KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Agri. Engg.) 2019 Admission
IV Semester Final Examination- November 2021

Lwre.2206 **Soil and Water Conservation Engineering (2+1)**

Marks: 50
Time: 2 hours

I **Define** **(10x1=10)**

1. Accelerated erosion
2. Rill erosion
3. Wischmeir and Smith relationship between intensity of rainfall and total kinetic energy
4. Sediment yield
5. Erosivity of rainfall
6. Shelter belt
7. Puertorican terraces
8. Sheet erosion
9. Gabions
10. Ramser's formula for spacing of bunds

II **Write short notes on ANY FIVE of the following** **(5x2=10)**

1. Differentiate between Vegetated waterway and Diversion drains
2. Explain contour cultivation and outline its limitations
3. Define land capability and list the limitations accounted for capability classification
4. Give Modified USLE
5. List five indicators of water erosion in a field
6. Describe different types of sediment movement during wind erosion
7. List advantages of parabolic shaped grassed waterway

III **Answer any FIVE of the following** **(5x4=20)**

1. Explain Conservation bench terracing and Zing terracing
2. What is strip cropping? Explain different types of strip cropping with neat figures.
3. What is contour trenching? Explain the features of contour trenches. Illustrate with a neat sketch.
4. Calculate the distance of full protection from a wind break of 16m height. The angle of deviation of the prevailing wind perpendicular to the barrier is 24°. The actual wind velocity is 13km/h at 15m height and minimum wind velocity that is capable of moving the soil fraction is 15 km/h at 15 m height.
5. Calculate the area lost for cultivation in watershed of 100 ha treated with contour bunding. Side and lateral bunds are also provided in the bunding system. The necessary data is given as Land slope=6% , Base width of the bund=1.5 m, horizontal interval=25 m.
6. Calculate the discharge capacity of a trapezoidal vegetated waterway having the following dimensions
   Bottom width =1m, Top width =3m, Depth =0.8m, Bed slope=0.95, Manning's n=0.04.
7. A field is cultivated on the contour with continuous hybrid Napier. Compute the average annual soil loss using USLE, if the details are given as K=0.40 R=180 LS=0.65 P=0.50 C=0.30. Comment on the soil loss from the field if vegetable crops are taken continuously. Assume C for vegetables as 0.65.

IV **Write an essay on ANY ONE of the following** **(1x10=10)**

1. Explain how check dams are effective in controlling gully erosion. Explain different temporary gully control structures. Draw neat sketches also.
2. Explain various biological methods of soil and water conservation

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