

**B.Tech. Civil (Water Resources Engineering)**

**Term-End Examination**

00602

**December, 2016**

**ET-537(A) : SOIL CONSERVATION AND AGRONOMY**

*Time : 3 hours*

*Maximum Marks : 70*

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**Note :** Answer any **seven** questions. All questions carry equal marks. Use of non-programmable scientific calculator is allowed.

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1. Explain the different phases of wind erosion process. Describe the various control measures for wind erosion. Explain the equations and the factors involved with it for estimation of soil erosion by wind. 3+3+4
  
2. Explain the various stages of gully erosion. The annual soil erosion was found to be 10 tons/ha from a land with 5% slope and 100 m slope length. What slope length is required to reduce this soil erosion to half by keeping all other factors unchanged ? 3+7
  
3. Mention the advantages and limitations of a chute spillway. Also draw a neat sketch of a chute spillway with SAF type outlet and label various parts of it. 5+5

4. Which nutrients are required for plant growth ? Explain the various types of manures and fertilizers along with the methods for their application. 4+6
5. What are the possible flow conditions through a drop inlet spillway with respect to slope conditions ? Determine the flow capacity and type of flow through a drop inlet spillway with 80 cm diameter and 20 m length. The elevations of inlet and outlet are 130 m and 129.6 m, respectively and head water and tail water elevations are 132 m and 128 m, respectively. Also, the coefficients of entrance loss and frictional loss may be taken as 0.50 and 0.10, respectively. 4+6
6. Explain the various stages of plant growth in wheat cultivation. Also explain the control measures for pests and diseases of wheat. 4+6
7. Explain the various layouts of tile drainage systems. Compute the size of a 100 m long underground tile laterals at 50 m spacing with a longitudinal slope of 0.40%. The drainage coefficient of the land is 4 cm and Manning's roughness coefficient is 0.10. 3+7
8. What is agricultural drainage ? Mention the various benefits of drainage. Also explain the categories of surface drainage systems. 2+3+5

9. Explain the symptoms and control measures for four major diseases of paddy and maize crops. 5+5

10. Write short notes on any *two* of the following : 2×5=10

- (a) Contour Bunding
  - (b) Leaching Requirement
  - (c) Objectives of Watershed Management
  - (d) Crop Rotation
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