

# CHEMISTRY

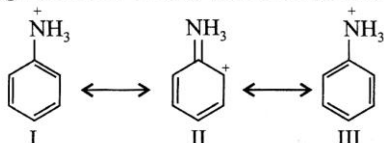
Test Series for NEET Students

Test No. : 05/24

By Khare Sir

## SECTION - A

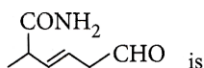
- 1 Canonical structures of anilinium ion obtained by accepting a proton are given below. Choose the correct statements.



- (a) Anilinium ion has two stable canonical structures I and III.  
 (b) II is not an acceptable structure because carbonium ion is less stable.  
 (c) Only I and III are acceptable aromatic canonical structures since II is non-aromatic.  
 (d) Anilinium ion has three stable canonical structures I, II and III.
- 2 The C—O—C angle in ether is about  
 (a) 180° (b) 190°28' (c) 117° (d) 105°
- 3 A 0.020 m solution of each of the following compounds is prepared. Which solution would you expect to freeze at -0.149 °C?  
 ( $K_f(\text{water}) = 1.86 \text{ K kg mol}^{-1}$ )  
 (a)  $[\text{Co}(\text{en})_2\text{Cl}_2]\text{Cl}$  (b)  $\text{Na}[\text{Co}(\text{EDTA})]$   
 (c)  $[\text{Cr}(\text{py})_5\text{Cl}]\text{Cl}_2$  (d)  $[\text{Cr}(\text{NH}_3)_6]\text{Cl}_3$
- 4 Match the column I with column II and mark the appropriate choice.

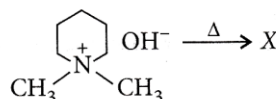
Column I		Column II	
(A)	$n\text{-Butane} \longrightarrow$ 2-Methylpropane	(i)	Free radical substitution
(B)	$\text{CH}_4 + \text{Cl}_2 \xrightarrow{h\nu} \text{CH}_3\text{Cl}$	(ii)	Wurtz reaction
(C)	$\text{RCOONa} + \text{soda lime} \longrightarrow \text{RH}$	(iii)	Isomerisation
(D)	$\text{RX} + \text{Na} \xrightarrow{\text{ether}} \text{R}-\text{R}$	(iv)	Decarboxylation

- (a) (A) → (iii), (B) → (i), (C) → (iv), (D) → (ii)  
 (b) (A) → (ii), (B) → (iv), (C) → (i), (D) → (iii)  
 (c) (A) → (i), (B) → (ii), (C) → (iv), (D) → (iii)  
 (d) (A) → (iv), (B) → (i), (C) → (iii), (D) → (ii)
- 5 A gas (X) is obtained when copper reacts with dilute  $\text{HNO}_3$ . The gas thus formed reacts with oxygen to give brown fumes of (Y). (Y) when dissolved in water gives an important acid (Z) and the gas (X). X, Y and Z respectively are  
 (a) NO;  $\text{NO}_2$ ;  $\text{HNO}_3$  (b)  $\text{NO}_2$ ; NO;  $\text{HNO}_3$   
 (c)  $\text{N}_2\text{O}$ ; NO;  $\text{HNO}_2$  (d) NO;  $\text{N}_2\text{O}$ ;  $\text{HNO}_3$
- 6 The IUPAC name of the compound

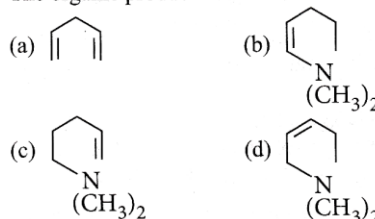


- (a) 5-carbamoylhex-1-enal  
 (b) 2-carbamoylhex-3-enal  
 (c) 2-methyl-6-oxohex-3-enamide  
 (d) 6-keto-2-methylhexanamide.

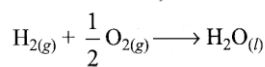
- 7 Which of the following does not show octahedral geometry?  
 (a)  $\text{SF}_6$  (b)  $\text{IF}_5$  (c)  $\text{SiF}_6^{2-}$  (d)  $\text{SF}_4$
- 8 Which of the following has highest molar conductivity?  
 (a) Diamminedichloroplatinum(II)  
 (b) Tetraamminedichlorocobalt(III) chloride  
 (c) Potassium hexacyanoferrate(II)  
 (d) Pentacarbonyliron(0)
- 9 Sanger's reagent is used for the identification of  
 (a) N-terminal of a peptide chain  
 (b) C-terminal of a peptide chain  
 (c) side chain of amino acids  
 (d) molecular mass of the peptide chain.
- 10 In the following reaction,



The organic product X is



- 11 A solution of colourless salt on boiling with excess NaOH produces a non-inflammable gas. The gas evolution ceases after sometime. Upon addition of Zn dust to the same solution, the gas evolution restarts. The colourless salt is  
 (a)  $\text{NH}_4\text{Cl}$  (b)  $\text{NH}_4\text{NO}_3$   
 (c)  $(\text{NH}_4)_2\text{SO}_4$  (d)  $(\text{NH}_4)_3\text{PO}_4$
- 12 Which of the following species is the strongest base?  
 (a)  $^-\text{OH}$  (b)  $^-\text{OR}$   
 (c)  $^-\text{OC}_6\text{H}_5$  (d)  $^-\text{O}-\text{C}_6\text{H}_4-\text{NO}_2$
- 13 We have three aqueous solutions of NaCl labelled as 'A', 'B' and 'C' with concentrations 0.1 M, 0.01 M and 0.001 M, respectively. The value of van't Hoff factor for these solutions will be in the order  
 (a)  $i_A < i_B < i_C$  (b)  $i_A > i_B > i_C$   
 (c)  $i_A = i_B = i_C$  (d)  $i_A < i_B > i_C$
- 14 For the reaction,

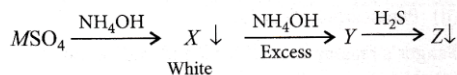


$$B.E._{(\text{H}-\text{H})} = x_1; B.E._{(\text{O}=\text{O})} = x_2 \text{ and } B.E._{(\text{O}-\text{H})} = x_3.$$

If the latent heat of vaporisation of water liquid into water vapour =  $x_4$ , then  $\Delta_f H$  (heat of formation of liquid water) is

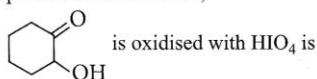
- (a)  $x_1 + \frac{x_2}{2} - x_3 + x_4$   
 (b)  $2x_3 - x_1 - \frac{x_2}{2} - x_4$   
 (c)  $x_1 + \frac{x_2}{2} - 2x_3 - x_4$   
 (d)  $x_1 + \frac{x_2}{2} - 2x_3 + x_4$

15 In the given reactions sequence,



*M* and *Z* are respectively

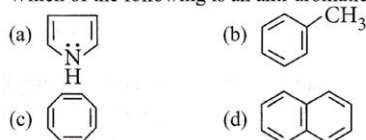
- (a) Zn, ZnS (b) Al, Al<sub>2</sub>S<sub>3</sub>  
 (c) Cu, ZnS (d) Fe, FeS
- 16 If the equilibrium constant of  $\text{BOH} \rightleftharpoons \text{B}^+ + \text{OH}^-$  at 25°C is  $2.5 \times 10^{-6}$ , then equilibrium constant for  $\text{BOH} + \text{H}^+ \rightleftharpoons \text{B}^+ + \text{H}_2\text{O}$  at the same temperature is  
 (a)  $4.0 \times 10^{-9}$  (b)  $4.0 \times 10^5$   
 (c)  $2.5 \times 10^8$  (d)  $2.5 \times 10^{-6}$
- 17 The product obtained when,



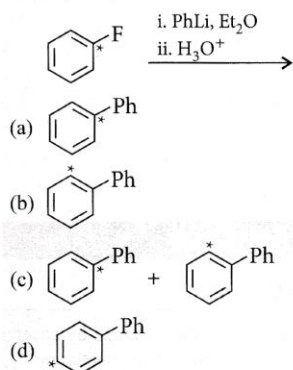
- (a) (b)   
 (c) (d)
- 18 Which is finally produced when acetylene reacts with HCl?  
 (a) CH<sub>2</sub>=CHCl (b) CH<sub>3</sub>CHCl<sub>2</sub>  
 (c) ClCH=CHCl (d) None of these
- 19 An unknown element forms an oxide. What will be the equivalent weight of the element if the oxygen content is 20% by weight?  
 (a) 16 g (b) 32 g (c) 8 g (d) 64 g

20 The ligand called π-acid is

- (a) CO (b) NH<sub>3</sub>  
 (c) C<sub>2</sub>O<sub>4</sub><sup>2-</sup> (d) ethylenediamine.
- 21 Which of the following is an anti-aromatic compound?



22 Identify the product of the following reaction.



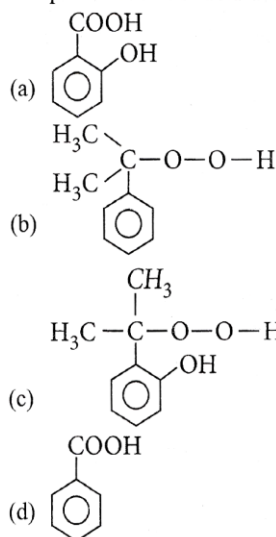
23 The successive ionisation enthalpy values for an element *X* are given as :

- 1<sup>st</sup> ionisation enthalpy = 410 kJ mol<sup>-1</sup>  
 2<sup>nd</sup> ionisation enthalpy = 820 kJ mol<sup>-1</sup>  
 3<sup>rd</sup> ionisation enthalpy = 1100 kJ mol<sup>-1</sup>  
 4<sup>th</sup> ionisation enthalpy = 1500 kJ mol<sup>-1</sup>  
 5<sup>th</sup> ionisation enthalpy = 3200 kJ mol<sup>-1</sup>

Find out the number of valence electrons for the atom *X*.

- (a) 4 (b) 3 (c) 5 (d) 2

24 Phenol is distilled with Zn dust followed by Friedel-Crafts alkylation with propyl chloride in the presence of AlCl<sub>3</sub> to give a compound *B*. *B* is oxidised in the presence of air to form the compound *C*. The structural formula of *C* is



25  $\Delta_f^\circ(\text{NH}_4\text{OH})$  is equal to

- (a)  $\Delta_f^\circ(\text{NH}_4\text{OH}) + \Delta_f^\circ(\text{NH}_4\text{Cl}) - \Delta_f^\circ(\text{HCl})$   
 (b)  $\Delta_f^\circ(\text{NH}_4\text{Cl}) + \Delta_f^\circ(\text{NaOH}) - \Delta_f^\circ(\text{NaCl})$   
 (c)  $\Delta_f^\circ(\text{NH}_4\text{Cl}) + \Delta_f^\circ(\text{NaCl}) - \Delta_f^\circ(\text{NaOH})$   
 (d)  $\Delta_f^\circ(\text{NaOH}) + \Delta_f^\circ(\text{NaCl}) - \Delta_f^\circ(\text{NH}_4\text{Cl})$

26 At the equilibrium position in the process of adsorption

- (a)  $\Delta H > 0$  (b)  $\Delta H = T\Delta S$   
 (c)  $\Delta H > T\Delta S$  (d)  $\Delta H < T\Delta S$

27 Distinction between primary, secondary and tertiary alcohols is done by

- (a) oxidation method  
 (b) Lucas test  
 (c) Victor Meyer method  
 (d) all of these.

28 The frequency of radiation emitted when the electron falls from  $n = 4$  to  $n = 1$  in a hydrogen atom will be

- (a)  $3.08 \times 10^{15} \text{ s}^{-1}$  (b)  $2.00 \times 10^{15} \text{ s}^{-1}$   
 (c)  $1.54 \times 10^{15} \text{ s}^{-1}$  (d)  $1.03 \times 10^{15} \text{ s}^{-1}$

29 **Assertion :** (CH<sub>3</sub>)<sub>2</sub>NH is less basic than (CH<sub>3</sub>)<sub>3</sub>N in aqueous solution.

**Reason :** Hyperconjugation in (CH<sub>3</sub>)<sub>2</sub>NH is more than that of (CH<sub>3</sub>)<sub>3</sub>N.

- (a) If both assertion and reason are true and reason is the correct explanation of assertion.  
 (b) If both assertion and reason are true but reason is not the correct explanation of assertion.  
 (c) If assertion is true but reason is false.  
 (d) If both assertion and reason are false.

30 In Ramsay and Rayleigh's isolation of noble gases from air, the nitrogen of the air is finally converted into

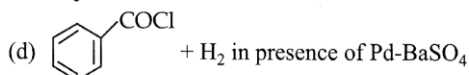
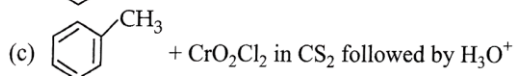
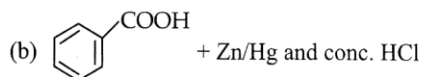
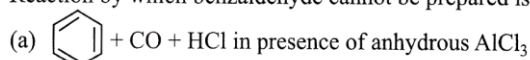
- (a) NaNO<sub>2</sub> only (b) NO and NO<sub>2</sub>  
 (c) NaNO<sub>3</sub> only (d) NaNO<sub>2</sub> and NaNO<sub>3</sub>

31 Which of the following statements are correct concerning redox properties?

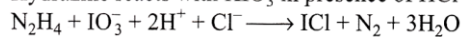
- (i) A metal *M* for which  $E^\circ$  for the half reaction  $\text{M}^{n+} + ne^- \rightleftharpoons \text{M}$  is very negative will be a good reducing agent.  
 (ii) The oxidising power of halogens decreases from chlorine to iodine.  
 (iii) The reducing power of hydrogen halides increases from hydrogen chloride to hydrogen iodide.



45 Reaction by which benzaldehyde cannot be prepared is



46 Hydrazine reacts with KIO<sub>3</sub> in presence of HCl as



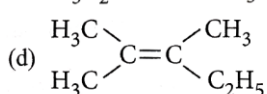
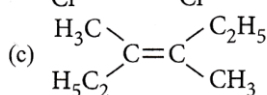
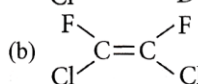
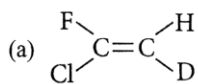
The equivalent masses of N<sub>2</sub>H<sub>4</sub> and KIO<sub>3</sub> respectively are

- (a) 16 and 87                      (b) 16 and 53.5  
(c) 8 and 53.5                     (d) 8 and 87

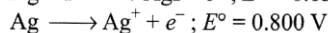
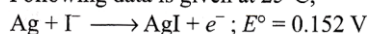
47 Lead has been placed in group 1<sup>st</sup> and 2<sup>nd</sup> because

- (a) it shows valency one and two  
(b) it forms insoluble PbCl<sub>2</sub>  
(c) it forms lead sulphide  
(d) its chloride is partly soluble in water.

48 Which of the following will not show geometrical isomerism?



49 Following data is given at 25°C,



What is the value of log  $K_{sp}$  for AgI?

- (a) -37.83                      (b) -16.13  
(c) -8.12                      (d) +8.612

50 Because of lanthanoid contraction, which of the following pairs of elements have nearly same atomic radii? (Numbers in the parenthesis are atomic numbers)

- (a) Zr(40) and Hf(72)  
(b) Zr(40) and Ta(73)  
(c) Ti(22) and Zr(40)  
(d) Zr(40) and Nb(41)