A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 96A01

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2025

Sixth semester

Agriculture Engineering

19UAG601- HYDROLOGY AND WATER RESOURCES ENGINEERING

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. A 6 hour storm had 6cm of rainfall and the resulting runoff was 3 cm.if the φ-index remains at the same value the runoff due to 12 cm rainfall in 9 hour in the catchment is CO2- App

   (a) 7.5cm (b) 9cm (c) 4.5cm (d) 6.5cm

2. Isohyets are the imaginary lines joining the points of equal CO1- U

   (a) Pressure (b) Height (c) Humidity (d) Rainfall

3. The runoff can be described as part of the water cycle that CO1- U

   (a) Is absorbed into the ground (b) Is discarded

   (c) Evaporates (d) Flows over land as surface water

4. The observed annual runoff from a basin of area 500Km^2 is 150Mm^3 and the corresponding annual rainfall over the basin during the same year is 750mm.what is the runoff coefficient? CO2- App

   (a) 0.67 (b)0.4 (c)0.2 (d) 0.3

5. Which of the following equation is used in hydrological flood routing? CO1- U

   a)energy equation b)continuity equation c)equation of motion d)both a and c

6. Ryve's formula for flood estimate in cumecs, is CO1- U

   (a) $Q=CA^{3/4}$ (B) $Q=CA^{2/3}$ (C) $Q=CA^{1/2}$ (d) $Q=CA^{1/4}$

7. The major resisting force in a gravity dam is CO1- U

   (a) water pressure (b) wave pressure (c) self-weight of dam (d) uplift pressure

8. Which of the following spillways is least suitable for an earthen dam? CO1- U

(a) ogee spillway (b) chute spillway (c) side channel spillway (d) shaft spillway

9. The net water balance equation can be written as CO1- R

(a) P-Q-E-T-G = ΔS (b) P-Q+E+T-G= ΔS (c) Q- P-E+T-G = ΔS (d) P+Q+E+T+G = ΔS

10 The boundary between the saturated zone and the unsaturated zone is called the CO1- R

(a) water table (b) Aquifer (c) Aquiclude (d) porosity

PART – B (5 x 2= 10 Marks)

11 How the precipitation can be measured? CO1- U

12 Define Effective Rainfall. CO1- U

13 List the structural flood control methods. CO1- U

14 What is the difference between weir and barrage? CO1- U

15 What is rainwater harvesting? CO1- U

PART – C (5 x 16= 80 Marks)

16 . (a) A Storm with 10cm of precipitation produced a direct runoff of 5.8 cm.The duration of the rainfall was 16 hours and its time distribution is given below CO2- App (16)

Time from start(h)	0	2	4	6	8	10	12	14	16
Cumulate rainfall(cm)	0	0.4	1.3	2.8	5.1	6.9	8.5	9.5	10

Estimate the φ-index of the storm.

Or

(b) Describe the working principle of a recording type rain gauge with neat sketch, Mentioning its advantages and disadvantages. CO1- App (16)

17 (a) Explain in detail about factors affecting runoff hydrograph method. CO1- U (16)

Or

(b) Elaborate components of hydrograph also explain in detail about the characteristics of streams CO1- U (16)

18 (a) List the societal impacts of drought and also explain the Factors Aggravating Drought Impacts CO1- U (16)

Or

	(b)	List out the structures methods of flood control explain in detail any one of the method	CO1- U	(16)
19	(a)	Explain in detail about classification of reservoirs.	CO1- U	(16)

Or

	(b)	Elaborate in detail about reservoir sedimentation control.	CO1- U	(16)
20	(a)	Elaborate on the importance of GW and its historical background.	CO1- U	(16)

Or

	(b)	Elaborate on rain water harvesting. With neat sketch the explain the rain water harvesting in school buildings.	CO1- U	(16)