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BCE-061

DIPLOMA IN CIVIL ENGINEERING
DCLE(G)
Term-End Examination

00960

June, 2014

BCE-061 : IRRIGATION ENGINEERING

Time : 2 hours *Maximum Marks : 70*

Note : *Answer any **five** questions, including Question no. **1** which is **compulsory**. Draw labelled diagrams wherever necessary.*

1. (A) Select the correct option in the following questions : *7×1=7*

(a) Out of total rainfall of about 400 Mham, the portion that is lost to the atmosphere is nearly

(i) 70 Mham

(ii) 80 Mham

(iii) 90 Mham

(iv) 92 Mham

(b) The discharge measuring device with the largest range is

(i) V-notch

(ii) Weir

(iii) Nozzle

(iv) Parshall flume

(c) The ultimate irrigation potential of India is

(i) 22·61 Mha

(ii) 105·53 Mha

(iii) 140 Mha

(iv) 150·54 Mha

(d) Sugarcane is a

(i) Kharif crop

(ii) Rabi crop

(iii) Annual crop

(iv) Eight monthly crop

(e) Unit of duty is

(i) ha/cumec

(ii) cumec/ha

(iii) ha-m

(iv) m^3/s

(f) The SI unit of discharge is

(i) litre/second

(ii) cm^3/second

(iii) m^3/second

(iv) m^3/hour

(g) A cavity type tubewell draws water from

(i) sides

(ii) bottom

(iii) surface

(iv) ponds

(B) State True or False. $7 \times 1 = 7$

(i) The Puddling operation is related to potato crop.

(ii) For kharif jowar having delta as 40·87 cm, the duty will be 2600 cumec/ha.

(iii) In Indian context, a minor irrigation project is envisaged to cover area below 1000 ha.

(iv) The other name of Silt vane is King's vane.

(v) The open well is suitable for low discharge of 5 – 10 litres per second.

(vi) The design efficiency of a drip irrigation system should be of the order of 90 – 95 per cent.

(vii) SAR is the measure of sodium ions present in the soil.

2. (a) Name different types of rain gauges. Explain principle of working and construction of Symon's Rain gauge. 7

(b) What are the ill-effects of irrigation ? Suggest ways to mitigate these effects. 7

3. (a) Explain critical growth stages of cereals in relation to irrigation. 7

(b) Enlist names of different irrigation efficiencies and explain determination of any one of them. 7

4. (a) What are the different types of lining ? Explain steps of construction of any one of them. 7

(b) The branch 'A' of a canal carrying a discharge of 25 cumec has cultivable command area of 25,000 hectares. The intensity of Rabi crop is 80% and the base period is 118 days. The branch 'B' of the canal carrying discharge 12 cumec has cultivable command area of 15,000 hectares. The intensity of Rabi crop is 60% and the base period is 118 days. Compare the efficiencies of the two canal systems. 7

5. Write a comprehensive note on drip irrigation system. 14

6. Enlist names of various types of dams. Compare merits and demerits of any two types. 14

7. Write short notes on any ***four*** of the following : $4 \times 3\frac{1}{2} = 14$

(a) Major causes of water-logging

(b) Tile drainage

(c) Confined aquifer

(d) Barrage

(e) Fertigation

(f) Canal regulation