

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

December, 2012

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

Time : 3 hours

Maximum Marks : 70

Note : Answer any seven (7) questions. Use of calculator is allowed.

1. Explain various factors involved in Universal Soil Loss Equation (USLE) and give their computation method. 5+5=10

2. Explain important factors influencing the design of terraces and give step-by-step design of Bench terrace. 5+5=10

3. How does a gully develop ? Explain various stages of gully erosion. On a land with 5% slope and 100 m slope-length, the annual soil erosion rate was 15 tons/ha. What change is required in slope length to reduce soil erosion to half, keeping all other factors unchanged ? 5+5=10

4. Explain the functions and important features of drop inlet spillways. Give their limitations also. Draw a neat labelled sketch of a drop-inlet spillway and briefly mention the role of its different components. **5+5=10**

5. Derive Hooghoudt's equation for computing the spacing of open drains to facilitate sub-surface drainage due to rainfall or irrigation for steady state conditions. Draw a neat definition sketch for this. **10**

6. Explain the characteristics of alkaline and saline soils. Describe various methods for reclamation of saline soils. Explain the causes of water-logging and salinity in the soils. **2+6+2=10**

7. Explain the advantages of puddling for rice transplantation. Also, explain nutrient management at various growth stages in transplanted rice. **3+7=10**

8. What are different pesticide formulations ? Explain construction and functioning of one manual and one tractor drawn sprayer. **4+3+3=10**

9. What are the purposes for which in-situ rainwater conservation practices are used ? Explain various methods used for in-situ rainwater conservation. **2+8=10**

10. Write short notes on *any four* of the following :

4x2½=10

- (a) Infectious plant diseases and classification
- (b) Growth stages of wheat
- (c) Salinisation of soils
- (d) Phases of wind erosion
- (e) Ratoon crop management in sugar cane
