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Candidate's Seat No : _____

M.Sc Semester-4 Examination

507

AGL (Hydro)

April-2024

Time : 2-30 Hours]

[Max. Marks : 70

QUESTION – 1 Write the following:

7 marks each

1. Explain porosity and its relationship with specific yield and specific retention, including relevant formulas?
2. What are the physical and chemical parameters that determine the quality of groundwater?

OR

3. Explain Darcy's Law, including all relevant formulas, its applicability? and distinguish between hydraulic conductivity and intrinsic permeability?
4. What significant roles do wetlands play in the hydrological cycle?

QUESTION – 2 Write the following:

7 marks each

1. Write a note on Ground water exploration?
2. Distinguish between hydraulic conductivity and intrinsic permeability? Additionally, discuss the concept of equivalent hydraulic conductivity in vertical and horizontal aquifer systems.

OR

3. What is hydrograph, discuss the different elements of hydrograph?
4. What significant roles do arid zones play in the hydrological cycle?

QUESTION – 3 Write the following:

7 marks each

1. Explain the variations in well hydraulics under confined, unconfined, steady, and radial flow conditions?
2. Examine groundwater management strategies and the issues arising from overexploitation of groundwater?

OR

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3. Examine the phenomenon of seawater intrusion, strategies for prevention, and provide an example?
4. Discuss groundwater legislation?

QUESTION – 4 Write the following:

7 marks each

1. Discuss the different methods construction of well drilling?
2. How the igneous and metamorphic rocks play role in understanding the occurrence of groundwater?

OR

3. Discuss the different methods of Artificial methods of groundwater?
4. How do sedimentary rocks contribute to our understanding of groundwater occurrence?

QUESTION – 5* Attempt any seven out of twelve.

14 marks

1. Intrinsic permeability depends on
A). nature of fluid B). Nature of host rock C). Telodiagenesis D). None of above
2. Unit of hydraulic conductivity
A). m/day B). m^2 C). m D). unitless
3. Ratio of volume of voids to total volume of rock is called as
A). permeability B). Porosity C). Resistivity D). Storageivity
4. Which factor has no impact on Porosity
A). Particle size B) Particle shape C). Sorting D). Packing
5. Unit of hydraulic gradient:
A). m/day B). m^2 C). m D). unitless
6. Which of following is not a method of artificial recharge
A). Dug well B). Induced recharge
C). Heavily pump well D). Ditch and Furrow system
7. Factor which does not affect water level fluctuations:
A) Tidal phenomena
B) Meteorological
C) Sea floor distance
D) Urbanisation

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8. Hardness in water is mainly due to the presence of:
A) Silicon B). Magnesium C). Arsenic D). Lead
9. From the view of land surface, which of following is correct:
A) Precipitation = evaporation – runoff
B) Precipitation = evaporation + runoff
C) Precipitation = evaporation * runoff
D) Precipitation = runoff – evaporation
10. Which of following is a deep water well:
A). Cable tool B). Dug well C). Bored well D). Jetted well
11. The amount of decline in water level in a well due to pumping is termed as:
A). Dynamic water level B). Static water level
C). Drawdown D). Potentiometric surface
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12. Which of the following have highest permeability?
A). Gravel B). Silt
C). Clay D). Sand

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