

cm weighs 640 gm. After prolonged immersion in water and complete saturation its weight increased to 730 gm. – Calculate the porosity and void ratio of the aquifer rock.

5

PART – II (20 Marks)

Answer any *two* questions. $2 \times 10 = 20$

1. What do you mean by Perched and Leaky aquifer? How do you distinguish between aquiclude and aquifuge? How do you justify potential aquifers in gravely sand beds, sandy beds, and clayey beds for groundwater exploration? What is the mechanism of fluoride release in groundwater? $2+2+3+3=10$
2. What are the different components of hydrological runoff? What is the relationship between hydraulic conductivity and porosity in clayey beds? What is the limitation of Darcy's Equation? How do you distinguish between the cones of depression in confined and unconfined aquifers? $3+3+2+2=10$
3. What are the major, minor and trace elements in water? What do you mean by 'Hardness of water'? What is the significance of Sodium Absorption Ratio (SAR)? What do you mean by Biological Oxygen Demand (BOD)? $3+2+3+2=10$

B. SC. GEOLOGICAL SCIENCES EXAMINATION, 2024

(3rd Year, 1st Semester, Special Supplementary)

HYDROGEOLOGY

PAPER – CORE/TH/11

Time : Two hours

Full Marks : 40

(Use a separate Answer script for each Part)

PART – I (20 Marks)

Answer any *four* questions from the following: $4 \times 5 = 20$

1. What is 'wilting point'? How does it differ from 'field capacity'? Discuss the importance of wilting point for the formation of soil-water zone. $1+2+2=5$
2. What is Interflow? How does it differ from surface runoff? Why in the monsoon months interflow is significantly high at hilly regions? $1+2+2=5$
3. What is piezometric surface? Discuss the geohydrological conditions, when a confined aquifer may perform similar like an unconfined aquifer. What is transmissivity? $2+2+1=5$
4. Discuss the effect of major parameters of a porous media those control its permeability. What is coefficient of percolation? How is it related with porosity? $3+1+1=5$
5. Completely oven dried cylindrical core of an aquifer rock material having a base diameter of 6 cm and length of 10