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**Reg. No. :**

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**Question Paper Code: 91007**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

First Semester

Agriculture Engineering

19UCY107 - CHEMISTRY FOR AGRICULTURIST

(Regulation 2019)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The ability of an atom to attract the shared electron pair towards itself is known as \_\_\_\_\_ CO1- R  
(a) Coordination (b) Electro negativity (c) Bonding (d) Electron Affinity
2. The type of hybridization is exhibited by  $C_2H_2$  is \_\_\_\_\_ CO1- R  
(a) SP (b)  $SP^2$  (c)  $SP^3$  (d) None of the above
3. \_\_\_\_\_ bond is account for many physical features of metals such as luster, conduction and strength. CO1- R  
(a) Metallic (b) Ionic (c) Covalent (d) Hydrogen
4. Hardness is expressed in terms of  $CaCO_3$  equivalent, because CO2- R  
(a) It is highly insoluble salt (b) Its molecular weight is 100  
(c) Its equivalent weight is 50 (d) All the above
5. The reagent used in Calgon conditioning is CO2- R  
(a)  $Na_2[Na_4(PO_3)_6]$  (b)  $CaCO_3$  (c)  $[NaAlO_2]$  (d)  $Mg(OH)_2$
6. Which of the following salt is not responsible for hardness of water? CO2- R  
(a)  $CaCO_3$  (b)  $MgCO_3$  (c)  $Na(HCO_3)$  (d) None of the Above
7. The type of soil has the greater surface area is \_\_\_\_\_ CO3- R  
(a) Loam (b) Sand (c) Clay (d) Red soil

8. All the type of soil contains \_\_\_\_\_, organic matter, water and air. CO3- R  
 (a) Minerals (b) Micro organisms (c) Radioactive elements (d) Oil and gases
9. Butter, vegetable oil, Cholesterol are examples for CO4- R  
 (a) Proteins (b) Food preservatives (c) Lipids (d) Carbohydrates
10. Which one of the following vitamin is soluble in water CO4- R  
 (a) A (b) B (c) D (d) K

PART – B (5 x 2= 10 Marks)

11. Write the electronic configuration of  $\text{Fe}^{2+}$  ion. CO2-App
12. Ice floats in water. Give reason. CO2- Ana
13. Suggest a method to convert sea water into drinking water. CO1- App
14. List the major components of sodic soil CO3- R
15. Write any two examples for proteins and carbohydrates used in food industry. CO4- U

PART – C (5 x 16= 80 Marks)

16. (a) Explain Valence Band Theory (VBT) in detail with examples. CO1- U (16)  
 Discuss its applications and limitations.
- Or
- (b) (i) Write short note on Vander Waals forces CO1- U (8)  
 (ii) Explain Aufbau Principle and Pauli Exclusion Principle in detail. CO1- U (8)
17. (a) Write the principle of EDTA method. Describe the estimation of CO2- U (16)  
 hardness of water by EDTA method.
- Or
- (b) Describe the demineralization process of water softening. Explain CO2- U (16)  
 the reactions involved in it.
18. (a) Write a note on mineral materials and organic matters present in the CO3- U (16)  
 soil.
- Or
- (b) Explain the terms soil acidity, sodic soil, buffer capacity and time CO3- U (16)  
 content in soil.

19. (a) Explain the need and role of food preservatives, colouring agents and flavoring agents in food industry. Name few examples for each category. CO4- U (16)

Or

- (b) Explain the manufacturing of alcohol and acetic acid by fermentation process. Explain the chemical reactions involved in it. CO4- U (16)

20. (a) Explain the carbonate, phosphate and Calgon conditioning of water to overcome the boiler troubles. CO2- U (16)

Or

- (b) Explain the permutit process of water softening. CO2- U (16)

