Code No: R1931352 **R19** SET - 1

III B. Tech I Semester Supplementary Examinations, DEC/JAN -2022/2023
SOIL AND WATER CONSERVATION ENGINEERING
(**Agricultural Engineering**)

Time: 3 hours Max. Marks: 75

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks
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UNIT-I

1 a) What is land capability classification? Write the importance of land capability classification in terms of land use planning [8M]

b) Explain about methods of computation of runoff? [7M]

(OR)

2 a) Determine the peak runoff rate for a return period of 25 years to design a gully control structure in a catchment area of 10 km^2 [8M]
The maximum depth of rainfall during 25 years return period is as fallows

Rainfall duration (min)	5	10	20	30	40	50	60
Rainfalldepth (mm)	20	25	40	70	85	100	115

Assume slope of catchment as 0.5% average runoff coefficient of catchment is 0.45 and longest length of water course is 1000m.

b) Write down the factors affecting runoff? [7M]

UNIT-II

3 a) List out types of erosion and explain the factors influencing water erosion? [8M]

b) Explain different gully development stages and give classification of gullies? [7M]

(OR)

4 a) Compute the annual soil loss from the continuous fallow field tilled up and down the slope using USLE The values of the other factors of USLE are as fallows [8M]
Rainfall factor R= 500
Soil erodability factor k= 0.19
Topographic factor LS= 0.2
Also compute the soil loss from the above field when it is cultivated on contour with maize crop and assume the value of crop management factor C= 0.6 and p= 0.5

b) Explain different agronomical measures for controlling soil erosion? [7M]

UNIT-III

5. a) How to control the wind erosion by strip cropping and stubble mulching? [8M]

b) Explain about mechanics of wind erosion [7M]

(OR)

6 a) What is wind erosion and the favorable conditions for wind erosion? [8M]

b) Explain about wind brakes and shelter brakes. [7M]

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UNIT-IV

7	a)	Design contour bund on a land surface with loamy soil and slope of 3%. The maximum expected rainfall based on a 10-year recurrence interval is 10 cm of which about 40% is lost to abstraction. The horizontal spacing between bunds is 60 m. assume the slope of the seepage line in the type of soil to be 4:1.	[8M]
	b)	Describe contour trenching and explain graded and staggered trenches?	[7M]
		(OR)	
8	a)	Determine the width of bench terrace in an area with 20% slope, under the following conditions; i) Level terrace, where the depth of cut is 60 cm ii) Outward sloping terrace, where the outward slope of the bench is 0.5% and the depth of the cut is 0.6 m iii) Inward sloping terrace, where the inward slope of the bench is 0.2% and the depth of the cut is 0.6 m.	[8M]
	b)	Explain different types of terraces with neat figures	[7M]

UNIT-V

9	a)	Design a grassed water way of trapezoidal cross section which is to be constructed as an outlet for flow from a graded bund system. The expected run of is 4 cubic meter per sec. Grade to be used (S) = 0.3%, Manning's co-efficient = 0.04. Side slope = 2:1. Assume a trail value of bottom width of water way as b=2m.	[8M]
	b)	Explain about different types of farm ponds?	[7M]
		(OR)	
10	a)	Write down about different types of vegetative water ways based on shapes.	[8M]
	b)	Write down about brush wood dams and wire mesh dams.	[7M]