

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

June, 2012

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

Time : 3 hours

Maximum Marks : 70

*Note : Answer any seven questions. Use of scientific calculator
is allowed.*

1. Explain the process of soil erosion and its effects. Describe and compare various forms of a soil erosion by water. Also, explain different types of sediment loads. 3+5+2

2. What are terraces ? Explain their advantages. Classify various types of terraces along with their sub-classes and respective limitations. 2+2+6

3. Derive a general expression for the computation of critical depth in a hydraulic channel of rectangular cross-section. Compute the permissible discharge through a 2 m wide rectangular channel with 1 m depth of floor corresponding to a fronde number of unity. 6+4

4. Explain the functions of vegetative water ways. **2+8**
Design a triangular shaped grassed water way to drain a 300 hectare land with drainage coefficient of 4 cm. The side slopes/ of the channel is 4 : 1, the longitudinal slope is 2% and the Manning's roughness coefficient is 0.04.
5. Explain important considerations for designing the parallel field drain system of surface drainage. **3+7**
Design a drainage ditch with most efficient trapezoidal cross-section to drain 2.4 km² area having drainage coefficient of 30 mm in clay soil. The side slope of ditch is 1:1 and Manning's roughness coefficient is 0.04. The drain is laid on 0.10% longitudinal slope.
6. Give the benefits of sub-surface drainage over surface drainage. Derive an equation to calculate depth and spacing of file drains for steady state condition. **3+7**
7. Explain the harmful effects of weeds. Classify weeds and give an example of each type. Explain the methods of weed control. **2+3+5**
8. Explain various growth stages of sugar cane crop. **4+6**
Also explain different sowing/planting methods for sugar cane cultivation along with prominent diseases.

9. Explain the characteristics of watershed. Enlist the objectives of watershed management. How monitoring and evaluation of watersheds are done ? 4+3+3
10. Write short notes on *any four* of the following : 4x2½=10
- (a) Graded bunding
 - (b) Leaching requirement
 - (c) Organic pesticides
 - (d) Types of drought
 - (e) Crop rotation
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