B.Tech. Civil (Water Resources Engineering)

Term-End Examination

December, 2006

ET-537(A) : SOIL CONSERVATION AND AGRONOMY

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks. Use of calculator is permitted.*

1. List five main types of soil erosion. Compare them (in tabular form) in terms of mechanics of erosion, causative factors and detrimental effects. *10*

2. How do you estimate soil loss due to wind erosion ? Discuss the suitability and effectiveness of any four methods of control of wind erosion. *10*

3. Describe the hydraulic characteristics of different shapes of waterways. Design a trapezoidal shape grass waterway to carry out a flow of $3{\cdot}024 \times 10^5$ m^3/day down a slope of 1 in 40. Make all other necessary assumptions. *10*

4. What are the factors that control the gully erosion process ? Give detailed procedure for design of a temporary check dam in an arid region. *10*

5. Explain the two dimensionless numbers frequently used in connection with channel flow. With a labelled diagram, describe energy dissipation in a hydraulic jump. *10*

6. Write down the field situations where farm drainage is required. With the help of neat sketches, describe the important technical features of different types of surface drains. *10*

7. What are the different amendment methods for reclamation of alkali soil ? Develop a relationship between gypsum requirement and exchangeable sodium. *10*

8. What is the economic importance of weed management ? How do the weed management programmes differ in the cases of the following crops : *10*

   (a) Rice

   (b) Maize

   (c) Sugarcane

9. What are the various formulations of pesticides ? Compare their effectiveness. Also, list equipment for application of respective formulations. *10*

10. Discuss different methods of rainwater harvesting in an agricultural field. Detail out conservation bench terracing with specific technical details. *10*