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ET-533(A)

B. TECH. CIVIL (WATER RESOURCE ENGINEERING) (BTWRE)

Term-End Examination

June, 2019

ET-533(A) : IRRIGATION ENGINEERING

Time : 3 Hours *Maximum Marks : 70*

Note : *Attempt any **five** questions. All questions carry equal marks. Use of scientific calculator is permitted. Assume any data suitably, if not given.*

1. (a) Write a note on irrigation water quality standards. Also discuss the quality variation based on source of water. 10

   (b) Salt concentration of a sample is measured as 10 milli mho/cm. Express this in ppm. 4

2. (a) Define Evapotranspiration. Draw a neat sketch showing variation of crop coefficient (Kc) with percentage growth of a plant and discuss it briefly. 7

(b) In an agricultural field, the double ring infiltrometer test provided the following results : 7

$t = 60$ minutes $f = 3.8$ cm

$t = 180$ minutes $f = 7.8$ cm

Evaluate the coefficients in Kostiakov equation.

3. (a) Explain drip irrigation method. Also discuss the advantages and disadvantages of this method. 7

(b) Discuss the various climatic zones of India. 7

4. (a) Discuss any ***one*** method to estimate the water requirement of a crop. Explain the term "Irrigation Scheduling". 7

(b) Derive the steady state drainage formula. Also, state assumptions made. 7

5. (a) Compare the advantages and disadvantages of sprinkler irrigation *vs.* surface irrigation methods. 7

(b) Discuss the criteria for the selection of pumps for irrigation. 7

6. Explain the four-corner method for the calculation of cut and fill volumes. 14

7. Write short notes on any *two* of the following : 7 each

   (a) Sardar Sarovar Rehabilitation Policy

   (b) Types of infiltrometers

   (c) Equipments used for land grading