

PARUL UNIVERSITY
COLLEGE OF AGRICULTURE

B.Sc.(Hons.)Agriculture Summer 2018 - 19 Examination

Semester: 1

Date: 13/04/2019

Subject Code: 20103102

Time: 10:30am to 1:00pm

Subject Name: Fundamentals of Soil Science

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 Do as Directed.**A. Fill in the blanks. (Each of 0.5 mark)****(05)**

1. Granite is the example of _____ rock.
2. Monovalent plant takes _____ cations.
3. The two metallic elements occurring in greatest abundance in the earth crust are _____ and _____.
4. Apatite is the source of _____ in soils.
5. The cation exchange capacity of montmorillonite is _____ me/100 g.
6. _____ is held in _____ utilized by the plants.
7. The attraction between water and water molecule is known as _____.
8. The sandy soils have _____ water holding capacity.
9. The arrangement of soil particles and their aggregates into certain defined patterns is called soil _____.
10. Basalt is the example of _____ rock

B. Multiple choice type questions. (Each of 0.5 mark)**(10)**

- 1 **Which soil separates have a high water holding capacity and high fertility?**
 - a) Silt
 - b) Sand
 - c) Clay
 - d) Gravel
- 2 **Carbon dioxide gas dissolved in water, it forms _____.**
 - a) carbon acid
 - b) carbonic acid
 - c) water dioxide
 - d) None of the above
- 3 **Which of the following is the metamorphic rock?**
 - a) slate
 - b) Granite
 - c) basalt
 - d) All of the above
- 4 **Which of the following is not heavy minerals?**
 - a) Hematite
 - b) Feldspar
 - c) Pyrite
 - d) Limonite
- 5 **Which materials are taking part in aggregate formation**
 - a) Zinc and silicon hydroxides
 - b) Iron and aluminium hydroxides
 - c) Calcium and magnesium hydroxides
 - d) Potassium hydroxides
- 6 **The following is an example of 1:1 lattice silicate clay mineral**
 - a) kaolinite
 - b) Montmorillonite
 - c) kaolinite-biotite
 - d) All of the above
- 7 **_____ is much greater proportion in the soil air.**
 - a) Oxygen
 - b) water vapour
 - c) Carbon dioxide
 - d) Nitrogen
- 8 **Which of the following is not metamorphic rock?**
 - a) Quartzite
 - b) Slate
 - c) Conglomerate
 - d) Marble
- 9 **Why the clay particles have greater CEC than sandy soils.?**
 - a) larger particle size
 - b) the smallest particle size
 - c) both a) + b)
 - d) None of the above
- 10 **What is the effect of addition of organic matter on particle density?**
 - a) It increases the particle density.
 - b) No effect on particle density.
 - c) decreases the particle density
 - d) None of the above

11 Physical weathering brought about by mechanical action of various weathering agents is known as

- a) decomposition
- b) denudation
- c) disintegration
- d) None of the above

12 The vertical section of the soil showing the various layers from the surface to the unaffected parent material is known as

- a) soil profile
- b) Horizon
- c) horizon A
- d) horizon of illuviation

13 What is the significance of soil consistence?

- a) It decreases the soil fertility.
- b) It increases the fertility of soil.
- c) No effect on soil fertility.
- d) None of the above

14 The alluvial soils are finding in the following states of India

- a) Maharashtra, M.P. and Mysore
- b) Rajasthan, Punjab and U.P
- c) Kerala, Orissa and tops hills in the Deccan
- d) None of the above

15 Salinization takes place in

- a) Humid region
- b) Arid and semi arid region
- c) Temperate region
- d) None of the above

16 Which soil separates have a high water holding capacity?

- a) Clay
- b) Silt
- c) sand
- d) Gravel

17 The water held tightly on the surface of the colloidal particles is known as _____ water.

- a) Gravitational
- b) Capillary
- c) Hygroscopic
- d) A and B both

18 Which soil separates have the lowest total pore space?

- a) silt
- b) clay
- c) sand
- d) None of the above

19 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

20 Each water molecule carries the following charges

- a) Positive
- b) Negative
- c) Both negative and positive
- d) None of the above

Q.2 Do as Directed.

A. Define the following. (Any five)

1. Bulk density
2. Nitrification
3. Soil pollution
4. Rock
5. Deflocculation
6. Capillary water
7. Soil profile

(05)

B. Answer the following. (Any five)

1. What is soil?
2. Enlist different horizons.
3. How to make poor sandy soils into productive for higher crop production.
4. Give two important of percolation in agriculture.
5. Why the plasticity of montmorillonite is higher?
6. Why kaolinite clay mineral has low cation exchange capacity?
7. How we can maintaining levels of mono and di-valiant cations in the soil by adopting cereal-legume crop rotation in a field?

(05)

Q.3 Write short notes. (Any five)

1. Properties and importance of soil colloids
2. Give the difference between montmorillonite and kaolinite clay mineral

(10)

3. Significance of C: N Ratio
4. Give the differences between sand and clay.
5. Give difference between Gravitational water and capillary water
6. Physical Classification of Soil Water
7. Give classification of soil separates.

Q.4 Long Questions/Example (Attempt any three)

(15)

1. Classify minerals on the basis of chemical composition. Give two examples of each
2. Components of soils (volume basis)..
3. Role of organic matter
4. Write down the details of soil profile and their different horizons with figures.