No. of Printed Pages : 3 **ET-537(A)**

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

00663 **June, 2015**

ET-537(A) : SOIL CONSERVATION AND AGRONOMY

Time : 3 hours *Maximum Marks : 70*

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

1. (a) Explain Universal soil loss equation. *5*

(b) For a small plot having slope 5% and slope length 100 m, the annual soil loss is 15 tons/ha/year. In order to reduce soil loss to half, what changes in length factor would you suggest, other conditions remaining same ? *5*

2. (a) Explain the mechanism of wind erosion. *5*

(b) Under the vegetative management system, write three important methods to control wind erosion. *5*

3. (a) Explain the importance of terracing. *3*

(b) From a certain region, the annual soil loss is 10 tons/ha. It is proposed to control soil loss by terracing. Calculate the slope length (maximum) and corresponding terrace spacing to reduce the loss to 4 tons/ha, if present slope is 8% and slope length is 120 m. *7*

4. (a) Define gullied watershed. Explain the measures to reduce run-off volume from a gullied watershed. *4*

(b) Explain the guidelines w.r.t. land use adoption and soil conservation measures for an area having more than 3 – 8% slope. *6*

5. (a) What is the role of irrigation and drainage structures in soil and water conservation ? *3*

(b) Explain any two such structures with their construction and specific utility. *7*

6. (a) Explain the drainage coefficient. How does it help in determining the capacity of a drainage system ? *4*

(b) How will you determine the cross-section of an open ditch to carry drainage flow ? Find the bottom width of such a ditch to enable it to carry out a flow 2 m deep in clay soil condition. *6*

7. (a) Explain the role of knowledge of soil water plant relationship in water management. *5*

(b) Explain the weed management in rice or maize crop. *5*

8. (a) List the various pesticide formulations. *3*

(b) Explain the working and special features of three important sprayers for pesticide application. *7*

9. (a) How will you classify rainfed ecosystem ? Explain the constraints of rainfed farming. *5*

(b) List the various techniques for increasing infiltration for water storage in soil profile. Explain any two in detail. *5*

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

$$4 \times 2\frac{1}{2} = 10$$

(a) Crop improvement

(b) Vermicomposting

(c) Organic pesticides

(d) Cropping pattern

(e) Bench terracing

(f) Rain-water harvesting
