ADAMAS UNIVERSITY PURSUE EXCELLENCE	**ADAMAS UNIVERSITY** **END (EVEN) SEMESTER EXAMINATION : MAY 2021** (Academic Session: 2020 – 21)		
Name of the Program:	B.Tech - Civil Engineering	**Semester:**	VI
Paper Title :	WATER RESOURCE ENGINEERING - I	**Paper Code:**	ECE43106
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)	**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.
   b) Name the two major crop seasons.
   c) Define artesian well.
   d) What do you understand by hygroscopic water?
   e) What is crop rotation?

Group B

(Answer any three questions)

$3 \times 5 = 15$

2. Compare Sprinkler and Drip irrigation.
3. Explain the rainfall- runoff process with the help of a diagram.
4. Define Duty. Derive the relation between duty, delta and base period. (1+4)
5. Explain the various saturated geological formations.
6. A 30 cm diameter well penetrates 25 m below the static water table. After 24 hours of pumping @ 5400 litres/minute, the water level in the test well at 90 m is lowered by 0. 53 m, and in a well 30 m away the drawdown is 1.11 m. Determine the drawdown in the main well.

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 you will supply water to soil in order to ensure sufficient irrigation of the crop, if

i. Field capacity of the soil = 28%
ii. Permanent Wilting Point = 13%
iii. Dry density of soil = 1.3 gm/cm^3
iv. Effective depth of root zone = 70 cm
v. Daily consumptive use of water for the given crop = 12 mm

Assume any other data, not given. (2+8)

9. What is 'Unit Hydrograph'? The ordinates of 6 hr unit hydrograph are as under:

Time (from the begining of rainfall) in hours	Ordinate of the Unit Hydrograph in cumecs
0	0
6	20
12	50
18	150
24	120
30	90
36	70
42	50
48	30
54	20
60	10
66	0

If two storms, each of unit rainfall excess in 6 hours duration, reach the catchment in succession, then draw the hydrograph resulting from these two storms. The stream may be assumed to have a uniform base flow of 2 cumecs. (2+8)