

17581

16117

3 Hours / 100 Marks

Seat No.

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Instructions : (1) All Questions are *compulsory*.

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. (A) Attempt any THREE :

12

(a) Define irrigation and state need of irrigation.

(b) Explain volume and mass relationships of soil constituents.

(c) Define (i) Evaporation, (ii) Transpiration.

(d) State any four factors affecting duty and delta.

(B) Attempt any ONE :

06

(a) Classify irrigation methods in details.

(b) Explain Border irrigation and state its types.

2. Attempt any TWO : **16**

- (a) State advantages and disadvantages of irrigation.
- (b) Explain soil's physical properties influencing irrigation.
- (c) Explain the factors affecting infiltration rate (any eight)

3. Attempt any FOUR : **16**

- (a) Write short note on saturation capacity.
- (b) Wheat is to be grown at a certain place, the useful climatological conditions of which are tabulated below. Determine the evapotranspiration and consumptive irrigation requirement of wheat crop. Also determine the field irrigation requirement if the water application efficiency is 80% make use of Blaney-Criddle equation and crop factor equal to 0.8.

4

Month	Monthly temp. in °C average over the last 5 year	Monthly % of day time hr. of the year computed from the sun-shine	Useful rainfall in cm averaged over the last 5 year
November	18.0	7.20	1.7
December	15.0	7.15	1.42
January	13.5	7.30	3.01
February	14.5	7.10	2.25

- (c) Explain check basin irrigation with an example.
- (d) Explain furrow irrigation with an example.
- (e) State merits & demerits of micro-irrigation system.

4. (A) Attempt any THREE : **12**

- (a) Explain Soil-Moisture irrigation relationship.
- (b) Explain soil moisture characteristic curves.
- (c) Enlist types and components of micro-irrigation system.
- (d) Explain contour irrigation method.

(B) Attempt any ONE :**06**

- (a) Explain Drip irrigation in detail.
- (b) Explain components of drip irrigation system with neat labelled sketch.

5. Attempt any TWO :**16**

- (a) Explain Tension infiltrometer with neat sketch and state advantages of it.
- (b) Derive relationship between Delta, Duty & Base period.
- (c) When is furrow irrigation used and state maintenance of furrow irrigation.

6. Attempt any FOUR :**16**

- (a) Explain capillary and non-capillary pores and define soil consistency.
 - (b) Explain Lysimeter experiment for measurement of evapotranspiration.
 - (c) State Net irrigation requirement and cross irrigation requirement.
 - (d) State any four benefits of drip irrigation.
 - (e) Compare drip irrigation and sprinkler irrigation on any four points.
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