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**B.TECH.**  
**(SEM VII) THEORY EXAMINATION 2022-23**  
**SOIL & WATER CONSERVATION ENGINEERING**

**Time: 3 Hours****Total Marks: 100****Note:** Attempt all Sections. If you require any missing data, then choose suitably.**SECTION A****1. Attempt all questions in brief.****2x10 = 20**

- (a) Discuss the effect of soil erosion.
- (b) Define spillways.
- (c) Explain the classification of gullies.
- (d) Explain in short, the various factors responsible for the sheet erosion.
- (e) Write about impact of surface roughness on the wind erosion.
- (f) List two methods of Air Erosion Control.
- (g) Enlist the different method of grass land management.
- (h) Enlist various types of water losses.
- (i) What do you mean by infiltration?
- (j) What do you mean by the "Soil Conservation"?

**SECTION B****2. Attempt any three of the following:****10x3 = 30**

- (a) Using the USLE, calculate the annual soil loss in tons per hectare from afield with the following details:  
 Rainfall erosivity factor = 800  
 Soil erodibility factor = 0.20  
 Cropmanagement factor = 0.50  
 Conservation practice factor = 1.0  
 Slopelength factor = 0.2  
 Also find out by how much % of soil loss is reduced when the cultivation is done on the contour. Assume value of conservation practice P for contouring as 0.5.
- (b) Differentiate between u shape and v shape gullies.
- (c) How can we use biological methods in conserving the soil?
- (d) How do agricultural waste contaminate water sources?
- (e) What is the need for planning of water resources project?

**SECTION C****3. Attempt any one part of the following:****10x1 = 10**

- (a) Explain why erosion rates are more in clay soils compared to sandy soils.
- (b) Explain wind erosion control measure.

**4. Attempt any *one* part of the following: 10 x1 = 10**

- (a) Calculate the height and cross-sectional area of contour bund to be constructed on the land of slope 5%. The other details are given below
  - I. Rainfall excess for 24-hr duration is 80cm
  - II. Horizontal interval is 15cm
  - III. Depth of water flow over the weir is 30 cm.
- (b) What are the components of chute spillway?

**5. Attempt any *one* part of the following: 10x1 = 10**

- (a) Write about the assessment of the surface water resources in India. Also explain in detail; the inter and intra basin development concept.
- (b) What is soil quality management? Write in brief, the various methods to improve the soil quality. Explain; how will you perform the reclamation of salt affected soils.

**6. Attempt any *one* part of the following: 10x1 = 10**

- (a) What are the four processes involved in water self-purification?
- (b) How to control and reduce evaporation losses?

**7. Attempt any *one* part of the following: 10x1 = 10**

- (a) Explain various measures to flood control.
- (b) What is the economic importance of water resources?