CE8016 GROUNDWATER ENGINEERING

IMPORTANT QUESTIONS AND QUESTION BANK

UNIT-I HYDROGEOLOGICAL PARAMETERS

2-Marks

1. Define aquifer.
2. What is the aquifer?
3. Tell about the aquifer properties.
4. Define aquiclude.
5. Define aquifuge.
6. Explain about specific yield.
7. Define transmissivity.
8. Define Darcy's laws.
9. Define steady and unsteady state of flow.
10. Write about the groundwater potential.
11. How do you identify by GEC?
12. Define storage coefficient.
13. Discuss about porosity.
14. Write about safe yield.
15. Write about specific retention.

13-Marks

1. Explain about water bearing properties of rock.
2. Explain about groundwater investigation.
3. Analyse the factors affecting the groundwater.
4. Describe about GEC Norm sand its Recommendations.
5. Explain about electrical resistivity method?
6. Explain about seismic refraction method?
7. Write about bore hole geophysical technique.
8. What are the criteria to select a site for locating a well?
9. Describe about groundwater movement.
10. Write about water table contour map and Flow net analysis.

UNIT-II WELL HYDRAULICS

2-Marks

1. Write the difference types of flow condition.
2. What is meant by drawdown?
3. Define cone of depression.
4. Describe about well losses.
5. Write about Hydraulics of open well.
6. What do you mean by observation well?
7. Define specific yield.
8. Explain specific capacity.
9. What is Infiltration gallery?
10. Examine the Recharge boundary?
11. Tell about the water table aquifer.
12. Explain about injection well?
13. Define specific capacity of a well.
14. What are the merits and demerits of partial penetration of wells?
15. How will you evaluate Fluctuation in groundwater level?

13-Marks

1. Explain Bailer method.
2. Enumerate chow's method.
3. Write in detail about leaky artesian aquifer.
4. Write in detail about Jacob method, slug test, thesis method.
5. What is multiple well system? Write in detail.
6. Explain about the image well theory
7. Write in detail about partial penetration of wells.
8. A 30cm well fully penetrate a confined aquifer 30m deep. After a long period of pumping at a rate of 1200 lpm, the drawdown in the well at 20 and 45m from the pumping well are found to be 2.2 and 1.8m respectively. Determine transmissibility of the aquifer. What is the draw down?
9. A 30cm well fully penetrate 50m below static water table. After a long period of pumping at a rate of 1800lpm, the drawdown in the well at 15 and 45m from the pumping well where 1.7 and 0.8m respectively. Determine transmissibility of the aquifer. What is the draw down?
10. The following date were collected during the pumping test of a confined aquifer to determine the aquifer parameters. The test well was pumped at the rate of 31.5 IPS. The observation well is located at 15.2m from the main pumping well. Determine T and S of an aquifer by Jacob's technique.

Time (hrs)	0.5	1.0	2.0	4.0	6.0	12.0	24.0	48.0
Drawdown(m)	0.15	0.30	0.46	0.76	0.98	1.31	1.65	1.95

UNIT-III GROUNDWATER MANAGEMENT

2-Marks

1. What is the need for groundwater management?
2. Reproduce the groundwater balance equation.
3. List the need for groundwater balance equation.
4. What is need for groundwater management model?
5. Classify the types of groundwater models
6. List the applications of groundwater management model.
7. Define conjunctive use of groundwater.
8. Discuss about basin.
9. Define collector well.
10. Write about the mathematical model.
11. Describe the model domain?
12. Define Infiltration gallery.
13. Define sensitivity analysis.
14. State the aspects of system approach.
15. What is future prediction of groundwater

13-Marks

1. Illustrate the components of groundwater balance equation.
2. Draw and explain the model protocol.
3. Explain for modelling approaches in hard rock aquifer system.
4. Write about prospects and modern techniques for an optimal groundwater management.
5. Explain GALDIT methods to evaluate the system vulnerability and ranking.
6. Explain about 1) Finite Element method 2) Finite difference method.
7. Integrate the database for groundwater.
8. Define collector well and explain.
9. How can you explain groundwater management in India?
10. Explain in detail about the Infiltration in India.

UNIT-IV GROUNDWATER QUALITY

2-Marks

1. Define potable water.
2. Define design period.
3. How to determine the storage need for an impounding reservoir?
4. What are the components of water supply system?
5. Distinguish between surface water and groundwater.

6. Outline the various sources of water.
7. State the objectives of public water supply scheme.
8. Compare and contrast between carbonate and non-carbonate hardness.
9. Illustrate factors affecting per capita water demand.
10. Write in brief about the recharge of ground water.
11. What is water demand? State its types.
12. Define per capita demand. How is per capita demand for water calculated?
13. Define BOD.
14. State the purposes of carrying out water quality characterization.
15. Explain the factors influencing the design period?

13-Marks

1. Briefly discuss about the various types of aquifers with neat sketch.
2. Discuss the physical factors that governs the ground water pollution.
3. Discuss about the drinking water quality standards as per BIS.
4. Classify the ground water pollution parameter.
5. Explain the laboratory procedure to determine the chlorides, turbidity, sulphates and odour.
6. Summarize chemical characteristics of water.
7. Elaborate the water quality standards of industrial water.
8. Examine the origin and movement of groundwater.
9. Evaluate the Environmental Regulatory requirements.
10. Elaborate the water quality standards for irrigation water.

UNIT-V GROUNDWATER CONSERVATION

2-Marks

1. What do you mean by MAR?
2. Why artificial recharge is needed?
3. Write about injection well.
4. What if the algae present in the percolation pond?
5. Write any two artificial recharge methods.
6. Compare natural and artificial recharge.
7. Define saltwater intrusion.
8. Discuss the impacts of saltwater intrusion?
9. Why ground water pollution occurs?
10. How did you control ground water pollution?
11. Report the objectivities of ground water legislation.

12. Why ground water legislation is needed in India?
13. Define ASR.
14. List method of SAT.
15. What is protection zone?

13- Marks

1. List the remediation measure for saline intrusion and explain.
2. How do you technically determine the impact of an artificial recharge structure?
3. Write a case study about saline intrusion remediation?
4. Explain in detail about protection zone delineation?
5. What are the managing steps available to conserve ground water?
6. What is a potential contaminant source inventory?
7. Identify remediation schemes of containment present in ground water?
8. Write the preventive measures of ground water pollution.
9. Write in detail about ground water legislation.
10. What is the cause of ground water pollution?