

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur (GIET University)

B. Sc. (Ag.) (Second Semester - Regular) Examinations, April – 2026

AG-225 – Water Management



Time: 2 hrs

Maximum: 40 Marks

(The figures in the right hand margin indicate marks)

PART – A

(2 x 5 = 10 Marks)

Q.1. Answer **ALL** questions

- | | CO # | BLOOMS
Level |
|--|------|-----------------|
| a. The depth of water at the head point of field is 1.6 m, and at the tail region is 1.4 m. Find the water distribution efficiency. | CO2 | L3 |
| b. i) If the radius of pore is increased by 4 times, then flow rate of water is increased by how many times according to Poiseuille's law. | CO2 | L3 |
| ii) IW/CPE of crop 'A' is 0.5 and for crop 'B' is 0.75, then irrigation frequency is more which crop? | | |
| c. State the limitations in "Theories of water availability" | CO1 | L1 |
| d. Define soil water potential. Write its different units. | CO1 | L1 |
| e. Write difference between PWP and UWP. | CO1 | L2 |

PART – B

(6 x 5 = 30 Marks)

Answer **ALL** the questions

- | | Marks | CO # | BLOOMS
Level |
|---|-------|------|-----------------|
| 2. (a) Define scheduling of irrigation. Briefly describe regarding soil moisture depletion approach. | 3+2 | CO1 | L2 |
| (b) A wheat crop with duration of 110 days requires 50 cm of irrigation water. How much area can be irrigated with flow of 20 lps for 10 hours in a day. | | CO2 | L2 |
| 3. (a) Describe the movement of water in soil. | 3+2 | CO1 | L2 |
| (b) The boron content in irrigation water is 2 per cent. The depth of water is 50 mm and total 8 number of irrigations is given for maize crop. Calculate the amount of boron accumulated for an area of 1 ha. | | CO3 | L2 |
| 4. (a) State Darcy's law. | 2+3 | CO1 | L1 |
| (b) A water surface received 15 MJ/m ² of solar radiation. 80 % of solar radiation is used for evaporation of water. Then what is the depth of water in milli meter is vapourised? | | CO3 | L2 |
| 5. What is water use efficiency? Discuss in details regarding the agronomic practice which leads to improve the water use efficiency. | 5 | CO1 | L2 |
| 6. (a) What is 1 cumec day? | 1+4 | CO2 | L1 |
| (b) Calculate irrigated area from following data: i) Discharge rate of canal = 10 cumec, ii) Duty of water 120 ha/cumec, iii) loss of water in transit = 20%. | | | L3 |
| 7. (a) What is Field capacity? | 1+4 | CO3 | L1 |
| (b) Given, soil moisture content at FC = 25 cm/m depth, moisture content before irrigation = 13 cm/m depth, BD = 1.3 g/cc, Effective root depth = 60 cm, irrigation efficiency = 70 % and ET loss = 3 mm/day. Calculate the Gross irrigation requirement (GIR), Net irrigation requirement (NIR) and irrigation interval. (4) | | | L3 |
| 8. What is the difference between saline and brackish water? Explain the parameters in brief which categorize the irrigation water quality. | 5 | CO2 | L2 |
| 9. (a) What is drainage coefficient? | 2+3 | CO3 | L1 |
| (b) The drainage coefficient is 3 cm/ day. Calculate the volume of water drained in an area of 5000 hectares. | | | L2 |