Total No. of Questions : 12]

SEAT No. :

P3336

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[5353]-501

T.E. (Civil)

HYDROLOGY & WATER RESOURCE ENGINEERING

(2015 Pattern)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Attempt Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8 and Q9 or Q10 and Q11 or Q12.***

2) ***Figures to the right indicate full marks.***

Q1) a) the isohytes due to storm were having following data; **[4]**

isohytes[mm]	Area[km^2]
150	40
170-150	150
150-140	70
140-130	200
130-110	25

Find the weighted precipitation for total catchment area

b) Why isohytel method of determination of average rainfall is more accurate than other two? **[3]**

OR

Q2) a) What are the different types of rain gauges? Explain non-recording type rain gauge with neat sketch. **[4]**

b) Explain any four factors affecting Evapouration of water from reservoir. **[3]**

Q3) a) Derive relationship between duty and delta. **[4]**

b) Write a short not on assessment of canal revenue? **[3]**

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OR

Q4) Estimate the number of days required between two watering for a crop having following data : **[7]**

i) Field capacity = 30%,

ii) permanent wilting point = 15%

iii) Apparent density of soil = 1.5

iv) effective depth of root zone = 755.55 mm,

v) daily consumptive use of water for crop = 10 mm

Q5) a) A 30 cm diameter well is pumped at a uniform rate of 3 m^3/min. in 230 m thick aquifer. Drawdown observed at 2m and 200m distances from center of well are 10 m and 0.5m respectively. Determine aquifer constant of water bearing statum. **[3]**

b) Distinguish between unconfined aquifer and perched aquifer. **[3]**

OR

Q6) a) State assumption in Dupits theory. **[3]**

b) Explain application of Darcys law. **[3]**

Q7) a) Define unit hydrograph. State factors affecting the unit hydrograph. Explain the components with the help of sketch. **[8]**

b) Explain extreme value (Gumbel) distribution. **[8]**

OR

Q8) a) State various methods to estimate flood and explain rational method in detail. **[8]**

b) What is Scurve hydrograph? Explain its components and construction with a neat sketch. **[8]**

Q9) a) Explain the different steps involved in calculating the useful life of reservoir. **[8]**

b) Write a note on B/C ratio for reservoir Explain any two methods. **[8]**

OR

Q10)a) Explain types of reservoirs and explain the points considered for selecting the site for a reservoir and state the investigations required for construction of reservoir. **[8]**

b) Explain I.S.D method of flood routing. **[8]**

Q11)a) What are the field information to be collected before providing Drainage channel to Irrigated Land? Explain Sub-Surface and Surface Drain. **[6]**

b) Explain the Participatory Irrigation Management? Explain Need and Objective of farmer Participation in Irrigation Management. **[6]**

c) How water management can be applied while Irrigation. **[6]**

OR

Q12)a) What is water logging? State methods to improve the sub-surface drainage. **[6]**

b) Explain different irrigation acts? **[6]**

c) Explain different methods of reclamation of water logged land. **[6]**