

	ADAMAS UNIVERSITY END (EVEN) SEMESTER EXAMINATION : MAY 2021 (Academic Session: 2020 – 21)		
Name of the Program:	B.Tech - Civil Engineering	Semester:	IV
Paper Title :	WATER RESOURCE ENGINEERING	Paper Code:	ECE42108
Maximum Marks :	40	Time duration:	3 Hrs
Total No of questions:	9	Total No of Pages:	2
(Any other information for the student may be mentioned here)	<ol style="list-style-type: none"> 1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. 2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. 3. Assumptions made if any, should be stated clearly at the beginning of your answer. 		

Answer all the Groups

Group A

(Answer all the questions)

$$5 \times 1 = 5$$

1.
 - a) Define irrigation engineering from an engineer's point of view.
 - b) What do you understand by the term hygroscopic water?
 - c) What are the different zones of ground water?
 - d) What is the significance of soil salinity?
 - e) Define canal fall.

Group B

(Answer any three questions)

$$3 \times 5 = 15$$

2. Compare Sprinkler and Drip irrigation.
3. Define field irrigation requirement. What are the various ways of determining the efficiency of irrigation? (1+4)
4. Explain the various types of saturated geological formation giving an example for each type.
5. Define water logging. Explain its various effects on the irrigation field. (1+4)
6. Explain the different storage zones of a reservoir with the help of a neat and clean diagram.

Group C

(Answer any two questions)

$$2 \times 10 = 20$$

7. Derive Thiem's equilibrium equation for unconfined aquifer with the help of a neat diagram. Also, mention the various assumptions made in deriving the equation. (7+3)
8. What is evapotranspiration? After how many days will you supply water to soil in order to ensure sufficient irrigation to the crop, if

- i. Field capacity of the soil = 27 %
- ii. Permanent Wilting point = 12%
- iii. Dry density of soil = 1.33 gm/cc
- iv. Effective depth of root zone = 700 mm
- v. Daily consumptive use of the crop = 1.2 cm

Assume any other relevant data.

(2 + 8)

- 9. i) Design an irrigation channel to carry 50 cumecs of discharge. The channel is to be laid at a slope of 1 in 4000. The critical velocity ratio for the slope is 1.1. Use Kutter's rugosity coefficient (n) as 0.023. (5)
- ii) Design a regime channel for a discharge of 55 cumec and silt factor 1.1 using Lacey's theory. (5)