

B.Sc. (Ag.) Honours Semester-II Examination, 2019

Course No: AEG-121 (Old)

(Fundamentals of Soil & Water Conservation Engineering)

Signature of Centre Superintendent

Roll No. : (in figure) _____ (in words) _____

Student Index No. _____ Regn. No. _____ of _____

Time : Two Hours

Full marks : 40

Questions are of value as indicated in the margin

Part - I
(Objective and Short Answer Type)
(Use only ball point pen)

Time : 20 minutes

Full marks : 10

- Note:** 1. Answer in question paper itself.
2. Striking, rewriting or overwriting are not allowed in the objective type questions.

1. **State True (T) or False (F) in respect of the following statements:** 0.5×5=2.5

- a) In a metric chain one link is 15 cm long. ☐
- b) If fore bearing of a line is S18°E, its back bearing will be N72°W. ☐
- c) The suction head of centrifugal pump should be within 10 m. ☐
- d) Handle of a chain is included in its length. ☐
- e) In cipoletti weir, a correction for end contraction is not needed. ☐

2. **Fill up the blanks with most appropriate words:** 0.5×10=5

- a) The duty of water is expressed in _____.
- b) In whole circle bearing the angle is measured in _____ direction.
- c) In a well conditioned triangle no angel is _____ than _____.
- d) In USLE _____ and _____ are called topographic factor.
- e) Furrow irrigation is not suitable for soils having high _____.
- f) Ranging requires minimum of _____ rods.
- g) In _____ survey, curvature of earth is considered.
- h) The back bearing of a line is _____ if the fore bearing is 20°25'.
- i) According to USDA, land is classified into _____ land capability classes.
- j) Contour bunds are laid _____ the slope of the land.

3. **Tick (√) the correct alternatives:** 0.5×5=2.5

- a) Magnetic bearing of a line is S48°25'. If magnetic declination is 2°15' then true bearing of the line is
 - i) S46°10'E ii) S50°40'E iii) S46°40'E iv) S52°10'E

P.T.O.

- b) Fore bearing of AB is 240° , back bearing of BC is $N60^\circ E$. Angle formed by this two lines is
- i) 0° ii) 45° iii) 60° iv) 90°
- c) Drip irrigation system is used in the area of water scarce, because it minimizes
- i) conveyance loss of water ii) deep percolation loss
iii) evaporation loss iv) all of the above
- d) Border irrigation method is not for soils with
- i) high infiltration rate ii) less infiltration rate
iii) high hydraulic conductivity iv) all of the above
- e) The length of Engineer's chain is
- i) 100 m ii) 100 ft. iii) 66 ft. iv) 33 ft.

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Part - II
(Descriptive Type)

Time : 100 Minutes

Full marks : 30

Questions are of value as indicated in the margin

Answer *any four* questions from the following.

4. Differentiate between geological erosion and accelerated erosion. Define Universal Soil Loss Equation with explaining all the factors briefly. 3+4.5=7.5

5. The following bearing were observed with a compass on a traverse

Line	FB	BB
AB	75°0'	255°0'
BC	75°0'	264°0'
CD	168°0'	345°0'
DE	178°0'	0°0'
EF	187°0'	7°0'

At what stations do you suspect local attractions and find the correct bearing. 7.5

6. a) Define whole circle bearing and quadrantal bearing with example.
b) Define local attraction, chainage and Simpson's rule. 3+3+1.5=7.5

7. Prove $b = 2d \tan \frac{\theta}{2}$ for a most economic trapezoidal channel cross section. 7.5

8. Write the advantages and disadvantages of sprinkler irrigation system. 7.5

9. a) A centrifugal pump delivers water at the rate of 80 l/s against a total head of 65 m. Determine the water horse power and break horse power if the efficiency is 75%.
b) Write short note on bench mark. 3+4.5=7.5
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