Q.P. Code: 19AG0721

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Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech IV Year I Semester Regular Examinations November/December-2022
IRRIGATION & DRAINAGE ENGINEERING
(Agricultural Engineering)

Time: 3 hours   Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

1	a	Define the following: (i) Saturation capacity (ii) Field capacity (iii) Permanent wilting point (PWP) (iv) Moisture equivalent (v) Gross irrigated area (GIA).	L1 6M
	b	Find the duty of water if a crop requires a total depth of 920 mm of water for a base period of 120 days.	L2 6M

OR

2	a	What are the prospective irrigation developments and explain in detail?	L2 6M
	b	An irrigation canal has gross commanded area of 80,000 hectares. Out of which 85% is culturable irrigable. The intensity of irrigation for Kharif season is 30% and for Rabi season is 60%. Find the discharge required at the head of canal if the duty at its head is 800 hectare/cumec for Kharif and 1,700 hectare/cumec for Rabi season.	L3 6M

UNIT-II

3	a	Define Irrigation and classify irrigation methods.	L1 6M
	b	A twenty hectare area has medium texture loam soil grown with Wheat crop peak. Daily water use of wheat crop is 6.2 mm day^{-1}. The available soil moisture ($\theta FC - \theta WP$) is 120 mm m^{-1}. The allowable soil moisture depletion is 50%. The crop root zone depth (DRZ) is 0.8 m. Soil infiltration rate is 6 mm/ hr and using application efficiency of 75% of sprinkler irrigation. Determine the maximum net depth of water application, irrigation frequency and gross depth of water application.	L2 6M

OR

4	a	Explain briefly the components of sprinkler irrigation system with neat sketch.	L4 6M
	b	Define Drip irrigation. Explain its suitability, advantages and disadvantages.	L5 6M

UNIT-III

5	a	Explain the factors influencing the effective fertigation.	L1 6M
	b	Write short note on maintenance of Micro irrigation system.	L2 6M

OR

6	a	Define filters and briefly explain about types of filters.	L3	6M
	b	Briefly explain the pressure differential fertigation method.	L5	6M

UNIT-IV

7	a	Define (i) Bio drainage (ii) Vertical drainage system (iii) Drainage Coefficient (v) Mole drainage system.	L1	6M
	b	Define subsurface drainage and write the specific benefits of sub surface Drainage.	L2	6M

OR

8	a	Explain in detail the reclamation of saline and alkaline soils?	L3	6M
	b	Derive Hooghoudt equation with neat diagram.	L4	6M

UNIT-V

9	a	Explain briefly about determination of hydraulic conductivity in laboratory.	L2	6M
	b	Explain manning's equation and its application.	L3	6M

OR

10	a	Briefly explain about indices used in economic evaluation of drainage system.	L4	6M
	b	Explain about the unsteady state equation in pipe flow.	L5	6M

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