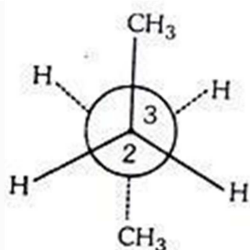


**IIT-JEE-Chemistry-Screening-2004**

1. 2-phenyl propene on acidic hydration gives

- (a) 2-phenyl-2-propanol
- (b) 2-phenyl-1-propanol
- (c) 3-phenyl-1-propanol
- (d) 1-phenyl-2-propanol

2.



C<sub>2</sub> is rotated anticlockwise 120° about C<sub>2</sub> - C<sub>3</sub> bond. The resulting conformer is

- (a) Partially eclipsed
- (b) Eclipsed
- (c) Gauche
- (d) Staggered

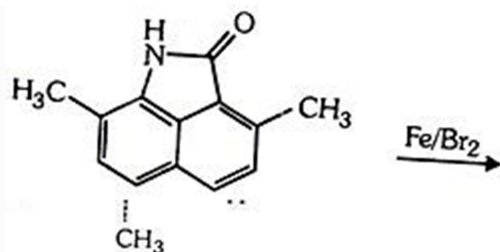
3. Benzamide on treatment with POCl<sub>3</sub> gives

- (a) Aniline
- (b) Benzonitrile
- (c) Chlorobenzene
- (d) Benzyl amine

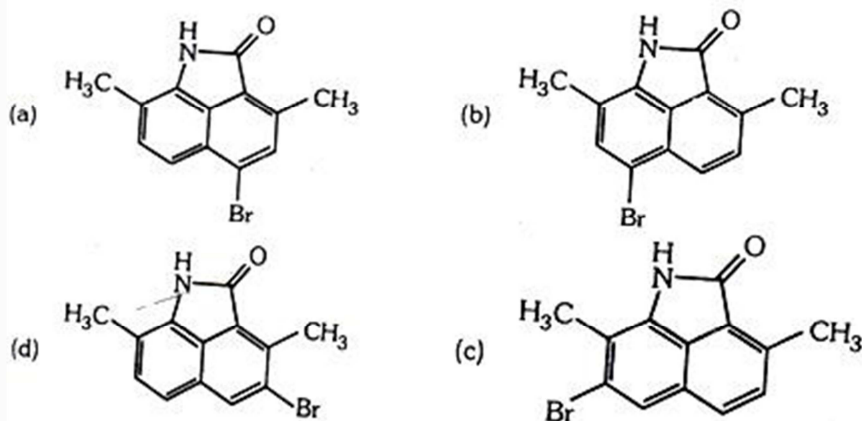
4. The methods chiefly used for the extraction of lead and tin from their ores are respectively

- (a) Self reduction and carbon reduction
- (b) Self reduction and electrolytic reduction
- (c) Carbon reduction and self reduction
- (d) Cyanide process and carbon reduction

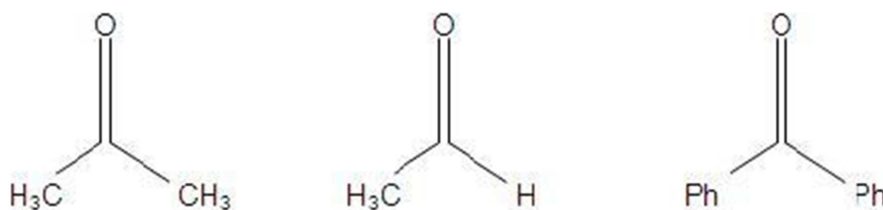
5.



Product on monobromination of this compound is



6. The order of reactivity of phenyl magnesium bromide with the following compounds is



- (a) (II) > (III) > (I)  
 (b) (I) > (III) > (II)  
 (c) (II) > (I) > (III)  
 (d) All react with the same rate

7.  $(\text{NH}_4)_2 \text{Cr}_2\text{O}_7$  on heating gives a gas which is also given by

- (a) Heating  $\text{NH}_4\text{NO}_2$
- (b) Heating  $\text{NH}_4\text{NO}_3$
- (c)  $\text{Mg}_3\text{N}_2 + \text{H}_2\text{O}$
- (d)  $\text{Na}(\text{comp.}) + \text{H}_2\text{O}_2$

8.  $\text{Zn}|\text{Zn}^{2+} (a = 0.1 \text{ M})||\text{Fe}^{2+} (a = 0.01 \text{ M})|\text{Fe}$ .

The emf of the above cell is 0.2905 V. Equilibrium constant for the cell reaction is

- (a)  $10^{0.32/0.591}$
- (b)  $10^{0.32/0.0295}$
- (c)  $10^{0.26/0.0295}$
- (d)  $e^{0.32/0.295}$

9. HX is a weak acid ( $K_a = 10^{-5}$ ). It forms a salt NaX (0.1M) on reacting with caustic soda. The degree of hydrolysis of NaX is

- (a) 0.01 %
- (b) 0.0001 %
- (c) 0.1 %
- (d) 0.5%

10. Spontaneous adsorption of a gas on solid surface is an exothermic process because:

- (a) DH increases for system
- (b) DS increases for gas
- (c) DS decreases for gas
- (d) DG increases for gas

11. For a monoatomic gas kinetic energy = E. The relation with rms velocity is

- (a)  $\mu = (2E/M)^{1/2}$
- (b)  $\mu = (3E/2M)^{1/2}$
- (c)  $\mu = (E/2M)^{1/2}$
- (d)  $\mu = (E/3M)^{1/2}$

12. The pair of compounds having metals in their highest oxidation state is

- (a)  $\text{MnO}_2, \text{FeCl}_3$
- (b)  $[\text{MnO}_4]^- , \text{CrO}_2\text{Cl}^2$
- (c)  $[\text{Fe}(\text{CN})_6]^{3-} , [\text{Co}(\text{CN})_3]$

(d)  $[\text{NiCl}_4]^{2-}$ ,  $[\text{CoCl}_4]^-$

13. The compounds having tetrahedral geometry is

- (a)  $[\text{Ni}(\text{CN})_4]^{2-}$   
 (b)  $[\text{Pd}(\text{CN})_4]^{2-}$   
 (c)  $[\text{PdCl}_4]^{2-}$   
 (d)  $[\text{NiCl}_4]^{2-}$

14. Spin only magnetic moment of the compound  $\text{Hg}[\text{Co}(\text{SCN})_4]$  is

- (a)  $\sqrt{3}$   
 (b)  $\sqrt{15}$   
 (c)  $\sqrt{24}$   
 (d)  $\sqrt{8}$

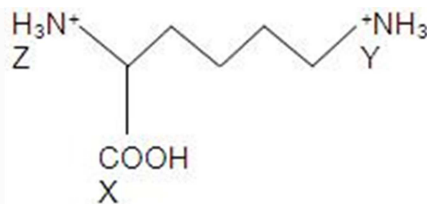
15. A sodium salt of an unknown anion when treated with  $\text{MgCl}_2$  gives white precipitate only on boiling. The anion is

- (a)  $\text{S}_4^{2-}$   
 (b)  $\text{HC}_3^-$   
 (c)  $\text{C}_3^{2-}$   
 (d)  $\text{N}_3^-$

16. Which hydrogen like species will have same radius as that of Bohr orbit of hydrogen atom?

- (a)  $n = 2$ ,  $\text{Li}^{+2}$   
 (b)  $n = 2$ ,  $\text{Be}^{3+}$   
 (c)  $n = 2$ ,  $\text{He}^+$   
 (d)  $n = 3$ ,  $\text{Li}^{2+}$

17.



Arrange in order of increasing acidic strength

- (a)  $X > Z > Y$

- (b)  $Z < X < Y$
- (c)  $X > Y > Z$
- (d)  $Z > X > Y$

18. 0.004 M  $\text{Na}_2\text{SO}_4$  is isotonic with 0.01 M glucose. Degree of dissociation of  $\text{Na}_2\text{SO}_4$  is

- (a) 75%
- (b) 50%
- (c) 25%
- (d) 85%

19.  $\Delta H_{\text{vap}} = 30 \text{ kJ/mole}$  and  $\Delta S_{\text{vap}} = 75 \text{ Jmol}^{-1} \text{ K}^{-1}$ . Find temperature of vapour, at one atmosphere

- (a) 400 K
- (b) 350 K
- (c) 298 K
- (d) 250 K

20. 2 mol of an ideal gas expanded isothermally and reversibly from 1 litre to 10 litres at 300 K. What is the enthalpy change?

- (a) 4.98 kJ
- (b) 11.47 kJ
- (c) -11.47 kJ
- (d) 0 kJ

21. (A) follows first order reaction. (A)  $\rightarrow$  product

Concentration of A, changes from 0.1 M to 0.025 M in 40 minutes. Find the rate of reaction of A when concentration of A is 0.01 M.

- (a)  $3.47 \times 10^{-4} \text{ M min}^{-1}$
- (b)  $3.47 \times 10^{-5} \text{ M min}^{-1}$
- (c)  $1.73 \times 10^{-4} \text{ M min}^{-1}$
- (d)  $1.73 \times 10^{-5} \text{ M min}^{-1}$

22. 2-hexyne gives trans-2-hexene on treatment with

- (a)  $\text{Li/NH}_3$
- (b)  $\text{Pd/BaSO}_4$

- (c)  $\text{LiAlH}_4$   
(d)  $\text{Pt}/\text{H}_2$
23. How many chiral compounds are possible on mono chlorination of 2-methyl butane?  
(a) 2  
(b) 4  
(c) 6  
(d) 8
24. Which of the following pairs give positive Tollen's test?  
(a) Glucose, sucrose  
(b) Glucose, fructose  
(c) Hexanal, acetophenone  
(d) Fructose, sucrose
25. Which of the following has -O-O- linkage  
(a)  $\text{H}_2\text{S}_2\text{O}_6$   
(b)  $\text{H}_2\text{S}_2\text{O}_8$   
(c)  $\text{H}_2\text{S}_2\text{O}_3$   
(d)  $\text{H}_2\text{S}_5\text{O}_6$
26. When  $\text{I}^-$  is oxidised by  $\text{MnO}_4^-$  in alkaline medium,  $\text{I}^-$  converts into  
(a)  $\text{I}_3^-$   
(b)  $\text{I}_2$   
(c)  $\text{I}_4^-$   
(d)  $\text{IO}^-$
27. Number of lone pair (s) in  $\text{XeF}_4$  is/are  
(a) 0  
(b) 1  
(c) 2  
(d) 3
28. According to MO theory,  
(a)  $\text{O}_2^+$  is paramagnetic and bond order greater than  $\text{O}_2$   
(b)  $\text{O}_2^+$  is paramagnetic and bond order less than  $\text{O}_2$   
(c)  $\text{O}_2^+$  is diamagnetic and bond order is less than  $\text{O}_2$   
(d)  $\text{O}_2^+$  is diamagnetic and bond order is more than  $\text{O}_2$