

Total No. of Questions : 10]

SEAT No. :

P3373

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T.E. (Civil) (End Sem.)

**HYDROLOGY & WATER RESOURCE ENGINEERING**  
**(2015 Pattern)**

*Time : 2½ hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Attempt Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8 and Q9 or Q10.*
- 2) *Figures to right indicates full marks.*

- Q1)** a) Explain Application of Hydrology. [5]  
b) State deltas for gram, maize, sugarcane, rice and cotton also explain methods to improve duty. [5]

OR

- Q2)** a) State the formula to calculate optimum number of rainauges. Explain the different terms in formula. [5]  
b) Differentiate between sub-surface irrigation and sprinkler irrigation. [5]

- Q3)** a) Derive the formula to calculate discharge of a well in a confined aquifer. [5]  
b) State various types of tube well. Explain Any one in detail. [5]

OR

- Q4)** a) Determine the capacity of reservoir from the following data. The CCA is 80000 hectares. Assume canal and reservoir losses as 5% and 10% respectively.

Crop	Base period (days)	Duty (hect/cumecs)	Intensity of irrigation (%)
Rice	120	1800	25
Wheat	150	2000	30
Sugarcane	320	2500	20

[6]

- b) Explain the following. [4]
- i) Aquifer
  - ii) Aquiclude
  - iii) Specific Yield of an Aquifer
  - iv) Porosity of soil

**P.T.O.**

- Q5) a)** The ordinate of 6 h unit hydrograph are given below: **[10]**

Time (h)	0	6	12	18	24	30	36	42	48	54	60	66
Ordinate of 6 h UH ( $\text{m}^3/\text{s}$ )	0	20	60	150	120	90	66	50	32	20	10	0

It two storms, each of 1- cm excess rainfall and 6 h duration occurs in succession, calculate the resulting hydrograph of flow. Assume base flow to be  $10\text{m}^3/\text{s}$ .

- b) What is unit Hydrograph? Draw a single peaked hydrograph showing its all components. Also state the uses of hydrograph. **[8]**

OR

- Q6) a)** What is S curve Hydrograph? Explain its construction with sketch. **[9]**

- b) Explain Gumbels flood frequency analysis method. **[9]**

- Q7) a)** Explain how will you fix the capacity of the reservoir using annual inflow and outflow. **[8]**

- b) Explain fixation of reservoir capacity using elevation capacity curve and dependable yield. **[8]**

OR

- Q8) a)** What are various reservoir losses? Explain various measures to control these losses. **[8]**

- b) What is reservoir sedimentation? What is significance of trap efficiency? Explain with neat sketches. **[8]**

- Q9) a)** Write a short note on ancient system of water distribution which still exist in North Maharashtra. **[8]**

- b) Explain Global Water Partnership (GWP). **[8]**

OR

- Q10) a)** What is water logging? Explain tile drain formule and also state formule for spacing of tile drain. **[8]**

- b) Draw a neat sketch for lift irrigation scheme and state various components of lift irrigation scheme. Explain various design steps in lift irrigation system. **[8]**

