

[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 isohyets due to storm were having following data; [4]

isohyets[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 isohyetal 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 Evaporation of water from reservoir. [3]

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

- b) Write a short note on assessment of canal revenue? [3]

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 $3 \text{ m}^3/\text{min}$. 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 stratum. [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]

