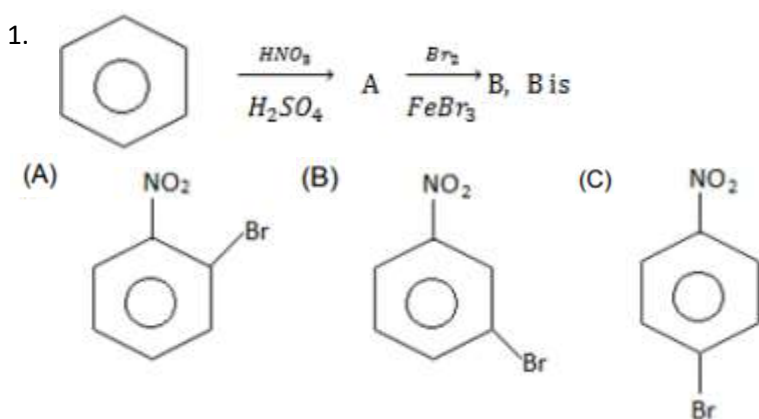


Chemistry

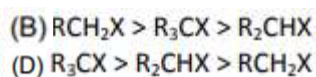
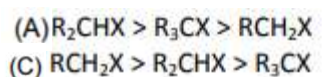
(for B.Tech, Integrated B.Tech, B. Sc (H)(Bio-Tech)(Food-Tech), B.Pharma)

General instructions

1. Each section comprises of 15 questions.
2. All questions are compulsory.
3. Each right answer would be awarded 4 marks.
4. There is no negative marking.



2. Which of the following is the correct order of decreasing S_N2 reactivity



- 3 Ethers on hydrolysis yield

- (A) Alcohol
- (B) Aldehyde
- (C) Acid
- (D) Ketone

4. The rate of reaction increases by the increase of temperature because

- (A) Collision frequency is increased
- (B) Energy of products decreases
- (C) Fraction of molecules possessing energy $\geq E_T$ (threshold Energy) increases
- (D) Mechanism of a reaction is changed

5. The Oxidation potential of hydrogen electrode at $P^H=10$ and P_{H_2} at 1atm is :

- (A) 0.51 V
- (B) 0.00V
- (C) +0.59 V
- (D) 0.059 V

6. Match the List-I with List-II by using the postulates of VBT of complexes

| List-I | List-II |
|-----------------------------|------------------------------|
| (P) $[Ni(CN)_4]^{2-}$ | (1) sp^3 hybridization |
| (Q) $[Ni(CO)_4]$ | (2) dsp^2 hybridization |
| (R) $[Cu(NH_3)_4]^{2+}$ | (3) $\mu = 0$ BM |
| (S) $[Pd(Cl)_4]^{2-}$ | (4) $\mu = 1.732$ BM |
| (A) P-3,1 Q-1,4 R-2,3 S-1,4 | (B) P-2,3 Q-1,3 R-1,4 S-2,3 |
| (C) p-2,4 Q-1,4 R-2,4 S-2 | (D) P-2,3 Q-1,3 R- 2,4 S-2,3 |

7. The incorrect order regarding 15 th group hydrides is

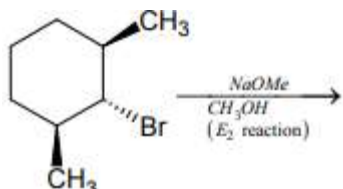
- (A) Reducing nature : $NH_3 < PH_3 < AsH_3 < SbH_3 < BiH_3$
- (B) Bond angle : $NH_3 > PH_3 > AsH_3 > SbH_3 > BiH_3$
- (C) Basic nature : $NH_3 > PH_3 > AsH_3 > SbH_3 > BiH_3$
- (d) Boiling point : $NH_3 < PH_3 < AsH_3 < SbH_3 < BiH_3$

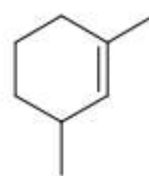
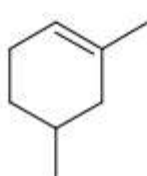
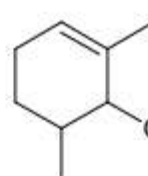
8. The equivalent weight of $MnSO_4$ is half its molecular weight when it is converted to

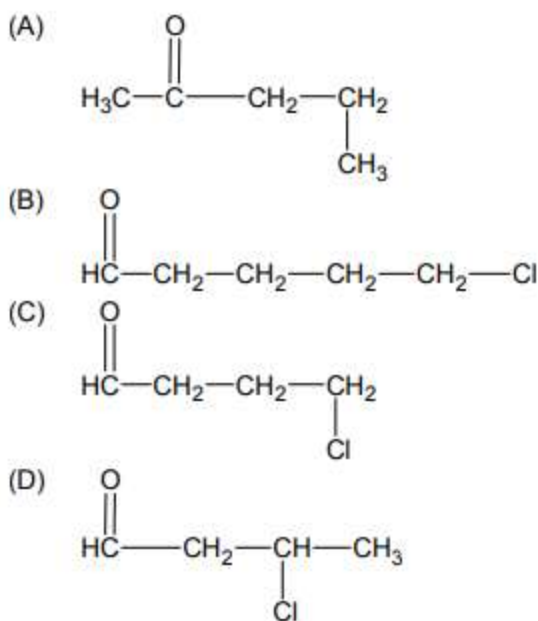
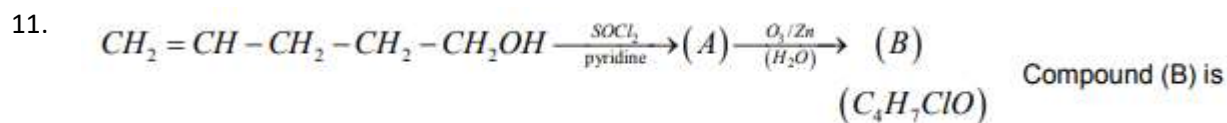
- (A) Mn_2O_3
- (B) MnO_2
- (C) MnO_4^-
- (D) MnO_4^{2-}

9. The largest number of molecules is in

- (A) 36 g of H_2O
 - (B) 28 g of CO
 - (C) 46 g of CH_3CH_2OH
 - (D) 54 g of N_2O_5
- (Use atomic weight: O = 16, C = 12, N = 14, H = 1)

10.  Product. Product of the reaction is:

- (A) 
- (B) 
- (C) 
- (D) No reaction



12. A 0.004 M solution of Na_2SO_4 is isotonic with a 0.01 M solution of glucose at same temperature. The apparent degree of dissociation of Na_2SO_4 is

- (A) $10^{-3} M BaCl_2$ and $2 \times 10^{-2} M NaF$ (B) $10^{-3} M BaCl_2$ and $1.5 \times 10^{-2} M NaF$
 (C) $1.5 \times 10^{-2} M BaCl_2$ and $10^{-2} M NaF$ (D) $2 \times 10^{-2} M BaCl_2$ and $2 \times 10^{-2} M NaF$

13. Which of the following statement about the sulphates of alkali metal is correct?

- (A) Except Li_2SO_4 , all sulphates of other alkali metals are soluble in water
 (B) All sulphates of alkali metals except Li_2SO_4 forms alum.
 (C) The sulphates of alkali metals cannot be hydrolysed
 (D) All of these

14. Ammonia gas can be dried by
 (A) conc. H_2SO_4 (B) P_2O_5 (C) quick lime (D) None of these

15. Which of the following is false?

- (A) When NaCl is heated in the atmosphere of Na, metal excess defect arise due to the migration of Na from vapour to NaCl lattice.
- (B) Both Schottky and Frenkel defects can effect electrical conductivity and this conduction is known as intrinsic semiconduction.
- (C) Density decreases in Frenkel defect but remains same in Schottky defect
- (D) In compounds having metal excess defect F-centres are present which makes them paramagnetic, coloured and help in n-type semiconduction.

Answer Key

1. B
2. C
3. A
4. C
5. C
6. D
7. D
8. B
9. A
- 10.D
- 11.C
- 12.C
- 13.D
- 14.C
- 15.C