

Total No. of Questions : 12]

SEAT No. :

P2383

[5153]- 6

[Total No. of Pages : 3

T.E. (Civil)

**Hydrology and Water Resource Engineering
(2008 Pattern) (Semester - II) (301006)**

Time :3 Hours]

[Max. Marks :100

Instructions to the candidates:

- 1) Answer 3 questions from each section.*
- 2) Numbers written on the right indicate full marks.*

SECTION - I

- Q1)** a) State various practical applications of hydrology [6]
b) State the factors governing site selection for rain guage station. [6]
c) Explain the different methods of determining the mean rainfall over a catchment. [6]

OR

- Q2)** a) Explain with a neat sketch weighing bucket type rainguage. [6]
b) What are the WMO recommendations for density of rainguage network. Based on this what are the recommendation by I.S.8389 –1983? [6]
c) Determine ϕ index from following data of storm of 8cm precipitation that resulted in direct runoff of 4.4 cm. [6]

Time (Hr)	1	2	3	4	5	6
Incremental rainfall per hours in cm	0.57	0.58	1.25	3.00	1.4	1.2

- Q3)** a) Explain factors affecting runoff [8]
b) Explain the dilution technique of stream guaging. [8]

OR

P.T.O.

Q4) Explain [8]

- a) ISI standard pan Evaporimeter. [8]
- b) Field capacity and permanent wilting point. [8]

Q5) a) What is synthetic unit hydrograph? Why it is necessary. [8]

- b) Explain any two methods of estimating peak flood discharge. [8]

OR

Q6) Develop the unit hydrograph for following data. [16]

Catchment area = 250 Km²

Base flow = 10m³/s

Time	0	6	12	18	24	30	36	42	48	54	60	66	72
ordinate of 6 Hr.cm ³ /sec	10	110	260	210	160	110	80	60	45	35	25	15	10

SECTION - II

Q7) a) What are advantages and disadvantages of irrigation. [6]

- b) What is Duty? How can it be improved. [6]

- c) The following table shows the details of various crops grown in culturable area of 2000 hectares served by a field channel. Work out discharge? [6]

Sr	Crop	Intensity of Irrigation	Baseperiod (Days)	Kor depth(cm)
1	Wheat	40%	16	15
2	Jowar(Rabi)	50%	10	12

OR

Q8) a) Explain factors to be considered in determination of crop water requirement. [6]

- b) Explain National water policy [6]

- c) How crops are classified? State the principal Indian water crops and their seasons. [6]

Q9) a) State Dupits assumption. Derive expression for discharge from well through confined aquifer. **[8]**

b) What is water logging? Explain causes and effects of water logging? **[8]**

OR

Q10)a) Explain with a neat sketches Artesian well, free flowing well, confined and unconfined aquifer, & perched aquifer. **[8]**

b) Explain in detail 'Reservoir' sedimentation. **[8]**

Q11)a) Derive the expression for spacing of file drain. **[8]**

b) Write steps to estimate design discharge at head for design canal. **[8]**

OR

Q12)a) Explain lift irrigation scheme with various components. **[8]**

b) Explain in brief methods of application of water. **[8]**

