

DIPLOMA IN CIVIL ENGINEERING (DCLEVI)

Term-End Examination

June, 2016

00386

BICEE-008 : IRRIGATION ENGINEERING

Time : 2 hours

Maximum Marks : 70

Note : Attempt five questions in all. Question no. 1 is compulsory. Assume missing data, if any. All questions carry equal marks. Use of scientific calculator is allowed.

1. Write True or False for the following : 7×2=14

- (a) The value of C will be more for hilly catchments as compared to plain areas even for the same region in Dicken's formula.
- (b) Self recording gauges are used to determine the rainfall over long periods of time.
- (c) Rice is a common crop in Rabi season.
- (d) The silt factor f is correlated approximately to the silt grade m (in mm) by the relation
$$f = \frac{1.76}{\sqrt{m}}$$
- (e) If canal passes below the trough as a pressure flow, then it is termed as a syphon or a canal syphon.

- (f) An aquifer is a saturated formation of earth material, which not only stores water but yields it in sufficient quantity.
- (g) Fertigation is the process of application of water soluble solid fertilizers or liquid fertilizers through drip irrigation system .
2. (a) Define irrigation, rainfall and runoff. 6
- (b) Discuss the factors affecting the runoff. 8
3. (a) Discuss one non-recording and one recording type rain gauge with suitable neat sketches of each. 8
- (b) A drainage basin having an area of 10,000 sq km is located in North Indian plains. Estimate the maximum flood discharge from basin. 6
4. Find out the capacity of the reservoir, if its culturable area is 65,000 ha, from the following data : 14

S. No.		<i>Type of Crop</i>		
		<i>Sugarcane</i>	<i>Wheat</i>	<i>Rice</i>
1.	B in days	330	120	120
2.	D in ha/cumec	2200	1800	800
3.	Intensity of irrigation as %	15	20	10

5. (a) What do you understand by the lining of canals ? Enumerate the various types of linings. 6
- (b) Design a trapezoidal lined canal to carry a discharge of 120 cumecs. The velocity of flow may be taken as 2 m/s. Take the side slope as 1 : 1. Assume $n = 0.018$ and bed slope as 1 in 3000. 8
6. (a) What are the functions of canal outlets ? What are the requirements of a good outlet ? 6
- (b) Describe the various types of cross-drainage works on a canal. Under what condition is each type most suitable ? 8
7. (a) Discuss Cavity type and Strainer type tube wells. 6
- (b) Calculate the discharge from a fully penetrating confined well of 300 mm diameter, if the thickness of aquifer is 20 m, drawdown is 5 m, permeability of aquifer is 20 mm/min and the the radius of influence is 450 metres. 8
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