JEE MAIN - 2019
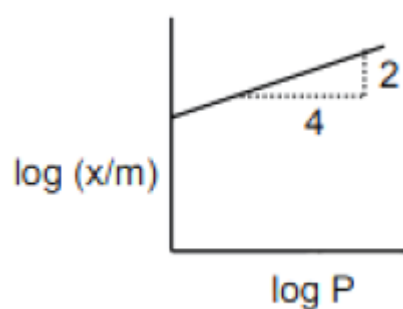
Chemistry

This paper contains 30 multiple choice questions. Each question has 4 choices (1), (2), (3) and (4) for its answer, out of which Only One is correct.
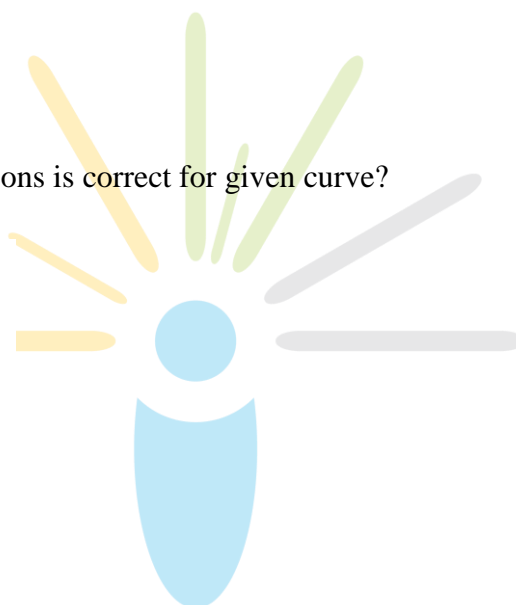
31: The weight of Na^+ in the solution of Na_2SO_4 is $92\,g$. Find molality of Na^+ per kg of water?

(1) 2

(2) 4

(3) 6

(4) 8

32: Which of the following options is correct for given curve?

(1) $\dfrac{x}{m} \propto (P)^{\frac{1}{2}}$

(2) $\dfrac{x}{m} \propto (P)$

(3) $\dfrac{x}{m} \propto (P)^2$

(4) $\dfrac{x}{m} \propto (P)^0$

33: $20\,ml$ of $0.1M\,H_2SO_4$ is added to $30\,ml$ of $0.2\,M\,NH_4OH$ then calculate

pH of resultant solution. (Given that pK_b of NH_4OH is 4.7)

(1) 9

(2) 9.4

(3) 5.2

(4) 5

34: Which of the following is not correct about Henry's law?

(1) On increasing temperature value of K_H increases.

(2) Value of K_H increases solubility of gas increases.

(3) Value of K_H for two different gases at same temperature is not same.

(4) None of these

35: $2A+B\rightarrow$ Product

| $[A]$	$[B]$	Rate $(M\,min^{-1})$
0.1	0.20	6.93×10^{-3}
0.1	0.25	6.93×10^{-3}
0.2	0.30	1.386×10^{-2}

Time when concentration of A becomes half is

(1) 1

(2) 10

(3) 100

(4) 5

36: $0.05\,F$ charge is passed through a lead storage battery. In the anodic reaction, what is the amount of $PbSO_4$ precipitated (Molar mass of $PbSO_4$ is ($303\,g\,mol^{-1}$)?

(1) $30.3\,g$

(2) $15.15\,g$

(3) $7.6\,g$

(4) $60.6\,g$

37: In hydrogen emission spectrum electron transition takes place from $n = 8$ to $n = n_f$. If we plot this graph of $\bar{v}$ vs $\dfrac{1}{n_f^{\,2}}$. Which of the following statement is correct?

(1) $\text{Slope} = -R_H$

(2) $\text{Slope} = R_H$

(3) $\text{Intercept} = -R_H$

(4) Graph is non-linear
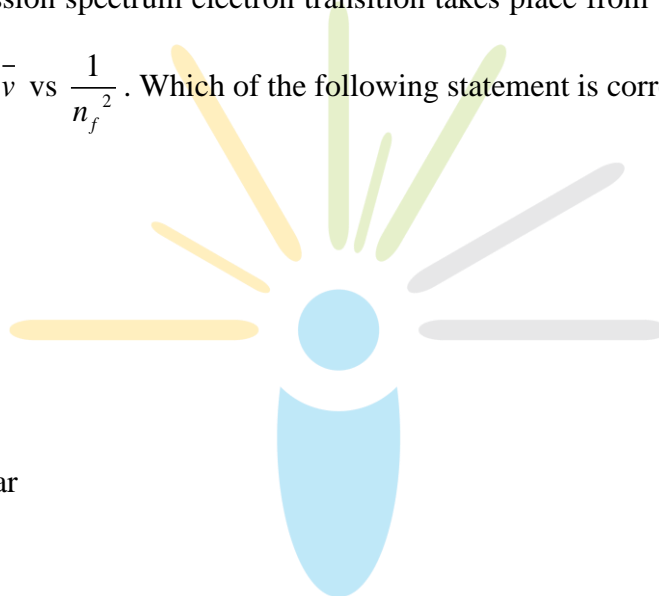
38. Given a mixture with 0.5 mole of gas A and X moles of gas B. Total pressure is $200\,Pa$ at $1000\,K$ temperature in a vessel of volume $10\,m^3$. Then, find X. (R Is universal gas constant).
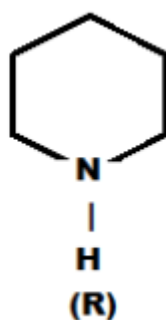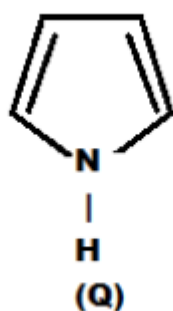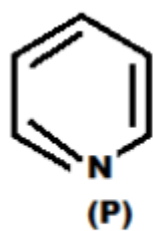
(1) $\dfrac{4 - R}{2R}$

(2) $\dfrac{4 + R}{2R}$

(3) $\dfrac{2 - R}{2R}$

(4) $\dfrac{2}{2}$
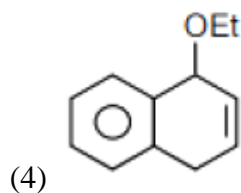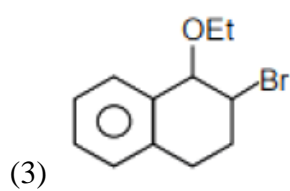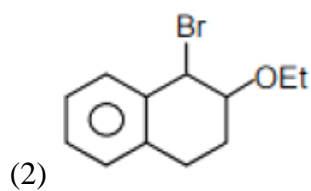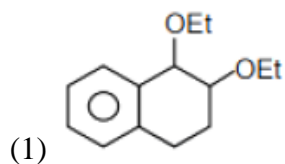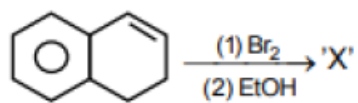
39: Which of the following are isotopes of hydrogen?

(1) Deuterium, Protium

(2) Deuterium, Tritium

(3) Deuterium, Tritium, Protium

(4) Protium
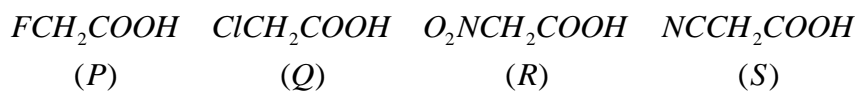
40: Arrange the following in order of K_b value

(1) $P > Q > R$

(2) $Q > P > R$

(3) $R > P > Q$

(4) $R > Q > P$

41. Product ' X ' major will be

(1)

(2)

(3)

(4)

42. Arrange the following in order of K_a value

FCH_2COOH $ClCH_2COOH$ O_2NCH_2COOH $NCCH_2COOH$
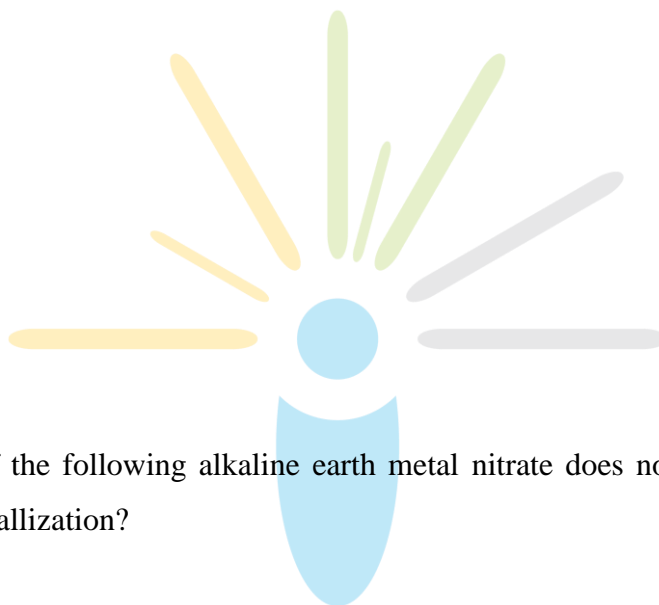 (P) (Q) (R) (S)

(1) $P > Q > R > S$

(2) $R > S > P > Q$

(3) $R > P > S > Q$

(4) $R > S > Q > P$

43: Presence of which makes water unsuitable for drinking

(1) $Fe = 0.2\,\mathrm{ppm}$

(2) $Cu = 2\,\mathrm{ppm}$

(3) $Mn = 0.5\,\mathrm{ppm}$

(4) $Zn = 0.05\,\mathrm{ppm}$

44: Which of the following is strongest acid?

(1) $CHCl_3$

(2) CHI_3

(3) $CHBr_3$

(4) $CH(CN)_3$

45: Which of the following alkaline earth metal nitrate does not crystalline with water of crystallization?

(1) $Ca(NO_3)_2$

(2) $Mg(NO_3)_2$

(3) $Sr(NO_3)_2$

(4) $Ba(NO_3)_2$

46: Which of the following ore contains iron and copper?

(1) Malachite

(2) Azurite

(3) Copper pyrite

(4) None of these

47: Considering MOT comment on the stability:

(1) Li_2^+ stable and Li_2^- unstable

(2) Li_2^+ unstable and Li_2^- stable

(3) Li_2^+ unstable and Li_2^- unstable

(4) Li_2^+ stable and Li_2^- stable

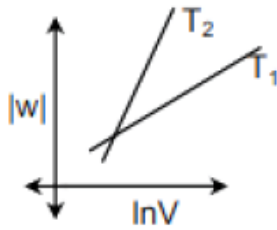**Q48.** Which of the following property in a group decrease down the group and increase down the group respectively?

(1) Electronegativity and atomic radius

(2) Electronegativity and electro gain enthalpy

(3) Atomic radius and electronegativity
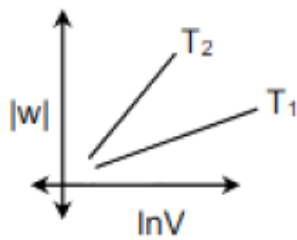
(4) Electron gain enthalpy and electronegativity

49. Reversible isothermal expansion of gas for two temperature T_1 and $T_2\,(T_2 > T_1)$.

Graph $\left(|W|\right)$ versus $\ln V$ is
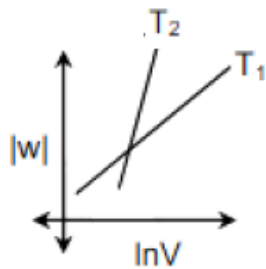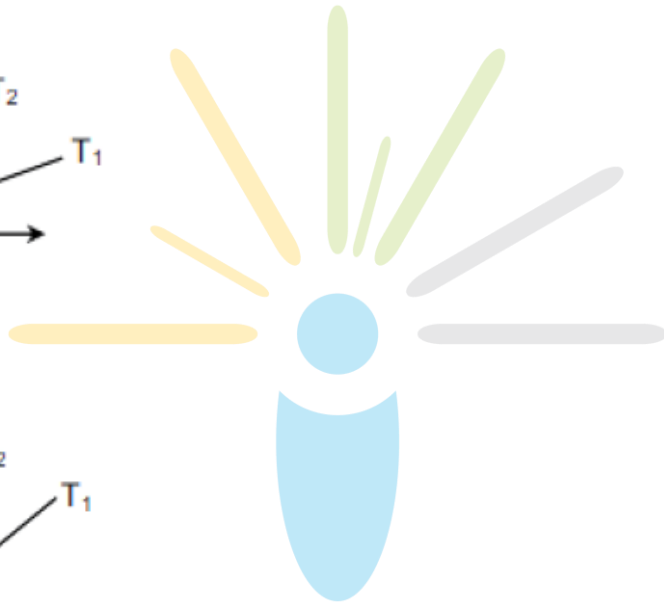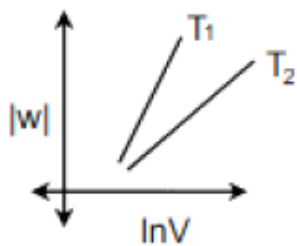
(1)

(2)

(3)

(4)

50. Which of the following properties is/are true for a silicone polymer?

(I) Thermally resistant and have low dielectric constant

(II) Resistant towards oxidation and used in grease

(III) Biocompatible

(IV) Hydrophobic in nature

(1) (I) and (II)

(2) (I), (II) and (III)

(3) (II), (III) and (IV)

(4) (I), (II), (III) and (IV)

51: Which of the following is a piezo-electric material?

(1) Silica

(2) Quartz

(3) Mica

(4) Beryl

52: Aluminum exists in $+3$ stable whereas thallium exists in both $+1 \& +3$ oxidation states. Reason for this is

(1) Inert pair effect

(2) Lanthanoid contraction

(3) Diagonal relationship

(4) None of these

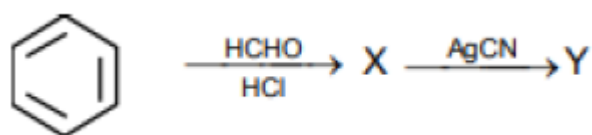**53:** Maximum spin only magnetic moment for transition metal complex may be

(1) 5.92 BM

(2) 6.92 BM

(3) 4.89 BM

(4) 3.87 BM

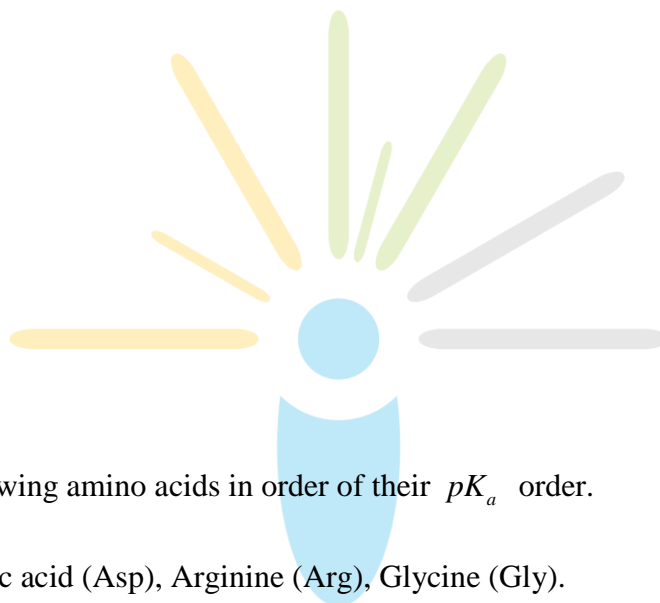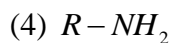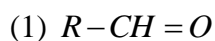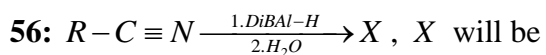**54:** Match the following drugs with correct functional group test.

	Column I		Column II
(A)	Chloroxylenol	(P)	Carbylamine
(B)	Penicillin	(Q)	Baeyer's reagent
(C)	Sulpha Pyridine	(R)	$FeCl_3$ test
(D)	Norethindrone	(S)	Sodium hydrogen sulphate

(1) $A \rightarrow R, B \rightarrow P, C \rightarrow S, D \rightarrow Q$

(2) $A \rightarrow S, B \rightarrow R, C \rightarrow P, D \rightarrow Q$

(3) $A \rightarrow R, B \rightarrow S, C \rightarrow P, D \rightarrow Q$

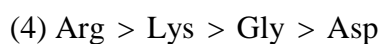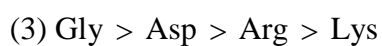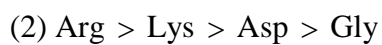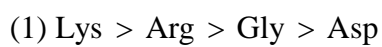(4) $A \rightarrow Q, B \rightarrow R, C \rightarrow P, D \rightarrow S$

55: Product $X \& Y$ will be

(1) $X \rightarrow Ph - CH_2Cl \quad Y \rightarrow Ph - CH_2 - NC$

(2) $X \rightarrow Ph - CH_2OH \quad Y \rightarrow Ph - CH_2 - CN$

(3) $X \rightarrow Ph - CH_2Cl \quad Y \rightarrow Ph - CH_2 - CN$

(4) $X \rightarrow Ph - OH \quad Y \rightarrow Ph - CH_2 - CN$

56: $R - C \equiv N \xrightarrow[2.H_2O]{1.DiBAl-H} X$, X will be

(1) $R - CH = O$

(2) $R - CH_2 - NH_2$

(3) $RCOOH$

(4) $R - NH_2$
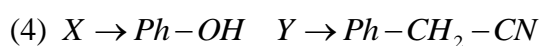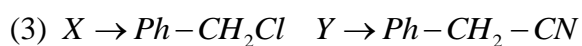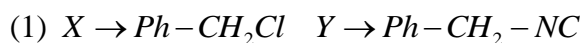
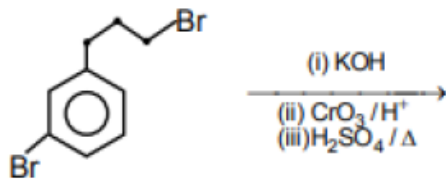**57:** Arrange the following amino acids in order of their pK_a order.

Lysine (Lys), Aspartic acid (Asp), Arginine (Arg), Glycine (Gly).

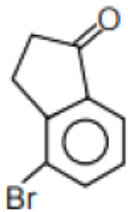(1) Lys > Arg > Gly > Asp

(2) Arg > Lys > Asp > Gly

(3) Gly > Asp > Arg > Lys

(4) Arg > Lys > Gly > Asp

58. Write the product of given reaction:

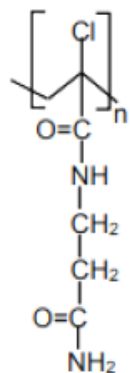(i) KOH
(ii) CrO_3/H^+
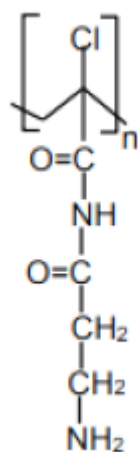(iii) H_2SO_4/Δ

(1)
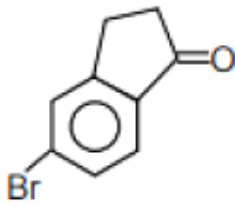
(2)

(3)
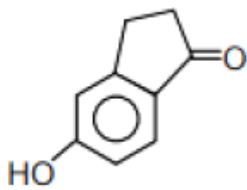
(4)
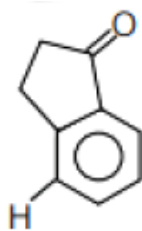
59:
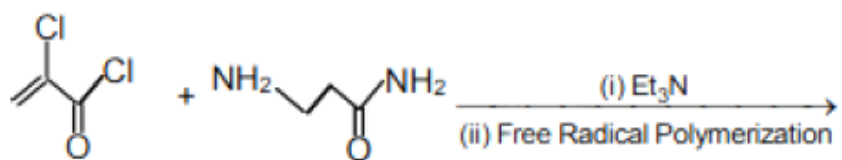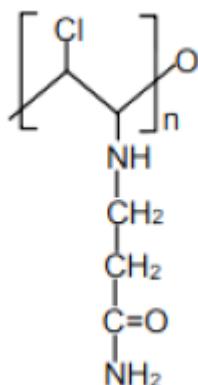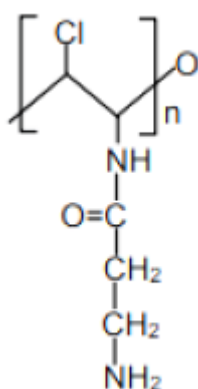

(1)

(2)

(3)

(4)

60: Consider the compound A $[Cr(H_2O)_6]Cl_3$; yellow $B[Cr(NH_3)_6]Cl_3$; violet. Then which of the following is incorrect.

(1) $(\Delta_0)_A < (\Delta_0)_B$

(2) The crystal field splitting parameter can be measured by wavelengths of complementary colors for (A) and (B) respectively.

(3) Both are paramagnetic with three unpaired electrons each.

(4) The crystal field splitting parameter can't be measured by wavelength of yellow and violet colors for (A) and (B) respectively.