DU MSc Chemistry

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 mol 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]
2. Hydrogen electrode [Option ID = 7586]
3. All of the above [Option ID = 7588]
4. Glass electrode [Option ID = 7585]

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 cm^3 [Option ID = 7853]
2. 22400 cm^3 [Option ID = 7856]
3. 5600 cm^3 [Option ID = 7855]
4. 3200 cm^3 [Option ID = 7854]

Correct Answer :-

- 11200 cm^3 [Option ID = 7853]

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

1. HCN [Option ID = 7683]
2. $NaHSO_3$ [Option ID = 7684]
3. $C_6H_5NHNH_2$ [Option ID = 7681]
4. H_2N-OH [Option ID = 7682]

Correct Answer :-

- $C_6H_5NHNH_2$ [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]

Correct Answer :-

- increasing the surface area [Option ID = 7617]

9) If AgI crystallizes in zinc blende structure with I^{2-} ions at lattice points, what fraction of tetrahedral voids is occupied by 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]

1.  [Option ID = 7680]
2.  [Option ID = 7678]
3.  [Option ID = 7679]
4.  [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 2nd period of the periodic table [Option ID = 7803]
2. Atomic radius of the elements increases as one moves down the first group of the periodic table [Option ID = 7802]
3. Amongst isoelectronic species, greater the negative charge on the anion, larger is the ionic radius [Option ID = 7804]

4. 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]

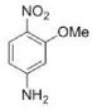
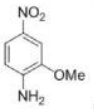
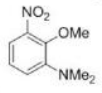
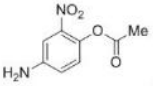
12) The structure of sulphur dioxide molecule (SO_2) may be given as [Question ID = 1956]

1. Linear [Option ID = 7824]
2. Bent [Option ID = 7823]
3. Octahedral [Option ID = 7822]
4. Tetrahedral [Option ID = 7821]

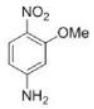
Correct Answer :-

- Tetrahedral [Option ID = 7821]

13) The structure of the compound that matches the ^{1}H NMR data given below: ^{1}H NMR (DMSO-d_6): δ 7.75 (dd, J = 8.8, 2.4 Hz, 1H), 7.58 (d, J = 2.4 Hz, 1H), 6.70 (d, J= 8.8 Hz, 1H), 6.50 (brs, 2H), 3.80 (s, 3H) [Question ID = 1924]

1.  [Option ID = 7693]
2.  [Option ID = 7694]
3.  [Option ID = 7695]
4.  [Option ID = 7696]

Correct Answer :-

-  [Option ID = 7693]

14) A mixture of $CaCl_2$ and NaCl weighing 4.44 g is treated with sodium carbonate solution to precipitate all the Ca^{2+} ions as calcium carbonate. The calcium carbonate so obtained is heated strongly to get 0.56 g of CaO. The percentage of NaCl in the mixture (atomic mass of Ca = 40) is _____.

[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]

15) Which pair of species is listed in increasing order of the property given? [Question ID = 1958]

1. Ionization energy: O, F [Option ID = 7829]
2. Covalent character: HI, HBr [Option ID = 7832]
3. Melting point: I_2, Br_2 [Option ID = 7830]
4. Radius: Te^{2-}, 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. $E_n = 8n^2h^2/ma^2$, where n = 1, 2, 3,... [Option ID = 7548]
2. $E_n = n^2h^2$ ($8ma^2$), where n = 1, 2, 3,... [Option ID = 7546]
3. $E_n = n^2h^2/8ma^2$, where n = 1, 2, 3,... [Option ID = 7545]
4. $E_n = n^2h^2a^2/8m$, where n = 1, 2, 3,... [Option ID = 7547]

Correct Answer :-

- $E_n = n^2h^2/8ma^2$, where n = 1, 2, 3,... [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? [Question ID = 1891]

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]

21) Oxidation product of quinoline with $KMnO_4$ 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]

Correct Answer :-

- Phthalic acid [Option ID = 7729]

22) The IUPAC name for the complex $[Co(NO_2)(NH_3)_5]Cl_2$ is [Question ID = 1973]

1. nitrito-N-pentaamminecobalt (II) chloride [Option ID = 7891]
2. nitrito-N-pentaamminecobalt (III) chloride [Option ID = 7889]
3. pentaammine nitrito-N-cobalt (III) chloride [Option ID = 7890]
4. pentaammine nitrito-N-cobalt (II) chloride [Option ID = 7892]

Correct Answer :-

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

23) The compound that gives precipitate on warming with aqueous $AgNO_3$ is: [Question ID = 1929]

1.  [Option ID = 7713]
2.  [Option ID = 7716]
3.  [Option ID = 7714]
4.  [Option ID = 7715]

Correct Answer :-

-  [Option ID = 7713]

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]

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 cell is- [Question ID = 1912]

1. 10^{25} [Option ID = 7645]
2. 10^{20} [Option ID = 7646]

3. 10^{30} [Option ID = 7648]
4. 10^{15} [Option ID = 7647]

Correct Answer :-

- 10^{25} [Option ID = 7645]

26) The oxidation state of Cr in $[Cr(NH_3)_4Cl_2]^+$ is [Question ID = 1975]

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___ [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 (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 $[CoCl_2(en)(NH_3)_2]^+$, the number of geometrical isomers, the number of optical isomers and total number of isomers of all type possible respectively are [Question ID = 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 AB_3 has pyramidal structure. The number of lone pair and bond pair electrons in the molecule are respectively [Question ID = 1961]

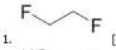
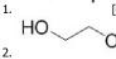
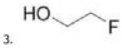
1. 2 and 2 [Option ID = 7843]

2. 1 and 3 [Option ID = 7841]
3. 0 and 4 [Option ID = 7844]
4. 3 and 1 [Option ID = 7842]

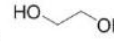
Correct Answer :-

- 1 and 3 [Option ID = 7841]

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

1.  [Option ID = 7775]
2.  [Option ID = 7773]
3.  [Option ID = 7774]
4.  [Option ID = 7776]

Correct Answer :-

-  [Option ID = 7773]

32) In which of the following octahedral complexes of Co (atomic no. 27), will the magnitude of Δ_O be the highest?

[Question ID = 1977]

1. $[Co(NH_3)_6]^{3+}$ [Option ID = 7908]
2. $[Co(CN)_6]^{3-}$ [Option ID = 7906]
3. $Co(H_2O)_6]^{3+}$ [Option ID = 7907]
4. $Co(C_2O_4)_3]^{3-}$ [Option ID = 7905]

Correct Answer :-

- $Co(C_2O_4)_3]^{3-}$ [Option ID = 7905]

33) Hydroxyl ion concentration of 1M HCl is [Question ID = 1966]

1. 1×10^{-13} mol dm^{-3} [Option ID = 7863]
2. 1×10^{14} mol dm^{-3} [Option ID = 7861]
3. 1×10^{-1} mol dm^{-3} [Option ID = 7862]
4. 1×10^{1} mol dm^{-3} [Option ID = 7864]

Correct Answer :-

- 1×10^{14} mol dm^{-3} [Option ID = 7861]

34) The unit of rate constant for a zero order reaction is: [Question ID = 1893]

1. s^{-1} [Option ID = 7569]
2. mol dm^{-3} s^{-1} [Option ID = 7570]
3. mol^{-1} dm^3 s^{-1} [Option ID = 7571]
4. mol^{-2} dm^6 s^{-1} [Option ID = 7572]

Correct Answer :-

- 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: [Question ID = 1904]

1. F=0, for a two-component system with two phases in equilibrium [Option ID = 7616]
2. 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. F=1, for a one-component system with two phases in equilibrium [Option ID = 7613]

Correct Answer :-

- 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. $Siemens^{-1}$ cm [Option ID = 7526]
2. $Siemens^{-1}$ cm^{-1} [Option ID = 7525]
3. Siemens cm^{-1} [Option ID = 7527]
4. Siemens cm [Option ID = 7528]

Correct Answer :-

- $Siemens^{-1}$ 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 :-

- Lewis acid [Option ID = 7845]

39) When a solute is distributed between two immiscible liquids, on which of the following parameters the value of partition coefficient (K_D) depends? [Question ID = 1899]

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, K_{eq}, of a chemical reaction to the change in temperature, T, is known as: [Question ID = 1884]

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: [Question ID = 1894]

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°C to 75°C at constant volume? [Question ID = 1907]

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]

Correct Answer :-

- 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. 3N – 3 [Option ID = 7568]
2. 3N [Option ID = 7567]
3. 3N – 5 [Option ID = 7565]
4. 3N – 6 [Option ID = 7566]

Correct Answer :-

- 3N – 5 [Option ID = 7565]

45) 10 cm^3 of NaOH solution of pH 12 is mixed with 990 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^{st} excited state of a particle in 2-D rectangular box with sides 'a' and '2a' 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]
3. Isotonic system [Option ID = 7634]
4. Isobaric system [Option ID = 7636]

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 ID = 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 atoms are at the body centres. The simplest formula of the compound is:

[Question ID = 1960]

1. AB_4 [Option ID = 7840]
2. AB [Option ID = 7839]
3. A_8B_4 [Option ID = 7838]
4. A_6B [Option ID = 7837]

Correct Answer :-

- A_6B [Option ID = 7837]

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 'k' and 'n' as constants for the given pair of adsorbate and adsorbent, is: [Question ID = 1903]

1. $(x/m) = k\ p^{1/n}$ [Option ID = 7610]
2. $(x/p) = k\ m^{n}$ [Option ID = 7611]
3. $(x/p) = k\ m^{1/n}$ [Option ID = 7609]
4. $(x/m) = k\ p^{n}$ [Option ID = 7612]

Correct Answer :-

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

53) The isotope atoms differ in ? [Question ID = 1957]

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]

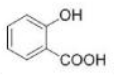
54) It takes 15 minutes for the concentration of a radioactive species to decay to its $1/8^{th}$ value of its original concentration. What is the rate constant of this radioactive decay reaction? [Question ID = 1880]

1. 865.8 s^{-1} [Option ID = 7520]
2. 0.001155 s^{-1} [Option ID = 7518]
3. 600 s^{-1} [Option ID = 7517]
4. 0.00231 s^{-1} [Option ID = 7519]

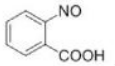
Correct Answer :-

- 600 s^{-1} [Option ID = 7517]

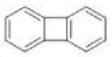
55) Anthranilic acid, on treatment with iso-amyl nitrite furnishes a product which displays a strong peak at 76 (m/e) in its mass spectrum. The structure of the product is [Question ID = 1927]

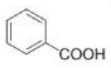
1. 

[Option ID = 7707]

2. 

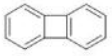
[Option ID = 7706]

3. 
[Option ID = 7705]

4. 

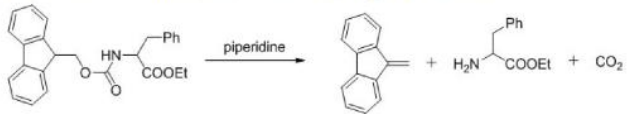
[Option ID = 7708]

Correct Answer :-

- 
[Option ID = 7705]

56)

The mechanism involved in the following reaction is:



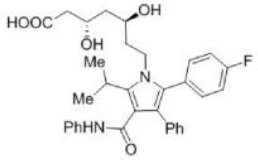
[Question ID = 1928]

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]

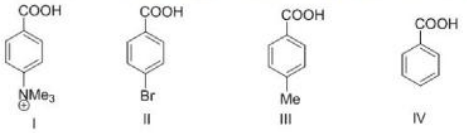
1. Cholesterol lowering drug [Option ID = 7725]
2. Blood sugar lowering drug [Option ID = 7726]
3. Anti-plasmodial drug [Option ID = 7727]
4. Anti-HIV drug [Option ID = 7728]

Correct Answer :-

- Cholesterol lowering drug [Option ID = 7725]

58)

Arrange the following in decreasing order of acidity



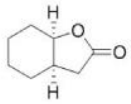
[Question ID = 1934]

1. III > II > IV > I [Option ID = 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]

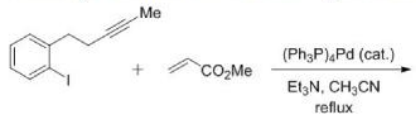
1. 1810 cm^{-1} [Option ID = 7697]
2. 1710 cm^{-1} [Option ID = 7698]
3. 1730 cm^{-1} [Option ID = 7699]
4. 1690 cm^{-1} [Option ID = 7700]

Correct Answer :-

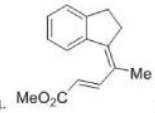
- 1810 cm^{-1} [Option ID = 7697]

60)

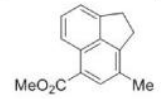
Find Major Product of the following reaction:



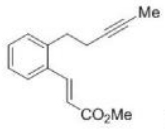
[Question ID = 1938]

1. 

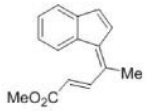
[Option ID = 7749]

2. 

[Option ID = 7751]

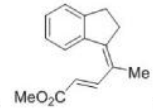
3. 

[Option ID = 7750]

4. 

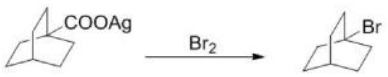
[Option ID = 7752]

Correct Answer :-

- 

[Option ID = 7749]

61) Following reaction goes through:



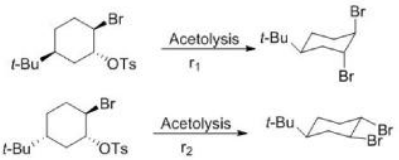
[Question ID = 1930]

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]

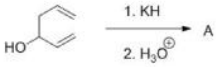
1. r2 > r1 [Option ID = 7770]
2. r1 > r2 [Option ID = 7769]
3. r1 = r2 [Option ID = 7771]
4. all are correct [Option ID = 7772]

Correct Answer :-

- r1 > r2 [Option ID = 7769]

63)

Find product (A) of the below reaction is:



[Question ID = 1922]

1.  [Option ID = 7686]
2.  [Option ID = 7685]
3.  [Option ID = 7688]
4.  [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

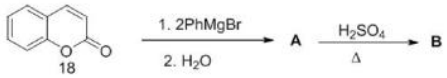
[Question ID = 1895]

1. A = iv, B = iii, C = ii, D = i [Option ID = 7579]
2. A = iv, B = iii, C = i, D = ii [Option ID = 7578]
3. A = ii, B = iv, C = i, D = iii [Option ID = 7577]
4. A = iii, B = iv, C = i, D = ii [Option ID = 7580]

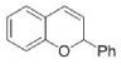
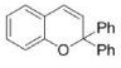
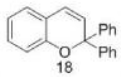
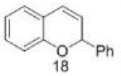
Correct Answer :-

- A = ii, B = iv, C = i, D = iii [Option ID = 7577]

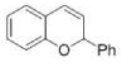
65) Product B in the following reaction is:



[Question ID = 1916]

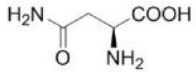
1.  [Option ID = 7661]
2.  [Option ID = 7663]
3.  [Option ID = 7664]
4.  [Option ID = 7662]

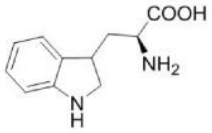
Correct Answer :-

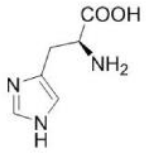
-  [Option ID = 7661]

66)

Match the amino acids with structures:

(i) 

(ii) 

(iii) 

(A) tryptophan

(B) histidine

(C) Asparagine

(D) Serine

(E) Glutamic acid

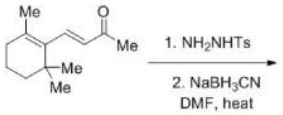
[Question ID = 1926]

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]

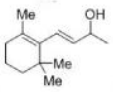
Correct Answer :-

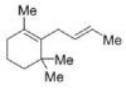
- (i)-A (ii)-E (iii)-(C) [Option ID = 7701]

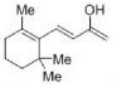
67) Find out the major product of the following reaction is:

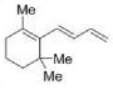


[Question ID = 1935]

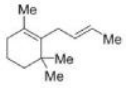
1.  [Option ID = 7740]

2.  [Option ID = 7737]

3.  [Option ID = 7739]

4.  [Option ID = 7738]

Correct Answer :-

-  [Option ID = 7737]

68) Consider the addition of HBr to 3,3-Dimethyl-1-butene shown below. What is the best mechanism explanation for the formation of the observed product?



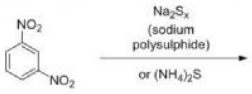
[Question ID = 1917]

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]

Correct Answer :-

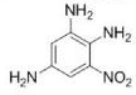
- Protonation of the alkene followed by a hydride shift and addition of bromide to the carbocation [Option ID = 7665]

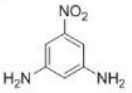
69) Find Major Product of the following reaction:



[Question ID = 1941]

1.  [Option ID = 7761]

2.  [Option ID = 7764]

3.  [Option ID = 7763]

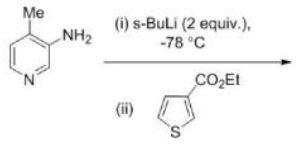
4.  [Option ID = 7762]

Correct Answer :-

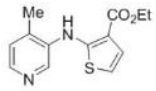
-  [Option ID = 7761]

70)

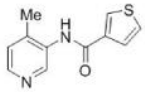
Find the major product of the given reaction:



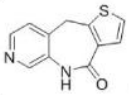
[Question ID = 1914]

1. 

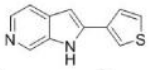
[Option ID = 7654]

2. 

[Option ID = 7653]

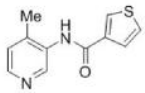
3. 

[Option ID = 7656]

4. 

[Option ID = 7655]

Correct Answer :-

- 

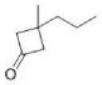
[Option ID = 7653]

71)

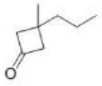
The major product formed in the following reaction is:



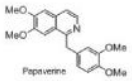
[Question ID = 1915]

1.  [Option ID = 7657]
2.  [Option ID = 7660]
3.  [Option ID = 7659]
4.  [Option ID = 7658]

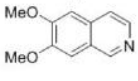
Correct Answer :-

-  [Option ID = 7657]

72) Papaverine on oxidation with potassium permanganate gives a ketone, which on fusion with potassium hydroxide gives



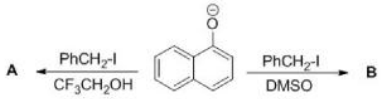
[Question ID = 15235]

1. None of these [Option ID = 30940]
2.  [Option ID = 30938]
3.  [Option ID = 30937]
4.  [Option ID = 30939]

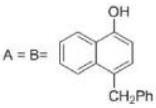
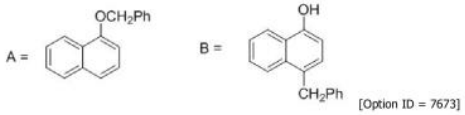
Correct Answer :-

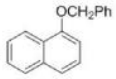
-  [Option ID = 30937]

73) **A** and **B** are respectively

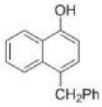
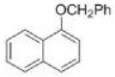


[Question ID = 1919]

1.  [Option ID = 7676]
2.  [Option ID = 7673]

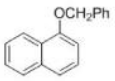
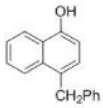
A = B= 

3. [Option ID = 7675]

A =  B = 

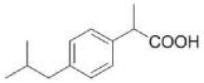
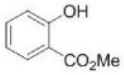
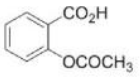
4. [Option ID = 7674]

Correct Answer :-

A =  B = 

• [Option ID = 7673]

74) The correct match for the compounds in column A with the description in column B is:

Column-A		Column-B	
(P)		(X)	Oil of wintergreen
(Q)		(Y)	Aspirin
(R)		(Z)	Ibuprofen

[Question ID = 1931]

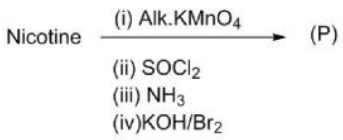
1. P-Y, Q-Z, R-X [Option ID = 7721]

2. P-Z, Q-Y, R-X [Option ID = 7723]
3. P-Z, Q-X, R-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



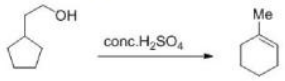
[Question ID = 1945]

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]

76) How many 1,2-shift are involved during the course of the following reaction:



[Question ID = 1939]

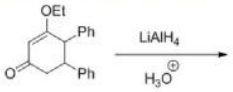
1. 2 [Option ID = 7754]
2. 1 [Option ID = 7753]
3. 3 [Option ID = 7755]
4. 4 [Option ID = 7756]

Correct Answer :-

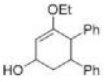
- 1 [Option ID = 7753]

77)

Find out major product:



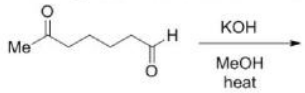
[Question ID = 1942]

1.  [Option ID = 7765]
2.  [Option ID = 7766]
3.  [Option ID = 7768]
4.  [Option ID = 7767]

Correct Answer :-

-  [Option ID = 7765]

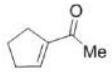
78) Find Major Product of the following reaction:



[Question ID = 1937]

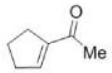
1.  [Option ID = 7746]

2.  [Option ID = 7747]

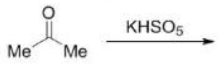
3.  [Option ID = 7745]

4.  [Option ID = 7748]

Correct Answer :-

-  [Option ID = 7745]

79) Find major product of the below reaction is:

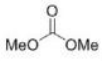


[Question ID = 1936]

1.  [Option ID = 7742]

2.  [Option ID = 7741]

3.  [Option ID = 7744]

4.  [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 (2θ) is 90° and the second order line has a *d* value of 2.28Å. The wavelength (in Å) of X-Rays used for Bragg's diffraction is

[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 $[NiCl_4]^{2-}$ 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 :-

- 5.46 BM [Option ID = 7893]

83) Total spin angular momentum of nd^{10} electronic system is (a.u.): [Question ID = 1908]

1. 0 [Option ID = 7629]
2. ¼ [Option ID = 7631]
3. 1 [Option ID = 7630]
4. ½ [Option ID = 7632]

Correct Answer :-

- 0 [Option ID = 7629]

84) Electronic transitions originating from the 2S 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. $\ln (K) = - (RT/nFE^0)$ [Option ID = 7640]
2. $\ln (K) = (nFE^0/RT)$ [Option ID = 7637]
3. $\ln (K) = - (nFE^0/RT)$ [Option ID = 7638]
4. $\ln (K) = (RT/nFE^0)$ [Option ID = 7639]

Correct Answer :-

- $\ln (K) = (nFE^0/RT)$ [Option ID = 7637]

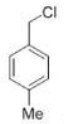
88) Which of the following molecules give pure rotational spectra? [Question ID = 1896]

1. O_2, CH_4 [Option ID = 7582]
2. H_2, HCl [Option ID = 7581]
3. H_2, CO [Option ID = 7583]
4. HCl, CO [Option ID = 7584]

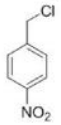
Correct Answer :-

- H_2, HCl [Option ID = 7581]

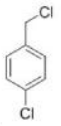
89) Which of the following is most reactive toward S_N2 reaction? [Question ID = 1918]

1. 

[Option ID = 7669]

2. 

[Option ID = 7672]

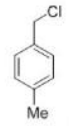
3. 

[Option ID = 7671]

4. 

[Option ID = 7670]

Correct Answer :-



- [Option ID = 7669]

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 = 1902]

1. HCl = 2 [Option ID = 7607]
2. H_2SO_4 = 2 [Option ID = 7605]
3. NH_4Cl = 6 [Option ID = 7606]
4. $K_4[Fe(CN)_6]$ = 5 [Option ID = 7608]

Correct Answer :-

- H_2SO_4 = 2 [Option ID = 7605]

91) Which one of the following Vitamins is essential for coagulation of Blood? [Question ID = 1953]

1. D [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]

1.  [Option ID = 7760]

2.  [Option ID = 7759]

3.  [Option ID = 7758]

4.  [Option ID = 7757]

Correct Answer :-



- [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 3×10^{18} 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 $Ni(CO)_4$ and $[Ni(CN)_4]^{2-}$ is

[Question ID = 1972]

1. nickel is in the same oxidation state in both [Option ID = 7888]
2. have tetrahedral and square planar geometry, respectively [Option ID = 7885]
3. both have tetrahedral geometry [Option ID = 7887]
4. both have square planar geometry [Option ID = 7886]

Correct Answer :-

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

97) The chemical reaction: 2A + B → C + 2D is found to be first order with respect to A but second order with respect to B. The rate of the reaction is given by...

[Question ID = 1889]

1. None of these [Option ID = 7556]
2. k [A] $[B]^2$ [Option ID = 7554]
3. k $[A]^2$ [B] [Option ID = 7553]
4. k [A] [B] [Option ID = 7555]

Correct Answer :-

- k $[A]^2$ [B] [Option 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) ^1H NMR spectrum of a mixture of benzene and acetonitrile shows two singlets of equal integration. The molar ratio of benzene : acetonitrile is : [Question ID = 1923]

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]