Total No. of Questions : 10]

SEAT No :

P3862

[Total No. of Pages : 2

[5058]-301
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 ro 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 km^2 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]**

OR

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) Wrtie 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]**

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