

**DIPLOMA IN CIVIL ENGINEERING
DCLE(G)**

Term-End Examination

00074

June, 2017

BCE-061 : IRRIGATION ENGINEERING

Time : 2 hours

Maximum Marks : 70

Note : *Question no. 1 is compulsory. Attempt any four questions from the remaining questions. Use of scientific calculator is permitted.*

1. Choose the correct answer from the given options. 7×2=14
- (a) Rice is the common crop of the following season :
- (i) Kharif
 - (ii) Rabi
 - (iii) Hot weather
 - (iv) Annual
- (b) The relation between Duty and Delta is
- (i) $\Delta = 8.64 \frac{D}{B}$
 - (ii) $\Delta = 8.64 \frac{B}{D}$
 - (iii) $\Delta = 8.64 BD$
 - (iv) None of these

(c) The relation among cross-sectional area (A), wetted perimeter (P) and hydraulic radius (R) is

(i) $R = AP$

(ii) $R = \frac{P}{A}$

(iii) $R = \frac{A}{P}$

(iv) $R = A + P$

(d) An artificial obstruction placed in a river or water course to increase the depth of water is known as

(i) Sluice

(ii) Canal Head Regulator

(iii) Cross Regulator

(iv) Barrage

(e) The flow velocity V is denoted by the relation

(i) $V = KI$

(ii) $V = \frac{K}{I}$

(iii) $V = \frac{I}{K}$

(iv) $V = I - K$

where V = discharge velocity, cm/sec.

K = coefficient of permeability, cm/sec.

I = hydraulic gradient.

(f) Low Sodium water has SAR value of

(i) 0 to 10

(ii) 10 to 18

(iii) 18 to 26

(iv) > 26

- (g) The unit of Drainage Coefficient (D.C.) is
- cm
 - day
 - hectare
 - None of these
2. (a) Why is irrigation necessary ? Give reasons. Enumerate the ill-effects of irrigation. 7
- (b) Explain the types of irrigation in detail. 7
3. (a) Write the base period (days) for the following crops : 3
- Kharif
 - Rabi
 - Sugarcane
- (b) The net amount of irrigation required for a field is 6.4 cm, if the field efficiency is 80%. What is the gross amount of water required to be applied in the field ? 3
- (c) Discuss the irrigation scheduling of Cotton, Jute, Sugarcane and Vegetables. 8
4. (a) Find out the capacity of the reservoir if its culturable area is 65,000 ha, from the following data : 10

Sl. No.	Type of Crop	Sugarcane	Wheat	Rice
1	B (days)	330	120	120
2	D (ha/cumec)	2200	1800	800
3	Intensity of irrigation as %	15	20	10

- (b) Write the difference between Gross Command Area (GCA) and Culturable Command Area (CCA). 4
5. (a) What are the methods of field water application? Explain each of them in detail. 8
- (b) Draw a neat sketch of the layout of an Irrigation Canal System and label the features. 6
6. (a) Classify the saturated zone and explain each of them in detail. 8
- (b) Explain the types of wells in brief. 4
- (c) Define the term Confined Aquifer. 2
7. (a) Write the various types of impurities which make water unsuitable for irrigation. 4
- (b) Discuss the effects and causes of waterlogging. 6
- (c) Define the term SAR and give the expression to calculate SAR. 4
8. Write the short notes on any *four* of the following : $4 \times 3 \frac{1}{2} = 14$
- (a) Canal Regulators
- (b) Canal Drops and Falls
- (c) Zone of Aeration
- (d) Drip Irrigation
- (e) Types of Dams
- (f) Types of Wells