41. Following are some statements which are either True or False. Select the correct answer from the codes given below :

(a) Nitrogen (N) has greater ionization energy (IE_1) than Oxygen (O).

(b) The second ionization energy (IE_2) of Boron is smaller than that of carbon.

(c) Fluorine (F) has lower electron affinity than chlorine (Cl)

(d) Electro negativity of sodium (Na) is smaller than potassium (K)

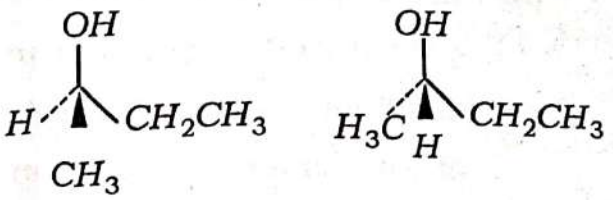
Codes :	(a)	(b)	(c)	(d)
(A)	True	False	True	Flase
(B)	False	True	False	True
(C)	False	False	True	True
(D)	False	True	False	False

42. Match the items of List I with those of List II and identify the correct match from the code given below :

List-I (Point Group)	**List-II (Molecules)**
(a) D_{3h}	1. PCl_3
(b) C_{3h}	2. CO_3^{-2}
(c) D_{6h}	3. $B(OH)_3$
(d) C_{3v}	4. C_6H_6

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

43. We have the following conformations



1 2

Codes :

Select the correct answer using codes below :

(A) '1' has R-conformation and '2' has S-conformation

(B) '1' has 'S'-conformation and '2' has 'R'-conformation

(C) Both can be described either 'R' or 'S' conformation

(D) None of the above points are true

44. The reaction of acetaldehyde with an excess of formaldehyde in presence of alkali gives

Codes :

Select the correct answer using codes below :

(A) $H_2C(OH)CH_2CHO$

(B) $HOCH_2-C(CH_2OH)_2-CHO$

(C) $HO-CH_2-C(CH_2OH)_2-CH_2-OH$

(D) None of these

45. Find out the correct statement :

(A) Molecularity cannot be calculated from the stoichiometric coefficients of an elementary reaction

(B) Fractional value of both order and molecularity are possible

(C) Molecularity and order are the same for elementary processes

(D) All the first order reactions are unimolecular

46. Find out the wrong statement :

(A) The entropy of diamond is less than the entropy of graphite

(B) The entropy of a polyatomic molecule is more than that of a mono-atomic substance

(C) Entropy of a perfect crystal at absolute zero is zero

(D) Entropy of a perfect crystal at absolute zero is always positive

47. Which one of the following is not suitable for a buffer composition ?

(A) CH_3COONa and HCl

(B) Borax and Boric acid

(C) Na_2HPO_4 and Na_3PO_4

(D) CH_3COOH and CH_3COONa

48. List-I gives d^n configurations and List II gives the free ion ground state. Match List I with List II and select the correct match from the codes given below :

List-I	**List-II**
(a) d^5	1. ^2D
(b) d^6	2. ^4F
(c) d^7	3. ^5D
(d) d^9	4. ^6S

Codes :

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

49. State, using codes supplied, whether the following statements are true or false :

(a) '$AgOH$' dissolves in ammonia solution to give $[Ag(NH_3)_2]^+$; So NH_3 is a stronger base than OH^-

(b) $NOCl$ would be an acid is liquid N_2O_4

(c) HF is a weak acid owing to extensive H-bonding in liquid state

(d) Lux-Flood acids are oxides which react with water giving bases in oxides.

Codes :

	(a)	(b)	(c)	(d)
(A)	False	False	True	True
(B)	False	True	True	True
(C)	True	False	True	False
(D)	True	False	False	False

50. The following are some statements which are either true or false. Examine them and select the correct answer from the codes given below :

(a) $Cu\ (II)$ forms stable octahedral complexes true

(b) $[CoF_6]^{3-}$ is paramagnetic while $Co(NH_3)_6^{3+}$ is diamagnetic

(c) Thiocyanate reacts with Fe^{2+} ions to form a highly coloured species.

(d) Ni and Pt are in the same family of the periodic table but $NiCl_4^{2-}$ and $PtCl_4^{2-}$ differ in geometry and magnetism.

Codes :

	(a)	(b)	(c)	(d)
(A)	True	False	True	False
(B)	False	True	False	True
(C)	True	False	False	True
(D)	False	True	True	False