Total No. of Questions :10]

SEAT No. :

P3918

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[4958] - 1001

T. E. (Civil)

HYDROLOGY AND WATER RESOURCES ENGINEERING

(2012 Course) (Semester - I)

Time : 2½ Hours] *[Max. Marks :70*

Instructions to the candidates:

1) ***Answer Q.No 1 or Q,No 2, Q,No 3 or Q,No 4, Q,No 5 or Q,No 6, Q,No 7, or Q,No 8, Q,No 9 or Q,No 10.***
2) ***Neat diagrams must be drawn whenever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) How hydrology is interdisciplinary science? **[5]**

b) Explain isohyetal method with neat sketch. **[5]**

OR

Q2) a) State the formula to calculate optimum number of raingauges. Explain the terms in the formula. **[5]**

b) State deltas for Gram, Maize, Sugarcane, Rice and cotton also explain methods to improve duty. **[5]**

Q3) a) Differentiate between furrow irrigation and Drip irrigation system. **[5]**

b) Explain with neat sketch tipping bucket type gauge to determine the stage of river and also state the advantages of this gauge. **[5]**

OR

P.T.O.

Q4) a) Derive the formula to calculate discharge of a well in a confined aquifer. **[6]**

b) State various types of tube wells and explain construction of Slotted Type Tube well. **[4]**

Q5) a) What is hydrograph? Explain all the parts of the typical hydrograph. Explain fern shaped catchment. **[8]**

b) Maximum values of 24 hour precipitation (mm) at a Rainguage station are 140, 113, 132, 115, 130, 118, 127, 123, 121. Estimate maximum and minimum precipitation having a recurrence interval of 5 and 15 years. Use Hazen's Method. Use graphical method. **[10]**

OR

Q6) a) What is S- curve hydrograph? Explain its construction with sketch. **[8]**

b) In a 10 hr storm rainfall depths occurred over a the catchment are **[10]**

Hour	1	2	3	4	5	6	7	8	9	10
Depths (cm/hr)	1	1.5	5	6	10.5	8.5	9	7	1.5	1.5

Surface runoff resulting from the storm is equivalent to 20 cm of depth over the catchment. Determine

i) Average infiltration, and

ii) Average rate of infiltration.

Q7) a) Explain how will you fix the capacity of reservoir using annual inflow and outflow. **[8]**

b) Explain fixation of reservoir capacity using elevation capacity curve and dependable yield. **[8]**

OR

Q8) a) What are various reservoir losses? What are various measures to control these losses **[8]**

b) What is reservoir sedimentation? What is the significance of trap efficiency? Explain with neat sketch. **[8]**

Q9) a) Write a note on ancient system of water distribution which still exist in North Maharashtra. **[8]**

b) Explain Global Water Partnership. (GWP) **[8]**

OR

Q10)a) What is water logging? Explain tile drain method and also state formula for spacing of tile drains. **[8]**

b) Draw a neat section for lift irrigation scheme and state various components of lift irrigation scheme. Explain various design steps in lift irrigation system. **[8]**