

Total No. of Questions : 10]

SEAT No :

P3862

[5058]-301

[Total No. of Pages : 2

T.E. (Civil)

HYDROLOGY AND WATER RESOURCES ENGINEERING
(2012 Pattern) (Semester - I) (End - Semester)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q4, Q.5 or Q6, Q.7 or Q.8, Q.9 or Q10.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data if necessary.

- Q1)** a) Explain with a neat sketch hydrological cycle. [3]
b) Explain construction and application of DAD Curves with sketch. [7]

OR

- Q2)** a) The isohyet drawn for a storm which occurred over a drainage basin of area 950 km² yielded the following information. Calculate the average depth of rainfall over a basin. [6]

Isohyet interval in mm	85-75	75-65	65-55	55-45	45-35
Area between isohyets in Km ²	125	236	264	175	150

- b) State principal Indian crops and explain importance of crop rotation. [4]
- Q3)** a) Differentiate between furrow irrigation and drip irrigation. [5]
b) Explain Ultrasonic method to measure stream discharge. [5]

OR

- Q4)** a) A well of 0.5m diameter penetrates fully into a confined aquifer of thickness 20 m and hydraulic conductivity 8.2×10^{-4} m/s. What is the maximum yield expected from this well if the drawdown in the well is not to exceed 3 m. The radius of influence may be taken as 260m. [7]
b) Explain construction of open well with neat sketch. [3]

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- Q5)** a) State various factors affecting runoff and explain in detail. [14]
 b) Explain any one method of base flow separation. [4]

OR

- Q6)** a) Given below are the observed flows (cumecs) from a storm of 6 hour duration on a stream with a drainage area of 316 sq.km. Assume a constant base flow of 17 cumecs, derive a 6 hour duration unit hydrograph. [9]

Time (hr)	0	6	12	18	24	30	36
Flow	17	113.2	254.5	198	150	113.2	87.7
Time (hr)	42	48	54	60	66	72	Base Flow=17
Flow	67.9	53.8	42.5	31.1	22.64	17	

- b) Explain synthetic hydrograph with neat sketch. [9]
- Q7)** a) Explain flow mass curve and explain the step by step procedure to calculate the reservoir capacity and surplus water. [8]
 b) What is apportionment of total cost for multipurpose reservoir. Explain equal apportionment method and alternative justifiable expenditure method. [8]

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- Q8)** a) Draw a section of dam indicating details of sedimentation. Explain significance of trap efficiency. [8]
 b) What method you will suggest to control evaporation loss and loss due to seepage. [8]

- Q9)** a) Explain participatory irrigation management. [8]
 b) Write a note on Warabandi. [8]

OR

- Q10)** a) What are the ill effects of water logging and how will you control it. [9]
 b) Draw a neat section of lift irrigation scheme and state the authorities from whom permission for implementing it is necessary. [7]

