Total No. of Questions : 10]

SEAT No. :

P2390

[Total No. of Pages : 2

[5253] - 101
T.E. (Civil)
HYDROLOGY AND WATER RESOURCES ENGINEERING
(2012 Pattern)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates :

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Ql0***
2) ***Neat diagram 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

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

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

Q5) a) What is hydrograph? Explain factors affecting run off. **[8]**

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

OR

P.T.O.

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

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. **[10]**

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 Participatory Irrigation Management. (PIM) **[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]**