

31. Following are some statements which are either True or False. Select them from the codes given below :

- (a) Free sulphur is liberated from  $H_2S$  by a reducing agent  
 (b) A reducing agent discharges the pink colour of an acidified  $KMnO_4$  solution  
 (c) The colour of acidified  $K_2Cr_2O_7$  solution is changed from orange to green by an oxidizing agent.  
 (d) Iodine is liberated from  $KI$  by an oxidizing agent.

**Codes :** (a) (b) (c) (d)

(A) True True False False  
 (B) False True False True  
 (C) True False True False  
 (D) False True True False

32. List I gives names of iron ores and List II gives their compositions. Match List I with List II and select the correct match from the codes given below :

List-I	List-II
(a) Magnetite	1. $Fe_2O_3$
(b) Hematite	2. $Fe_3O_4$
(c) Iron Pyrite	3. $FeCO_3$
(d) Siderite	4. $FeS_2$

**Codes :** (a) (b) (c) (d)

(A) 2 1 4 3  
 (B) 1 4 3 2  
 (C) 4 3 2 1  
 (D) 3 2 1 4

33. List I gives some metal cluster compounds and List II gives their structures on the basis of their CVE count. Match List I with List II and select the correct match from the codes given below :

List-I	List-II
(a) $Rh_4(CO)_{12}$	1. Closed triangle
(b) $[Fe_4(CO)_{12}C]^{2-}$	2. Tetrahedral
(c) $Co_3(CO)_9CH$	3. Trigonal Prism
(d) $[Rh_6C(CO)_{15}]^{2-}$	4. Butterfly

**Codes :** (a) (b) (c) (d)

(A) 1 3 2 4  
 (B) 3 2 4 1  
 (C) 2 4 1 3  
 (D) 4 1 3 2

34. Some of the following statements are true and others are false. Pick out the correct answer from the codes given below.

- (1) In Michaelis addition a nucleophile attacks the  $\beta$ -C atom of an  $\alpha\beta$  unsaturated carbonyl compound  
 (2) Aldol condensation between  $R^1\text{---}CHO$  and  $R^2\text{---}CHO$  gives a mixture of two aldols.  
 (3) Ethyl acetoacetate can be prepared by Claisen condensation of ethyl acetate,  $CH_3COOEt$ .  
 (4) Aniline,  $C_6H_5NH_2$  can be prepared from benzene,  $C_6H_6$  by nucleophilic substitution reaction with  $NaNH_2$ .

**Codes :** (1) (2) (3) (4)

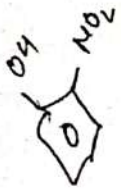
(A) True True True False  
 (B) True False True False  
 (C) False True True False  
 (D) True False False True



35. Read the following statements given as Assertion (Ass) and Reason (R) and pick out the correct answer from the codes given below :

**Assertion (Ass) :** Ortho nitrophenol is less soluble in water than para nitrophenol.

**Reason (R) :** In para form, nitro and phenolic groups are at maximum distance apart. When this compound is put an intermolecular Hydrogen bonding between H-atom of  $H_2O$  and oxygen atom of para form and vice versa. Para form comes in contact with many water molecule.



**Codes :**

- (A) Both (Ass) and (R) are true and (R) is the correct explanation of (Ass)  
 (B) Both (Ass) and (R) are true but (R) is not the correct explanation of (Ass)  
 (C) (Ass) is true but (R) is false  
 (D) (Ass) is false but (R) is true

36. Which of the following cannot show E-Z isomerism ?

- (A) 1-butene  
 (B) 2-butene  
 (C) 3-heptene  
 (D) Hexa-2 : 4-diene

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37. Match List-I (character of reaction) with List-II (order) and select the correct match using the codes given below :

List-I (Character of reaction)	List-II (Order)
(a) Reaction with identical rate and rate constant	1. Zero
(b) Reaction rate doubles on increasing concentration four times	2. First
(c) Half life period is inversely proportional to initial concentration	3. Second
(d) Half life period is independent of concentration	4. Half

**Codes :**

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

38. Match the entries in Column-I with those in Column-II and pick up the correct match using the codes given below :

Column-I (Order of chemical reaction)	Column-II (Units of rate constant)
(a) Zero order	1. $time^{-1}$
(b) First order	2. $mol^{-1}.l.time^{-1}$
(c) Second order	3. $mol^{-2}.l^2.time^{-1}$
(d) Third order	4. $mol.l^{-1}.time^{-1}$

**Codes :**

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

P.T.O.



39. Following are some statements which are either True or False. Select them from the codes given below :

(a) Molecularity of chemical reaction is invariant for a chemical equation

(b) Molecularity can have both zero value and fractional value

(c) Molecularity is a theoretical concept

(d) Higher the activation energy of the reaction, faster is the rate of the reaction

**Codes :** (a) (b) (c) (d)

(A) True False False True

(B) False True True True

(C) True False True False

(D) False True False True

40. List-I gives some molecules and List II gives their symmetry point groups. Match List I with List II and select the correct match from the codes given below :

**List-I**

**List-II**

(a)  $BF_3$

1.  $C_{2V}$

(b)  $NF_3$

2.  $D_{4h}$

(c)  $BrF_3$

3.  $D_{3h}$

(d)  $XeF_4$

4.  $C_{3V}$

**Codes :** (a) (b) (c) (d)

(A) 4 1 2 3

(B) 1 2 3 4

(C) 2 3 4 1

(D) 3 4 1 2