VCD 170522 F.Y.B.Sc SEM-II CHEMISTRY P-II
MARKS 100 TIME 3 HRS

NOTE: i) All the questions are compulsory.
ii) Figures to right indicate full marks.
iii) Use of non –programmable calculator / log table is allowed.

Q.1. Choose the correct Answer from the following (2M each) **[50 M]**

1. _____ transmitters are used in remote control and TV sets
a. UV b. IR c. Microwave d. X Ray

2. Distance between two successive crests and troughs is called _____
a. Wave number b. Frequency c. Wavelength d. Velocity

3. Radiation consist of stream of discrete packets of pure energy called____
a. Electron b. Neutron c. Photon d. Atomic Number

4. The dimensional highly ordered regular repeating structure is called_____
a. Unit Cell b. Lattice point c. Space Lattice d. Crystalline solid

5. _____ buffers consist of solution of weak acid and its salt.
a. Basic b. Acid c. Electrolysis d. Edges

6. Dissociation constant of a strong electrolyte is ----------
a) Low b) very high c) high d) very low

7. _____ is a process in which energy of photon is transferred to an atom or molecule and promotes it from ground state to higher excited state.
a Emission b. Scattering c. Absorption d. Reflection

8. The titration in which iodine is released by a chemical reaction is used is called.....
a. Iodimetry b. Iodometry c .Coulometry d. Iodine

9. How many bond pair and lone pair present in IF_3 molecule.
a. 3 and 2 b. 3 and 1 c. 2 and 3 d. 2 and 1

10. The oxidation number of chromium in $K_2Cr_2O_7$ is ____
a.14 b.12 c.6 d.7

11. Among the following examples identify the correct isoelectronic pair.
a .O_3 & SO_2 b.CH_4 & CO_2 c. SiH_4 & SO_2 d.CS_2 & O_2

12. Standard reduction potential of a standard hydrogen electrode is.....
a. 0.0V b. 1.1V c. 1.5V d. 2.0V

13. Identify the name of the following reaction.

$$2\,Cu^{+}_{(aq)} \longrightarrow Cu^{2+}_{(aq)} + Cu^{0}$$

a. Oxidation reaction b. Reduction reaction
c. Disproportionation reaction d. Non dispersion Asian reaction

munotes.in

14. A reducing agent is a substance which brings about _____
a. Electron donation b. Oxidation c. Reduction d. Hydrolysis

15. Which element acts as a reducing agent in the reaction

$Zn + H_2SO_4 \rightarrow ZnSO4 + H_2$

a. Zn b H c S d O

16. Graphical plot of volt equivalent (nE) or free energy vs. oxidation state of chemical series is called ____ diagram
a. Latimer b. Forst c. Walsh d.PH

17. _____Conformation of cyclohexane is most stable conformation.
a. Twist-boat b. half chair c. boat d. Chair

18. Thiophene ring contains _____as the heteroatom.
a. sulphur b. nitrogen c. oxygen d. sodium`

19. The stability of aromatic compounds is depending on number of ___.
a. Hyperconjugation b. resonating structure c. bonds d.Carbanions

20. Which of the following is an example of benzenoid compound.
a. benzene b. pyrrole c. cyclopropane d. cyclobutadiene

21 Pyridine has six membered ring containing ___ carbon atoms.
a. Five b. Four c. Six d. One

22. Cyclopentadienyl anion is _____ compound.
a. Aliphatic b. Aromatic c. Anti-aromatic d. Non aromatic

23. Halogenations is carried out by the action of chlorine in presence of _____ as catalyst
a. $FeCl_3$ b. $AlCl_3$ c. H_2SO_4 d. HCl

24. Identify the correct statement which is related to aromatic hydrocarbons
a) it has only sigma bond b) it has only pi bond
c) it has sigma and two pi bond d) it has sigma and delocalised pi bonds

25. Benzene doesn't undergo _____ reaction
a) Substitution b) addition c) polymerisation d) Oxidation

Q.2. Attempt any three (5M each) **[15]**

1. Define buffer solution? Explain mechanism of it in a basic buffer.
2. Explain law of symmetry with diagram?
3 Derive the expression for ionic product of water.
4 Explain the terms: (i) pH (ii) pOH (iii) common ion effect (iv) buffer solution (v) Degree of dissociation.
5 What is meant by electromagnetic radiations? Describe various regions of the electromagnetic spectrum?

munotes.in

Q.3. Attempt any three (5M each) [15]

1. What is isoelectronic principle? State and justify the following series of molecules are isoelectronic or not.
   i) CO_2, NO_2^+, CS_2 ii)HNCO, HN_3 iii)IF_2, XeF_4 iv)PX_3, NH_3
2. Distinguish between ionic and covalent bond
3. Define the term oxidation and reduction. Balance the following ionic equation using oxidation number method.

$$Cu + HNO_3 \text{----------} \rightarrow Cu(NO_3)_2 + NO + H_2O$$

4. Explain role of $KMnO_4$ as an oxidizing agent with suitable example
5. What are disproportionation reactions? Explain with suitable example.

Q.4. Attempt any three (5M each) [15]

1. what is nitrating mixture? Explain nitration of benzene with mechanism.
2. What is friedel craft acylation? Give an example with a mechanism.
3. Summarise the characteristics of aromatic compounds.
4. Explain benzenoid compound and hetero aromatic compounds with Huckle's rule,
5. Explain aromaticity of anthracene .Draw the resonating structures

Q.5. Attempt any one [5]

1. A) Explain Baeyer strain theory with suitable example. (3M)
   B) Draw four conformations of cyclohexane (2M)
2. A) Define (i) Wavelength (ii) Frequency (iii) Wave number (3M).
   B) Write down the factor affecting the degree of dissociation? (2M)
3. A) Differentiate between ionic bond and covalent bond. (3M)
   B) Differentiate between Iodometry and Iodimetry. (2M)

-------*******-------

munotes.in