

**PARUL UNIVERSITY**  
**COLLEGE OF AGRICULTURE**  
**B.Tech Agriculture Winter 2019 - 20 Examination**

Semester: 1

Date: 10/12/2019

Subject Code: 20103204

Time: 10:30 am to 12:30 pm

Subject Name: Principles of Soil Science

Total Marks: 50

**Introduction:**

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

**Q.1. (A) Fill in the blanks (each of 0.5 marks)****(05)**

1. \_\_\_\_\_ is the study of the origin of rocks.
2. Different distinguished layers in soils designated as \_\_\_\_\_.
3. The size of clay particles is \_\_\_\_\_mm.
4. The attraction between clay and water molecules is known as \_\_\_\_\_.
5. Rock is a mixture of \_\_\_\_\_.
6. Plutonic rocks have \_\_\_\_\_ size crystal than intrusive rocks.
7. The most active compound of soil is \_\_\_\_\_.
8. Soil air contains \_\_\_\_\_ percent CO<sub>2</sub>.
9. Saline soil can be reclaimed by \_\_\_\_\_.
10. The process of accumulation of soluble salt in soil is known as \_\_\_\_\_.

**(B) Multiple choice Questions (each of 0.5 marks)****(10)**

1. Phosphorus is absorbed by plants.  
 (a) H<sub>2</sub>PO<sub>4</sub>    (b) H<sub>4</sub>PO<sub>4</sub>    (c) PO<sub>4</sub>    (d) H<sub>3</sub>PO<sub>4</sub>
2. Paddy absorbed nitrogen in the form of \_\_\_\_\_.  
 (a) NH<sub>4</sub>    (b) NO<sub>3</sub>    (c) NO<sub>2</sub>    (d) NO
3. Urea fertilizer contains \_\_\_\_\_ percent N.  
 (a) 26    (b) 44    (c) 46    (d) 36
4. \_\_\_\_\_ is a hygroscopic in nature.  
 (a) Urea    (b) DAP    (b) Ammonium Sulphate    (c) Calcium nitrate
5. The solid zone of the earth's is known as \_\_\_\_\_.  
 (a) Atmosphere    (b) Hydrosphere    (c) Lithosphere    (b) Hydrosphere
6. When the magma solidifies at moderate depth is call \_\_\_\_\_.  
 (a) Effusive    (b) Intrusive    (c) Plutonic    (d) Volcanic
7. Micronutrient availability is \_\_\_\_\_ in sodic soils.  
 (a) Less    (b) Medium    (c) High    (d) Very high
8. The process of accumulation od soluble salt in soil is known as \_\_\_\_\_.  
 (a) Alkalization    (b) Solonisation    (b) Salinization    (d) Acidification
9. \_\_\_\_\_ element is required for quality of crops.  
 (a) K    (b) P    (c) N    (d) S
10. \_\_\_\_\_ required throughout the crop growth.  
 (a) N    (b) P    (c) K    (d) S
11. \_\_\_\_\_ is the idle texture of the soil.  
 (a) Sand    (b) Loam    (c) Clay    (d) Salt
12. Generally \_\_\_\_\_ percent solution of Urea is used for foliar application  
 (a) 2    (b) 4    (c) 6    (d) 0.2
13. \_\_\_\_\_ types of structures are found in soil.  
 (a) 2    (b) 4    (c) 6    (d) 8
14. The solubility of gypsum is \_\_\_\_\_.  
 (a) 0.2    (b) 0.4    (c) 0.6    (d) 0.8
15. \_\_\_\_\_ class water is suitable for irrigation in all soils.  
 (a) C<sub>1</sub>S<sub>1</sub>    (b) C<sub>3</sub>S<sub>3</sub>    (3) C<sub>4</sub>S<sub>4</sub>    (d) C<sub>2</sub>S<sub>4</sub>
16. 1 me/Lt of Ca = \_\_\_\_\_ mg Ca/L  
 (a) 10    (b) 20    (c) 30    (d) 40
17. Full form of SAR \_\_\_\_\_.

- (a) Soluble Absorption ratio                      (b) Sodium Absorption ratio  
 (c) Strontium Absorption ratio                  (d) Selenium Absorption ratio
18. \_\_\_\_\_ Fertilizer behave basic in nature.  
 (a) Ammonium Sulphate                      (b) Sodium nitrate  
 (c) Urea    (d) DAP
19. Basalt is a \_\_\_\_\_ rock.  
 (a) Acidic                      (b) Basic                      (c) Neutral                      (d) Strong acidic
20. \_\_\_\_\_ is a 2:1 types of minerals  
 (a) Illite                      (b)                      (c) Kaolinite                      (d) Rock phosphate

**Q.2. (A) Define the following (Any five out of seven questions) (05)**

- 1) Soil                      2) Edaphology                      3) Ion exchange  
 4) Soil fertility                      5) Soil reaction                      6) Rocks  
 7) Soil colloids

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

1. Give the classification of Igneous rocks.
2. What is the role of organic matter in soil fertility?
3. Give the classification of minerals on their chemical composition with examples.
4. Explain the alkaline (sodic) soil with suitable example.
5. What is difference between saline and sodic soils?
6. What is liquid fertilizer and discussed any one of them.

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

1. Role of organic matter in soil.
2. Reclamation of sodic soils.
3. What is role of sulphure in plant?
4. Explain the detailed sedimentary rocks.
5. Discuss the physical properties of soil.
6. Explain the different types of soil orders or silicate clay with suitable examples.
7. What is the role of C:N ratio in plant.

**Q.4. Long question (Any three out of Four questions) (15)**

1. Explain micronutrient deficiency symptoms in plants.
2. Give the criteria of quality of Irrigation water.
3. Discuss the effect of soil reaction on nutrient availability.
4. Classify the rocks on the basis of origin with examples.