## Topic:- DU_J19_MSC_CHEM

1) Specific Redox reaction of chlorine is known as [Question ID $=1959$ ]
1. reduction [Option ID $=7836$ ]
2. redox chlorination [Option ID $=7835$ ]
3. disproportionation [Option ID $=7834$ ]
4. oxidation [Option ID = 7833]

Correct Answer :-

- oxidation [Option ID = 7833]

2) Which of the following is not a standard condition?
[Question ID = 1906]
1. $1 \mathrm{~mol} \mathrm{dm}^{-3}$ solutions [Option ID $=7624$ ]
2. 100 atm [Option ID $=7622$ ]
3. 100 kPa [Option ID $=7621$ ]
4. 298 K [Option ID $=7623$ ]

Correct Answer :-

- 100 kPa [Option ID = 7621]

3) Which transitions are studied by UV spectrophotometer?
[Question ID $=1955$ ]
1. Rotational [Option ID $=7818$ ]
2. Electronic [Option ID = 7817]
3. Vibrational [Option ID $=7819$ ]
4. Nuclear [Option ID $=7820$ ]

## Correct Answer :-

- Electronic [Option ID $=7817]$

4) Which electrode/s may be used to determine the pH of a solution?
[Question ID = 1897]
1. Quinhydrone electrode [Option ID $=7587$ ]

Correct Answer :-

- Glass electrode [Option ID $=7585$ ]

5) Which acid is present in lemon ? [Question ID = 1949]
1. lactic acid [Option ID $=7794$ ]
2. tartaric acid [Option ID $=7796$ ]
3. citric acid [Option ID = 7795]
4. marlic acid [Option ID $=7793$ ]

Correct Answer :-

- marlic acid [Option ID $=7793$ ]

6) Gram molecular volume of oxygen at STP is [Question ID = 1964]
1. $11200 \mathrm{~cm}^{3}$ [Option ID $=7853$ ]
2. $22400 \mathrm{~cm}^{3}$ [Option ID $=7856$ ]
3. $5600 \mathrm{~cm}^{3}$ [Option ID $=7855$ ]
4. $3200 \mathrm{~cm}^{3}$ [Option ID $=7854$ ]

Correct Answer :-

- $11200 \mathrm{~cm}^{3}$ [Option ID $=7853$ ]

7) Glucose does not react with: [Question ID = 1921]

## HCN

[Option ID = 7683]
$\mathrm{NaHSO}_{3}$
$\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{NHNH}_{2}$
[Option ID = 7681]
$\mathrm{H}_{2} \mathrm{~N}-\mathrm{OH}$
[Option ID = 7682]
Correct Answer :-
$\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{NHNH}_{2}$
[Option ID = 7681]
8) Which does not increase rate by affecting the number or nature of collisions? [Question ID = 1905]

1. adding a catalyst [Option ID $=7619$ ]
2. increasing the surface area [Option ID = 7617]
3. increasing the pressure [Option ID $=7618$ ]
4. increasing the temperature [Option ID $=7620$ ]

[^0]9) If AgI crystallizes in zinc blende structure with $\mathrm{I}^{2-}$ ions at lattice points, what fraction of tetrahedral voids is occupied by $\mathrm{Ag}^{+}$ions?
[Question ID $=1968$ ]

1. $75 \%$ [Option ID $=7870$ ]
2. $25 \%$ [Option ID $=7872$ ]
3. $50 \%$ [Option ID $=7871$ ]
4. $100 \%$ [Option ID $=7869$ ]

Correct Answer :-

- 100\% [Option ID = 7869]

10) Which carbonyl compound has maximum dipole moment? [Question ID = 1920]


Option ID = 7680]

[Option ID = 7678]

[Option ID = 7679]

[Option ID = 7677]

Correct Answer :-

[Option ID = 7677]
11) Identify the wrong statement in the following
[Question ID = 1951]

1. Atomic radius of the elements decreases as one moves across from left to right in the 2 nd period of the periodic table [Option ID $=7803$ ]
2. Amongst isoelectronic species, smaller the positive charge on the cation, smaller is the ionic radius [Option ID =7801]

Correct Answer :-

- Amongst isoelectronic species, smaller the positive charge on the cation, smaller is the ionic radius [Option ID =7801]

12) The structure of sulphur dioxide molecule $\left(\mathrm{SO}_{2}\right)$ may be given as [Question ID = 1956]
1. Linear [Option ID $=7824$ ]
2. Bent [Option ID = 7823]
3. Octahedral [Option ID $=7822$ ]
4. Tetrahedral [Option ID $=7821$ ]

Correct Answer :-

- Tetrahedral [Option ID $=7821$ ]

13) The structure of the compound that matches the ${ }^{1} \mathrm{H}$ NMR data given below: ${ }^{1} \mathrm{H}$ NMR (DMSO-d $): \mathbf{\delta 7 . 7 5}(\mathrm{dd}, \mathrm{J}=8.8,2.4 \mathrm{~Hz}, 1 \mathrm{H}), 7.58(\mathrm{~d}, \mathrm{~J}=2$. 3.80 (s, 3H) [Question ID = 1924]

[Option ID = 7693]

[Option ID = 7694]

[Option ID $=7695$ ]

*[Option ID = 7696]

Correct Answer :-

[Option ID = 7693]

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14) A mixture of CaCl }2\mathrm{ and NaCl weighing 4.44 g}\mathrm{ is treated with sodium carbonate solution to precipitate all the Ca}\mp@subsup{}{}{2+}\mathrm{ ions as calcium carbonate. Th to get 0.56 g of CaO . The percentage of NaCl in the mixture (atomic mass of \(\mathrm{Ca}=40\) ) is
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[Question ID = 1963]
1. 70 [Option ID \(=7850\) ]
2. 75 [Option ID \(=7849\) ]
3. 25 [Option ID \(=7852\) ]
4. \(30.6[\) Option ID \(=7851\) ]
Correct Answer :-
- 75 [Option ID \(=7849\) ]
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15) Which pair of species is listed in increasing order of the property given? [Question ID = 1958]
1. Ionization energy: $\mathrm{O}, \mathrm{F}$ [Option $\mathrm{ID}=7829$ ]
2. Covalent character: $\mathrm{HI}, \mathrm{HBr}$ [Option ID $=7832$ ]
3. Melting point: $\mathrm{I}_{2}, \mathrm{Br}_{2}$ [Option $\mathrm{ID}=7830$ ]
4. Radius: $\mathrm{Te}^{2-}, \mathrm{Te}^{4+}$ [Option ID $=7831$ ]

Correct Answer :-

- Ionization energy: O, F [Option ID $=7829$ ]

16) The material, whose dimensions can be changed upon the application of an electric field is called [Question ID = 1947]
1. Ferromagnetic [Option ID $=7785$ ]
2. Ferroelectric [Option ID $=7787$ ]
3. Piezoelectric [Option ID $=7786$ ]
4. Pyroelectric [Option ID $=7788$ ]

## Correct Answer :-

- Ferromagnetic [Option ID = 7785]

17) In the case of a particle in a one-dimensional box, the energy of an energy state is given by: [Question ID = 1887]
1. $E_{n}=8 n^{2} h^{2} / m a^{2}$, where $n=1,2,3, \ldots$ [Option ID $\left.=7548\right]$
2. $E_{n}=n^{2} h^{2}\left(8 m a^{2}\right)$, where $n=1,2,3, \ldots$ [Option ID $\left.=7546\right]$
3. $E_{n}=n^{2} h^{2} / 8 m a^{2}$, where $n=1,2,3, \ldots$ [Option ID $\left.=7545\right]$
4. $E_{n}=n^{2} h^{2} a^{2} / 8 m$, where $n=1,2,3, \ldots[$ Option $I D=7547]$
$E_{n}=n^{2} h^{2} / 8 m a^{2}$, where $n=1,2,3, \ldots$ [Option ID $=7545$ ]
18) How many chiral carbon atoms are present in 2, 3, 4 - trichloropentane? [Question ID $=1965$ ]
1. 2 [Option ID $=7858$ ]
2. 1 [Option ID $=7857]$
3. 3 [Option ID $=7859]$
4. 4 [Option ID $=7860$ ]

Correct Answer :-

- 1 [Option ID $=7857]$

19) The process of heating the concentrated ore in a limited supply of air or in absence of air is known as: [Question ID $=1952$ ]
1. Cupellation [Option ID $=7806$ ]
2. Roasting [Option ID $=7805$ ]
3. Calcination [Option ID $=7808$ ]
4. Leaching [Option ID $=7807$ ]

Correct Answer :-

- Roasting [Option ID $=7805$ ]

20) Spectroscopic transitions leading to bending of bond angles in molecules will appear at which region of the electromagnetic spectrum? [Questi
1. Radiofrequency [Option ID $=7564$ ]
2. Infra-red [Option ID = 7563]
3. Microwave [Option ID $=7562$ ]
4. Ultraviolet [Option ID $=7561$ ]

## Correct Answer :-

- Ultraviolet [Option ID = 7561]

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21) Oxidation product of quinoline with \(\mathrm{KMnO}_{4}\) is :
[Question ID = 1933]
1. Phthalic anhydride [Option ID \(=7731\) ]
2. Phthalic acid [Option ID \(=7729\) ]
3. Nicotinic acid [Option ID \(=7730\) ]
4. None of these [Option ID \(=7732\) ]
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Correct Answer :-

- Phthalic acid [Option ID = 7729]

[^1][^2]Correct Answer :-

- nitrito-N-pentaamminecobalt (III) chloride [Option ID = 7889]

23) The compound that gives precipitate on warming with aqueous $\mathrm{AgNO}_{3}$ is: [Question ID $=1929$ ]

1. [Option ID = 7713]

 [Option ID = 7714]
2. 


4.
[Option ID = 7715]
Correct Answer :-

[Option ID = 7713]

[^3]
## Correct Answer :-

- Equivalent conductance [Option ID $=7913$ ]

25) The standard emf of galvanic cell involving 3 moles of electrons in its redox reaction is 0.59 V . The equilibrium constant for the reaction of the
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3. 10 30 [Option ID = 7648]
4. 1015 [Option ID = 7647]
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Correct Answer :-

- $10^{25}$ [Option ID $\left.=7645\right]$

26) The oxidation state of Cr in $\left[\mathrm{Cr}\left(\mathrm{NH}_{3}\right)_{4} \mathrm{Cl}_{2}\right]^{+}$is [Question ID $\left.=1975\right]$
1. 2 [Option ID $=7899$ ]
2. 0 [Option ID $=7897]$
3. 1 [Option ID $=7898]$
4. 3 [Option ID $=7900$ ]

## Correct Answer :-

- 0 [Option ID = 7897]

27) Activated charcoal is used to remove colouring matter from pure substances. It works by $\qquad$ [Question ID = 1970]
1. absorption [Option ID $=7879$ ]
2. adsorption [Option ID $=7880$ ]
3. reduction [Option ID $=7877$ ]
4. oxidation [Option ID $=7878$ ]

Correct Answer :-

- reduction [Option ID $=7877]$

28) Which type of colloid is the dissolution of sulphur ( $\mathrm{S}_{8}$ ) [Question ID = 1969]
1. Micelle [Option ID $=7874$ ]
2. Multimolecular colloid [Option ID $=7875$ ]
3. Associated colloid [Option ID $=7873$ ]
4. Macromolecular colloid [Option ID $=7876$ ]

Correct Answer :-

- Associated colloid [Option ID = 7873]

29) For the given complex $\left[\mathrm{CoCl}_{2}(\mathrm{en})\left(\mathrm{NH}_{3}\right)_{2}\right]^{+}$, the number of geometrical isomers, the number of optical isomers and total number of isomers of a 1976]
1. $0,1,3$ [Option ID $=7902$ ]
2. $0,2,2$ [Option ID $=7903]$
3. 2, 2, 3 [Option ID $=7901$ ]
4. 3, 3, 4 [Option ID $=7904$ ]

Correct Answer :-

- 2, 2, 3 [Option ID = 7901]

30) A covalent molecule $A B_{3}$ has pyramidal structure. The number of lone pair and bond pair electrons in the molecule are respectivelv [Question I

Correct Answer :-

- 1 and 3 [Option ID = 7841]

31) Among the following compounds the compounds having anti-conformation as most stable conformation [Question ID $=1944$ ]

## F

OH
[Option ID = 7773]
HO
[Option ID = 7774]
Br Br
4. [Option ID $=7776$ ]

Correct Answer :-
OH
[Option ID = 7773]

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32) In which of the following octahedral complexes of Co (atomic no. 27), will the magnitude of \(\Delta_{0}\) be the highest?
[Question ID = 1977]
1. \(\left[\mathrm{Co}\left(\mathrm{NH}_{3}\right)_{6}\right]^{3+}[\) Option ID \(=7908]\)
2. \(\left[\mathrm{Co}(\mathrm{CN})_{6}\right]^{3-}\) [Option ID \(\left.=7906\right]\)
3. \(\left.\mathrm{Co}\left(\mathrm{H}_{2} \mathrm{O}\right)_{6}\right]^{3+}\) [Option ID \(\left.=7907\right]\)
4. \(\left.\mathrm{Co}\left(\mathrm{C}_{2} \mathrm{O}_{4}\right)_{3}\right]^{3-}[\) Option ID \(=7905]\)
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Correct Answer :-

- $\left.\mathrm{Co}\left(\mathrm{C}_{2} \mathrm{O}_{4}\right)_{3}\right]^{3-}[$ Option ID $=7905]$

33) Hydroxyl ion concentration of 1 M HCl is [Question ID = 1966]
$1.1 \times 10^{-13} \mathrm{~mol} \mathrm{dm}^{-3}$ [Option ID $=7863$ ]
2. $1 \times 10^{14} \mathrm{~mol} \mathrm{dm}^{-3}$ [Option ID $=7861$ ]
3. $1 \times 10^{-1} \mathrm{~mol} \mathrm{dm}^{-3}$ [Option ID $=7862$ ]
4. $1 \times 10^{1} \mathrm{~mol} \mathrm{dm}^{-3}$ [Option ID $=7864$ ]
34) The unit of rate constant for a zero order reaction is: [Question ID = 1893]
1. $\mathrm{s}^{-1}$ [Option ID $=7569$ ]
2. $\mathrm{mol} \mathrm{dm}^{-3} \mathrm{~s}^{-1}$ [Option ID $=7570$ ]
3. $\mathrm{mol}^{-1} \mathrm{dm}^{3} \mathrm{~s}^{-1}$ [Option ID $=7571$ ]
4. $\mathrm{mol}^{-2} \mathrm{dm}^{6} \mathrm{~s}^{-1}$ [Option ID $=7572$ ]

Correct Answer :-

- $\mathrm{s}^{-1}$ [Option ID $=7569$ ]

35) Using the basic phase rule equation, find out which of the following is a correct representation of the degrees of freedom (F) of a system: [Que
1. $\mathrm{F}=0$, for a two-component system with two phases in equilibrium [Option ID $=7616$ ]
2. $\mathrm{F}=2$, for a one-component system with two phases in equilibrium [Option ID $=7614$ ]
3. $F=3$, for a two-component system with two phases in equilibrium [Option ID $=7615$ ]
4. $\mathrm{F}=1$, for a one-component system with two phases in equilibrium [Option $\mathrm{ID}=7613$ ]

Correct Answer :-

- $\mathrm{F}=1$, for a one-component system with two phases in equilibrium [Option ID $=7613$ ]

36) What is the unit of specific conductance (or conductivity) of a conductor? [Question ID = 1882]
1. Siemens ${ }^{-1} \mathrm{~cm}$ [Option ID $=7526$ ]
2. Siemens ${ }^{-1} \mathrm{~cm}^{-1}$ [Option ID $=7525$ ]
3. Siemens $\mathrm{cm}^{-1}$ [Option $\mathrm{ID}=7527$ ]
4. Siemens cm [Option ID $=7528$ ]

Correct Answer :-

- Siemens ${ }^{-1} \mathrm{~cm}^{-1}$ [Option ID $=7525$ ]

37) The addition of a catalyst during a chemical reaction alters which of the following quantities? [Question ID = 1971]
1. Internal energy [Option ID $=7884$ ]
2. Activation energy [Option ID $=7881$ ]
3. Enthalpy [Option ID $=7883$ ]
4. Entropy [Option ID $=7882$ ]

## Correct Answer :-

- Activation energy [Option ID $=7881$ ]

38) A ligand can also be regarded as [Question ID = 1962]
1. Lewis base [Option ID $=7846$ ]
2. Lewis acid [Option ID $=7845$ ]
3. Bronsted base [Option ID $=7848$ ]
4. Bronsted acid [Option ID $=7847$ ]

Correct Answer :-
39) When a solute is distributed between two immiscible liquids, on which of the following parameters the value of partition coefficient ( $\mathrm{K}_{\mathrm{D}}$ ) depen

1. Amount of solute [Option ID $=7595$ ]
2. Relative amount of the two solvents [Option ID $=7596$ ]
3. Temperature [Option ID = 7593]
4. Pressure [Option ID = 7594]

Correct Answer :-

- Temperature [Option ID $=7593$ ]

40) The equation that relates the change in the equilibrium constant, $\mathrm{K}_{\mathrm{eq}}$, of a chemical reaction to the change in temperature, T , is known as: [Que
1. Wilhemy's equation [Option ID $=7536$ ]
2. Sackur-Tetrode equation [Option ID $=7535$ ]
3. Mark-Houwink equation [Option ID $=7533$ ]
4. Van't Hoff equation [Option ID $=7534$ ]

Correct Answer :-

- Mark-Houwink equation [Option ID = 7533]

41) Milk is a colloidal system in which
[Question ID = 1954]
1. Water is dispersed in fat [Option ID $=7815$ ]
2. Fat is dispersed in water [Option ID $=7814$ ]
3. Fat is dissolved in water [Option ID $=7813$ ]
4. None of these [Option ID = 7816]

Correct Answer :-

- Fat is dissolved in water [Option ID $=7813$ ]

42) In a body-center cubic (BCC) type of crystal lattice, the number of atoms belonging exclusively to each unit cell within the lattice is/are: [Ques
1. 2 [Option ID $=7574]$
2. 1 [Option ID $=7573$ ]
3. 3 [Option ID $=7575$ ]
4. 4 [Option ID $=7576$ ]

Correct Answer :-

- 1 [Option ID = 7573]

43) What quantity will remain unchanged for a sample of gas in a sealed rigid container when it is cooled from $100^{\circ} \mathrm{C}$ to $75^{\circ} \mathrm{C}$ at constant volume?
1. The pressure of the gas [Option ID $=7627]$
2. The average energy of the molecules [Option ID $=7626$ ]
3. The average speed of the molecules [Option ID $=7625$ ]
4. The density of the gas [Option ID $=7628$ ]

- The average speed of the molecules [Option ID $=7625$ ]

44) The number of independent modes of vibration in a non-liner molecule having $N$ atoms is [Question ID $=1892$ ]
1. $3 \mathrm{~N}-3$ [Option $\mathrm{ID}=7568$ ]
2. 3 N [Option $\mathrm{ID}=7567]$
3. $3 \mathrm{~N}-5$ [Option ID $=7565$ ]
4. $3 \mathrm{~N}-6$ [Option ID $=7566$ ]

## Correct Answer :-

- $3 \mathrm{~N}-5$ [Option ID = 7565]

45) $10 \mathrm{~cm}^{3}$ of NaOH solution of pH 12 is mixed with $990 \mathrm{~cm}^{3}$ of water. What is the pH of the resulting solution? [Question ID = 1886]
1. 11 [Option ID $=7541$ ]
2. 1 [Option ID $=7543$ ]
3. 10 [Option ID $=7542$ ]
4. 3 [Option ID $=7544$ ]

Correct Answer :-

- 11 [Option ID = 7541]

46) Degeneracy of $1^{\text {st }}$ excited state of a particle in $2-D$ rectangular box with sides ' $a$ ' and ' $2 a$ ' is: [Question ID $=1885$ ]
1. 2 [Option ID $=7540$ ]
2. 0 [Option ID $=7539$ ]
3. 1 [Option ID $=7537]$
4. 3 [Option ID $=7538$ ]

Correct Answer :-

- 1 [Option ID = 7537]

47) Today the concentration of green house gases is very high because of
[Question ID $=1946]$
1. Increase in combustion of oil and coal [Option ID $=7782$ ]
2. Use of refrigerator [Option ID $=7781$ ]
3. Deforestation [Option ID $=7783$ ]
4. all of the above [Option ID = 7784]

Correct Answer :-

- Use of refrigerator [Option ID $=7781$ ]

48) A system maintaining same pressure is known as: [Question ID = 1909]
1. Isochoric system [Option ID $=7635$ ]
2. Isothermal system [Option ID $=7633$ ]

Correct Answer :-

- Isothermal system [Option ID = 7633]

49) The term PVC used in the plastic industry stands for [Question ID $=1950$ ]
1. phosphavinyl chloride [Option $I D=7800$ ]
2. phosphorvanadium chloride [Option ID $=7799$ ]
3. polyvinyl carbobate [Option ID $=7797$ ]
4. polyvinyl chloride [Option ID = 7798]

Correct Answer :-

- polyvinyl carbobate [Option ID = 7797]

50) A compound is formed by elements $A$ and $B$. This crystallises in the cubic structure where the $A$ atoms are at the corners of the cube and $B$ atom the compound is:
[Question ID = 1960]
1. $\mathrm{AB}_{4}$ [Option ID $=7840$ ]
2. AB [Option $\mathrm{ID}=7839$ ]
3. $\mathrm{A}_{8} \mathrm{~B}_{4}$ [Option ID $=7838$ ]
4. $\mathrm{A}_{6} \mathrm{~B}$ [Option ID $\left.=7837\right]$

Correct Answer :-

- $\mathrm{A}_{6} \mathrm{~B}$ [Option ID $\left.=7837\right]$

51) What type of light scattering involves interaction of photons with acoustic phonons in solids? [Question ID = 1901]
1. Compton Scattering [Option ID = 7604]
2. Mie Scattering [Option ID $=7602$ ]
3. Rayleigh Scattering [Option ID $=7601$ ]
4. Brillouin Scattering [Option ID $=7603$ ]

Correct Answer :-

- Rayleigh Scattering [Option ID $=7601$ ]

52) The correct expression for the Freundlich adsorption equation involving ' $x$ ' mass of gas adsorbed on ' $m$ ' mass of adsorbent at pressure ' $p$ ', with adsorbate and adsorbent, is: [Question ID = 1903]
1. $(\mathrm{x} / \mathrm{m})=\mathrm{k} \mathrm{p}^{1 / \mathrm{n}}$ [Option ID $=7610$ ]
2. $(\mathrm{x} / \mathrm{p})=\mathrm{k} \mathrm{m}^{\mathrm{n}}$ [Option ID $=7611$ ]
3. $(x / p)=k \mathrm{~m}^{1 / n}$ [Option ID $=7609$ ]
4. $(x / m)=k p^{n}$ [Option ID $=7612$ ]

Correct Answer :-

- $(\mathrm{x} / \mathrm{p})=\mathrm{k} \mathrm{m}^{1 / \mathrm{n}}$ [Option ID $\left.=7609\right]$

1. atomic weight [Option ID $=7826$ ]
2. number of neutrons [Option ID $=7828$ ]
3. number of electrons [Option ID $=7827$ ]
4. atomic number [Option ID $=7825$ ]

## Correct Answer :-

- atomic number [Option ID $=7825$ ]

54) It takes 15 minutes for the concentration of a radioactive species to decay to its $1 / 8^{\text {th }}$ value of its original concentration. What is the rate const = 1880]
1. $865.8 \mathrm{~s}^{-1}$ [Option ID $=7520$ ]
2. $0.001155 \mathrm{~s}^{-1}$ [Option ID $=7518$ ]
3. $600 \mathrm{~s}^{-1}$ [Option ID $=7517$ ]
4. $0.00231 \mathrm{~s}^{-1}$ [Option ID $=7519$ ]

Correct Answer :-

- $600 \mathrm{~s}^{-1}$ [Option ID $=7517$ ]

55) Anthranilic acid, on treatment with iso-amyl nitrite furnishes a product which displays a strong peak at 76 ( $\mathrm{m} / \mathrm{e}$ ) in its mass spectrum. The str


1 [Option ID = 7707]

2. [Option ID = 7706]

3.

4. [Option $\mathrm{ID}=7708$ ]

## Correct Answer :-


[Option ID = 7705]

The mechanism involved in the following reaction is:



[Question ID = 1928]

1. E1CB- elimination [Option ID $=7712$ ]
2. E2- elimination [Option ID $=7709$ ]
3. E1- elimination [Option ID $=7710$ ]
4. syn- elimination [Option ID = 7711]

Correct Answer :-

- E2- elimination [Option ID $=7709]$
${ }^{57)}$ Atorvastatin (structure given below) is a

[Question ID = 1932]

1. Cholesterol lowering drug [Option ID $=7725$ ]
2. Blood sugar lowering drug [Option ID $=7726$ ]
3. Anti-plasmodial drug [Option ID $=7727$ ]
4. Anti-HIV drug [Option ID $=7728$ ]

Correct Answer :-

- Cholesterol lowering drug [Option ID = 7725]

58) 

Arrange the following in decreasing order of acidity

I

II

III

IV
[Question ID = 1934]

1. III $>$ II $>$ IV $>$ I [Option $I D=7734]$
2. II $>$ IV $>$ I $>$ III [Option ID $=7736$ ]
3. II $>$ I $>$ IV $>$ III [Option ID $=7735$ ]
4. I $>$ II $>$ IV $>$ III [Option ID $=7733$ ]

Correct Answer :-

- I $>$ II $>$ IV $>$ III [Option ID $=7733$ ]
${ }^{59)}$ In the IR spectrum, carbonyl absorption band for the following compound appears at

[Question ID = 1925]

1. $1810 \mathrm{~cm}^{-1}$ [Option ID $\left.=7697\right]$
2. $1710 \mathrm{~cm}^{-1}$ [Option ID $=7698$ ]
3. $1730 \mathrm{~cm}^{-1}$ [Option ID $=7699$ ]
4. $1690 \mathrm{~cm}^{-1}$ [Option ID $=7700$ ]

Correct Answer :-

- $1810 \mathrm{~cm}^{-1}$ [Option ID $=7697$ ]

60) 

Find Major Product of the following reaction:

[Question ID = 1938]
 [Option ID = 7749]

[Option ID $=7751$ ]

[Option ID = 7750]

[Option ID = 7752]
Correct Answer :-

${ }^{61)}$ Following reaction goes through:

[Question ID = 1930]

1. carbine intermediate [Option ID $=7720$ ]
2. free radical intermediate [Option ID $=7717$ ]
3. carbocation intermediate [Option ID $=7719$ ]
4. carbanion intermediate [Option ID $=7718$ ]

Correct Answer :-

- free radical intermediate [Option ID $=7717$ ]
${ }^{62)}$ Which of the following is correct?


[Question ID = 1943]

1. $r 2>r 1$ [Option $I D=7770$ ]
2. $r 1>r 2$ [Option $I D=7769]$
3. $\mathrm{r} 1=\mathrm{r} 2$ [Option ID $=7771$ ]
4. all are correct [Option ID $=7772$ ]

Correct Answer :-

- $\mathrm{r} 1>\mathrm{r} 2$ [Option ID $=7769$ ]

63) 

## Find product $(A)$ of the below reaction is:


[Question ID = 1922]

[Option ID = 7686]

[Option ID = 7685]

[Option ID = 7688]

[Option ID = 7687]
Correct Answer :-

[Option ID = 7685]
64) Match the following:

| A. NMR Spectroscopy | i. Quadruple Splitting |
| :--- | :--- |
| B. Raman Spectroscopy | ii. Binding Energy |
| C. Mossbauer Spectroscopy | iii. Polarizability Ellipsoid |
| D. Photoelectron Spectroscopy | iv. Larmor Precession |

[Question ID = 1895]

1. $\mathrm{A}=\mathrm{iv}, \mathrm{B}=\mathrm{iii}, \mathrm{C}=\mathrm{ii}, \mathrm{D}=\mathrm{i}[$ [Option $\mathrm{ID}=7579$ ]
2. $A=$ iv, $B=$ iii, $C=i, D=$ ii [Option $I D=7578]$
3. $A=$ ii, $B=i v, C=i, D=$ iii [Option $I D=7577]$
4. $A=$ iii, $B=i v, C=i, D=i i[$ Option $I D=7580]$
${ }^{65)}$ Product $B$ in the following reaction is:

[Question ID = 1916]

[Option ID $=7661$ ]


[Option ID = 7663]

[Option ID $=7664]$

[Option ID = 7662]
Correct Answer :-

[Option ID = 7661]
66) 

Match the amino acids with structures:
(i)

(A) tryptophan
(B) histidine
(ii)

(C) Asparagine
(iii)

(D) Serine
(E) Glutamic acid
[Question ID = 1926]

1. (i)-C (ii)-A (iii)-(B) [Option ID = 7704]
2. (i)-C (ii)-D (iii)-(B) [Option ID $=7702]$
3. (i)-A (ii)-E (iii)-(C) [Option ID = 7701]
4. (i)-A (ii)-B (iii)-(D) [Option ID = 7703]

Correct Answer :-

- (i)-A (ii)-E (iii)-(C) [Option ID = 7701]
${ }^{67)}$ Find out the major product of the following reaction is:



Correct Answer :-

[Option ID = 7737]
${ }^{68)}$ Consider the addition of HBr to 3,3-Dimethyl-1-butene shown below. What is the best mect explanation for the formation of the observed product?


[^4]1. Double bond shift in the alkene following by the protonation and addition of bromide to the carbocation [Option ID = 7666]
2. Protonation of the alkene followed by a hydride shift and addition of bromide to the carbocation [Option ID =7665]
3. Protonation of alkene followed by a methyl shift and addition of bromide to the carbocation [Option ID $=7668$ ]
4. Addition of bromide to the alkene followed by a double bond shift and protonation [Option ID $=7667$ ]

- Protonation of the alkene followed by a hydride shift and addition of bromide to the carbocation [Option ID = 7665]
${ }^{69)}$ Find Major Product of the following reaction:

[Question ID = 1941]

[Option ID = 7761]



[Option ID = 7762]
Correct Answer :-

[Option ID = 7761]

70) 

Find the major product of the given reaction:

(i) s-BuLi (2 equiv.),



[Question ID = 1914]

[Option ID = 7654]

[Option ID = 7653]

[Option ID = 7656]

[Option ID = 7655]

## Correct Answer :-



The major product formed in the following reaction is:

[Question ID = 1915]


1. [Option ID = 7657]

[Option ID = 7660]

2. 

[Option ID = 7659]

[Option ID = 7658]
Correct Answer :-

[Option ID = 7657]
72) Papaverine on oxidation with potassium permanganate gives a ketone, which on fusion with potassium hydroxide gives


1. None of these [Option ID = 30940]

[Option ID = 30938]

[Option ID = 30937]

[Option ID = 30939]
Correct Answer :-

${ }^{73)} \mathbf{A}$ and $\mathbf{B}$ are respectively

[Question ID = 1919]

[Option ID = 7676]

[Option ID = 7673]

[Option ID = 7675]

$B=$


Correct Answer :-


Option ID = 7673]
${ }^{74)}$ The correct match for the compounds in column A with the description in column B is:

## Column-A

(P)

(Q)

(R)


[Question ID = 1931]
2. P-Z, Q-Y, R-X [Option ID $=7723$ ]
3. $\mathrm{P}-\mathrm{Z}, \mathrm{Q}-\mathrm{X}, \mathrm{R}-\mathrm{Y}$ [Option ID $=7722$ ]
4. P-X, Q-Z, R-Y [Option ID $=7724$ ]

Correct Answer :-

- P-Y, Q-Z, R-X [Option ID = 7721]
${ }^{75)}$ The product $(P)$ in the following reaction is

$$
\text { Nicotine } \xrightarrow{\text { (i) Alk. } \mathrm{KMnO}_{4}}(\mathrm{P})
$$

(ii) $\mathrm{SOCl}_{2}$
(iii) $\mathrm{NH}_{3}$
(iv) $\mathrm{KOH} / \mathrm{Br}_{2}$
[Question ID = 1945]

1. 2-amino-Pyridine [Option ID $=7777$ ]
2. 2-amino-nicotinamide [Option ID $=7779$ ]
3. 3-amino-Pyridine [Option ID $=7778$ ]
4. 3-amino-nicotinic acid [Option ID $=7780$ ]

Correct Answer :-

- 2-amino-Pyridine [Option ID = 7777]
${ }^{\text {76) }}$ How many 1,2-shift are involved during the course of the following reaction:

[Question ID = 1939]

1. 2 [Option ID $=7754]$
2. 1 [Option ID $=7753$ ]
3. 3 [Option ID $=7755$ ]
4. 4 [Option ID $=7756$ ]

Correct Answer :-

- 1 [Option ID = 7753]

Find out major product:

[Question ID = 1942]

[Option ID = 7765]


[Option ID = 7768]

4. $\mathrm{HO}{ }_{\text {[Option } \mathrm{ID}=7767 \text { ] }}$

Correct Answer :-

${ }^{78)}$ Find Major Product of the following reaction:


[Option ID $=7746$ ]

[Option ID = 7747]


[Option ID = 7748]
Correct Answer :-

[Option ID = 7745]
${ }^{79)}$ Find major product of the below reaction is:

[Question ID = 1936]

[Option ID = 7742]

[Option ID = 7741]

[Option ID = 7744]

[Option ID = 7743]

Correct Answer :-

[Option ID = 7741]
80) For a reaction between two ionic species dissolved in a solvent, the rate constant relies on which factor/s?
[Question ID = 1911]

1. Charges of both the ions [Option ID = 7641]
2. Dielectric constant of the solvent [Option ID = 7642]
3. All of the above [Option ID $=7644$ ]
4. Ionic strength of the solution [Option ID $=7643$ ]

## Correct Answer :-

- Charges of both the ions [Option ID $=7641$ ]

81) For a crystal, the angle of diffraction (20) is $90^{\circ}$ and the second order line has a $d$ value of $2.28 \AA$. The wavelength (in $\AA$ ) of X-Rays used for Brag
[Question ID = 1967]
1. 1.613 [Option ID $=7867$ ]
2. 2.28 [Option ID $=7865$ ]
3. 1.00 [Option ID $=7866$ ]
4. 4.00 [Option ID $=7868$ ]

Correct Answer :-

- 2.28 [Option ID $=7865$ ]

82) The magnetic moment (spin only) of $\left[\mathrm{NiCl}_{4}\right]^{2-}$ is [Question ID = 1974]
1. 5.46 BM [Option ID $=7893$ ]
2. 1.82 BM [Option ID $=7895$ ]
3. 1.41 BM [Option ID $=7894$ ]
4. 2.82 BM [Option ID $=7896$ ]

## Correct Answer :-

83) Total spin angular momentum of nd ${ }^{10}$ electronic system is (a.u.): [Question ID = 1908]
1. 0 [Option ID $=7629$ ]
2. $1 / 4$ [Option ID $=7631$ ]
3. 1 [Option ID $=7630$ ]
4. $1 / 2$ [Option ID $=7632$ ]

Correct Answer :-

- 0 [Option ID = 7629]

84) Electronic transitions originating from the 2 energy level of the Hydrogen atom to higher levels belong to which series? [Question ID $=1890$ ]
1. Brackett Series [Option ID = 7559]
2. Lyman Series [Option ID = 7557]
3. Pfund Series [Option ID $=7560$ ]
4. Balmer Series [Option ID $=7558$ ]

Correct Answer :-

- Lyman Series [Option ID = 7557]

85) Which of the following indicators cannot be used in redox potentiometric titrations? [Question ID = 1898]
1. Nile red [Option ID $=7591$ ]
2. Methylene blue [Option ID $=7590$ ]
3. Erioglaucine A [Option ID = 7589]
4. Quinhydrone [Option ID $=7592$ ]

## Correct Answer :-

- Erioglaucine A [Option ID = 7589]

86) Which of the following represent the correct bond orders for $N_{2}, N_{2}{ }^{+}$and $N_{2}^{-}$molecules? [Question ID = 1888]
1. 3.0, 2.5, 2.5 [Option ID $=7551$ ]
2. 3.0, 2.0, 2.5 [Option ID $=7550$ ]
3. 3.0, 3.0, 3.0 [Option ID $=7549$ ]
4. 2.5, 2.5, 2.5 [Option ID $=7552$ ]

## Correct Answer :-

- 3.0, 3.0, 3.0 [Option ID $=7549$ ]

87) Which of the following equations is used in the calculation of the equilibrium Constant ( $K$ )? [Question ID = 1910]
1. $\ln (K)=-\left(R T / n F E^{0}\right)$ [Option $\left.I D=7640\right]$
2. $\ln (K)=(n F E) / R T)$ [Option ID $=7637]$
3. $\ln (K)=-(n F E O / R T)$ [Option ID $=7638]$
4. $\ln (K)=\left(R T / n F E^{0}\right)$ [Option ID $\left.=7639\right]$

[^5]88) Which of the following molecules give pure rotational spectra? [Question ID = 1896]

1. $\mathrm{O}_{2}, \mathrm{CH}_{4}$ [Option ID $=7582$ ]
2. $\mathrm{H}_{2}, \mathrm{HCl}$ [Option ID $=7581$ ]
3. $\mathrm{H}_{2}, \mathrm{CO}$ [Option ID $=7583$ ]
4. $\mathrm{HCl}, \mathrm{CO}$ [Option ID $=7584]$

Correct Answer :-

- $\mathrm{H}_{2}, \mathrm{HCl}$ [Option ID $=7581$ ]

89) Which of the following is most reactive toward $S_{N} 2$ reaction? [Question ID $=1918$ ]

[Option ID = 7669]

2. 


[Option ID $=7672$ ]
3.
[Option ID = 7671]

[Option ID = 7670]

Correct Answer :

#  <br> [Option ID = 7669] <br> 90) Which of the following indicates the incorrect limiting value of the van't Hoff factor (i) at infinite dilution for strong electrolytes? [Question ID <br> 1. $\mathrm{HCl}=2$ [Option ID $=7607$ ] <br> 2. $\mathrm{H}_{2} \mathrm{SO}_{4}=2$ [Option ID $=7605$ ] <br> 3. $\mathrm{NH}_{4} \mathrm{Cl}=6$ [Option ID $\left.=7606\right]$ <br> 4. $\mathrm{K}_{4}\left[\mathrm{Fe}(\mathrm{CN})_{6}\right]=5[$ Option ID $=7608]$ 

Correct Answer :-

- $\mathrm{H}_{2} \mathrm{SO}_{4}=2$ [Option ID $=7605$ ]

91) Which one of the following Vitamins is essential for coagulation of Blood? [Question ID = 1953]
. [Option ID $=7811]$
2. B1 [Option ID $=7810$ ]
3. K [Option ID $=7809$ ]
4. C [Option ID $=7812$ ]

Correct Answer :-

- K [Option ID $=7809$ ]

92) Which one of the following is least basic in character? [Question ID = 1940]


NH
[Option ID = 7760]

[Option ID = 7759]

[Option ID $=7758$ ]

[Option ID = 7757]

[Option ID = 7757]
93) The vibrational energy of a simple harmonic oscillator, as calculated from the Schrodinger equation, depends on:
[Question ID $=1900$ ]

1. Oscillation frequency [Option ID $=7598$ ]
2. Vibrational quantum number [Option ID $=7597$ ]
3. Planck's constant [Option ID $=7599$ ]
4. All of the above [Option ID $=7600$ ]

## Correct Answer :-

- Vibrational quantum number [Option ID $=7597$ ]

94) The frequency of $3 \times 10^{18} \mathrm{~Hz}$ falls in the:
[Question ID = 1883]
1. Visible and ultraviolet region [Option ID $=7531$ ]
2. Infra-red region [Option ID $=7530$ ]
3. X-Ray region [Option ID $=7532$ ]
4. Microwave region [Option ID $=7529$ ]

Correct Answer :-

- Microwave region [Option ID = 7529]

95) The reduced $C-C$ bond strength/order in Zeise's salt as compared to $C-C$ bond in free ethylene is due to the following factor:
[Question ID $=1978$ ]
1. back bonding or back donation [Option ID = 7912]
2. sp hybridization [Option ID $=7909$ ]
3. quadruple bonding [Option ID $=7911$ ]
4. ionic bonding [Option ID $=7910$ ]

Correct Answer :-

- sp hybridization [Option ID $=7909$ ]

96) The correct statement with respect to the complexes $\mathrm{Ni}(\mathrm{CO})_{4}$ and $\left[\mathrm{Ni}(\mathrm{CN})_{4}\right]^{2-}$ is
[Question ID = 1972]
1. nickel is in the same oxidation state in both [Option $\mathrm{ID}=7888$ ]
2. have tetrahedral and square planar geometry, respectively [Option ID $=7885$ ]
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Correct Answer :-

- have tetrahedral and square planar geometry, respectively [Option ID $=7885$ ]

97) The chemical reaction: $2 A+B \rightarrow C+2 D$ is found to be first order with respect to $A$ but second order with respect to $B$. The rate of the reaction
[Question ID = 1889]
1. None of these [Option ID $=7556$ ]
2. $\mathrm{k}[\mathrm{A}][\mathrm{B}]^{2}$ [Option ID $\left.=7554\right]$
3. $k[A]^{2}[B][$ Option $I D=7553]$
4. $k[A][B][$ Option ID $=7555]$

## Correct Answer :-

- $\mathrm{k}[\mathrm{A}]^{2}[\mathrm{~B}][$ Option $\mathrm{ID}=7553]$

98) Chemical potential is also known as
[Question ID = 1881]
1. Partial molar enthalpy [Option ID $=7522$ ]
2. Partial molar volume [Option ID $=7523$ ]
3. Partial molar entropy [Option ID $=7521$ ]
4. None of the above [Option ID $=7524$ ]

Correct Answer :-

- Partial molar entropy [Option ID $=7521$ ]

99) Who is regarded as father of modern chemistry? [Question ID = 1948]
1. Einstein [Option ID $=7789$ ]
2. Lavoisier [Option ID $=7792$ ]
3. C.V. Raman [Option ID = 7791]
4. Rutherford [Option ID $=7790$ ]

Correct Answer :-

- Einstein [Option ID = 7789]

100) ${ }^{1}$ H NMR spectrum of a mixture of benzene and acetonitrile shows two singlets of equal integration. The molar ratio of benzene : acetonitrile
1. 1: 2 [Option ID $=7691$ ]
2. 1: 1 [Option ID = 7689]
3. 2: 1 [Option ID = 7690]
4. 6: 1 [Option ID = 7692]

## Correct Answer :-

- 1: 1 [Option ID = 7689]


[^0]:    Correct Answer :

[^1]:    22) The IUPAC name for the complex $\left[\mathrm{Co}\left(\mathrm{NO}_{2}\right)\left(\mathrm{NH}_{3}\right)_{5}\right] \mathrm{Cl}_{2}$ is [Question ID = 1973]
    1. nitrito-N-pentaamminecobalt (II) chloride [Option ID $=7891$ ]
    2. nitrito-N-pentaamminecobalt (III) chloride [Option ID $=7889$ ]
[^2]:    4. pentaammine nitrito-N-cobalt (II) chloride [Option ID = 7892]
[^3]:    24) The one which decreases with dilution is [Question ID = 1979]
    1. Specific conductance [Option ID $=7916]$
    2. Molar conductance [Option ID = 7914]
    3. conductance [Option ID = 7915]
    4. Equivalent conductance [Option ID $=7913$ ]
[^4]:    [Question ID = 1917]

[^5]:    Correct Answer :-

