Reg. No. \_\_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **18AT2009** | **Duration :** | **3hrs** |
| **Sub. Name:** | **SOIL AND WATER CONSERVATION ENGINEERING** | **Max. Marks:** | **100** |

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| **Q. No.** | **Questions** | **Course Outcome** | **Marks** |
| **PART – A (20 X 1 = 20 MARKS)** | | | |
| 1. | What is Geological erosion? | CO1 | 1 |
| 2. | Differentiate between Erosivity and Erodibility. | CO1 | 1 |
| 3. | Define rill erosion. | CO1 | 1 |
| 4. | Write down the Universal soil loss equation. | CO1 | 1 |
| 5. | What are the major rainfall characteristics influencing runoff from watersheds? | CO1 | 1 |
| 6. | What are the various causes of soil degradation? | CO1 | 1 |
| 7. | Define pinnacle erosion. | CO2 | 1 |
| 8. | Distinguish active gully from inactive gully. | CO2 | 1 |
| 9. | What is a runoff plot? | CO1 | 1 |
| 10 | Define surface creep in wind erosion. | CO2 | 1 |
| 11 | What are the major tree species introduced to control wind erosion? | CO1 | 1 |
| 12 | Define threshold velocity of wind. | CO1 | 1 |
| 13 | Differentiate between wind breaks and shelter belts. | CO2 | 1 |
| 14 | What are the surface roughness factors influencing soil erosion by wind? | CO2 | 1 |
| 15 | What do you mean by sand dune? | CO2 | 1 |
| 16 | Distinguish contour strip cropping from buffer strip cropping systems. | CO2 | 1 |
| 17 | What is mulch tillage? How does it influence soil erosion? | CO2 | 1 |
| 18 | What are the common types of bench terraces? | CO2 | 1 |
| 19 | Differentiate between contour bund and graded bund. | CO2 | 1 |
| 20 | Where is the contour stone wall construction adopted? | CO2 | 1 |

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| **PART – B (10 X 5 = 50 MARKS)**  **(Answer any 10 from the following)** | | | |
| 21. | How gullies are classified? Explain. | CO1 | 5 |
| 22. | Compute the annual soil loss by using USLE for the following data:  Erosion index =300J/ha; contour cultivated area; Length of the field = 100 metres; Slope of the field = 5%; 65% silt + very fine stand; 5% sand; 3% organic matter; very fine granular structure; moderate permeability; Crop management factor = 0.35 and Conservation practice factor =0.5. | CO2 | 5 |
| 23. | Define contour trench and staggered trench. Where it is adopted? | CO2 | 5 |
| 24. | Explain the stepwise procedure for design of contour trench. | CO2 | 5 |
| 25. | Discuss the ill effects of soil erosion. | CO1 | 5 |
| 26. | What are the basic steps to be followed in improving grasslands? Explain. | CO1 | 5 |
| 27. | Explain the step wise procedure to be followed in the design of contour bunds. | CO2 | 5 |
| 28. | Design the notch dimensions of a wooden log dam to carry a peak flow of 0.6 m3 / sec. The notch has rectangular opening. The width of the drainage channel is 2.5 m. | CO2 | 5 |
| 29. | Briefly explain the mechanics of soil erosion by water. | CO2 | 5 |
| 30. | Explain the stepwise procedure for estimating soil erosion by wind. | CO2 | 5 |
| 31. | Discuss the wind erosion measures with neat sketches. | CO2 | 5 |
| 32. | Explain the various structural measures adopted in stream banks erosion control and what are their specific limitations? | CO2 | 5 |

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| **PART - C (2 X 15 = 30 MARKS)**  **(Answer any 2 from the following)** | | | | |
| 33. | a. | With neat sketches, discuss in detail the temporary gully control measures. | CO2 | 8 |
| b. | Explain the various factors affecting the soil erosion by wind. | CO2 | 7 |
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| 34. | a. | With neat sketches, describe the bench terraces adopted in the hilly regions. | CO2 | 8 |
| b. | Design a 150 m long bench terrace for a land having an average slope of 20%. The soil is clay loam. The terrace channel has a uniform grade of 0.5%. Maximum intensity of rainfall expected during the 10 year recurrence interval is 10cm/hr. | CO2 | 7 |
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| 35. | a. | Explain with neat sketches, the sediment samplers used for measuring soil loss. | CO2 | 8 |
| b. | Design a parabolic shaped grassed waterway to carry a flow of 3 cu. m / sec. down a slope of 4%. An excellent stand of dub grass is to be maintained in the waterway. | CO2 | 7 |