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ET-533 (A)

B.Tech. CIVIL (WATER RESOURCES ENGINEERING)

01990

Term-End Examination

December, 2010

ET-533 (A) : IRRIGATION ENGINEERING

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any five questions. All questions carry equal marks. Support your answers with examples and neat diagrams, wherever necessary. Use of calculator is permitted. Assume appropriate data if not given. Graph sheet will be provided.*

1. Differentiate between any ***four*** of the following : **4x3½=14**
   (a) Rabi and Kharif Crops.
   (b) Leaching and Drainage.
   (c) Potential Evapotranspiration and Actual Evapotranspiration.
   (d) Salinity and Alkalinity of soils.
   (e) Discharge column and Discharge head.
   (f) Tube well and Canal irrigation.

2. (a) Define irrigation and explain its necessity in India. 7
   (b) The sprinkler system of irrigation is an excellent method. Discuss its characteristic, features, suitability and potential in India. 7

3. (a) What do you understand by crop rotation ? What are its advantages ? 7

(b) The following observations were made in a laboratory test on a soil sample. 7

wet weight = 960.30g, wet volume = 510.20cc, Over dried weight = 810. 32 g, G_s=2.7. Find the void Ratio degree of saturation and dry density. Also represent these quantities on a profile of air, water and solid

4. (a) Write a note on subsurface irrigation, stating clearly the conditions under which this method is suitable. 7

(b) Fit the Horton equation for the data given below and find its parameter. 7

time (hrs)	0	0.3	0.50	0.8	1.00	1.3	1.50	1.8	2.00
f (cm/hr)	10	5.8	3.2	2.2	1.5	1.2	1.1	1.0	1.0

5. (a) List the factors that affect the selection of equipment for land grading and excavation. 7

(b) Describe the function of a scraper and a grader. 2x3½=7

6. (a) Explain the various considerations in the selection of an irrigation pump. 7

(b) It is required to calculate the effective head and power of drive motor for a centrifugal pump to deliver a discharge of 100 lps from a sump to an overhead tank, from the following data. 7

(i) Difference of water levels in the sump and over head tank = 24.8 m

(ii) Suction lift = 2.8 m

(iii) Delivery head = 22.0 m

(iv) Head loss in suction pipe = 1.06 m

(v) Head loss in delivery pipe line = 5.41 m

(vi) Internal diameter of suction and delivery pipe = 250 mm

7. Write short notes on *any four* of the following : 4x3½=14

(a) Ill-effects of over irrigation.

(b) Excavation Equipment.

(c) Participatory Irrigation Water Management.

(d) On Farm Development.

(e) Contour Bunding.

(f) Irrigation efficiencies.