O.P.Code: 20AG0706	R20	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. III Year I Semester Regular & Supplementary Examinations February-2024
SOIL AND WATER CONSERVATION ENGINEERING
(Agricultural Engineering)

Time: 3 Hours **Max. Marks: 60**

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

UNIT-I

1	a	List out the agents causing soil erosion and explain pipe erosion.	CO1	L1	6M
	b	Compute the annual soil loss from the continuous fallow field tilled up and down the slope using USLE. Values of the other factors of USLE are as follows: Rainfall factor R = 500 ,Soil Erodibility factor K = 0.15 , LS factor = 0.50 and C and P factor =1.Also compute the soil loss from the above field when it is cultivated on contour with maize crop and assume value of crop management factor C = 0.6 and conservation factor P = 0.5	CO1	L3	6M
		OR			
2		Briefly explain the each parameters of USLE.	CO2	L2	12M

UNIT-II

3	a	Write briefly about hydrological soil groups.	CO2	L2	6M
	b	Explain agronomical measure to control erosion.	CO2	L2	6M
		OR			
4	a	Write a short note on Antecedent Moisture Condition (AMC).	CO2	L2	6M
	b	Explain different methods of estimation of peak rate of runoff in brief.	CO2	L2	6M

UNIT-III

5	a	Design a contour bund for the following specific conditions given below: The area of the field is 1200 m x 50 m having uniform slope of 3% in length wise direction. The soil type is sandy loam having medium to high infiltration rates. The soil cover is moderate during rainy season. The average annual rainfall of the region is 850 mm and one day maximum excess rainfall for 10 years recurrence interval is 900 mm. Take X=0.6 and Y = 1.5, As per soil conditions (sandy loamy soil), consider 2:1 and 5:1 as upstream and downstream slopes respectively.	CO3	L3	10M
	b	Differenciate narrow base bund and broad base contour bund.	CO3	L2	2M
		OR			
6	a	Discuss types of bench terraces with neat diagram.	CO3	L2	6M
	b	Explain the adaptability conditions of different types of bench terraces.	CO3	L2	6M

UNIT-IV

7	a	Design a grassed waterway of parabolic shape to carry a flow of 2.6 m^3/s down a slope of 3 percent. The waterway has a good stand of grass and a velocity of 1.8 m/s can be allowed. Assume the value of n in Manning's formula as 0.04.	CO4	L3	6M
	b	Define sedimentation and various sources of sediment in brief.	CO4	L1	6M
		OR			
8	a	Explain pre and post sedimentation control methods.	CO4	L2	10M
	b	Write a short note on toposheet.	CO4	L2	2M

UNIT-V

9	a	Write short note on gabion structure, Froud number and piping and freeboard.	CO6	L2	6M
	b	List the types of farm pond and describe embankment type farm pond	CO5	L1	6M
		OR			
10	a	lassify the gully control structures and explain temporary structures	CO6	L2	10M
	b	Write down the Uses of Drop Structures	CO6	L2	2M

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