Signature of Centre Superintendent

Visva-Bharati
Palli Siksha Bhavana (Institute of Agriculture)
B. Sc. (Honours) Agriculture Semester-II Examination, 2024
Subject: Introductory Soil and Water Conservation Engineering (AEG-121)

Roll No. (in figure)…….…..... (in words)……..

Time: 2 hours **Full marks: 50**

Part-I
(Objective and Short Answer Type)

Time: 30 minutes **Marks: 20**

Note: 1. ***Answer in question paper itself (No extra page will be provided)***
2. *Striking, rewriting or overwriting are not allowed in the objective type questions.*

1. Select appropriate answer from the following alternatives: **(1×5= 5)**

a) Gully erosion can be controlled by:
(i) Overgrazing (ii) Deforestation (iii) Mechanical structures (iv) Monocropping

b) Which of the following classes of soils has severe limitations that restrict the range of crops or require special conservation practices? (i) Class 2 (ii) Class 3 (iii) Class 4 (iv) Class 5

c) Mulching helps in:
(i) Increasing soil erosion (ii) Reducing evaporation (iii) Compacting the soil (iv) Decreasing soil fertility

d) In high rainfall areas with steep slopes, _____ type of terraces may be used.
(i) Level (ii) Outward slopy (iii) Inward slopy (iv) Both (ii) and (iii)

e) Crop rotation involves:
(i) Growing the same crop repeatedly (ii) Growing of different crops
(iii) Leaving the land fallow (iv) Planting trees

(1×5 = 5)

2. Fill in the blanks with suitable word(s):

a) Erosion caused by natural activities is called as _____.

b) _____ bunds are suitable for areas with high rainfall and steep slopes.

c) Erodibility is the susceptibility of _____ to erosion.

d) The movement of soil particles by wind is primarily through _____, _____, and suspension.

e) The main purpose of no-till farming is to reduce soil _____.

(2×5=10)

3. Write short notes on *any five* of the following:

a) Development of Gullies.
b) Hydrologic Soil Group.
c) Time of concentration
d) Agronomical Measures of Water Erosion Control.
e) Plane table surveying
f) USLE (Universal Soil Loss Equation)
g) WCB and QB
h) Grassed waterways

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Part-II
(Descriptive Type)

Time: 1½ hours **Marks: 30**

Questions are of value as indicated in the margin
Answer *any three* of the following questions

4. Explain the classification of bench terraces depending on the slope of benches with proper diagram and the purpose of each type? (10)

5. What is contour bunding? Write in detail about the design specification of contour bunds. Also mentioned the parameters considered for contour bund design. (2+8 = 10)

6. Why is water harvesting important? What are the different types of water harvesting? (3+7 = 10)

7. Define Runoff Coefficient. Calculate peak runoff for 50 year recurrence interval for AMC II condition. Total area of watershed is 60 ha of which 50 ha area is used under row crop terraced land (CN = 80) and the remaining 10 ha area is kept under poor grass land farming practices (CN =86). Assume maximum rainfall depth as 15 cm and soil group are C. (2+8 = 10)

8. The following consecutive readings were taken with a levelling instrument at intervals of 20 m.

   2.375, 1.730, 0.615, 3.450,3.450, 2.835, 2.070, 1.835, 0.985, 0.435, 1.630, 2.255, 3.63 m.

   The instrument was shifted after 4^{th} and 8^{th} readings. The Benchmark is given as 110.2 m. Find the RL of all points. (10)
