

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

00591

Term-End Examination

December, 2015

BCE-061 : IRRIGATION ENGINEERING

Time : 2 hours

Maximum Marks : 70

Note : Answer any **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. Choose the correct answer from the following : 7×2=14

(a) Given that the base period is 100 days and the duty of the canal is 1000 ha/cumec, the depth of water will be

- (i) 0.864 cm
- (ii) 8.64 cm
- (iii) 86.4 cm
- (iv) 864 cm

- (b) The most economical method of soil conservation is to
- (i) Construct check dams
 - (ii) Construct contour bunds
 - (iii) Drain the soil
 - (iv) Afforest the area
- (c) For medium silt whose average grain size is 0.16 mm, the Lacey's silt factor is likely to be
- (i) 0.30
 - (ii) 0.45
 - (iii) 0.70
 - (iv) 1.32
- (d) A check dam is
- (i) Flood control structure
 - (ii) Soil conservation structure
 - (iii) River training structure
 - (iv) Water storage structure
- (e) The delta for a crop having base period 120 days is 70 cm. What is the duty ?
- (i) 2480 ha/cumec
 - (ii) 1481 ha/cumec
 - (iii) 148 ha/cumec
 - (iv) 1.481 ha/cumec

(f) What type of cross drainage work is provided when the canal runs below the drain, with FSL of canal well below the bed of the drain ?

- (i) Aqueduct
- (ii) Super passage
- (iii) Level crossing
- (iv) Siphon aqueduct

(g) A submerged pipe outlet is an example of

- (i) Semi-modular outlet
- (ii) Non-modular outlet
- (iii) Rigid module
- (iv) Adjustable proportional module

2. (a) Write a note on the development irrigation in India. 7

(b) Write short notes on the following : $2 \times 3 \frac{1}{2} = 7$

- (i) Gross command area
- (ii) Cultivable command area

3. (a) Draw a neat sketch of cross-section of an irrigation canal, with illustrations. 7

(b) Write a note on different parts of irrigation canal, mentioning their functions too. 7

4. (a) Define duty and delta. Mention the factors affecting duty. Also write a note on the method of improving duty. 6
- (b) Write short notes on the following : $4 \times 2 = 8$
- (i) Canal falls
 - (ii) Energy dissipator
 - (iii) Escape
 - (iv) Aqueduct
5. (a) Draw a neat sketch of cross-section of a gravity dam, with illustration. 6
- (b) Discuss the ill-effects of water-logging, in regard to irrigation. Also mention some suggestions for prevention of water-logging. 8
6. (a) Write a note on ogee spillway. 7
- (b) Explain the application of Lacey's theory for channel design. 7
7. (a) Write a note on tube-well irrigation and its utility in an agriculture-based economy, like India. Also discuss its advantages and disadvantages. 8
- (b) Write short notes on the following : $2 \times 3 = 6$
- (i) Radius of influence
 - (ii) Depression head
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