No. of Printed Pages : 4

BCE-061

DIPLOMA IN CIVIL ENGINEERING
DCLE(G)

Term-End Examination

00680

June, 2016

BCE-061 : IRRIGATION ENGINEERING

Time : 2 hours *Maximum Marks : 70*

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

1. Select the correct answer from the following : *7×2=14*

(a) If the depth of water is 8·64 cm on a field over a base period of 10 days, then the duty is

(i) 10 ha/cumec/sec

(ii) 100 ha/cumec/sec

(iii) 864 ha/cumec/sec

(iv) 1000 ha/cumec/sec

(b) Lysimeter and Tensiometer are used to measure, respectively, one of the following groups of quantities :

(i) Capillary potential and Permeability

(ii) Evapotranspiration and Capillary potential

(iii) Velocity in channels and Vapour pressure

(iv) Velocity in pipes and Pressure head

(c) In Lacey's regime theory, the velocity of flow is proportional to

(i) Qf^2

(ii) Q/f^2

(iii) $(Qf^2)^{1/6}$

(iv) $(Q/f^2)^{1/6}$

(d) For Delta (Δ) in cm, Duty (D) in ha/cumec and Base period (B) in days are related as

(i) $\Delta = 864\ B/D$

(ii) $B = 864\ D/\Delta$

(iii) $B = 864\ \Delta/D$

(iv) $D = 8{\cdot}64\ B/\Delta$

(e) For medium silt, where average grain size is 0·16 mm, Lacey's silt factor is likely to be

(i) 0·30

(ii) 0·45

(iii) 0·70

(iv) 1·32

(f) A tube-well having a capacity of 4 m^3/hr operates for 20 hours each day during the irrigation season. How much area can be commanded, if the irrigation interval is 20 days and depth of irrigation is 7 cm ?

(i) $1{\cdot}71 \times 10^4\ m^2$

(ii) $1{\cdot}14 \times 10^4\ m^2$

(iii) $22{\cdot}9 \times 10^4\ m^2$

(iv) $2{\cdot}29 \times 10^4\ m^2$

(g) Acidic soils are reclaimed by

(i) leaching of the soil

(ii) using limestone as a soil amendment

(iii) using gypsum as a soil amendment

(iv) provision of drainage

2. (a) Define run-off. Also discuss the various factors affecting run-off. 7

(b) Explain the various types of irrigation, with a flow chart. 7

3. (a) Explain unconfined and confined aquifers, with the help of neat sketches. 7

(b) Discuss the advantages and disadvantages of lift irrigation over flow irrigation. 7

4. (a) Discuss the drawbacks of Kennedy's and Lacey's silt theories. 6

(b) Write short note on the following : 2×4=8

(i) Weir

(ii) Barrage

5. (a) Write a note on the classification of canals according to their alignment. 6

(b) What is the necessity for providing canal lining ? Discuss the various advantages and disadvantages of lining a canal. 8

6. (a) Write short notes on the following : 6

(i) Non-modular outlet

(ii) Flexible module outlet

(iii) Rigid modular outlet

(b) What is meant by canal regulatory work ? Explain any two canal regulatory works in brief. 8

7. (a) Discuss the various causes of failures of earth dams, with neat sketches. 7

(b) Explain, in brief, well shrouding and well development. 7