Code: 13A01504

R13

B.Tech III Year I Semester (R13) Regular Examinations December 2015
WATER RESOURCES ENGINEERING – I
(Civil Engineering)

Time: 3 hours   Max. Marks: 70

PART – A
(Compulsory Question)
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1   Answer the following: (10 X 02 = 20 Marks)
 (a)   List out the various types of precipitation.
 (b)   Define $\emptyset$ − index.
 (c)   If following are the ordinates of a 2 hr unit hydrograph, what will be the ordinates of 2 hr hydrograph due to a rainfall excess of 3 cm.

Time (hr)	0	2	4	6	8	10	12	14	16
2 hr U.H(M3/s)	0	6.4	12.2	16.4	17.3	15.8	8.5	3.7	0

 (d)   If specific yield of an aquifer is 17.4% and its specific retention is 15.4%. What would be its porosity?
 (e)   Find the delta for a crop if the duty for a base period of 100 days is 1200 hectares/cumecs.
 (f)   Define Kor depth and Kor period.
 (g)   Give the necessary of lining of canals.
 (h)   What is a regime channel?
 (i)   Define setting.
 (j)   What is a weir?

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

| UNIT – I |

2   What are the various forms of precipitation? Explain each.
OR
3 (a)   What is Energy – Balance method?
   (b)   How do you separate base flow?

| UNIT – II |

4 (a)   Give the assumptions involved in construction of unit hydrograph.
   (b)   Derive the expression for discharge for steady radial flow to a well in an unconfined aquifer.
OR
5 (a)   Explain S – hydrograph.
   (b)   An undistributed rock sample has an oven dry weight of 0.755 kg. After saturation with kerosene its weight is 0.832 kg. It is then immersed in kerosene and found to displace 0.25 kg. What is the porosity of the sample?

| UNIT – III |

6 (a)   Define duty. And how do you improve duty?
   (b)   Give the ill effects of irrigation.
OR
7 (a)   A water course has a culturable commanded area of 2400 hectares, out of which the intensities of irrigation for perennial sugar-cane and rice crops are 22% and 40% respectively. The duty for these crops at the head of water course are 740 hectares/cumec and 1750 hecta/cumec respectively. Find the discharge required at the head of water course if the peak demand is 20% of the average requirement.
   (b)   Define consumptive use of water. List the factors that affect consumptive use of water.

| UNIT – IV |

8   Design an irrigation channel to carry a discharge of 45 cumecs. Assume N = 0.0225 and m = 1. The channel has a bed slope of 0.16 m per km.
OR
9 (a)   Give the advantages and disadvantages of lining.
   (b)   Give the effects of water logging.

| UNIT – V |

10   Explain the various component parts of a diversion headwork with sketch.
OR
11 (a)   What is Kennedy's gauge outlet?
    (b)   Explain various outlets.   **www.FirstRanker.com**
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