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 km^2. 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%, apparant 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]**