SUBJECT CODE: 15CH/AC/FC33

B.Sc. DEGREE EXAMINATION, NOVEMBER 2017
BRANCH III - PHYSICS
THIRD SEMESTER

COURSE :   ALLIED CORE
PAPER   :   FUNDAMENTALS OF CHEMISTRY- I
TIME   :   3 HOURS   MAX.MARKS :100

SECTION – A

ANSWER ALL QUESTIONS: **(30x1=30)**
I. Choose the correct answer: **(10x1=10)**

1. A condensation polymer among the following is
    [a] PVC   [b] Dacron   [c] Teflon   [d] Polystyrene
2. The monomer of PVC is
    [a] Ethylene dichloride   [b] Ethyl chloride [c] Chloroethane   [d] Chloroform
3. Which of the following compounds is an aldose?
    [a] Fructose   [b] Starch   [c] Glucose   [d] Cellulose
4. Number of peptide bonds in tripeptide
    [a] 3   [b] 2   [c] 4   [d] 1
5. If concentration of H^+ is greater than 1×10^{-7} then the solution is
    [a] acidic   [b] basic   [c] neutral   [d] aqueous
6. Strong acid among the following
    [a] oxalic acid   [b] carbonic acid   [c] acetic acid   [d] hydrochloric acid
7. An electrolytic cell uses electrical energy to drive
    [a] chemical reaction [b] physical reaction [c] no reaction   [d] none of the above
8. Bronsted base among the following is
    [a] NH_3 [b] NH_4^+ [c] HCl   [d] HCN
9. Thermo gravimetric analysis is used to measure
    [a] change in weight   [b] rate of change in weight
    [c] heat evolved   [d]heat absorbed
10. Silver nitrate thermally stable up to which temperature
    [a] 373^0C [b] 473^0C [c] 573^0C [d] 673^0C

II. Fill in the blanks: **(10x1=10)**

11. Bakelite is an example of _____ polymer.
12. Expansion of PVC_____
13. Sucrose on hydrolysis gives _____.
14. Hair is composed of protein called _____.
15. The pH of a 10^{-9} M solution of HCl in water is _____.
16. Solubility of a sparingly soluble salt can be calculated from its _____ at a given temperature.
17. Specific conductance is expressed as _____.

18. Oxidation-reduction reaction involves transfer of _____.
19. Thermometric titration is used to measure _____.
20. The downward DTA curves indicate a _____reaction.

III. State whether the following are true or false: (5x1=5)

21. Seliwanoff's test is used to test the presence of fructose.
22. Zwitter ion is a dipolar ion.
23. When an acid (H^+) is added to alkali (OH^-), the product is water.
24. Ionic product of water has a value of 1×10^{-7}.
25. Particle size of the sample will affect the progress of the thermo gravimetric analysis

IV. Answer in a line or two: (5x1=5)

26. Define polymer.
27. Draw the structure of tyrosine.
28. State Ostwald's dilution law.
29. Define molar conductance.
30. Draw the thermogram of silver nitrate.

SECTION – B
ANSWER ANY FIVE QUESTIONS :   (5x6=30)

31. Explain the classification of polymerization. Give an example to each type.
32. a) Explain the denaturation and Renaturation of proteins.   (3)
    b) Draw the Fischer projection of Fructose.   (3)
33. What are polypeptides? How are they formed? Explain N-terminal and C-terminal ends.
34. Explain the Lowry Bronsted theory of acids and bases with suitable example.
35. Elaborate the measurement of equivalent conductance.
36. Explain the thermal analysis of calcium oxalate and calcium acetate compounds.
37. Discuss the conductometric titration.

SECTION – C   2x20=40
ANSWER ANY TWO QUESTIONS:

38. (a) Describe the details about biodegradable and non-biodegradable polymers.   (5)
    (b) Explain the biological roles of Haemoglobin and Vitamin B_{12}.   (6)
    (c) Explain the following tests i) Osazone Test   ii) Ninhydrin Test   iii) Tollen's Test (9)

39. (a) State Kohlrausch's law and discuss its apllications.
    (b) Discuss the effect of dilution on moalr and equivalent conductance of electrolytes.
                                                                    [10+10]
40. (a) Explain the following terms (i) Buffer solution (ii) Common Ion Effect
        (iii) Solubility product   [4+3+3]
    (b) Describe the instrumentation and applications of TGA.   [10]

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