed stream patterns are as follows - Dendritic River Pattern; Rectangular River Pattern; Trellis River Pattern; Radial River Pattern etc.Which statement (s) is/are correct about stream or flowing river patterns?
  - Only I
  - Only II
  - Both I & II
  - Neither I nor II
- Which of the following river pattern referred to rivers flowing through dome Mountains and volcanoes?
  - Dendritic River Pattern
  - Rectangular River Pattern
  - Trellis River Pattern
  - Radial River Pattern
- Which of the following drainage pattern develops in folded topography; alternate layers of hard & soft rocks?
  - Dendritic River Pattern
  - Rectangular River Pattern
  - Trellis River Pattern
  - Radial River Pattern

6. Which statement (S) is/are correct about Watershed Divide?
- The line, which divides the surface runoff between two adjacent river basins, is called the topographic water divide, or the watershed divide.
  - It marks the highest points between the basins, but isolated peaks within a basin may reach higher elevations than any point on the divide.
  - Usually converges at the exit of the basin, where the waters join another water body viz. River, lake, reservoir, estuary, wetland, or sea
  - Both A & B
7. River Indus originates from
- Hindukush range
  - Himalayan range
  - Karakoram range
  - Kailash range
8. Which of the following peninsular rivers is westward flowing?
- Mahanadi
  - Godavari
  - Tapti
  - Cauvery
9. The fertile land between two rivers is called
- Drainage basin
  - Watershed
  - Doab
  - Lowland or terrain
10. Which one the following is a correct sequence of rivers in terms of their total basin area, in the descending order?
- Ganga Indus Brahmaputra Godavari
  - Indus Ganga Brahmaputra Godavari
  - Brahmaputra Indus Ganga Godavari
  - Indus Ganga Godavari Brahmaputra
11. The river Tsangpo flows through before entering India?
- Myanmar
  - Pakistan
  - Tibet
  - China
12. Which of the following is NOT a component of runoff?
- Base flow
  - Interflow
  - Overland flow
  - None of above
13. Which of the following statements about runoff is true?
- Statement 1: Runoff is a function of precipitation, intensity, duration, and its coverage.
- Statement 2: The size of the catchment has a definite effect on the runoff. More the area, lesser will be the runoff.
- Both statement 1 and statement 2 are true
  - Statement 1 is false and statement 2 is true
  - Statement 1 is true and statement 2 is false
  - Both statement 1 and statement 2 are false
14. Which of the following is a meteorological characteristic that affects runoff?
- Shape of catchment area
  - Soil type
  - runoff
  - All of above

15. The intensity of rainfall is expressed as
- a. mm/ hr
  - b. m/ hr
  - c. Km/hr
  - d. None of above
16. Portion of water that moves laterally in the upper part of the soil is called
- a. Surface flow
  - b. Interflow
  - c. Base flow
  - d. All of above
17. The flood discharge adopted for the design of a structure after careful consideration of economic and hydrologic factors is known as
- a. Peak flood
  - b. Design flood
  - c. Maximum probable flood
  - d. Minimum probable flood
18. Which of the following is not a component of hydrograph?
- a. Rising limb
  - b. Falling limb
  - c. Lag time
  - d. Return period
19. Area-Velocity Method is used in estimation of
- a. Rainfall
  - b. Stream discharge
  - c. Evaporation
  - d. None of above
20. Gumbel's Extreme Value Distribution is used in estimation of
- a. Rainfall
  - b. Wind speed
  - c. Flood
  - d. Humidity
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**( Descriptive )**

Time : 2 hrs. 30 mins.

Marks : 50

*[ Answer question no.1 & any four (4) from the rest ]*

1. Explain the meaning and concept of basin. 5+5=10
2. Describe the differences between watershed and river basin. 5+5=10
3. Write about different methods of stream flow measurement. 10
4. Write short notes on (any two) 5+5=10  
Stream flow, Unit Hydrograph Components of hydrologic cycle
5. What are the components of runoff? Write about factors affecting runoff 5+5=10
6. What is hydrograph? Discuss features of hydrograph. 2+8=10
7. Describe the importance of different methods of flood estimation. 10
8. Describe Log Pearson Type III method for estimation of flood. 10

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