

**PARUL UNIVERSITY**  
**COLLEGE OF AGRICULTURE**  
**B.Sc.(Hons.) Agriculture Summer 2017 - 18 Examination**

**Semester: I**  
**Subject Code: 20103102**  
**Subject Name: Fundamentals of Soil Science**

**Date: 05/06/2018**  
**Time: 2.00 pm to 4.30 pm**  
**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 1.00 marks)****(10)**

1. \_\_\_\_\_ is an example of metamorphic rocks.
2. Soils with \_\_\_\_\_ bulk densities have favourable physical conditions
3. The cation exchange capacity of montmorillonite is \_\_\_\_\_ me/100g.
4. Dicot plant roots have \_\_\_\_\_ CEC .
5. Gypsum is the example of \_\_\_\_\_ mineral.
6. \_\_\_\_\_ fertilizer helps in the development of soil structure.
7. \_\_\_\_\_ soil particles are chemically inert.
8. The arrangement of soil particles and their aggregates into certain defined patterns is called soil \_\_\_\_\_.
9. Apatite is the source of \_\_\_\_\_ in soils.
10. Capillary water is known as \_\_\_\_\_.

**B. Multiple choice type questions. (Each of 1.00 mark)****(10)**

1. **Which of the following is metamorphic rocks?**
  - a) Quartzite
  - b) slate
  - c) Marble
  - d) All of the above
2. **Which soil separates have a low water holding capacity?**
  - a) Silt
  - b) Sand
  - c) Clay
  - d) Gravel
3. **Which soil separates have a high fertility?**
  - a) Sand
  - b) Silt
  - c) clay
  - d) Gravel
4. **What is the significance of soil consistence?**
  - a) It increases the fertility of the soil.
  - b) It decreases the fertility of the soil.
  - c) No effect on soil fertility of the soil.
  - d) None of the above
5. **Which soils have a greater number of micro pores?**
  - a) Sandy soils
  - b) Silt and silt loam soils
  - c) Clays and clayey soils
  - d) Sandy loam soils
6. **The following two basic forces are responsible for water retention in the soil.**
  - a) Hydrogen bonding
  - b) Surface tension
  - c) Cohesion and adhesion
  - d) None of the above
7. **Capillary water is held in the following pores.**
  - a) Micro pores
  - b) Macro pores
  - c) Both micro and macro pores
  - d) None of the above
8. **Which materials are taking part in aggregate formation?**
  - a) Zinc and silicon hydroxides
  - b) Iron and aluminum hydroxides
  - c) Calcium and magnesium hydroxides
  - d) Potassium hydroxides
9. **The process which involves conversion of soil nitrate into gaseous nitrogen or nitrous oxide is called**
  - a) denitrification
  - b) ammonification
  - c) nitrification
  - d) None of the above
10. **Which soil separates have a very low plasticity, swelling and cohesion characteristics?**
  - a) clay
  - b) sand
  - c) silt
  - d) None of the above

**Q.2 Do as Directed.**

**A. Define the following. (Any five)**

**(05)**

- 1.Rocks
- 2.Ammonification
- 3.Cohesion
- 4.Nitrification
- 5.Particle density
- 6.Soil profile
- 7.Soil

**B. Answer the following. (Any Five)**

**(05)**

- 1.Give the two examples of metamorphic rocks
- 2.Why sandy soil has low water holding capacity?
- 3.Which soil has high fertility? Why?
- 4.Give two important of percolation in agriculture.
- 5.What is an organic horizon?
6. How you will improve poor fertility of sandy soils?
7. Why montmorillonite clay mineral has high cation exchange capacity?

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

**(15)**

1. Differentiate between Illite Vs Montmorillonite clay minerals.
2. Enlist the name of three clay minerals. Which clay mineral has higher CEC.?
3. Differentiate between Gravitational water Vs Capillary water
4. Classification of rocks on mode of origin or formation
5. Classification of soil separates
6. Differentiate between Sand Vs Clay

**Q.4 Attempt any Three/Long Questions**

**(15)**

1. Physical Classification of Soil Water
- 2.Role of organic matter
3. Classify the minerals on the basis of chemical composition
4. Components of soils (volume basis):