

Total No. of Questions :10]

SEAT No. :

**P3558**

**[5560]-501**

[Total No. of Pages :2

**T. E. (Civil)**

**HYDROLOGY AND WATER RESOURCES ENGINEERING**

**(2015 Pattern) (Semester - I)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) Answer Q.No.1or Q.No.2, Q.No.3 or Q.No.4, Q.No.5 or Q.No.6, No.7 or Q.No.8, Q.No.9 or Q.No.10.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary.

- Q1) a)** State and explain applications of Hydrology. [6]
- b) Write a note on sprinkler method of irrigation. Indicate the advantages and disadvantages of this method of irrigation. [4]

OR

- Q2) a)** There are five rain gauges uniformly spread in a small area. The depth of rainfall observed and area of Thiessen polygons for the corresponding rain gauges are given below. Determine average depth of precipitation. [6]

Rain gauge No.	A	B	C	D	E
Rainfall depth (cm)	50	40	47	50	49
Area of Thiessen	90	106	98	91	100
Polygons (sq.km)					

- b) An irrigation canal has gross command area of 50,000 hectares out of which 80% is irrigable. The intensity of irrigation for Kharif and Rabi season is 25% and 50% respectively. Find discharge require at the end of canal if the duty at its head is 750 hectares/cumecs for Kharif season and 1600 hectares/cumec for Rabi season. [4]

**P.T.O.**

- Q3)** a) State and explain any two methods of Assessment of canal revenue. [4]  
 b) Derive an expression for discharge from a well fully penetrating confined Aquifer. [6]

OR

- Q4)** a) Derive an expression for discharge from a well fully penetrating unconfined Aquifer. [6]  
 b) What is mean by Duty and Delta? Derive a relationship between Duty and Delta for a given Base period. [4]

- Q5)** a) State and explain various methods of base flow separation. [8]  
 b) Explain S-Curve hydrograph with neat sketch. [8]

OR

- Q6)** a) Given below are the observed flows from a storm of 6 hour duration on a stream with a drainage basin area of 380 sq km. Assume a constant base flow of 17 cumecs, derive ordinate of 6 hour duration unit hydrograph. [8]

Time (hr)	0	6	12	18	24	30	36	42	48	54	60	66	72
Flow (m <sup>3</sup> /s)	17	100	250	190	160	100	98	75	55	48	32	25	17

- b) What is runoff what are the factors that affect the runoff from a catchment. [8]
- Q7)** a) Explain in brief various investigations required for reservoir planning. [8]  
 b) Discuss various methods of reservoir sediment control. [8]

OR

- Q8)** a) What do you understand by mass curve and demand curve. [8]  
 b) Discuss the various types of storages in reservoir with sketch. [8]

- Q9)** a) Explain the Cooperative water distribution systems. [8]  
 b) Explain causes and effects of water logging. [10]

OR

- Q10)** a) What is mean by Alkaline and Saline land. [6]  
 b) Describe various methods adopted as anti-water logging measures. [12]

