SAIVA BHANU KSHATRIYA COLLEGE

(Aruppukottai Nadargal Uravinmurai Pothu Abi Viruthi Trustuku Pathiyapattathu)

ARUPPUKOTTAI

DEPARTMENT OF CHEMISTRY

QUESTION BANK

ANCILLARY CHEMISTRY			
Semester	**III: Class: II B.Sc., Zoology**	**Subject Code :**	SCHJA31
Name of the Subject :	Organic, Inorganic and Physical Chemistry		

Section A (Multiple Choice Questions)

Unit I: Electrochemistry

1. In an electrolytic cell the electrode at which the electrons enter the solution is called the _____ ; the chemical change that occurs at this electrode is called _____
   (a) anode, oxidation (b) anode, reduction (c) cathode, reduction
   (d) cannot tell unless we know the species being oxidized and reduced

2. Which of the following does not belong in the category of electrochemical cells
   (a) Voltaic cell (b) Photovoltaic cell (c) Electrolytic cell (d) Fuel Cell

3. The Current of _____ coulombs is called one Faraday (F)
   (a) 95600 b) 59600 c) 96500 d) 90500

4. Faraday's laws of electrolysis are related to the
   a) Atomic number of cation b) Atomic number of anion c) Equivalent weight of the electrolyte
   d) Speed of the cation

5. In electrochemical cell, Zn | Zn+2 || Cu+2 | Cu. The species undergoing oxidation is
   (a) Zn (b) Zn^{2+} (c) Cu^{2+} (d)Cu

6. The electrochemical equivalent of a substance is the amount of substance deposited by
   (a) 1 Ampere current (b) 1 Faraday (c) 1 Colomb of electricity (d) passage of current for 1 second

Unit II: Polymers

7. Natural rubber is a polymer of
   (a) 1, 1-dimethyl butadiene b) 2-methyl-1, 3-butadiene c) 2-chlorobuta-1, 3-diene
   d) 2-chlorobut-2-ene

8. Bakelite is an example of
   (a) Elastomer (b) Fiber (c) Thermoplastic (d)Thermosetting

9. Heating rubber is known as
   (a) Galvanization (b) Bessemerization (c) Vulcanization (d)Sulphonation

10. Which of the following is an addition polymer?
    (a) decron (b) nylon-66 (c) buna-S rubber (d) polyvinyl chloride

11. Following is the unique to polymeric materials
    (a) Elasticity (b) Viscoelasticity (c) Plasticity (d) None

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Unit III: Photochemistry

12. Question No. 1 life time of fluorescence?
    a) 10-2 b) 10-3 c) 10-8 d) 10-4

13. Question No. 2 Which among the following process is internal conversion?
    a) S1-T1 b) S1-S2 c) T1-T2 d) b and c

14. Which process is non radiative process?
    a) Internal conversion b) Intersystem crossing c) fluorescence d) None

15. Which process is used in find out forged document?
    a) fluorescence b) phosphorescence c) internal conversion d) inter-system crossing

16. In which process used to produce light In jelly fish.
    a) fluorescence b) phosphorescence c) internal conversion d) inter-system crossing

Unit IV: Coordination Compounds

17. An example of bidentate ligand is
    (a) NH_3 (b) $NH_2CH_2NH_2$ c) CN- d) $NH_2(CH_2)NH(CH)_2NH_2$

18. The geometry of a complex will be tetrahedral, if the hybridization involved is
    (a)dsp^2 b) d^2sp^3 c) sp^3d^2 d) sp^3

19. Chelate means
    (a) An inorganic coordination compound (b) An inorganic coordination compound
    (c) Strong covalent bond (d) Strong ionicbond

20. The dentisity of EDTA is
    (a) Monodentate (b) Hexadentate (c) Bidentate (d) Tridentate

21. Identify the correct naming for K3[Fe(CN)6]
    (a) Tripotassium hexacyanidoferrate (III) (b) Potassium hexacyanoferrate(III)
    (c)Tripotassium hexacyanoferrate(III) (d) Potassium hexacyanidoferrate(III)

Unit V: Pollutions

22. Following form(s) of oxygen is/are involved in ozone-oxygen cycle
    (a) O3 b) O_2 c) O d) all of these

23. Which of the following is a greenhouse gas?
    (a) CO_2 b) CH_4 c) CCl_2F_2 d) CCl_3F_3

24. Ozone forms readily in the _____ as incoming ultraviolet radiation breaks molecular oxygen (two atoms) into atomic oxygen (a single atom)

(a)Atmosphere (b) Stratosphere (c) Troposphere (d) outer space

25. Which one of the following is not Radioactive metals
    (a)Thorium (b) Radium (c) Uranium (d) ytterbium

26. Radioactive isotopes such as ____ and ___ emit radiation
    (a) U-238 and Th-234 (b) U-230 and Th-231 c) U-230 and Th-230 d) None of the above

Section B (7 mark Questions)

Unit I: Electrochemistry

27. State Faraday's Law of electrolysis
28. What is EMF in the Nernst equation
29. Explain the working of Galvanic cell
30. Define electrodes. Explain its types
31. Write notes on reference and calomel electrodes
32. Describe the working of hydrogen electrode

Unit II: Polymers

33. Differentiate linear, branched and cross-linked polymers
34. What are addition and condensation polymerization? Give examples.
35. Discuss the classification of polymers
36. Discuss the steps involved in the processing of latex into dry natural rubber
37. Mention the important properties of polymers

Unit III: (Title of the Unit)

38. Write the difference between fluorescence and phosphorescence
39. write the applications of phosphorescence
40. Distinguish between thermal and photochemical reaction
41. State Grotthuss–Draper law
42. Explain fluorescence

Unit IV: Coordination Compounds

43. What is EAN rule? Calculate the EAN value of cobalt in the complex of $[Co(NH3)6]^{3+}$
44. Discuss in detail nomenclature of coordination compounds

45. Discuss in detail the classification of ligands with suitable examples
46. Name the following coordination complexes
    (a) $[Cu(NH_3)4]^{2+}$ (b) $[Fe(H_2O)_5F]SO_4$ (c) $K_3[Fe(CN)_6]$ (d) $Cr(NH_3)_4en]Cl_3$
    (e) $Co(NH_3)_3Cl_3]$ (f) $Pt(NH_3)4Cl_2$ (g) $Na_3[Co(NO_2)6]$
47. Prove that K4Fe(CN)6 is diamagnetic in nature.
48. Explain Werner's theory with examples

Unit V: Pollution

49. Describe the various methods to preventing water pollution
50. Write notes on Acid rain
51. Describe the adverse effects of radioactive pollution
52. What is greenhouse effect? What are the major causes of the greenhouse effect?
53. What are the chemical reactions occurring in air due to sunlight?
54. What are organic and inorganic pollutants? Give examples
55. Discuss reverse osmosis water
56. Describe the various methods to preventing radioactive pollution

Section C (10 mark Questions)

Unit I: Electrochemistry

57. Derive the Nernst Equation for the emf of a cell
58. Write note on Hydrogen oxygen fuel cell

Unit II: Polymers

59. Discuss the methods of preparation and application of teflon, buna-S-rubber, nylon 66 and polystyrene
60. What is vulcanization of rubber? Explain the process in detail.

Unit III: Photochemistry

61. Explain Jablonski diagram
62. Compare the applications of fluorescence and phosphorescence
63. Write a note on radiative process
64. What is phosphorescence? Explain in detail
65. Write a note on i) IC b) ISC ii) bioluminescence iv) Chemiluminescence

Unit IV: Coordination Compounds

66. Write assumptions of VBT. Explain with one
67. Write the important postulates of Werner's theory with example

Unit V: Pollution

68. Give the composition of ozone layer. How is it formed? How do Chlorofluorocarbon (CFC) affect ozone layer and what is its effect?
69. Describe the methods of controlling water and radioactive pollution