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**Class –XI**

**(SET-02)**

**Examination: TERM-01 Subject: Chemistry (043)**

**Time: 90 Minutes Max. Marks: 35**

General Instructions:

1. The Question Paper contains three sections.

2. Section A has 25 questions. Attempt any 20 questions.

3. Section B has 24 questions. Attempt any 20 questions.

4. Section C has 6 questions. Attempt any 5 questions.

5. All questions carry equal marks.

6. There is no negative marking.

**SECTION A**

This section consists of 25 multiple choice questions with overall choice to attempt any 20 questions. In case more than desirable number of questions are attempted, ONLY first 20 will be considered for evaluation.

1. Value of azimuthal quantum number (l) for f subshell is \_\_\_\_\_\_\_\_

 a) 0 b) 1 c) 2 d) 3

2. Atomic number of element with IUPAC name Unniloctium is\_\_\_\_\_\_\_\_\_\_\_\_

 a) 101 b) 108 c) 117 d) 137

3. Which of the following molecule is paramagnetic?

 a) N2 b) O2 c) F2 d) H2

4. Which of the following species is not isoelectronic to Na+?

 a) N3– b) O2– c) F - d) Al2+

5. Element with most negative electron gain enthalpy is

 a) F b) Cl c) I d) Br

6. Electronic configuration of Cu is

 a) [Ar] 3d⁵ 4s¹ b) [Ar] 3d9 4s²

 c) [Ar] 3d¹⁰ 4s¹ d) [Ar] 3d⁶ 4s²

7. The oxidation number of Mn in K2MnO4 is

 a) 0 b) 2 c) 6 d) -3

8. Which of the following reactions is disproportionation reaction?

(a) Fe(s) + 2HCl (aq) →FeCl2 (aq) + H2(g)

(b) Mg(s) + 2H2O (l) → Mg(OH)2(s) + H2(g)

(c) 2H2O2 (aq) →2H2O (l) + O2(g)

(d) CuO(s) + H2(g) →Cu(s) + H2O(g)

9. Fill the correct number of electrons in the following half reaction to balance it.

 Cr2O7 2– (aq) + 14H+ (aq) + \_\_\_\_\_ → 2Cr3+(aq) + 7H2O (l)

 a) 2e- b) 1 e- c) 3 e- d) 6 e-

10. \_\_\_\_\_\_\_\_\_ subshell is not possible.

 a) 3s b) 3p c) 3d d) 3f

11. In the organic compound CH2 = CH – CH2 – CH2 – C ≡CH, the pair of hybridised

 orbitals involved in the formation of: C2 – C3 bond is:

 (a) *sp – sp*2 (b) *sp – sp*3 (c) *sp*2 *– sp*3 (d) *sp*3 – *sp*3

12. The I.U.P.A.C. name of CH3COCH(CH3)2 is

 (a) 3-methyl-2-butanone (b) Isopropyl methyl ketone
 (c) 2-methyl-3-butanone (d) 4-methyl isopropyl ketone

13. CH3CH2Cl undergoes homolytic fission to produce

(a) CH3CH2• & Cl•  (b) CH3CH+2 & Cl–
(c) CH3CH+2 & Cl (d) CH3CH2 & Cl–

14. The empirical formulae for glucose (C6H12O6) and Water are

 a) CHO, H2O b) CH2O2, HO1/2 c) CH2O, H2O d) None of these

15. Following compounds show \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ isomerism.

 

 a) Chain b) Position c) Functional group d) Metamerism

16. Considering the elements F, Cl, O and N, the correct order of their chemical reactivity in terms

 of oxidizing property is :

 (a) F > Cl > O > N (b) F > O > Cl > N

 (c) Cl > F > O > N (d) O > F > N > Cl

17. Which of the following is a neutral oxide

 a) CO b) Na2O c) Al2O3 d) All of these

18. The most stable free radical among the following is:

 

19. The reaction
   is
 a) Elimination reaction b) Substitution reaction
 c) Free radical reaction b) Addition reaction

20. Correct configuration of 2p⁴ is

 

 a) (A) & (C) b) (A) & (B)

 c) ONLY (D) d) (A), (B) & (D)

21. The total number of σ and π bonds in Benzene are

 a) 3, 3 b) 6, 6 c) 6, 12 d) 12, 3

## 22. Inductive effect involves

 a) displacement of σ electrons b) delocalization of π electrons
 c) delocalization of σ-electrons d) displacement of π-electrons

23. Which of the following can act as an electrophile?

 a) CN– b) OH– c) H2O d) BF3

24. Following is an example of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 

 a) Inductive effect b) resonance effect c) Hyperconjugation d) Electromeric Effect

25. What is the mass percent of Oxygen in carbon dioxide?

 a) 72.72 % b)   28.7% c)   3.4% d)  27.27%

**SECTION B**

This section consists of 24 multiple choice questions with overall choice to attempt any 20 questions. In case more than desirable number of questions are attempted, ONLY first 20 will be considered for evaluation.

26. Which of the following angle corresponds to sp2 hybridisation?

 a) 90° b) 120° c) 180° d) 109°

27. The element ‘X’ with electronic configuration X= 1s2, 2s2, 2p6, 3s2, 3p6, 3d7, 4s2 belongs to the

 \_\_\_\_ group.

 a) s b) p c) d d) f

28. In which of the following substances will hydrogen bond be strongest?

 a) HCl b) H2O c) HI d) H2S

29. The bond order of N2+ is

 a) 1 b) 1.5 c) 2 d) 2.5

30. The hybridisation of Xe in XeF4 is

 a) sp2 b) sp3 c) sp3d d) sp3d2

31. What is the frequency (in Hz) of a photon emitted during a transition from *n* = 5 state to the *n* = 2

 state in the hydrogen atom?

 a) 6.9 x 1014 b) 5.9 x 1014  c) 52 x 1013 d) 2.18 x 10-18

32. Radioactive elements emit α, β, an ɣ rays and are characterised by their half lives. The

 radioactive isotope of hydrogen is

 a) Protium b) Deuterium c) Tritium d) Hydronium

33. Which of the following belongs to homologous series of alkynes?

 a) C6H6 (b) C2H4 c) C2H6 d) C3H4

34. The number of lone pairs in NH3 an H2O are

 a) 1, 1 b) 1, 2 c) 2, 1 d) 3, 2

35. Which of the following hydrides is electron-precise hydride?

 a) B2H6 b) NH3 c) H2O d) CH4

36. The Quantum number which is related to the orientation of electrons is denoted by

 a) n b) l c) m*l* d) s

37. Carbon number \_\_\_\_\_\_\_\_\_\_\_ is 3° carbon.

 

 a) 1 b) 3 c) 5 d) 7

38. The radius of the 2nd shell of hydrogen atom is\_\_\_\_\_\_\_\_pm.

 a) 536 b) 476 c) 270 d) 212

39. Which is the correct relationship for mole fractions of solvent A and solute B?

 a) XA = ( nA + nB ) b) XA =1 -nB c) XA = 1 /nB d) XA  = nA / (nA + nB)

40. Calculate the amount of water (g) produced by the combustion of 16 g of methane.

 a) 9 b) 36 c) 18 d) 16

41. In a reaction

 A + B2 →AB2

 Identify the limiting reagent, if any, in the following reaction mixtures.

 300 atoms of A + 200 molecules of B

 a) A b) B c) AB2 d) None of these

42. No two electrons in an atom will have all 4 quantum numbers equal. This statement is known as

 a) Hund’s rule b) Pauli’s rule c) uncertainty rule d) aufbau rule

43. Which of the following figure shows negative overlap

 

# 44. Butanal has four carbon atoms with functional group\_\_\_\_\_\_\_\_\_\_\_.

#  a) –CO- b) -CHO c) -COOH d) -OH

**Directions: In the following questions, A statement of Assertion (A) is followed by a statement of Reason (R). Mark the correct choice as:**

(A) Both A and R are true and R is the correct explanation of A

(B) Both A and R are true but R is NOT the correct explanation of A

(C) A is true but R is false

(D) A is false and R is True

45. Assertion : 4s subshell fills before 3d subshell.

 Reason : The value of (n + *l*) is less for 4s subshell.

46. Assertion : In [nuclear fusion reactors,](https://byjus.com/physics/nuclear-fusion-reactor/) Deuterium is used as a tracer and it is responsible to

 slow down neutrons in heavy water moderated fission reactors

 Reason : Deuterium is radioactive isotope of hydrogen.

47. Assertion: d9 configuration is more stable than d10 configuration.

 Reason: d10 configuration has more number of exchange pairs.

48. Assertion (A) : Some metals like platinum and palladium, can be used as storage media for

 hydrogen.

 Reason (R) : Platinum and palladium can absorb large volumes of hydrogen.

49. **Assertion :**Nitrogen has more ionisation enthalpy than that of oxygen.
 **Reason :** On going along a period, generally ionisation enthalpy increases.

**SECTION C**

This section consists of 6 multiple choice questions with an overall choice to attempt any 5. In case more than desirable number of questions are attempted, ONLY first 5 will be considered for evaluation.

Read the given passage and answer the questions 50 to 52.

Limitations of the Octet Rule

The octet rule, though useful, is not universal. It is quite useful for understanding the structures of most of the organic compounds and it applies mainly to the second period elements of the periodic table. There are three types of exceptions to the octet rule.

(i) The incomplete octet of the central atom

(ii) Odd-electron molecules

(iii) The expanded octet

50. Sulphur violets octet rule in some of its compounds because

a) it has less electronegativity

b) it has empty d- orbitals

c) it has odd number of electrons

d) none of these

51. in BF3 violets octet rule due to

 a) The incomplete octet of the central atom b) Odd-electron molecules

 c) The expanded octet d) none of these

52. Which of the following molecules follow octet rule?

 a) H2O b) ClF3 c) XeF4 d) NO2

53.

|  |  |
| --- | --- |
| Series | Region |
| (A) Lyman | (i) IR Region |
| (B) Paschen | (ii) UV Region |
| (C) Pfund | (iii) Visible Region |
| (D) Balmer |  |

Which of the following is best matched option:

a) (A) (i) , (B) (iii), (C) (iii), (D) (i) b) (A) (ii) , (B) (iii), (C) (iii), (D) (iii)

c) (A) (ii) , (B) (i), (C) (iii), (D) (iii) d) (A) (ii) , (B) (i), (C) (i), (D) (iii)

54. The first organic compound synthesised in the laboratory was

 (a) Methane (b) Urea (c) Acetic acid (d) Chloroform

55. 2.0 g of NaOH dissolved in 50 ml solution. Molarity of the solution is

 (a) 1 M (b) 10 M (c) 0.1 M (d) 4 M