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BCE-061

DIPLOMA IN CIVIL ENGINEERING
DCLE(G)

Term-End Examination

00253 **December, 2016**

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. *7×2=14*

(a) Dicken's Formula can be expressed as

(i) $Q_p = CA^{3/4}$

(ii) $Q_p = CA^{1/2}$

(iii) $Q_p = CA^2$

(iv) None of the above

(b) When water is supplied from higher level to lower level by the action of gravity, then it is called

(i) Lift Irrigation

(ii) Flood Irrigation

(iii) Perennial Irrigation

(iv) Flow Irrigation

(c) Wheat is a common crop of the following season :

(i) Kharif

(ii) Hot weather

(iii) Rabi

(iv) Annual

(d) Unit of Duty D is

(i) Hectares/Cumec

(ii) Days

(iii) Metre

(iv) Cumec

(e) Clay is an example of

(i) Aquifer

(ii) Aquitard

(iii) Aquiclude

(iv) Aquifuge

(f) The process of application of water soluble solid fertilizer or liquid fertilizers through drip irrigation system is known as

(i) Furrow

(ii) Border

(iii) Check Basin

(iv) Fertigation

(g) The total area lying between drainage boundaries which can be irrigated by a canal system is known as

(i) CCA

(ii) ICA

(iii) GCA

(iv) None of these

2. (a) Explain the term Irrigation in brief. *2*

(b) Discuss the factors affecting run-off *4*

(c) A drainage basin having an area of 10,000 sq.m. is located in the North Indian plains. Estimate the maximum flood discharge from the basin. *3*

(d) Explain the construction of Symon's Rain Gauge with the help of a neat sketch. *5*

3. (a) What are the functions of Irrigation water ? Write the factors on which the total water requirements of a crop depends. *8*

(b) Write the differences between Net Irrigation Requirement and Gross Irrigation Requirement with required expression. *6*

4. (a) Discuss irrigation scheduling of Rice, Pulses, Wheat and Sugarcane in detail. *10*

(b) If the rice requires about 12 cm depth of water at an interval of 10 days and the base period for rice is 120 days, find out the delta for rice. *4*

5. (a) Describe with neat sketches, the direct and storage irrigation schemes. *10*

(b) Discuss the various types of lining. *4*

6. Draw a neat sketch of Canal Structures for Flow Regulation and Control. Explain the following terms in brief : *14*

(a) Drops

(b) Cross regulators

(c) Distributary head regulator

(d) Escapes

7. (a) An irrigation stream of 27 litres per second is diverted to a check basin of size 12 m × 10 m. The water holding capacity of the soil is 14%. The average soil moisture in the crop root zone prior to applying water is 6·5%. How long should the irrigation stream be applied to the basin to replenish the root zone moisture to its field capacity, assuming no loss to deep percolation ? The average depth of the crop root zone is 1·2 m. The apparent specific gravity of the root zone soil is 1·5. *12*

(b) Explain the Furrow Irrigation in brief. *2*

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

(a) Causes of Waterlogging

(b) Types of Surface Drain

(c) Drip Irrigation

(d) Types of Wells

(e) Canal Components

(f) Classification of Irrigation Projects