No. of Printed Pages : 4

ET-533(A)

00942

# B.Tech. Civil (Water Resources Engineering)

## Term-End Examination

## June, 2013

## ET-533(A) : IRRIGATION ENGINEERING

*Time : 3 Hours* *Maximum Marks : 70*

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

**1.** Define the following **7x2=14**

(a) Infiltration Capacity

(b) Sodium absorption ratio

(c) Environmental Impact Assessment(EIA)

(d) Drainage coefficient

(e) Excavation

(f) Evapotranspiration

(g) Aridity Index

**2.** (a) Explain the necessity of irrigation in a tropical country like India. How is this objective achieved? 7

(b) Name some of the important irrigation projects and multipurpose river valley projects undertaken or completed after Independence in India including salient features. 5

(c) Write a note on Sardar Sarovar Rehabilitation Policy. 2

3. (a) Write the factors affecting infiltration rate. Explain the methods for measurement of infilteration. 7

(b) Discuss the factors influencing effective rainfall. 3

(c) Write in short fertilizer response to irrigation. 4

4. (a) Write a detailed note on Furrow Irrigation and Corrugation Irrigation. 8

(b) Determine the system capacity for a sprinkler irrigation system to irrigate 16 hectares of maize crop. Design moisture use rate is 5mm/day. Moisture replaced in soil at each irrigation is 6 cm. Irrigation efficency is 70%. Irrigation period is 10 days in a 12 days interval. The system is to be operated for 20 hrs/day. 6

5. In an orchard, trees are planted at 5m interval, and it is estimated to have the canopy cover of 75%. The monthly average pan evaporation is 6.3mm/day. The pan coefficient and crop coefficient may be assumed as 0.70 and 1.15 respectively. If the coefficient of application uniformity is 90, determine the number of drippers required and the number of hours they have to be operated. Reduction factor, Kr for 75% GC=0.85. Water storage efficiency for sand soil, Ks=0.91. Assume orchard trees on sandy soil. **14**

6. (a) Draw a sketch of centrifugal pump, and label all its important parts. 7

   (b) Compare and contrast a turbine pump with reciprocating pump. 7

7. Write short notes on the following **4x3.5=14**

   (a) Phad system and wara bandi system

   (b) Land grader and land scrapers

   (c) Dragline and backhoe excavator

   (d) on farm development

8. Write short notes on the following **4x3.5=14**

(a) Salt concentration in irrigation waters and its effect on crop production.

(b) Usefulness of different infiltration indices.

(c) Contour benching.

(d) Gross Command Area and Culturable Command Area.