

Roll No.

Total No. of Pages : 02

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B.Sc. (Agriculture) (Sem.-2)

SOIL AND WATER CONSERVATION ENGINEERING

Subject Code : BSAG-203-19

M.Code : 77664

Date of Examination : 07-07-22

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Answer briefly :

- a. Differentiate between EI_{30} index and $KE > 25$ Index of computing rainfall erosivity factor.
- b. List the factors affecting water erosion.
- c. What are the advantages and limitations of graded bunding?
- d. List the different temporary structures used in controlling gully erosion.
- e. Differentiate between bench terraces with sloping inward and outward.
- f. Differentiate between active and inactive gullies.
- g. What are the major causes of land degradation in India?
- h. Differentiate between C and P factors used in Universal Soil Loss Equation (USLE).
- i. How mulching is important in soil and water conservation?
- j. Differentiate between broad base terrace and bench terrace.

SECTION-B

2. List the different types of water erosion. Also explain how to control water erosion?
3. What is water harvesting?. How it is important in the present scenario? Also, list the different methods of water harvesting.
4. What are the different causes of gully erosion? Also, describe the adverse impact of gully erosion.
5. What is bunding? Discuss the difference between contour and graded bunding.
6. What is wind erosion? Discuss the mechanics of soil erosion due to wind.

SECTION-C

7. Discuss the agents of soil erosion in detail. (10)
8. a) It is proposed to construct bench terraces on a hill having slope of 20% for a given vertical interval of 2 m. Compute the followings (both for vertical cut and batter slope of 1:1). (8)
 - i. Width of terrace
 - ii. Length of terrace per hectare
 - iii. Earth work per hectare
 - iv. Area lost per hectare
- b) Differentiate between buffer strip cropping and wind strip cropping. (2)
9. a) Discuss the different mechanical measures for controlling water erosion. (5)
- b) Discuss the types of bench terracing on the basis of their purpose. (3)
- c) Estimate the annual soil loss from an area subjected to soil erosion using the following available information:

| Index/Factor | Value |
|---------------------------------|----------------------|
| Rainfall erosivity index | 1250 MJ-mm/ha-h-y |
| Soil erodibility index | 0.20 t-ha-h/ha-MJ.mm |
| Crop management factor | 0.50 |
| Conservation practices factor | 1.0 |
| Slope length & steepness factor | 0.1 |

Also, explain how the soil loss will decrease by adopting conservation practices as combination of contouring and strip cropping (for slope range of 2.1 -7.0%). (2)

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.