

Total No. of Questions : 12]

SEAT No. :

P3508

[Total No. of Pages : 3

[4858] - 106

T.E. (Civil) (Semester - II)

Hydrology & Water Resources Engineering
(2008Pattern)

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) *Answer any 3 questions from each section.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right indicate full marks.*

SECTION - I

Q1) a) Explain with neat and labelled figure weighing bucket type rainguage. [8]

b) State various methods of measuring evaporation. Discuss the factors affecting infiltration. Explain flooding type infiltrometer. [10]

OR

Q2) a) What is stream guaging? Explain Area-Velocity method with sketch and explain its application in water resource engineering. [10]

b) State different forms and types of precipitation. Explain frontal type of precipitation. [8]

Q3) a) State various formulae to determine flood and explain any 2 methods. [8]

b) Given below are the observed flow from a storm of 6 hours duration with drainage area of 300 sq. km. Assume a constant base flow of 16 cumecs. Derive and plot a 6 hours duration unit hydrograph. [8]

Time (Hr)	0	6	12	18	24	30	36	42	48	54	60	66
Flow (Cumec)	17	113.2	254.3	198	145	112.8	87.7	69.9	54.2	42.8	31.1	17

P.T.O.

OR

- Q4)** a) Explain factor affecting run off. [8]
b) Explain with a neat sketch Synthetic Unit Hydrograph. [8]

- Q5)** a) Define trap efficiency of reservoir. Describe how the time required to reservoir to fill up with sediments is calculated. [8]
b) Explain various zones of reservoir with a neat sketch. [8]

OR

- Q6)** a) Explain with a neat figure how the economic height of dam is fixed. [8]
b) What is apportionment of total cost of reservoir? Explain various methods of the same. [8]

SECTION - II

- Q7)** a) Explain crop area and volumetric methods of assessing canal revenue. And state merits and demerits. [8]
b) The following table gives data for crop. Calculate [10]
i) Delta for each crop.
ii) Volume of water required for each crop.
iii) Volume of water stored in reservoir.

Crop	Base period (Days)	Field Duty (ha/cumec)	And under Crop (hectare)	Remark
Wheat	120	1800	4800	Transist losses = 15%
Sugar cane	360	800	5600	Reservoir losses = 25%
Cotton	200	1400	2400	

OR

- Q8)** a) Define : [8]
i) Time factor,
ii) Duty,
iii) Paleo Irrigation,
iv) Kor depth.

- b) Find the frequency of irrigation if [10]
- i) Field capacity of soil = 30%.
 - ii) Permanent wilting percentage = 10%.
 - iii) Mass density of soil = 1300 kg/m^3 .
 - iv) Effective depth of root zone = 800 mm.
 - v) Daily consumptive use of water = 15 mm.
 - vi) Readily available moisture = 15%.

Q9) a) State Darcy's assumptions. Derive equation for discharge from well through confined aquifer. [8]

- b) Explain pumping and recuperation test. What should be a diameter of well to give yield of 5 litres/sec?

Assume head = 3.75 m, and specific yield of sub-soil = 0.5 / hour. [8]

OR

Q10) a) Explain different types of tube wells and dug wells. Explain strainer type with a neat sketch. [8]

- b) What is water logging? Explain causes and effect of water logging. [8]

Q11) a) What are major, minor & medium irrigation projects? What are advantages and disadvantages of irrigation. [8]

- b) What is lift irrigation? Explain the design considerations of components. [8]

OR

Q12) a) What are co-operative water distribution society's state rules for equitable distribution of water to farmers. [8]

- b) Explain in brief methods of application of water to field. [8]

