NINTH SEMESTER M.Sc. INTEGRATED GEOLOGY DEGREE EXAMINATION, NOVEMBER 2025

(CBCSS)

(Regular/Supplementary/Improvement)

CC20GLO9IB20 - HYDROGEOLOGY

(Geology)

(2020 Admission onwards)

Time : Three Hours   Maximum : 80 Marks

Credit : 4

(Draw neat sketches, wherever necessary)

PART – A

Answer any *ten* question. Each question carries 2 marks.

1. What is an aquiclude? Mention one rock type that behaves as an aquiclude.

2. Give one example of a homogeneous aquifer material.

3. Give one example of a non-structural method for preventing seawater.

4. Explain Sheet piling.

5. Define baseflow.

6. Write about dissolved constituents in ground water.

7. Define well inventorying.

8. What is induced recharge?

9. Differentiate between 'depth' and 'intensity' of rainfall.

10. State peak flow in a hydrograph.

11. Explain the instrument used to measure gravity in field survey.

12. Define static water level in a pumping test.

(10 × 2 = 20 Marks)

PART – B

Answer any *five* question. Each question carries 8 marks.

13. Illustrate the derivation for capillary rise with a well-labeled sketch, and critically discuss its practical implications in hydrogeology with relevant real-world examples.

14. Explain the role of grain size, sorting, and compaction in controlling the physical properties of reservoir rocks.

15. Justify the importance of monitoring wells in controlling seawater intrusion.

16. Compare MODFLOW and FEFLOW.

17. A fluid with a density of (1000 kg/m3) and a viscosity of 8.9×10−4Pa·s is flowing through a pipe with a radius of (0.05m). If the Reynolds number at the critical point is (2000), calculate the critical velocity of the fluid in the pipe.

18. Explain how vegetation types serve as indicators of groundwater availability and quality.

19. Explain how MT data is used to map subsurface resistivity contrasts related to aquifer presence.

(5 × 8 = 40 Marks)

PART – B

Answer any two question. Each question carries 10 marks.

20. Explain how Darcy's law is used in determining hydraulic conductivity of aquifers. Discuss factors affecting its validity.

21. Explain the baseflow and why is it important for maintaining streamflow in a watershed?

22. Discuss in detail, the recording and non-recording type rain gauges.

23. Analyze the application of magnetotelluric surveys in identifying deep-seated aquifers inaccessible by conventional methods.

(2 × 10 = 20 Marks)

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