

2019

GEOLOGY

(Major)

Paper : 5.4

(Hydrogeology, Remote Sensing and GIS)

Full Marks : 60

Time : 3 hours

*The figures in the margin indicate full marks
for the questions*

1. Fill the blanks with appropriate words : $1 \times 7 = 7$

(a) The subsurface water occurring in the zone of aeration is known as _____.

(b) The imaginary surface extended through the static water levels of wells tapping a confined aquifer is called _____.

(c) A geologic formation that neither contains nor transmits groundwater is known as _____.

(d) The capacity of a rock/soil to transmit water under differential pressure is called _____.

(2)

- (e) The repetivity cycle of IRS-1B satellite is ____.
- (f) The full form of LIDAR is ____.
- (g) Spatial data can be classified into vector and ____ data.

2. Write briefly on the following with suitable diagram where necessary (any four): $2 \times 4 = 8$

- (a) Zone of aeration
- (b) Aquitard and aquiclude
- (c) Artesian aquifer
- (d) Active microwave remote sensing
- (e) IKONOS satellite
- (f) Spatial data

3. Write explanatory notes on any three of the following : $5 \times 3 = 15$

- (a) Perched groundwater
(Give suitable diagram)
- (b) Connate water and meteoric water
- (c) Confined aquifer
- (d) Geostationary satellite
- (e) Natural hazard mitigation

(3)

4. Write elaborate answers of the following questions : $10 \times 3 = 30$

- (a) Give an account on the groundwater provinces of India.

Or

What is Darcy's law? Explain the significance of Darcy's law with suitable diagram.

- (b) Write an account on the selection of sites for sinking wells.

Or

What is thermal remote sensing? Write about application of thermal remote sensing.

- (c) Explain how satellite remote sensing can be used in structural and lithological mapping.

Or

What are the basic components of GIS? Briefly explain the spatial data structures. Add a note on overlay analysis.
