

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

00641

December, 2015

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. (a) Explain different factors affecting erosion by water. 5
- (b) If the degree of slope of a plot is increased from 2% to 4%, what will be the increase in soil loss caused by water keeping other factors at the same level ? 5
2. (a) Explain erodibility index and roughness factor as used in soil loss due to wind erosion. 5
- (b) Explain tillage management practices which are helpful in controlling wind erosion. 5
3. (a) How will you decide terrace length and terrace grade ? What are design precautions in case of a terrace ? 5
- (b) Design a 140 m long bench terrace for an area with average slope 20%. The channel may have uniform slope of 0.5%. The peak runoff from area is 25 litres per second. The soil is clay loam. 5

4. (a) How will you ensure safe conveyance of runoff through gullies ? Explain all the three steps. 5
- (b) Explain the steps involved in design of a check dam. 5
5. (a) Derive Hooghoudt's equation for spacing between a tile drain. Draw a neat sketch of the physical situation. 7
- (b) How will you determine the capacity of tile drains ? 3
6. (a) What are the different sources of salts in irrigation water ? Explain two important drainage methods to reclaim alkali soil. 6
- (b) Explain leaching requirement for reclamation of saline soil. 4
7. (a) Explain nutrient management in irrigated transplanted rice or sugarcane crop. 5
- (b) Explain the pest management in cotton or mustard. 5
8. (a) Write a note on pesticide production in India. 5
- (b) What is integrated pest management ? Explain with example. 5

9. (a) How will you characterize a watershed ?
What are mini-watershed, micro-watershed
and sub-watershed ? 5
- (b) How do improved crop management
practices help rainfed farming ? 5
10. Write short notes on any *four* of the
following : $4 \times 2 \frac{1}{2} = 10$
- (a) In-situ Rainwater Conservation
 - (b) Multiple Cropping
 - (c) Gypsum Requirement
 - (d) Ratoon Crop Management
 - (e) Classification of Sprayers
 - (f) Biodrainage
-