

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

**Term-End Examination**

**June, 2018**

00033

**BCE-061 : IRRIGATION ENGINEERING**

*Time : 2 hours*

*Maximum Marks : 70*

---

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

---

1. Select the most appropriate answer from the given options.

7×2=14

(a) If the intensity of rain increases, the run-off

- (i) increases
- (ii) decreases
- (iii) remains constant
- (iv) None of these

(b) Canal escapes may be provided at intervals of \_\_\_\_\_ for main canal.

- (i) 10 to 15 km
- (ii) 15 to 20 km
- (iii) 20 to 25 km
- (iv) 25 to 30 km

- (c) Weir is a \_\_\_\_\_
- (i) Storage structure
  - (ii) Diversion structure
  - (iii) Outlet
  - (iv) Canal escape
- (d) Darcy's law is expressed as :
- (i)  $V = KI$
  - (ii)  $V = \frac{K}{I}$
  - (iii)  $V = K + I$
  - (iv)  $V = K - I$
- (e) The value of conductivity of High Conductivity Water, lies between \_\_\_\_\_
- (i) 250 to 750 micro mhos/cm
  - (ii) 750 to 2250 micro mhos/cm
  - (iii) Above 2250 micro mhos/cm
  - (iv) None of these
- (f) \_\_\_\_\_ is a saturated formation which not only stores water but yields it in sufficient quantity.
- (i) Aquiford
  - (ii) Aquifer
  - (iii) Aquifuge
  - (iv) Aquiclude
- (g) Rice is major crop of \_\_\_\_\_
- (i) Kharif season
  - (ii) Rabi season
  - (iii) Annual season
  - (iv) None of these

2. (a) Discuss non-recording and recording type rain gauges giving one example of each, with neat sketches. 7
- (b) If the rice requires about 12 cm depth of water at an interval of 10 days with the base period for rice being 120 days, find out the delta for rice. 3
- (c) Discuss what is meant by "Command Area" in detail. 4
3. (a) Draw a typical layout of an Irrigation Canal System. 4
- (b) Draw a neat sketch for canal structures for flow regulation and control. Describe them. 10
4. (a) Describe components and functions of a spillway. 4
- (b) Discuss in detail different sub-surface zones of water in the soil mantle. 10
5. (a) Calculate the discharge from an unconfined well of 0.20 m diameter, if the drawdown inside the well is 3 m and the saturated thickness of aquifer is 12 m. The permeability of the aquifer is 1.20 m/h and the radius of influence is 600 metres. 6
- (b) Explain well development in detail. 8

6. (a) Explain border strip method with a suitable example. 6
- (b) Discuss fertigation in detail with a suitable neat sketch. 8
7. Write short notes on any *four* of the following:  $4 \times 3 \frac{1}{2} = 14$
- (a) Classification of Water Based on Sodium Hazard
  - (b) Causes of Water Logging
  - (c) Types of Surface Drain
  - (d) Energy Dissipators
  - (e) Shotcrete Lining
  - (f) Perennial Irrigation System
-