PLEASE NOTE THAT QUESTIONS ARE ON FOUR PAGES

PAGE ONE

Attempt All Questions

Question No. 1: (30 Marks)

Approach the following sentences as shown: **(3 Marks each):**

1) **Choose the correct word:**

   A) The degree of uniformity obtainable with a set sprinkle system depends largely on the ....and.....................of the sprinklers. (pressure – water distribution pattern - discharge – spacing - uniformity)

   B) Wind distorts the ....and the higher the ....the ....the distortion. (greater – wind velocity – application rate – wind direction – lower – application pattern)

2) **Give reasons:**

   A) Formation of doughnut shape in some cases with sprinkler systems?

   ....

   ....

   B) Instantaneous application rates are higher than that average application rates?

   ....

   ....

3) **(MCQ) Choose the most correct answer (One only):**

   A) Sprinkler head discharge increases as the operating pressure :
   □ 1) Decreases
   □ 2) Increases
   □ 3) Varies
   □ 4) Is changeable

B) Average operating range of trajectory angles is:
- ☐ 1) $< 12°$
- ☐ 2) $22° - 27°$
- ☐ 3) $> 12°$
- ☐ 4) $= 45°$

4) Decide whether True (T) or False (F) and underline false words:

(   ) Highest discharge rate of sprinkler heads is less than 2 m³/hr.

(   ) The degree of uniformity obtainable with a set sprinkle system depends largely on the water-distribution pattern and spacing of the sprinklers.

5) Define briefly:

A) The varied amount fixed time schedule rotation is:

....

....

B) Irrigation quality means that:

....

....

Question No. 2 : (10 Marks)

Given:

- A typical impact sprinkler with a 3.9-mm nozzle operating at 300 kPa and discharging, $q = 1200$ ℓ/hr.
- The spacing of sprinklers along laterals, $S_e = 12$ m and % overlap = 40%
- The spacing of laterals along main line, $S_\ell = 18$ m. and the % overlap = 60%
- The instantaneous application rate, $I_I = 2$ mm/min

Find:

- The instantaneous wetted area.
- Radius of the wetted area.
- The angular wetted segment.

Question No. 3: (10 Marks)

Calculate the system capacity for the following data:

> A 20 ha Corn irrigated field is irrigated by a sprinkler system with water having $EC_w = 2$ dS/m.

> At 10 % yield reduction the $EC_e = 2.5$ dS/m.

> The moisture replaced in soil at each irrigation = 80 mm.

> Moisture use rate = 6 mm/day.

> Irrigation application efficiency = 75%.

> Irrigation period = 10 days in a 13-day interval.

> System operating time = 16 hr/day.

Question No.4: (10 Marks)

If a spray sprinkler through is 2.1 m at 200 kPa. <u>Calculate</u> the sprinkler spacing for the following data:
  A) 100 % overlapping
  B) 80 % overlapping
  C) 60 % overlapping
<u>Discuss results?</u>

<<<End of Questions>>>   <<<BEST WISHES>>>