

PARUL UNIVERSITY
FACULTY OF AGRICULTURE
B.Tech. (Agricultural Engineering) Summer 2022 - 23 Examination

Semester: 8
Subject Code: 20103478
Subject Name: Landscape Irrigation Design and Management

Date: 28-03-2023
Time: 10:30am to 12:30pm
Total Marks: 50

Instructions

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1**A) Fill in the blanks (Each of 0.5 Mark) (05)**

- i) _____ soil is not suitable for sprinkler irrigation.
- ii) The pop-up type sprinklers are used in _____.
- iii) Irrigation is supplementary to _____.
- iv) Irrigation canals are generally aligned along _____.
- v) The number of days between sowing and harvesting is known as _____.
- vi) _____ type of irrigation methods uses artificial rain to irrigate the land.
- vii) _____ Irrigation system refers to the operation of the system automatically with no or just a minimum of manual intervention beside the surveillance.
- viii) _____ is process of applying fertilizer along with irrigation.
- ix) $ET_c = \text{_____} * K_c$
- x) Irrigation _____ are flexible irrigation pipes, which take the form of tube when pressurized water flow inside and when this stop running, it retracts being flat.

B) Multiple Choice Questions (Each of 0.5 Mark) (10)

- i) Frequency of irrigation is dependent upon the type of
 - a) Soil and crop
 - b) Soil and climate
 - c) Soil, crop and climate
 - d) Soil, crop, climate and fertilizer
- ii) The interval that can be safely allowed between two successive irrigations is known as the _____ of irrigation.
 - a) Pause
 - b) Gap
 - c) Scheduling
 - d) Frequency
- iii) The irrigation method in which water is slowly and directly applied to the root zone of the plants, thereby minimizing the losses by evaporation and percolation, is called as _____ irrigation.
 - a) Sprinkler
 - b) Micro-sprinkler
 - c) Trickle
 - d) Flood
- iv) The main drawback of this method is
 - a) High cost
 - b) High investment
 - c) Less feasible
 - d) All of them
- v) _____ method is best suited when crops are grown in rows.
 - a) Furrow Irrigation
 - b) Drip Irrigation
 - c) Border Irrigation
 - d) Sprinkler Irrigation
- vi) Major projects of irrigation are those which have irrigation potential of more than:
 - a) >2000 ha
 - b) > 5000 ha
 - c) >10000 ha
 - d) >20000 ha

- vii) Which type of irrigation is practiced when the water supply is at too low a level to run by gravitation of the land?
 a) River canal Irrigation
 b) Lift Irrigation
 c) Flow Irrigation
 d) Inundation Irrigation
- viii) Which method of irrigation is preferred when land topography is irregular, gradient is steeper and soil is easily erodible?
 a) Sprinkler Irrigation
 b) Furrow Irrigation
 c) Drip Irrigation
 d) Border Irrigation
- ix) _____ is more suitable for permeable soil due to large stream discharge.
 a) Check Basin Irrigation
 b) Drip Irrigation
 c) Furrow Irrigation
 d) Flood Irrigation
- x) Which of the following has the highest irrigation efficiency ?
 a) Sprinkler Irrigation
 b) Trickle Irrigation
 c) Check Basin Irrigation
 d) Flood Irrigation
- xi) Irrigation water conveyed to the land by means of gravity flow indicates which of the following type of irrigation?
 a) Flow Irrigation
 b) Lift Irrigation
 c) Drip Irrigation
 d) Perennial Irrigation
- xii) The application of water to the surface of the field by Gravity flow is known as
 a) Gravity Irrigation
 b) Surface Irrigation
 c) Sub Surface Irrigation
 d) Free Irrigation
- xiii) _____ is mostly suitable for root and tuber crops.
 a) Drip b) Border c) Basin d) Furrow
- xiv) The devices used to measure the flow of water in an irrigation channel.
 a) Notch b) Weir c) Water meter d) All of them
- xv) _____ are devices for the measurement of the flow of water in open channels when the depth of flow is less
 a) Weir b) Notch c) Flumes d) Water meter
- xvi) The total volume of irrigation water required for a particular type of crop to mature is known as
 a) Delta b) Duty c) Crop ratio d) Base Period
- xvii) Arable land in the irrigated zones of India is becoming saline because of _____.
 a) Over Irrigation
 b) Overgrazing
 c) Heavy Rainfall
 d) Over Pesticide usage
- xviii) The downward movement of water through saturated or nearly saturated soil is response to force of gravity is
 a) Percolation b) Seepage c) Infiltration d) Inter flow
- xix) The amount of water required to fill up the pore spaces in soil particles by

replacing all air held in pore spaces, is known as

- a) Field capacity
- b) Permanent Wilting Point
- c) Saturation capacity
- d) Available moisture

- xx) The relative proportion of sand, clay and silt determines:
- a) Soil structure
 - b) Soil mass
 - c) Soil texture
 - d) Soil material

Q.2

A) Define the following (Any five out of seven questions) (05)

- (1) Consumptive use
- (2) Application rate
- (3) Evapotranspiration
- (4) Transpiration
- (5) Landscape Irrigation
- (6) Irrigation
- (7) Irrigation interval

B) Answer the following (Any five out of seven questions) (05)

- (1) What do you mean by crop coefficient?
- (2) Enlist modern method of landscape irrigation.
- (3) Enlist types of filters used in drip irrigation system.
- (4) Enlist components of automatic irrigation system.
- (5) Enlist components of drip irrigation system.
- (6) Write down the advantages of drip irrigation system?
- (7) Enlist components of sprinkler irrigation system.

Q.3 Write Short notes (Any five out of six questions) (10)

- (1) On what basis drippers are selected?
- (2) Write down demerits of conventional irrigation systems.
- (3) What are the inputs for FAO penman monteith equation?
- (4) What do you mean by Automatic Irrigation system
- (5) Write down merits of modern irrigation systems.
- (6) Write down the advantages of drip irrigation system?

Q.4 Long Questions (Any three out of four questions) (15)

- (1) Explain in detail about selection of pump.
- (2) How do you decide the number of section of the field while designing drip irrigation system?
- (3) Enlist various method of evapotranspiration and explain FAO penman monteith method in brief.
- (4) Design drip irrigation system for the following data given:
Crop: Soybean
Spacing: 8' * 4'
Soil: Clay
Land form: Flat
Water source: Well
Water level: 15 m BGL
Electricity Available: 8 hours