P3558

[5560]-501

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 Theissen 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 Theissen Polygons (sq.km)	90	106	98	91	100

    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]**

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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^3/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]**

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