

**THEORY EXAMINATION (SEM-VIII) 2016-17**  
**GROUNDWATER MANAGEMENT**

**Time : 3 Hours**

**Max. Marks : 100**

**Note : Be precise in your answer. In case of numerical problem assume data wherever not provided.**

**SECTION – A**

**1. Explain the following: 10 x 2 = 20**

- (a) List the different types of aquifers.
- (b) Define hydro-geologist.
- (c) What are the limitations made in Dupuit's theory?
- (d) Differentiate between confined and unconfined aquifers.
- (e) State the water well.
- (f) Write the types of tube well.
- (g) List the techniques adopted for groundwater modelling.
- (h) What is groundwater drainage?
- (i) State the advantage of groundwater management model.
- (j) Write the application of remote sensing in groundwater management.

**SECTION – B**

**2. Attempt any five of the following questions: 5 x 10 = 50**

- (a) Describe in detail about the Occurrence of ground water?
- (b) Express the flow net construction for steady groundwater flow.
- (c) State the characteristic well losses in detail.
- (d) (i) Design a tube well for the following data:  
 Yield required = 0.08 cumec  
 Thickness of confined aquifer = 30m  
 Radius of circle of influence = 300m  
 Permeability coefficient = 60m/day  
 Drawdown = 5 m  
 (ii) Write the selection of suitable site for tube well in detail.
- (e) Write short notes on  
 (i) Well construction (ii) Well completion (iii) Well disinfection
- (f) What do you mean by artificial discharge and recharge of groundwater? Explain the term groundwater drainage.
- (g) Brief notes on Groundwater budgeting and Surface & Sub surface investigation of groundwater.
- (h) Write a brief note on rain water harvesting method for urban areas.

**SECTION – C**

**Attempt any two of the following questions: 2 x 15 = 30**

- 3** (i) Derive an expression for the steady state discharge from a well in an unconfined aquifer. Draw a neat sketch and state clearly all the assumptions.  
 (ii) Enumerate the different techniques of geophysical exploration and explain any two.
- 4** (i) Explain in detail with neat sketch the "Hydrologic Cycle".  
 (ii) Write the different phenomena that occur in the movement of contaminated water.
- 5** What do you understand by groundwater modelling? How is GIS applied for modelling?