Seat No:_____ **Enrollment No:_____**

PARUL UNIVERSITY

COLLEGE OF AGRICULTURE

B.Sc.(Hons.) Agriculture, Winter 2017 - 18 Examination

Semester: 2 **Date: 02/01/2018**
Subject Code: 20101151 **Time: 10:30 am to 1:00 pm**
Subject Name: Water Management Including Micro Irrigation **Total Marks: 60**

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 Do as Directed.

A. Fill in the blanks. (Each of 0.50 marks) **(10)**

1. Water that is available to the plants and readily absorbed is **_____.**
2. **_____** method is direct method of measuring soil water content.
3. Water requirement of a crop is related to its **_____.**
4. Water requirement can be obtained by **_____.**
5. **_____%** of water absorbed by the plants is used for photosynthesis.
6. Consumptive use can be obtained by **_____.**
7. The negative pressure potential is often termed as **_____.**
8. **_____** soil texture has greater quantity of available water.
9. The tensiometer is suitable for **_____** soils.
10. One cubic foot water is equivalent to **_____** litres of water.
11. One cubic meter water is equivalent to **_____** litres of water.
12. The attraction of water molecules for solid surface is termed as **_____.**
13. Corrugation is a type of **_____** irrigation.
14. Capillarity is due to _____
15. Major source of water used by plants is **_____.**
16. 1 bar equals to **_____**
17. At field capacity all macropores are filled with **_____** and micropores filled with **_____.**
18. At PWP the soil water potential ranges from **_____.**
19. **_____** soil has lowest quantity of available water.
20. Field capacity is the **_____** limit of soil water availability to plants.

B. Multiple choice type questions. (Each of 0.50 mark) **(10)**

1. Movement of soil water takes in the direction of _____.
   a) Decreasing tension c) Both
   b) Increasing tension d) None
2. ._____ method is direct method of measuring soil water content.
   a) Gravimetric c) Tensiometer
   b) Neutron scattering d) None
3. Attraction of water molecule with each other is called _____.
   a) Cohesion c) Both
   b) Adhesion d) None
4. Capillarity is due to_____.
   a) Adhesion c) Both
   b) Cohesion d) None
5. When plants cannot absorb any water and die eventually this is termed as _____.
   a) Field capacity c) Hygroscopic water
   b) Ultimate wilting point d) PWP
6. Field capacity is the _____ limit of soil water availability to plants .
   a) Upper c) Both
   b) Lower d) None
7. The average rainfall of India has been estimated to be _____.
   a) 1194mm c) 1394mm
   b) 1294mm d) 1094mm
8. When plant is not dead but remains in wilted condition this is termed as_____.
   a) Field capacity c) Hygroscopic water
   b) Ultimate wilting point d) PWP

9. At field capacity _____.
   a) All macro pores are filled with water and micro pores are filled with air
   b) All macro pores are filled with air and micro pores filled with water
   c) Both are filled with air
   d) Both are filled water
10. The water available to the plants in the capillary water between _____.
   a) PWP and ultimate wilting point
   b) Field capacity and PWP
   c) Field capacity and hygroscopic water
   d) PWP and hygroscopic water
11. The available water holding capacity can be determined by _____.
   a) FC- ultimate wilting point
   b) Field capacity-hygroscopic water
   c) FC-PWP
   d) PWP-hygroscopic water
12._____ has lowest quantity of available water.
   a) Sandy loam
   b) Silty loam
   c) Clay loam
   d) Clay
13._____ has highest quantity of available water.
   a) Sandy loam
   b) Silty loam
   c) Clay loam
   d) Clay
14.1M Pa equals to _____.
   a) 1 JKg^{-1}
   b) 10 bars
   c) 100 psi
   d) All
15. One cubic meter water is equivalent to _____ litres.
   a) 102800
   b) 28.32
   c) 1000
   d) 102.79
16. The negative pressure potential is often termed as _____.
   a) Matric potential
   b) Suction potential
   c) Pressure potential
   d) None
17. The pressure due to solute is termed as _____.
   a) Osmotic pressure
   b) Imbibition pressure
   c) Suction pressure
   d) None
18. The tensiometer is suitable for _____ soils.
   a) Clayey
   b) Sandy
   c) Silty
   d) All
19. ._____ soil texture has greater quantity of available water.
   a) Fine
   b) Coarse
   c) Medium
   d) All
20. The attraction of water molecule for solid surface is termed as _____.
   a) Cohesion
   b) Adhesion
   c) Both
   d) None

C. Give the sentence true or false. (Each of 0.50 mark) **(05)**

1. Corrugation is a type of sprinkler irrigation.
2. 98 % of water absorbed by the plants is used for photosynthesis.
3. One cubic meter water is equivalent to 1000 litres of water.
4. The depth of water required by a crop during its life cycle in the field is called duty.
5. The first irrigation before sowing the crop for seed germination and seedling establishment is known as base period.
6. The negative pressure potential is often termed as pressure potential.
7. Major source of water used by plants is hygroscopic water.
8. The first drip irrigation was developed by Thornthwaite.
9. Water requirement of a crop is related to its dry matter content.
10. The method of irrigation where water is applied directly to the root zone is called as sprinkler irrigation.

Q.2 Do as Directed.

A. Match group A with group B. (Each of 0.50 marks) **(05)**

A	**B**
1) Surface water	a) Pegging
2) Sardar Sarovar Irrigation Project	b) Tasseling
3) Capillary potential	c) Moisture sensitive period
4) Metric potential	d) Spot Indicators
5) Physical water	e) Superflous water
6) Biological water	f) Capillary water

7) Soil-cum-sand mini plot technique
8) Critical stage
9) Maize
10) Groundnut

g) Negative
h) Buckingham
i) Nawagam
j) River and pond

B. Define the following. (Any ten) **(05)**

1. Capillarity
2. Effective rainfall
3. Delta
4. Net irrigation requirement
5. Duty of Water
6. Permeability
7. Irrigation
8. Critical stages
9. Seepage
10. Permanent wilting point
11. Infiltration
12. Water management

C. Answer the following. (Any ten) **(10)**

1. Enlist the Soil Moisture Constants
2. Factors affecting Infiltration Rate
3. Characteristics of good rainfall
4. Enlist the unit of expressing energy of soil water
5. Classification of irrigation method.
6. Write down Critical Growth Stages of following crops.
   Rice, Sorghum, Maize, Pigeon pea, Groundnut
7. Disadvantages of Sprinkler irrigation
8. Advantages of Drip Irrigation
9. Objectives of Irrigation
10. Enlist the movement of water into the soil
11. Factors affecting duty of water
12. How to increase infiltration rate?

Q.3 Write short notes. (Any five) **(10)**

1. IW /CPE Approach
2. Importance of Irrigation management
3. Importance of irrigation scheduling
4. Soil Moisture Constants
5. Components of Drip Irrigation
6. Problems of poor quality water

Q.4 Differentiate the following. (Any five) **(05)**

1. Adsorption and Absorption
2. Bar and Atmosphere
3. South-west monsoon and North-east monsoon
4. Adhesion and Cohesion
5. Water management and Irrigation management
6. Surface water and Subsurface water