M.Tech Even Semester Examination, May, 2025

Agricultural Engineering

(2nd Semester)

Course No: 4AG-152

(Land Husbandry and Watershed Management

Full Marks: 70
Pass Marks: 28
Time: 3 hours

Note:

1. Attempt any five questions taking one from each unit.
2. Begin each answer in a new page
3. Answer parts of a question at a place
4. Assume reasonable data wherever required
5. The figure in the right margin indicates full marks for the question
6. All the mathematical symbols and abbreviations have their usual meanings.

UNIT-I

1. Define: 2x7=14

   i) Pedon

   ii) Confined aquifer

   iii) Time of concentration

   iv) Porosity

   v) Bulk density

   vi) Storage coefficient

   vii) Field Capacity

2. a) What are the design criteria for farm pond? 8

b) A farm pond is designed with following parameters. Find the volume using both Simpson & Trapezoidal rule. 6

UNIT-II

3. a) Enumerate the different Land Usage Classification. 9

b) Enlist the factors affecting the Capability of Land. 5

4. a) What is the problem behind salt affected soils? Briefly describe about Reclamation of soil. 3+4=7

b) Discuss the FAO Land evaluation principles 7

UNIT-III

5. a) Compare between USLE and RUSLE. 10

b) Write about the factors considered for MUSLE 4

6. a) Discuss various modern strategies for developing rural water infrastructures. 10

b) Enlist the differences in erosion problems in terms of time. 4

UNIT-IV

7. a) Briefly discuss about the traditional erosion control strategies. 10

b) Explain the importance of land husbandry in sustainable agriculture. 4

8. a) Determine the values of form factor (R_f) , Circulatory ratio (R_c) and elongation ratio (R_e) of the drainage basin, using following details:

i) Area of watershed is 50 sq km.

ii) Length of drainage basin is 10,000 m.

iii) Perimeter of Basin is 25,000 m.

iv) Maximum basin length is 15,000 m. 10

b) What are the Land Use cover conditions while designing a watershed planning? 4

UNIT-V

9. a) Classify watershed based on Size and Land Use. 9

b) Discuss the watershed characteristics. 5

10. a) Discuss the steps of watershed management. 9

b) Write down the objectives of watershed Development. 5

*****