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B.TECH.

THEORY EXAMINATION (SEM-VIII) 2016-17

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GROUNDWATER MANAGEMENT

Time : 3 Hours

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

1. Explain the following:

- (a) List the different types of aquifers.
- (**b**) Define hydro-geologist.
- (c) What are the limitations made in Dupits 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:

- (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 = 0.08cumec 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

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- (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:

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

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 $10 \ge 2 = 20$

Max. Marks : 100

 $5 \ge 10 = 50$

 $2 \ge 15 = 30$