

B.Tech. Civil (Water Resources Engineering)

Term-End Examination

00610

June, 2016

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 non-programmable calculator is allowed.*

1. Explain soil erosion and its effects in a region. Describe the factors responsible for soil erosion by water. Also explain the different forms of soil erosion by water based on the mechanics involved. 3+4+3

2. Explain, with the help of neat sketches, various types of inlets, conduits and outlets used in different permanent soil conservation structures for controlling soil erosion. 3+4+3

3. Derive an expression for computing the critical depth of flow in a rectangular hydraulic channel. Compute the permissible discharge through a 3 m wide rectangular channel with a critical depth of flow as 1 m. 6+4

4. Explain the functions of vegetative waterways. Design a triangular shaped grassed waterway to drain a 100 hectare land with drainage coefficient of 4 cm. The channel has side slopes 4 : 1, longitudinal slope 2% and Manning's roughness coefficient 0.04. Is this design safe against erosion ? 3+7
5. Describe various growth stages of sugarcane cultivation. Also, explain various planting methods for sugarcane. Mention two major diseases of sugarcane and their control measures. 4+3+3
6. Describe Hooghoudt's equation, along with the assumptions used, for computing the spacing of open drains to facilitate subsurface drainage from a land under steady-state condition. Make a neat sketch of the drainage system and label it. 10
7. How do weeds harm a crop ? Explain the weed control measures adopted in rice or wheat crops. 3+7
8. Write the purpose of in-situ rainwater conservation. Describe various methods for in-situ rainwater conservation. 2+8

9. Explain the characteristics of alkaline and saline soils. Describe one important method each for reclamation of these problem soils. 3+7
10. Write short notes on any *two* of the following : 2×5=10
- (a) Classification of infectious plant diseases
 - (b) Bio-drainage
 - (c) Agricultural drought
 - (d) Sprayers for agro-chemical applications
-