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**Standard 11**  
**CHEMISTRY**  
**Part - I**

Time: 3.00 hrs

Marks: 70

**15×1=15**

Choose the correct answer:

1) Match the List-I and List-II using the correct code given below the list

	List - II
List - I (Empirical Formula)	(Molecular Formula)
A] Benzene - CH	1) H <sub>2</sub> O <sub>2</sub>
B] Fructose - CH <sub>2</sub> O	2) C <sub>2</sub> H <sub>2</sub>
C] Acetylene - CH	3) C <sub>6</sub> H <sub>6</sub>
D] Hydrogen Peroxide - HO	4) C <sub>6</sub> H <sub>12</sub> O <sub>6</sub>

Code:	A	B	C	D
a)	4	2	3	1
b)	3	4	2	1
c)	4	1	2	3
d)	1	4	3	2

2) Assertion: Number of radial and angular nodes for 3P orbital are 1, 1 respectively.  
Reason: Number of radial and angular nodes depends only on principal quantum number

- a) Both assertion and reason are true and reason is the correct explanation of assertion  
b) Both assertion and reason are true but reason is not the correct explanation of assertion  
c) Assertion is true but reason is false  
d) Both assertion and reason are false

3) An element has the electronic configuration 1s<sup>2</sup> 2s<sup>2</sup> 2p<sup>6</sup> 3s<sup>2</sup> 3p<sup>6</sup> 3d<sup>8</sup> 4s<sup>2</sup>.  
What will be its position in the periodic table?

- a) period 4, group 10  
b) period 2, group 2  
c) period 4, group 2  
d) period 2, group 8

4) The reaction H<sub>3</sub>PO<sub>2</sub>+D<sub>2</sub>O → H<sub>2</sub>DPO<sub>2</sub>+HDO indicates that hypo-phosphorous acid is

- a) tribasic acid    b) dibasic acid    c) monobasic acid    d) none of these

5) In which process, fused sodium hydroxide is electrolysed for extraction of sodium?

- a) Castner's process  
b) Cyanide Process  
c) Down Process  
d) All of these

6) Consider the following statements

- i) Atmospheric pressure is less at the top of a mountain than at sea level.  
ii) Gases are much more compressible than solids or liquids.  
iii) When the atmospheric pressure increases the height of the mercury column rises

Select the correct statement

- a) I and II    b) II and III    c) I and III    d) I, II and III

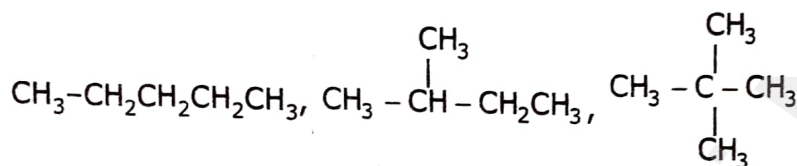
7) Which of the following relationships is not correct for the relation between ΔH and ΔU?

- a) when Δng = 0 then ΔH = U  
b) when Δng > 0 then ΔH > ΔU  
c) when Δng < 0 then ΔH < ΔU  
d) when Δng RT = 0 then ΔH > ΔU

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- 8)  $\frac{K_C}{K_P}$  for the reaction,  $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$  is
- a)  $\frac{1}{RT}$                       b)  $\sqrt{RT}$                       c)  $(RT)^2$                       d)  $RT$
- 9) Which one of the following gases has the lowest value of Henry's law constant?
- a)  $N_2$                       b) He                      c)  $CO_2$                       d)  $H_2$
- 10) Which type of hybridisation is shown by carbon atoms from left to right in the given compound  $CH_2 = CH - C \equiv N$ ?
- a)  $sp^2, sp^2, sp$                       b)  $sp^2, sp, sp$                       c)  $sp, sp^2, sp^3$                       d)  $sp^3, sp^2, sp$
- 11) The type of isomerism shown by the following compounds is



- a) position isomerism                      b) chain isomerism  
c) metamerism                      d) ring-chain isomerism
- 12) Hyper conjugation is also known as
- a) no bond resonance                      b) Baker-nathan effect  
c) both (a) and (b)                      d) none of these
- 13) The IUPAC name of the following compound is
- $$\begin{array}{c} Cl \\ \diagdown \\ C \\ \diagup \\ H_3C \end{array} = \begin{array}{c} CH_2 - CH_3 \\ \diagup \\ C \\ \diagdown \\ I \end{array}$$
- a) trans-2-chloro-3-iodo-2-pentene                      b) cis-3-iodo-4-chloro-3-pentane  
c) trans-3-iodo-4-chloro-3-pentene                      d) cis-2-chloro-3-iodo-2-pentene
- 14) The name of  $C_2F_4Cl_2$  is \_\_\_\_\_
- a) Freon-112                      b) Freon-113                      c) Freon-114                      d) Freon-115
- 15) Which of the following is natural and human disturbance in ecology?
- a) Forest fire                      b) Floods                      c) Acid rain                      d) green house effect

### Part - II

Answer any six questions. Q.No. 24 is compulsory:

6×2=12

- 16) Define limiting reagent.
- 17) Define Hund's rule of maximum multiplicity.
- 18) Explain what is meant by efflorescence.
- 19) What is meant by Joule-Thomson effect?
- 20) State the third law of thermodynamics.
- 21) Write a balanced chemical equation for an equilibrium reaction for which the

equilibrium constant is given by expression  $K_C = \frac{[NH_3]^4 [O_2]^5}{[NO]^4 [H_2O]^6}$

- 22) What is Grignard reagent? Give example.
- 23) What are the uses of alkanes?
- 24) Compound  $C_2H_6O$  (A) reacts with (anhydrous  $ZnCl_2$  and  $Con.HCl$ ) Lucas reagent to give compound (B) and water. Identify compounds A and B

### Part - III

Answer any six questions. Q.No. 33 is compulsory:

6×3=18

- 25) Write short note on principal Quantum number.
- 26) What is effective nuclear charge?
- 27) How do you convert para hydrogen into ortho hydrogen?
- 28) Define Hess's law of constant heat summation.

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- 29) Explain homogeneous and heterogeneous equilibrium.  
 30) Write a note on homologous series.  
 31) Write Fitting reaction.  
 32) Differentiate BOD and COD.  
 33) A 60 ml of paracetamol pediatric oral suspension contain 3 g of paracetamol. Find the mass by volume percentage?

**Part - IV**

Answer all the questions:

**5 × 5 = 25**

- 34) a] i) Define Avagadro number. (2)  
 ii) An organic compound present in Vinegar has 40% carbon, 6.6% hydrogen and 53.4% oxygen. Find the empirical formula of the compound (3)
- (OR)**
- b) i) Explain Pauling's method of ionic radii calculation. (3)  
 ii) What is Hydrogen bonding? How are they classified? (2)
- 35) a) i) Compare the properties of Beryllium with other elements of the group. (2)  
 ii) Write the uses of calcium oxide. (3)
- (OR)**
- b) i) State Charles law and write its mathematical expression. (3)  
 ii) What is Boyle temperature or Boyle Point? (2)
- 36) a) i) Phenol dimerises in benzene having Van't Hoff factor 0.54. What is the degree of association? (2)  
 ii) Explain the effect of pressure on the solubility. (3)
- (OR)**
- b) Discuss the formation of N<sub>2</sub> molecule using MO theory. (5)
- 37) a) i) Compare the structures of H<sub>2</sub>O and H<sub>2</sub>O<sub>2</sub>. (3)  
 ii) Write the uses of sodium chloride. (2)
- (OR)**
- b) i) Write the IUPAC name for the following compounds. (2)
- |   |   |
|---|---|
| $\begin{array}{c} \text{CH}_3 - \text{CH}_2 - \text{CH} - \text{CHO} \\   \\ \text{OH} \end{array}$ | $\begin{array}{c} \text{CH}_3 - \text{C} \equiv \text{C} - \text{CH} - \text{CH}_3 \\   \\ \text{Cl} \end{array}$ |
| (1)   | (2)   |
- ii) Distinguish between Nucleophiles and electrophiles. (3)
- 38) a) Explain Benzene Structure. (5)
- (OR)**
- b) i) How do you prepare DDT? (3)  
 ii) Write Finkelstein reaction. (2)
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