A Reg. No. :

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2024

First Semester

Agriculture Engineering

21UCY107 - CHEMISTRY FOR AGRICULTURIST

(Regulation 2021)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The lowest energy orbital is _____   CO1- U

    (a) p-orbital   (b) d-orbital   (c) s-orbital   (d) f-orbital

2. The bond angle between the sp hybrid orbitals is _____   CO1- U

    (a) 90 °   (b) 180 °   (c) 120 °   (d) 109 ° 29'

3. pH for drinking water is _____   CO1- U

    (a) 1-2   (b) 3-4   (c) 7-8.5   (d) 10-12

4. The expansion of EDTA is _____   CO1- U

    (a) Ethylene Diamine Tetra AceticAcid   (b) Ethylene Diiodo Tetra Acetylene

    (c) Ethylene Diphenyl Tri Acetic Acid   (d) None of These

5. The process of disintegration of rocks is called _____   CO1- U

    (a) weathering   (b) tempering   (c) cementing   (d) annealing

6. The particle size of clay is _____   CO1- U

    (a) 0.001 mm   (b) 0.002 mm   (c) 0.02 mm   (d) 0.0001 mm

7. Proteins are   CO1- U

    (a) monomer   (b) polymers   (c) dimer   (d) none of these

8. The blood protein hemoglobin is made up of ___ polypeptide chain.   CO1- U

    (a) 1   (b)2   (c) 3   (d) 4

9. Resin containing basic functional group are capable of exchanging   CO1- U
    their ____

    (a) anion   (b) cation   (c) both a & b   (d) none of these

10. Sea water contains _____ ppm of dissolved solids   CO1- U

    (a) >1000   (b) < 1000   (c) >35000   (d) < 35000

<center>PART – B (5 x 2= 10 Marks)</center>

11. State Pauli's Exclusion principle   CO1-U
12. A water sample contains 204 mg of $CaSO_4$ per litre .Calculate the hardness in   CO3- Ana
    terms of $CaCO_3$
13. Write a note on two types of weathering.   CO1- U
14. What is the function of proteins and lipids?   CO1-U
15. What is Calgon? How is it functioning in water treatment?   CO1-U

<center>PART – C (5 x 16= 80 Marks)</center>

16. (a) How does a chemical bond formed? Explain the types of chemical   CO2- App   (16)
        bonds in NaCl and H_2molecule.

<center>Or</center>

    (b) Identify the types of hybridization in methane, ethylene and   CO2- App   (16)
        acetylene and explain the reason.

17. (a) Analyze the hardness of well water by complexometric titration.   CO3- Ana   (16)

<center>Or</center>

    (b) Identify the method for the removal of cations and anions of hard   CO3- Ana   (16)
        water? Discuss the various steps involved with suitable diagram.

18. (a) Write in your own words on the types of rocks? How soils are   CO4- App   (16)
        formed from rocks? Explain two processes involved in soil
        formation.

<center>Or</center>

    (b) What would result from the sorption process in soil? List the   CO4- App   (16)
        factors affecting the sorption of soil.

19. (a) What are Lipids? How are they classified based on the fatty acids?   CO1- U   (16)

<center>Or</center>

    (b) What are the functions of enzymes? Describe the biochemical   CO1- U   (16)
        reaction of enzymes using lock and key method.

20. (a) A hotel tea shop boiler gets more corroded due to the continuous   CO3- Ana   (16)
        usage of hard water. So, how you prevent that boiler by using
        internal conditioning methods.

<center>Or</center>

    (b) How do you extract desalinated water from brackish water using   CO3- Ana   (16)
        membrane? Explain the working principle and procedure involved.

<center>2</center>