

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
SUMMER SEMESTER – END TERM TEST (JULY 2016)

Course Code: **10 B11CE513**
Course Name: **Water resource Engineering**
Course credit: 4

Max. Marks: **50**
Max. Time: **2 hrs**

Note: All questions are compulsory. Assume suitable data if required.

- Q1.** (a) What is meant by Duty and Delta? Derive the relation between Duty and Delta. [5]
(b) Find the delta for a crop when its duty is 864 hectares/cumec on the field, the base period of this crop is 120 days. [2]
- Q2.** What is meant by water logging? What precautions and measures will you adopt to prevent water logging of irrigated land [2+5]
- Q3.** Explain the Lacey's regime channel theory. [6]
- Q4.** Design an irrigation channel to carry 50 cumec of discharge. The channel is to be laid at a slope of 1 in 4000. The critical velocity ration for soil is 1.1. Take value of $n = 0.023$. [8]
- Q5.** Determine the volume of water required to be diverted from the head work to irrigate area of 5000 ha using the data given below. Assume 80% as the effective rainfall to take care of consumptive use of the crop. Also assume 50 % efficiency of water application in the field and 75% as the conveyance efficiency of channel. [8]

Month	Temp F	%age hrs of sunshine	Rainfall cm	crop factor K
June	70.8	9.9	75	0.8
July	74.4	10.2	108	0.85
August	72.8	9.6	130	0.85
September	71.6	8.4	115	0.85
October	69.3	7.86	105	0.65
November	55.2	7.25	25	0.65
December	47.1	6.42	0	0.6
January	48.8	8.62	0	0.6
February	53.9	9.95	0	0.65
March	60	8.84	0	0.7

- Q6.** The cultivable commanded area for a distributary is 15,000 hectares. The intensity of irrigation for the wheat is 40% and for the Rice is 15%. If the total water requirement of the two crops are 37.5 cm and 120 cm and their periods of growth are 160 days and 140 days respectively; determine the outlet discharge from the average demand consideration. Also determine the peak demand discharge assuming that kor water depth for two crops are 13.5 cm and 19 cm and their kor periods are 4 weeks and 2 weeks respectively. [8]
- Q7.** Explain briefly any two of the following: [6]
(a) Alluvial and non-alluvial channels
(b) Watershed canals
(c) Leaching