R18

Subject with Code: Soil and Water Conservation Engineering (18AG0730)   **Course & Branch**: B.Tech - AGE

Regulation: R18   **Year & Sem:** IV-B.Tech & I-Sem

UNIT –I

1	a	Define soil erosion	[L1][CO1]	**[2M]**
	b	List soil and water conservation training and research institute in India	[L1][CO1]	**[2M]**
	c	Write Universal Soil Loss Equation (USLE)	[L1][CO1]	**[2M]**
	d	What are the agents causing soil erosion	[L1][CO1]	**[2M]**
	e	Write down the gully development stages	[L1][CO1]	**[2M]**
2		What are the types of erosion and effects of soil erosion in agricultural land	[L1][CO1]	**[10M]**
3		Briefly explain the factors affecting erosion	[L2][CO1]	**[10M]**
4		Explain the types of water erosion	[L2][CO1]	**[10M]**
5		Explain classification of gullies and gully development stages	[L1][CO1]	**[10M]**
6		Discuss the Applications and Limitations of USLE	[L2][CO1]	**[10M]**
7		What are the causes of soil erosion	[L1][CO1]	**[10M]**
8		**a)** Using the USLE, calculate the annual soil loss in tonnes per hectare from a field with the following details: 1) Rainfall erosivity factor = 800 (2) Soil erodibility factor = 0.20 (3) Crop management factor = 0.50 (4) Conservation practice factor = 1.0 (5) Slope length factor = 0.2	[L3][CO1]	**[5M]**
		b) Describe the mechanism of water erosion	[L2][CO1]	**[5M]**
9		Briefly explain the each parameters of USLE	[L2][CO1]	**[10M]**
10		Write equation of USLE, MUSLE and RUSLE and expand each parameter	[L1][CO1]	**[10M]**

UNIT –II

1	a	Define wind erosion	[L1][CO2]	**[2M]**
	b	Write short note on wind break and shelter belt	[L1][CO2]	**[2M]**
	c	Write short note on strip cropping and Crop rotation	[L1][CO2]	**[2M]**
	d	Define Suspension, Saltation and Surface creep	[L1][CO2]	**[2M]**
	e	Write adverse effects of wind erosion	[L1][CO2]	**[2M]**
2		Define wind erosion and explain mechanics of wind erosion	[L1][CO2]	**[10M]**
3		Explain wind erosion control measures	[L2][CO2]	**[10M]**
4		What are the Factors affecting runoff	[L1][CO2]	**[10M]**
5		Describe land use capability classification	[L2][CO2]	**[10M]**
6		Write briefly about hydrological soil groups	[L1][CO2]	**[10M]**
7		Explain different methods of estimation of peak rate of runoff in brief	[L2][CO2]	**[10M]**
8		Explain agronomical and engineering measure to control erosion	[L2][CO2]	**[10M]**
9		Explain different methods of strip cropping	[L2][CO2]	**[10M]**
10		Classify the types of mulches and explain them	[L1][CO2]	**[10M]**

UNIT –III

1	a	Define: Contour bund and graded bund	[L1][CO3]	**[2M]**
	b	Write a short note on adaptability of trenches	[L1][CO3]	**[2M]**
	c	Write USDA and Cox's formula	[L1][CO3]	**[2M]**
	d	What are the factors to be considered in graded bunding	[L1][CO3]	**[2M]**
	e	List out the types of surplus wiers	[L1][CO3]	**[2M]**
2		Classify types of bunds and explain them	[L1][CO3]	**[10M]**
3		Explain the steps involved in design of contour bunds	[L2][CO3]	**[10M]**
4		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.	[L3][CO3]	**[10M]**
5		Classify Surplusing Arrangements in bunds and discuss the types surplus wiers	[L1][CO3]	**[10M]**
6		Discuss the types of trenches with neat sketch	[L2][CO3]	**[10M]**
7		Write the difference between Contour bund and Graded bund	[L1][CO3]	**[10M]**
8		Explain the types of terraces	[L2][CO3]	**[10M]**
9		Briefly describe the design and layout of bench terraces	[L2][CO3]	**[10M]**
10		Discuss types of bench terraces and their adaptability with neat diagram	[L2][CO3]	**[10M]**

UNIT –IV

1	a	List out the factors affecting sedimentation of water resources	[L1][CO4]	**[2M]**
	b	Write a short note sediment delivery ratio	[L1][CO4]	**[2M]**
	c	Mention different shapes of waterways	[L1][CO4]	**[2M]**
	d	Write a short note on selection of suitable grasses	[L1][CO4]	**[2M]**
	e	Write a short note on trap efficiency	[L1][CO4]	**[2M]**
2		Define grassed waterways and explain its importance in soil conservation	[L1][CO4]	**[10M]**
3		Define sedimentation and various sources of sediment in brief	[L1][CO4]	**[10M]**
4		Explain briefly the design steps of grassed waterways	[L2][CO4]	**[10M]**
5		Explain pre and post sedimentation control methods	[L2][CO4]	**[10M]**
6		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 1.75 m/s can be allowed. Assume the value of *n* in Manning's formula as 0.04.	[L3][CO4]	**[10M]**
7		Discuss the Constructional Procedure and Maintenance of waterways	[L2][CO4]	**[10M]**
8		Describe the methods of in Stream Sediment Measurements	[L2][CO4]	**[10M]**
9		Briefly explain the characteristics of contour	[L2][CO4]	**[10M]**
10		Define contour and briefly write its procedure for preparation of contour map	[L1][CO4]	**[10M]**

UNIT –V

1	a	Write a note on Froude number	[L1][CO5]	**[2M]**
	b	Define gabion structure	[L1][CO5]	**[2M]**
	c	Uses of Drop Structures	[L1][CO5]	**[2M]**
	d	Define: free board and piping	[L1][CO6]	**[2M]**
	e	Write a note on hydraulic jump	[L1][CO5]	**[2M]**
2		Explain the importance of water harvesting and its benefits	[L2][CO5]	**[10M]**
3		Explain various water harvesting techniques	[L2][CO5]	**[10M]**
4		Define farm pond, list different types of farm pond and describe embankment type farm pond	[L1][CO6]	**[10M]**
5		Describe the design steps involved in farm pond	[L2][CO6]	**[10M]**
6		Classify the temporary and semi-permanent gully control structures and explain temporary structures	[L1][CO5]	**[10M]**
7		Explain the permanent gully control structures	[L2][CO5]	**[10M]**
8		Explain the design steps of gully control structures in brief	[L2][CO5]	**[10M]**
9		Explain components of drop structures	[L2][CO5]	**[10M]**
10		A hydraulic jump occurs downstream from a 15 m wide sluice gate. the upstream depth is 1.5 m and the velocity is 20 m/s. determine (a) the Froude number corresponding to the conjugate depth, (b) the depth and velocity after jump and (c) the energy loss in the jump	[L3][CO5]	**[10M]**

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