

00498

Diploma in Civil Engineering DCLE(G)

Term-End Examination

June, 2013

BCE-061 : IRRIGATION ENGINEERING

Time : 2 hours

Maximum Marks : 70

Note : Q.1 is compulsory. Attempt any four questions from remaining questions. Use of scientific calculator is permitted.

1. (a) Which of the following is an automatic rain gauge ? 2x7=14
- (i) Symon's rain gauge
 - (ii) Weighing bucket gauge
 - (iii) Tipping bucket gauge
 - (iv) Syphongauge
- (b) Which of the following is a Kharif crop ?
- (i) Wheat
 - (ii) Barley
 - (iii) Grain
 - (iv) Rice

- (c) The flow area of a lined canal is 60m^2 and Hydraulic radius is 3m. The wetted perimeter will be :
- (i) 30m (ii) 20m
(iii) 10m (iv) 60m
- (d) The discharge of an open well is _____ than that of tube well
- (i) less (ii) more
(iii) equal (iv) Nothing can be said
- (e) If the area of a basin is 1000m^2 and net depth of irrigation is 0.5m, then the volume of water required is :
- (i) 1000m^3 (ii) 500m^3
(iii) 200m^3 (iv) 100m^3
- (f) Which of the following is not the micro irrigation method ?
- (i) Sprinkler irrigation
(ii) Drip irrigation
(iii) Border irrigation
(iv) None of the above
- (g) The pH value of the Sodic soil is :
- (i) < 8.5 (ii) $8.5-10.0$
(iii) > 10 (iv) > 12

2. (a) What are the methods of stream gauging ? 7
Explain any two in detail.
- (b) Find out the capacity of the reservoir if its 7
culturable area is 60,000ha from the
following data :

| S.No. | Types of Crop | Sugar cane | Wheat | Rice |
|-------|---------------|---------------|-------|------|
| 1 | B (days) | 320 | 120 | 120 |
| 2 | DCha/Cumecs | 2000 | 1500 | 1000 |
| 3 | Intensity (%) | 15 | 20 | 10 |

3. (a) Differentiate between : 7
- (i) Flow and lift irrigation
- (ii) Inundation and Perennial irrigation
- (b) Design a triangular lined canal to carry a 7
discharge of $60\text{m}^3/\text{sec}$. Take bed slope 1 in
8000, $n = 0.015$ and side slope as 45° .
4. (a) Differentiate between : 7
- (i) Aqueduct and Siphon aqueduct
- (ii) Level crossing and Inlet-Outlet
structures
- (b) What is a spillway ? Write the functions of 7
energy dissipators.

5. (a) Differentiate between a shallow well and a deep well. Calculate the discharge from an unconfined well of 0.30m diameter, if the draw-down inside the well is 3m and saturated thickness of aquifer is 15m. The permeability of aquifer is 1.5m/hr and radius of influence is 600m. 7
- (b) What are the methods of drilling a well ? Explain any one in detail. 7
6. (a) Explain the border strip method with a suitable example. 7
- (b) Discuss check basin irrigation. Explain its advantages. 7
7. (a) What are the effects and causes of water lagging ? Explain any one remedial measure. 7
- (b) What is a tile drain ? Explain how depth and spacing of tile drains are decided. 7

