

Total No. of Questions :10]

SEAT No. :

[Total No. of Pages :3

P3918

[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]

