

Total No. of Questions : 6]

SEAT No. :

P5659

[Total No. of Pages : 2

TE/INSEM./OCT.-101

T. E. (Civil)

HYDROLOGY AND WATER RESOURCES ENGINEERING

(2015 Pattern) (Semester - I)

Time : 1 Hour]

[Max. Marks : 30

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.
- 2) Figures to the right indicate full marks.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Assume suitable data, if necessary.

Q1) a) Explain hydrology is interdisciplinary science. **[5]**

- b) The average annual rainfalls in cm at four existing raingauge stations in a basin are 105, 79, 70 and 66. If the avg. depth of rainfall over the basin is to be estimated within 10% error, determine the additional number of gauges needed. **[5]**

OR

Q2) a) Explain with neat sketch hydrological cycle. **[4]**

- b) A 6 hour storm produced rainfall intensities of 7, 18, 25, 12, 10 and 3mm/hr in successive 1 hr intervals over a basin of 800 km². The resulting runoff is observed to be 2640 hec-m. **[6]**

Determine ϕ index for basin.

Q3) a) What are the factors affecting water requirements of crops? **[5]**

- b) Derive the relation between duty & delta. **[5]**

OR

P.T.O.

Q4) a) Define the following terms : **[5]**

- i) G.C.A.
- ii) C.C.A.
- iii) Capacity factor
- iv) Kor period
- v) Cumec day

b) Compute the depth and frequency of irrigation required for a certain crop if root zone depth is 100 cm, field capacity equal to 22%, wilting point equal to 12%, apparent specific gravity of soil is 1.5 gm/cc, consumptive use = 25 mm/day, efficiency of irrigation = 50%.

Assume 50% depletion of available moisture before application of irrigation water at field capacity. **[5]**

Q5) a) Explain with a neat sketch division of subsurface water. **[3]**

b) State Darcy's law. What are assumptions? State its validity. **[3]**

c) Define the following terms :- **[4]**

- i) Aquifer
- ii) Aquiclude
- iii) Specific yield
- iv) Specific retention

OR

Q6) a) Explain recuperation test of determining yield of open well. **[5]**

b) Explain Dupit's theory. State the assumptions made along with its limitations. **[5]**

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