Total No. of Questions : 6]

P37

Oct./TE/Insem.-151

SEAT No. :

T.E. (Civil)

HYDROLOGY AND WATER RESOURCE ENGINEERING

(2015 Pattern) (Semester - I)

Time : 1 Hour]

Instructions to the candidates:

[Max. Marks : 30

- 1) Answer Q1. or Q.2, Q.3 or Q.4, Q.5 or Q.6.
- 2) Figures to the right indicate full marks.

Q1) a) The mean annual rainfall in mm at '4' rain guage stations in catchment are 1050, 790, 700 and 660. If error in estimation of mean rainfall not exceeded 10%. Determine the additional number of rain guages needed.

- b) Explain with neat sketch A–V method of discharge measurement. [4]
- Q2) a) The total observed run off volume during a storm of 6 hr. duration with a uniform intensity of 15mm/hr is 21.6 Million m³. If the catchment area is 300 km², find the average infiltration rate and the run off coefficient for the catchment.

OR

b) Which are the agencies that usually maintain rain guages and make observation in your state? At what time or times in day is rainfall recorded?

Q3) a)

The GCA of irrigation Canal is 1.20 lakh hectare. The CCA is 75% of GCA. Intensities of irrigation for Kharif and Rabbi crops are 40% and 55% respectively. If duties at canal are 800 and 1550 ha/cumecs for Kharif and Rabbi crops respectively. Determine the discharge at canal head.

b) What are various methods of assessment of canal revenue. [4]

OR

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[4]

04) a) Find out capacity of reservoin from following data. The CCA = 80,000 ha. Take canal & reservir losses 5% and 10% respectively. [6]

Crop	Base period	Duty	Intensity of
	(Days)	(ha/cumecs)	Irrigation (%)
Sugar Cane	320	2500	20
Rice	128	1800	25
Wheat	9,50	2000	30

- Draw a labelled sketch of layout of drip irrigation system. Why is it **b**) essential in India? [4]
- A well with diameter of 1.2m penetrates an unconfined aguifer of thickness **05**) a) 70 m & coefficient of permeability (K) = 50 m/day. The well is pumped so that water level in the well remains at 60 m above the datum. Water table is at 500 m.

Determine the discharge in litres?

Define Aquifen and describe various types of aquifer. [5] b)

OR

[5]

- In confined aquifer of 10 m hick, 12 cm diameter well is pumped at rate **Q6**) a) of 250 litres/min. Drawdown observed in two wells located at 11m and 48m distance from centre of well are 4m and 0.09m. Determine the coefficient of permeability and transmissibility?
 - ns is What is Darcy's law. State its assumptions and limitations in ground b) [5] water.

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