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BCE-061

DIPLOMA IN CIVIL ENGINEERING
DCLE(G)
Term-End Examination
June, 2015

00713

BCE-061 : IRRIGATION ENGINEERING

Time : 2 hours *Maximum Marks : 70*

Note : *Question number **1** is **compulsory**. Attempt any **four** more questions from the remaining questions.*

1. Select the most appropriate answer from the given options. *14×1=14*

(a) South-west monsoon contributes about _____ rainfall in India.

(i) 72%

(ii) 74%

(iii) 76%

(iv) 78%

(b) Formula for calculating discharge from a Cipoletti weir is

(i) $0{\cdot}0138\ H^{5/2}$

(ii) $0{\cdot}0186\ LH^{3/2}$

(iii) $0{\cdot}0138\ H^{3/2}$

(iv) $0{\cdot}0184\ LH^{3/2}$

(c) Which of the following is ***not*** a method of canal lining ?

(i) Concrete

(ii) Shot concrete

(iii) RCC

(iv) Brick

(d) Which of the following is ***not*** a hydraulic structure ?

(i) Distributary head regulator

(ii) Escapes

(iii) Cross regulators

(iv) Grass waterways

(e) Which one of the following is ***not*** a component of fertigation system ?

(i) Venturi pump

(ii) V-notch

(iii) Pressure by-pass tank

(iv) Injection pump

(f) Unit of delta is

(i) cm

(ii) ha

(iii) cumec

(iv) cusec

(g) The salinity of water for irrigation purpose is measured by

(i) SAR value

(ii) pH value

(iii) Electrical conductivity

(iv) None of the above

(h) If the water applied to a field penetrates uniformly throughout, then the deviation from the mean depth is

(i) Zero

(ii) 1·0

(iii) 0·5

(iv) 1·5

(i) The confined aquifer is also known as

(i) artificial aquifer

(ii) gravity aquifer

(iii) Both (i) and (ii)

(iv) None of the above

(j) The structural efficiency of a gravity dam is _____ that of an arch dam.

(i) more than

(ii) less than

(iii) equal to

(iv) not comparable with

(k) The maximum flood discharge given by Ryves formula is $Q = CA^n$, where n is

(i) 1/2

(ii) 3/4

(iii) 2/3

(iv) 4/3

(l) The Symon's rain gauge is

(i) recording type

(ii) non-recording type

(iii) automatic

(iv) continuous

(m) Base period is the duration between presowing irrigation to

(i) crop maturity

(ii) crop harvesting

(iii) crop germination

(iv) last watering

(n) Lacey's formula is

(i) $f = 0{\cdot}76\sqrt{m}$

(ii) $f = 1{\cdot}76\sqrt{m}$

(iii) $f = 1{\cdot}67\sqrt{m}$

(iv) $f = 1{\cdot}86\sqrt{m}$

2. (a) Differentiate between the functioning of recording and non-recording rain gauges. *7*

(b) Distinguish between surface and sub-surface irrigation. *7*

3. Find out the capacity of the reservoir, if its culturable area is 65,000 ha, from the following data : *14*

Sr. No.	Type of crop	Sugarcane	Wheat	Rice
1.	B in days	330	120	120
2.	D in ha/cumec	2200	1800	800
3.	Intensity of irrigation	15%	20%	10%

4. (a) Describe in detail with a neat sketch the Direct Irrigation method. 7

(b) Enumerate the various types of linings. Explain the construction of cement concrete lining. 7

5. (a) What are the different types of concrete dams ? Explain any one of them with a neat sketch. 7

(b) Differentiate between trough and barrel type aqueducts with sketches. 7

6. (a) Define aquifer, aquitard, aquiclude and aquifuge. 7

(b) 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 the aquifer is 12 m. The permeability of the aquifer is 1·2 m/h and the radius of influence is 600 metres. 7

7. (a) Discuss the factors affecting the selection of irrigation system. 7

(b) Furrows 90 m long and spaced 75 cm apart are irrigated by an initial furrow stream of two litres per second. The initial furrow stream reached the lower end of the field in 50 minutes. The size of the stream was then reduced to 0·5 litres per second. The cut back stream continued for 1 hr. Estimate the average depth of irrigation. 7

8. Discuss the effects and causes of water logging. What are the remedial measures of water logging ? 14