DU Msc Chemistry

Topic:- DU_J18_MSC_CHEM

1) The halogen having metallic character is [Question ID = 790]

1. Bromine [Option ID = 3159]
2. Chlorine [Option ID = 3158]
3. Iodine [Option ID = 3160]
4. Fluorine [Option ID = 3157]

Correct Answer :-

- Iodine [Option ID = 3160]

2) If the density of air is 1.2 g/lit, what is the volume occupied by 7.8g of air? [Question ID = 860]

1. 10.10lit [Option ID = 3440]
2. 10 lit [Option ID = 3437]
3. 6 lit [Option ID = 3438]
4. 6.5 lit [Option ID = 3439]

Correct Answer :-

- 6.5 lit [Option ID = 3439]

3) Which of the following statement/s is/are true?

[Question ID = 855]

1. All of these [Option ID = 3420]
2. Adsorption increases with increase in pressure [Option ID = 3419]
3. Adsorption decreases with increase in temperature [Option ID = 3418]
4. Adsorption is an exothermic process [Option ID = 3417]

Correct Answer :-

- All of these [Option ID = 3420]

4) Which of the following species represent the example of dsp^2 hybridization?

[Question ID = 53390]

1. $[FeF_6]^{3-}$ [Option ID = 93549]
2. $[Fe(CN)_6]^{3-}$ [Option ID = 93546]
3. $[Ni(CN)_4]^{2-}$ [Option ID = 93547]
4. $[Zn(NH_3)_4]^{2+}$ [Option ID = 93548]

Correct Answer :-

- $[Ni(CN)_4]^{2-}$ [Option ID = 93547]

5) Correct characteristics of the functional groups of adenine in DNA base pair are

[Question ID = 824]

1. Both N(3) and $C(6)NH_2$ are hydrogen bond acceptors [Option ID = 3295]
2. Both N(3) and $C(6)NH_2$ are hydrogen bond acceptors. [Option ID = 3296]
3. N(3) is a hydrogen bond acceptor and $C(6)NH_2$ is a hydrogen bond donor. [Option ID = 3293]
4. N(1) is a hydrogen bond acceptor and $C(6)NH_2$ is a hydrogen bond donor. [Option ID = 3294]

Correct Answer :-

- N(1) is a hydrogen bond acceptor and $C(6)NH_2$ is a hydrogen bond donor. [Option ID = 3294]

6) Chemical potential is also known as [Question ID = 858]

1. Partial molar entropy [Option ID = 3429]
2. Partial molar Gibbs free energy [Option ID = 3431]
3. None of these [Option ID = 3432]
4. Partial molar enthalpy [Option ID = 3430]

Correct Answer :-

- Partial molar Gibbs free energy [Option ID = 3431]

7) From the following, which is more covalent? [Question ID = 781]

1. Al_2S_3 [Option ID = 3122]
2. AlN [Option ID = 3123]
3. Al_2Cl_6 [Option ID = 3124]
4. Al_2O_3 [Option ID = 3121]

Correct Answer :-

- Al_2S_3 [Option ID = 3122]

8) The most probable candidate to form an octahedral complex is [Question ID = 792]

1. d^{10} [Option ID = 3168]
2. d^8 (high spin) [Option ID = 3167]
3. d^8 (low spin) [Option ID = 3166]
4. d^1 (low spin) [Option ID = 3165]

Correct Answer :-

- d^1 (low spin) [Option ID = 3165]

9) Percentage of gold in 18 carat gold is [Question ID = 787]

1. 18 [Option ID = 3145]
2. 100 [Option ID = 3148]
3. 75 [Option ID = 3146]
4. 83.6 [Option ID = 3147]

Correct Answer :-

- 75 [Option ID = 3146]

10) Which pair from the following behaves as metalloid? [Question ID = 789]

1. Al and Zn [Option ID = 3155]
2. Rb and Cs [Option ID = 3156]
3. Br and I [Option ID = 3153]
4. Pt and I [Option ID = 3154]

Correct Answer :-

- Al and Zn [Option ID = 3155]

11) For a substitution reaction following a dissociative mechanism, the rate determining step is [Question ID = 800]

1. dependent on the solvent concentration [Option ID = 3199]
2. dependent on the leaving group [Option ID = 3198]
3. dependent on the entering group [Option ID = 3197]
4. dependent on the nature of the complex [Option ID = 3200]

Correct Answer :-

- dependent on the leaving group [Option ID = 3198]

12) The amino acid constituents of artificial sweetener given below are: [Question ID = 826]

1. L-Aspartic acid and L-tyrosine [Option ID = 3304]
2. D-Glutamic acid and L-phenylgylcine [Option ID = 3301]
3. L-Aspartic acid and L-phenylalanine [Option ID = 3303]
4. L-Glutamic acid and L-phenylgylcine [Option ID = 3302]

Correct Answer :-

- L-Aspartic acid and L-phenylalanine [Option ID = 3303]

13) In the following statements, which one is incorrect? [Question ID = 778]

1. Atomic radius of Zr and Hf are same because of lanthanide contraction [Option ID = 3112]
2. $La(OH)_3$ is less basic than $Lu(OH)_3$ [Option ID = 3109]
3. La is actually an element of transition series rather than lanthanides [Option ID = 3111]
4. In lanthanide series, ionic radius of Lu^{3+} ion decreases [Option ID = 3110]

Correct Answer :-

- $La(OH)_3$ is less basic than $Lu(OH)_3$ [Option ID = 3109]

14) In the dichromate dianion [Question ID = 791]

1. 3 Cr-O bonds are equivalent [Option ID = 3163]
2. 6 Cr-O bonds are equivalent [Option ID = 3162]
3. All the Cr-O bonds are non-equivalent [Option ID = 3164]
4. 4 Cr-O bonds are equivalent [Option ID = 3161]

Correct Answer :-

- 6 Cr-O bonds are equivalent [Option ID = 3162]

15) Vacuum is a measure of [Question ID = 804]

1. Leaking rate of air [Option ID = 3214]
2. Leaking rate of oil [Option ID = 3216]
3. Leaking rate of moisture [Option ID = 3215]
4. Emptiness [Option ID = 3213]

Correct Answer :-

- Leaking rate of air [Option ID = 3214]

16) The Pre-exponential factor 'A' in the Arrhenius Equation depends on which of the following? [Question ID = 852]

1. Collision Frequency [Option ID = 3407]
2. Gibb's free energy of reaction [Option ID = 3406]
3. None of these [Option ID = 3408]
4. Energy of activation of the reaction [Option ID = 3405]

Correct Answer :-

- Collision Frequency [Option ID = 3407]

17) The process of heating the concentrated ore in a limited supply of air or in the absence of air is known as: [Question ID = 869]

1. Roasting [Option ID = 3473]
2. Calcination [Option ID = 3475]
3. Cupellation [Option ID = 3476]
4. Leaching [Option ID = 3474]

Correct Answer :-

- Calcination [Option ID = 3475]

18) Spectroscopic transitions leading to rotation of molecules will appear at which region of the electromagnetic spectrum? [Question ID = 866]

1. Ultraviolet [Option ID = 3461]
2. Radiofrequency [Option ID = 3464]
3. Infra-red [Option ID = 3463]
4. Microwave [Option ID = 3462]

Correct Answer :-

- Microwave [Option ID = 3462]

19) The ground state of a harmonic oscillator has number of nodes: [Question ID = 846]

1. 2 [Option ID = 3382]
2. 0 [Option ID = 3384]
3. 1 [Option ID = 3383]
4. 3 [Option ID = 3381]

Correct Answer :-

- 0 [Option ID = 3384]

20) Tritium is a radioisotope of hydrogen, it undergoes disintegration to give

[Question ID = 786]

1. α-particles [Option ID = 3142]
2. β-particles [Option ID = 3143]
3. Neutrons [Option ID = 3144]
4. X-rays [Option ID = 3141]

Correct Answer :-

- Neutrons [Option ID = 3144]

21) Which transitions are studied by UV spectrometer? [Question ID = 870]

1. Electronic [Option ID = 3478]
2. Vibrational [Option ID = 3480]
3. Nuclear [Option ID = 3479]
4. Rotational [Option ID = 3477]

Correct Answer :-

- Electronic [Option ID = 3478]

22) What happens during digestion of a precipitate? [Question ID = 801]

1. Coalescence of smaller crystallites [Option ID = 3203]
2. Recrystallization takes place [Option ID = 3202]
3. Completion of precipitation [Option ID = 3201]
4. rate of the reaction increases [Option ID = 3204]

Correct Answer :-

- Coalescence of smaller crystallites [Option ID = 3203]

23) Among the following group of oxides, the group of oxides that cannot be reduced by carbon to give the respective metals is [Question ID = 788]

1. CaO, K_2O [Option ID = 3151]
2. Fe_2O_3, ZnO [Option ID = 3150]

3. PbO, Fe_3O_4 [Option ID = 3152]
4. Cu_2O, SnO_2 [Option ID = 3149]

Correct Answer :-

- CaO, K_2O [Option ID = 3151]

24) In which of the following reaction migration of alkyl group from carbon to oxygen is observed? [Question ID = 813]

1. Pinacol-pinacolone rearrangement [Option ID = 3249]
2. Prepration of phenol from cumene hydroperoxide [Option ID = 3251]
3. Baeyer-villiger oxidation [Option ID = 3250]
4. Both Baeyer-villiger oxidation and Prepration of phenol from cumene hydroperoxide [Option ID = 3252]

Correct Answer :-

- Baeyer-villiger oxidation [Option ID = 3250]

25) Alkali metals form highly stable complexes with [Question ID = 795]

1. diethyl ether [Option ID = 3178]
2. Butadiene [Option ID = 3180]
3. Cryptand-222 [Option ID = 3177]
4. Cyclopentadiene [Option ID = 3179]

Correct Answer :-

- Cryptand-222 [Option ID = 3177]

26) The unit of rate constant for a second order reaction is: [Question ID = 850]

1. s^{-1} [Option ID = 3397]
2. $mol^{-2}\ dm^6\ s^{-1}$ [Option ID = 3400]
3. $mol\ dm^{-3}\ s^{-1}$ [Option ID = 3398]
4. $mol^{-1}\ dm^3\ s^{-1}$ [Option ID = 3399]

Correct Answer :-

- $mol^{-1}\ dm^3\ s^{-1}$ [Option ID = 3399]

27) What is the unit of specific resistance (or resistivity) of a conductor? [Question ID = 868]

1. $Ohmcm^{-1}$ [Option ID = 3471]
2. $Siemens^{-1}$ [Option ID = 3470]
3. $Ohm^{-1}\,cm$ [Option ID = 3472]
4. $Siemens^{-1}\,cm$ [Option ID = 3469]

Correct Answer :-

- $Siemens^{-1}\,cm$ [Option ID = 3469]

28) When a nucleophile encounters a ketone the site of attack is: [Question ID = 811]

1. both the carbon and oxygen atoms, with equal probability [Option ID = 3243]
2. the carbon atom of the carbonyl [Option ID = 3241]
3. the oxygen atom of the carbonyl [Option ID = 3242]
4. no attack occur as ketones do not react with nucleophiles [Option ID = 3244]

Correct Answer :-

- the carbon atom of the carbonyl [Option ID = 3241]

29) In the cases of gases adsorbing on solid, which of the following statement/s is/are true?

[Question ID = 845]

1. Decrease in temperature of the system results in increase in adsorption [Option ID = 3378]
2. Decrease in pressure of the system results in decrease in adsorption [Option ID = 3379]
3. All of these [Option ID = 3380]
4. Adsorption is an exothermic process [Option ID = 3377]

Correct Answer :-

- All of these [Option ID = 3380]

30) During a disproportionation reaction, [Question ID = 802]

1. Simultaneous oxidation and reduction of metal ion takes place [Option ID = 3207]
2. Metal ion goes to lower oxidation state [Option ID = 3205]
3. Metal ion goes to higher oxidation state [Option ID = 3206]
4. Metal ion remains unchanged in its oxidation state [Option ID = 3208]

Correct Answer :-

- Simultaneous oxidation and reduction of metal ion takes place [Option ID = 3207]

31) The number of independent modes of vibration in a linear molecule having N atoms is [Question ID = 851]

1. 3N – 6 [Option ID = 3402]
2. 3N – 3 [Option ID = 3404]
3. 3N [Option ID = 3403]
4. 3N - 5 [Option ID = 3401]

Correct Answer :-

- 3N - 5 [Option ID = 3401]

32) A system that maintains a constant volume is known as [Question ID = 857]

1. None of these [Option ID = 3428]
2. Isochoric system [Option ID = 3425]
3. Adiabatic system [Option ID = 3427]
4. Isotactic system [Option ID = 3426]

Correct Answer :-

- Isochoric system [Option ID = 3425]

33) Cobalt is present in [Question ID = 777]

1. Vitamin B_2 [Option ID = 3106]
2. Vitamin B_1 [Option ID = 3105]
3. Vitamin B_6 [Option ID = 3107]
4. Vitamin B_{12} [Option ID = 3108]

Correct Answer :-

- Vitamin B_{12} [Option ID = 3108]

34) In collision theory of bimolecular gaseous reactions, the Collision Frequency does not depend on: [Question ID = 849]

1. Pressure of the system [Option ID = 3394]
2. Number of molecules of each gas [Option ID = 3396]
3. Temperature of the system [Option ID = 3393]

4. Reduced mass of the system [Option ID = 3395]

Correct Answer :-

- Pressure of the system [Option ID = 3394]

35) An inorganic mixture dissolves in hot conc. HCl giving a blue colored solution which on addition of water becomes pink. The mixture contains [Question ID = 793]

1. Fe^{3+} [Option ID = 3172]
2. Cr^{3+} [Option ID = 3171]
3. Ni^{2+} [Option ID = 3169]
4. Co^{2+} [Option ID = 3170]

Correct Answer :-

- Co^{2+} [Option ID = 3170]

36) The Bragg's equation for crystallography can be written as: [Question ID = 844]

1. $n\lambda = (2d / \sin\theta)$ [Option ID = 3375]
2. $n\lambda = (2d \sin\theta)$ [Option ID = 3373]
3. $n\lambda = (2/d) \sin 2\theta)$ [Option ID = 3374]
4. $n\lambda = 1 / (2d \sin\theta)$ [Option ID = 3376]

Correct Answer :-

- $n\lambda = (2d \sin\theta)$ [Option ID = 3373]

37)

The product X in the flowing reaction $6LiH + 8BF_3 \rightarrow 6LiBF_4 + X$ is

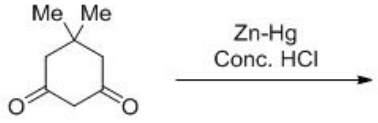
[Question ID = 783]

1. B_4H_{10} [Option ID = 3129]
2. B_2H_6 [Option ID = 3130]
3. B_3H_8 [Option ID = 3132]
4. BH_3 [Option ID = 3131]

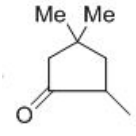
Correct Answer :-

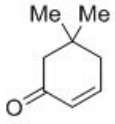
- B_2H_6 [Option ID = 3130]

38) The product obtained in the following conversion is:

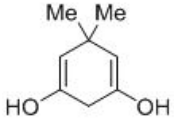


[Question ID = 840]

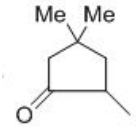
1.  [Option ID = 3358]

2.  [Option ID = 3360]

3.  [Option ID = 3357]

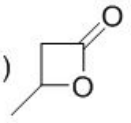
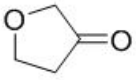
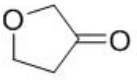
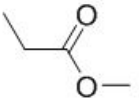
4.  [Option ID = 3359]

Correct Answer :-

-  [Option ID = 3358]

39)

A compound with molecular formula $C_4H_60_2$ shows band at 1770 cm-1 in IR spectra and peaks at 178,68,28,22 ppm in ^{13}C NMR spectrum. The correct structure of the compound is

(i)  (ii)  (iii)  (iv) 

[Question ID = 823]

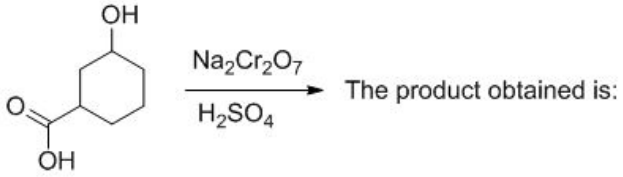
1. ii [Option ID = 3290]
2. iv [Option ID = 3292]
3. iii [Option ID = 3291]
4. i [Option ID = 3289]

Correct Answer :-

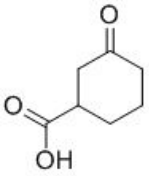
- ii [Option ID = 3290]
- iii [Option ID = 3291]

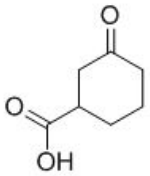
40)

The product in the given reaction is.

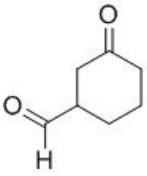


[Question ID = 810]

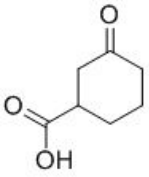
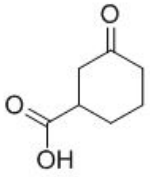
1.  [Option ID = 3239]

2.  [Option ID = 3237]

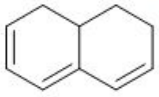
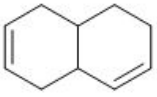
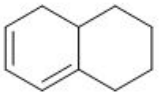
3. None of these [Option ID = 3240]

4.  [Option ID = 3238]

Correct Answer :-

-  [Option ID = 3239]
-  [Option ID = 3237]

41) Rank the following alkenes on order of increasing maximum wavelength

(i)  (ii)  (iii) 

[Question ID = 815]

1. i < ii < iii [Option ID = 3260]

2. ii < i < iii [Option ID = 3258]

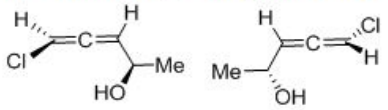
3. i < iii < ii [Option ID = 3259]

4. ii < iii < i [Option ID = 3257]

Correct Answer :-

- ii < iii < i [Option ID = 3257]

42) The correct relation between the following compounds is



[Question ID = 5490]

1. enantiomers [Option ID = 21957]
2. homomers (identical) [Option ID = 21959]
3. constitutional isomers [Option ID = 21960]
4. diastereomers [Option ID = 21958]

Correct Answer :-

- homomers (identical) [Option ID = 21959]

43) Tl^{+} compounds are poisonous because

[Question ID = 806]

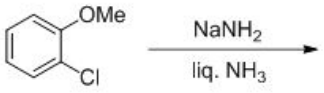
1. Stop blood circulation [Option ID = 3223]
2. They attack liver [Option ID = 3224]
3. Cut-off breathing capability [Option ID = 3222]
4. They can cause blood infection [Option ID = 3221]

Correct Answer :-

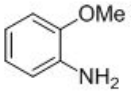
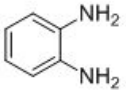
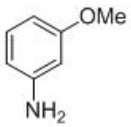
- Cut-off breathing capability [Option ID = 3222]

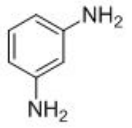
44)

The major product formed in the following reaction is.

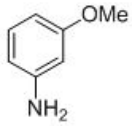


[Question ID = 839]

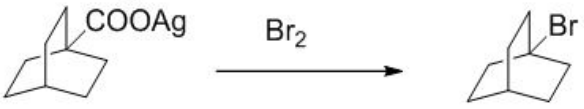
1.  [Option ID = 3354]
2.  [Option ID = 3356]
3.  [Option ID = 3353]

4.  [Option ID = 3355]

Correct Answer :-

-  [Option ID = 3353]

45) Following reaction goes through?



[Question ID = 822]

1. carbene intermediate [Option ID = 3288]
2. free reaical intermediate [Option ID = 3285]
3. carbocation intermediate [Option ID = 3287]
4. carbanion intermediate [Option ID = 3286]

Correct Answer :-

- free reaical intermediate [Option ID = 3285]

46)

Consider an electrochemical reaction: Oxidized form + ne^- = reduced form. If an ion forms a complex with the oxidized form, then the following happens:

[Question ID = 843]

1. The reduction potential of the system is increased [Option ID = 3370]
2. The reduction potential of the system remains the same [Option ID = 3369]
3. The effective concentration of the reduced form is increased [Option ID = 3372]
4. The reduction potential of the system is lowered [Option ID = 3371]

Correct Answer :-

- The reduction potential of the system is lowered [Option ID = 3371]

47) Total orbital angular momentum of np^6 electronic system is (a.u.):

[Question ID = 864]

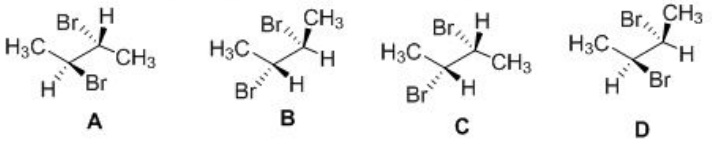
1. 0 [Option ID = 3453]
2. ½ [Option ID = 3456]
3. 2 [Option ID = 3455]
4. 1 [Option ID = 3454]

Correct Answer :-

- 0 [Option ID = 3453]

48)

Identify the enantiomers among the following compounds.



[Question ID = 827]

1. C and D [Option ID = 3308]
2. B and D [Option ID = 3307]
3. A and C [Option ID = 3306]
4. A and B [Option ID = 3305]

Correct Answer :-

- C and D [Option ID = 3308]

49)

Match the following

List – 1		List – 2	
A	Phosphorescence	1	A schematic representation of the various types of radiative and non-radiative transitions that can occur in molecules
B	Intersystem Crossing	2	Spontaneous emission of radiation arising from transitions between energy states of same multiplicity
C	Jablonski Diagram	3	Non-radiative transitions between energy states of different multiplicity
D	Fluorescence	4	Spontaneous emission of radiation arising from transitions between energy states of different multiplicities

[Question ID = 841]

1. A4, B3, C1, D2 [Option ID = 3363]
2. A4, B3, C2, D1 [Option ID = 3362]
3. A3, B1, C2, D4 [Option ID = 3364]
4. A1, B2, C3, D4 [Option ID = 3361]

Correct Answer :-

- A4, B3, C1, D2 [Option ID = 3363]

50) The oxidation state of oxygen in O_2F_2 is

[Question ID = 794]

1. $+2$ [Option ID = 3174]
2. $+1$ [Option ID = 3173]
3. $+4$ [Option ID = 3175]

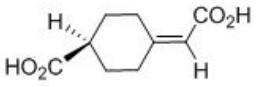
4. $^{-2}$ [Option ID = 3176]

Correct Answer :-

- $^{+1}$ [Option ID = 3173]

51)

The following molecule has



[Question ID = 829]

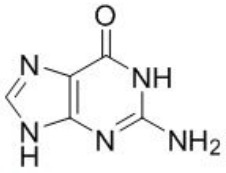
1. R configuration [Option ID = 3314]
2. centre of symmetry [Option ID = 3316]
3. S configuration [Option ID = 3315]
4. plane of symmetry [Option ID = 3313]

Correct Answer :-

- R configuration [Option ID = 3314]

52)

In low chloride ion concentration, the anticancer drug cis-platin hydrolysis to give a diaqua complex and this binds to DNA via adajacent guanine.



The coordinating atom of guanine to Pt(II) is

[Question ID = 825]

1. N9 [Option ID = 3300]
2. N7 [Option ID = 3299]
3. N1 [Option ID = 3297]
4. N3 [Option ID = 3298]

Correct Answer :-

- N7 [Option ID = 3299]

53)

Which of the following species is aromatic in nature?

(i) 

(ii) 

(iii) 

(iv) 

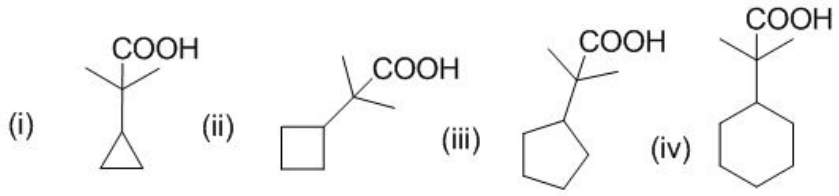
[Question ID = 818]

1. iv [Option ID = 3272]
2. i [Option ID = 3269]
3. ii [Option ID = 3270]
4. iii [Option ID = 3271]

Correct Answer :-

- iv [Option ID = 3272]

54) Arrange the following in decreasing order of their acidity



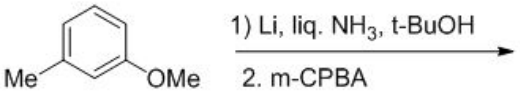
[Question ID = 807]

1. iv > ii > i > iii [Option ID = 3228]
2. iv > iii > ii > i [Option ID = 3227]
3. i > ii > iii > iv [Option ID = 3225]
4. i > iv > iii > ii [Option ID = 3226]

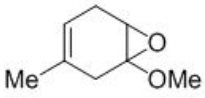
Correct Answer :-

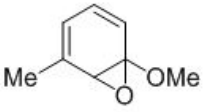
- i > ii > iii > iv [Option ID = 3225]

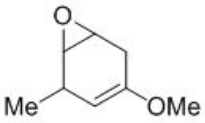
55) The major product formed in the following reaction sequence is:

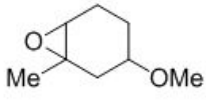


[Question ID = 5543]

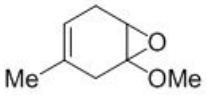
1.  [Option ID = 22165]

2.  [Option ID = 22163]

3.  [Option ID = 22164]

4.  [Option ID = 22166]

Correct Answer :-

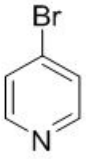


- [Option ID = 22165]

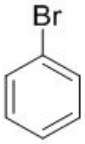
56)

The compound that gives precipitate on warming with aqueous $AgNO_3$ is.

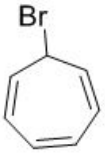
[Question ID = 834]

1. 

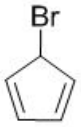
[Option ID = 3336]

2. 

[Option ID = 3333]

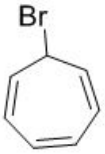
3. 

[Option ID = 3335]

4. 

[Option ID = 3334]

Correct Answer :-

- 

[Option ID = 3335]

57)

What is the specific resistance (or resistivity) of a conductor with cross-sectional area 4 cm^2, length 2cm and resistance 8 ohms?

[Question ID = 853]

1. 64 $Siemens^{-1}cm$ [Option ID = 3411]
2. 16 $Siemens^{-1}cm$ [Option ID = 3412]
3. 4 $Siemens^{-1}cm$ [Option ID = 3409]
4. 1 $Siemens^{-1}cm$ [Option ID = 3410]

Correct Answer :-

- $16\ Siemens^{-1}cm$ [Option ID = 3412]

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58) Which pair of ions cannot be precipitated by H_2S in dilute HCl?

[Question ID = 782]

1. Al^{3+}, Ni^{2+} [Option ID = 3127]
2. Bi^{3+}, Sn^{4+} [Option ID = 3125]
3. Ni^{2+}, Cu^{2+} [Option ID = 3128]
4. Zn^{2+}, Cu^{2+} [Option ID = 3126]

Correct Answer :-

- Bi^{3+}, Sn^{4+} [Option ID = 3125]

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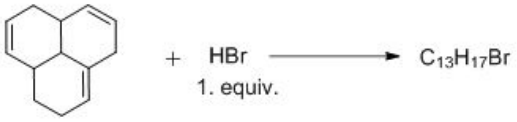
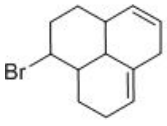
59)

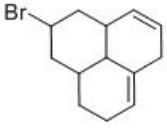
Which of the following bromides is the major product of the reaction shown below, assuming that there are no carbocation rearrangement?



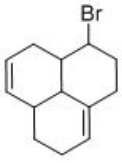
[Question ID = 816]

1. 

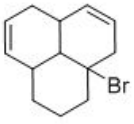
[Option ID = 3263]

2. 

[Option ID = 3262]

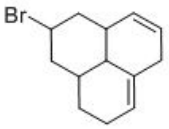
3. 

[Option ID = 3261]

4. 

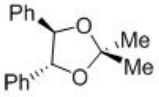
[Option ID = 3264]

Correct Answer :-



- [Option ID = 3262]

60) Methyl groups in the following compound are



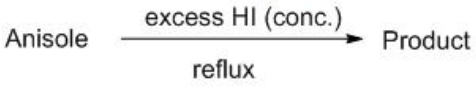
[Question ID = 828]

1. homotopic [Option ID = 3309]
2. enantiotopic [Option ID = 3311]
3. constitutionally heterotopic [Option ID = 3312]
4. diasterotopic [Option ID = 3310]

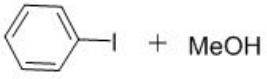
Correct Answer :-

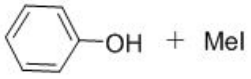
- homotopic [Option ID = 3309]

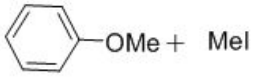
61) What is the principal product of the following reaction?

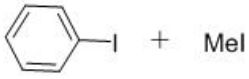


[Question ID = 809]

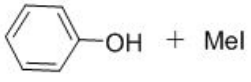
1.  [Option ID = 3234]

2.  [Option ID = 3235]

3.  [Option ID = 3236]

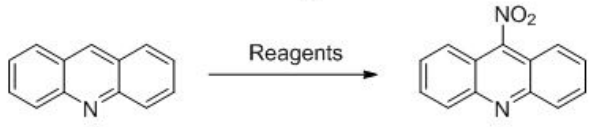
4.  [Option ID = 3233]

Correct Answer :-

-  [Option ID = 3235]

62)

Provide the suitable reagents for this conversion:



[Question ID = 833]

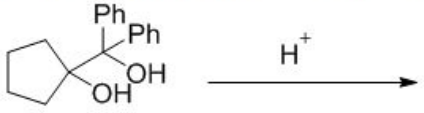
1. m-CPBA, $HNO_3/H_2SO_4/PCl_3$ [Option ID = 3331]
2. $HNO_3/H_2SO_4/POCl_3$ [Option ID = 3332]
3. $NaNO_2$ /H_2SO_4/PCl_3 [Option ID = 3329]
4. H_2O_2/OH^-, $HNO_3/H_2SO_4/PCl_3$ [Option ID = 3330]

Correct Answer :-

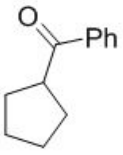
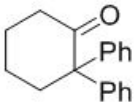
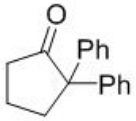
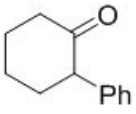
- m-CPBA, $HNO_3/H_2SO_4/PCl_3$ [Option ID = 3331]

63)

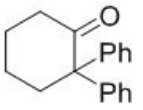
Identify the major product of the reaction?



[Question ID = 820]

1.  [Option ID = 3280]
2.  [Option ID = 3278]
3.  [Option ID = 3279]
4.  [Option ID = 3277]

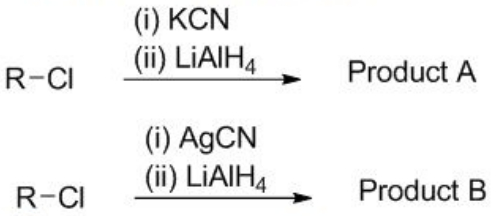
Correct Answer :-



- [Option ID = 3278]

64)

In the reaction given below,



The compound A and B are:

[Question ID = 814]

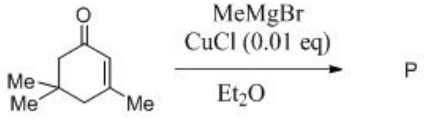
1. Metamers [Option ID = 3256]
2. Functional isomers [Option ID = 3255]
3. Chain isomers [Option ID = 3253]
4. Position isomers [Option ID = 3254]

Correct Answer :-

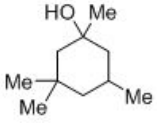
- Functional isomers [Option ID = 3255]

65)

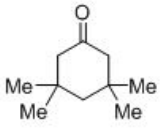
Which is product of the reaction:



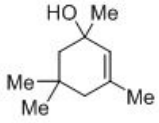
[Question ID = 831]



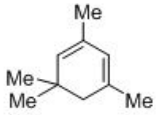
1. [Option ID = 3324]



2. [Option ID = 3323]

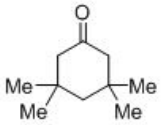


3. [Option ID = 3321]



4. [Option ID = 3322]

Correct Answer :-



- [Option ID = 3323]

66)

An ionic solution consists of 0.2 mol dm^{-3} each of A^{2+} and B^{3-} ions. What is the ionic strength of the solution?

[Question ID = 854]

1. 0.5 mol dm^{-3} [Option ID = 3416]
2. 1.0 mol dm^{-3} [Option ID = 3415]
3. 1.3 mol dm^{-3} [Option ID = 3414]
4. 2.6 mol dm^{-3} [Option ID = 3413]

Correct Answer :-

- 1.3 mol dm^{-3} [Option ID = 3414]

67)

The molar weight of $MgCO_3$ is 84. The volume in litres of CO_2 at STP on heating 8.4g of $MgCO_3$ would be

[Question ID = 863]

1. 2.24 [Option ID = 3452]
2. 11.2 [Option ID = 3450]
3. 22.4 [Option ID = 3449]
4. 1.12 [Option ID = 3451]

Correct Answer :-

- 2.24 [Option ID = 3452]

68)

It takes 20 minutes for the concentration of a radioactive species to decay to its $1/4^{th}$ value of its original concentration. What is the rate constant of this radioactive decay reaction?

[Question ID = 856]

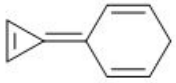
1. 865.8 s^{-1} [Option ID = 3424]
2. 600 s^{-1} [Option ID = 3421]
3. 415.8 s^{-1} [Option ID = 3423]

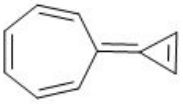
4. $0.001155\ s^{-1}$ [Option ID = 3422]

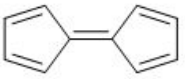
Correct Answer :-

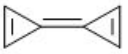
- $0.001155\ s^{-1}$ [Option ID = 3422]

69) Which of the following having the maximum Dipole moment ?

(i) 

(ii) 

(iii) 

(iv) 

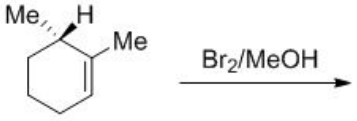
[Question ID = 817]

1. i [Option ID = 3265]
2. ii [Option ID = 3266]
3. iv [Option ID = 3268]
4. iii [Option ID = 3267]

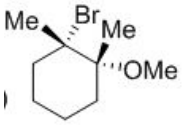
Correct Answer :-

- i [Option ID = 3265]

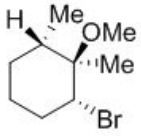
70) . What is the likely product of the reaction shown ?



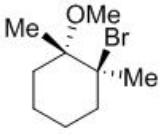
[Question ID = 808]

1. 

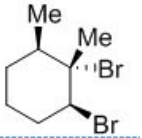
[Option ID = 3229]

2. 

[Option ID = 3232]

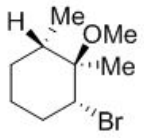
3. 

[Option ID = 3230]

4. 

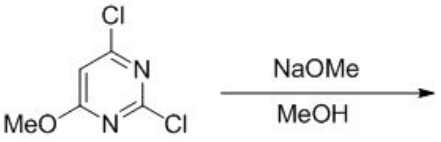
[Option ID = 3231]

Correct Answer :-

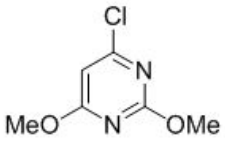


- [Option ID = 3232]

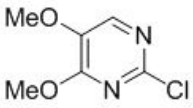
71) The major product formed in the following reaction.



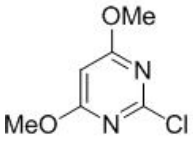
[Question ID = 835]

1. 

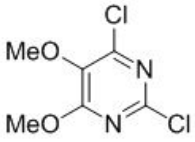
[Option ID = 3339]

2. 

[Option ID = 3340]

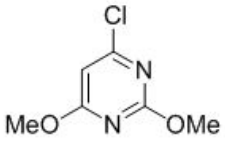
3. 

[Option ID = 3338]

4. 

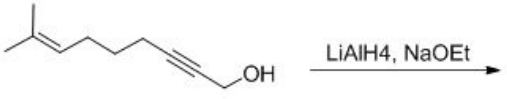
[Option ID = 3337]

Correct Answer :-

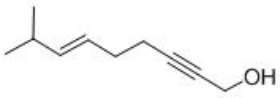
- 

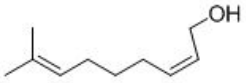
[Option ID = 3339]

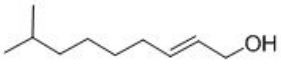
72) The major product formed in the following reaction:

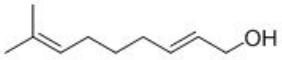


[Question ID = 838]

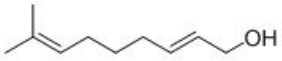
1.  [Option ID = 3351]

2.  [Option ID = 3350]

3.  [Option ID = 3352]

4.  [Option ID = 3349]

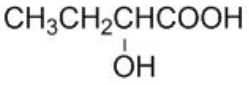
Correct Answer :-

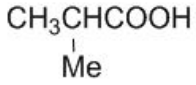
-  [Option ID = 3349]

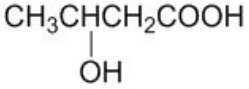
73)

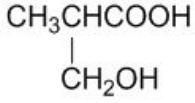
An optically active compound 'X' has molecular formula $C_4H_8O_3$. It evolves CO_2 with $NaHCO_3$. X reacts with $LiAlH_4$ to give achiral compounds. 'X' is:

[Question ID = 812]

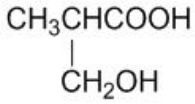
1.  [Option ID = 3245]

2.  [Option ID = 3246]

3.  [Option ID = 3248]

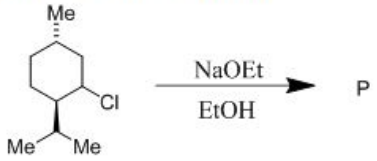
4.  [Option ID = 3247]

Correct Answer :-

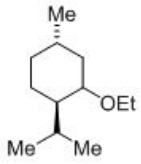
-  [Option ID = 3247]

74)

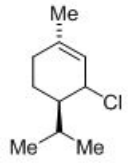
Which is product of the reaction:



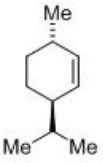
[Question ID = 832]

1. 

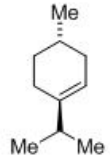
[Option ID = 3327]

2. 

[Option ID = 3328]

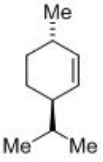
3. 

[Option ID = 3326]

4. 

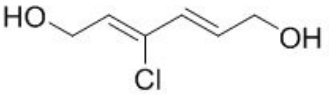
[Option ID = 3325]

Correct Answer :-



- [Option ID = 3326]

75) The IUPAC name of the compound given below is



[Question ID = 821]

1. (2Z, 4Z)-3-chlorohexa-2, 4-diene-1,6-diol. [Option ID = 3283]
2. (2E, 4E)-3-chlorohexa-2, 4-diene-1,6-diol. [Option ID = 3281]
3. (2Z, 4Z)-3-chlorohexa-2, 4-diene-1,6-diol. [Option ID = 3284]
4. (2Z, 4E)-3-chlorohexa-2, 4-diene-1,6-diol. [Option ID = 3282]

Correct Answer :-

- (2Z, 4E)-3-chlorohexa-2, 4-diene-1,6-diol. [Option ID = 3282]

76) Arrange the following in decreasing order of O-O Bond length?

(i) O_2 (ii) O_2^+ (iii) O_2^{2-} (iv) O_3

[Question ID = 819]

1. iv>i>iii>ii [Option ID = 3274]
2. ii>i>iii>iv [Option ID = 3275]
3. i>iv>ii>iii [Option ID = 3276]
4. iii>iv>i>ii [Option ID = 3273]

Correct Answer :-

- iii>iv>i>ii [Option ID = 3273]

77) PCl_5 does not react with

[Question ID = 779]

1. CH_3COOH [Option ID = 3113]
2. C_6H_5OH [Option ID = 3115]
3. C_2H_5OH [Option ID = 3114]
4. H_2SO_4 [Option ID = 3116]

Correct Answer :-

- H_2SO_4 [Option ID = 3116]

78) Partial pressure of CO_2 in a mixture of CO_2 and N_2 is 1 atm while the total pressure of mixture is 5 atm. Mole fraction of nitrogen in the mixture is:

[Question ID = 873]

1. 0.65 [Option ID = 3492]
2. 0.8 [Option ID = 3491]
3. 0.75 [Option ID = 3490]
4. 0.82 [Option ID = 3489]

Correct Answer :-

- 0.8 [Option ID = 3491]

79) pH of the solution produced by mixing equal volumes of 2.0×10^{-3} M $HClO_4$ and 1.0×10^{-2} M $KClO_4$ is

[Question ID = 798]

1. 2.3 [Option ID = 3190]
2. 1 [Option ID = 3192]
3. 3 [Option ID = 3191]
4. 2.7 [Option ID = 3189]

Correct Answer :-

- 3 [Option ID = 3191]

80) . For a simple paramagnetic compound, which one of the following is true? [Question ID = 805]

1. Magnetic susceptibility decreases initially and then increases with decrease in temperature [Option ID = 3220]

2. Magnetic susceptibility decreases with decrease in temperature [Option ID = 3218]
3. Magnetic susceptibility increases with decrease in temperature [Option ID = 3217]
4. Magnetic susceptibility increases initially and then decreases with decrease in temperature [Option ID = 3219]

Correct Answer :-

- Magnetic susceptibility increases with decrease in temperature [Option ID = 3217]

81) Two isotonic solutions will have same: [Question ID = 872]

1. Boiling point [Option ID = 3486]
2. Osmotic pressure [Option ID = 3485]
3. Vapour pressure [Option ID = 3488]
4. Freezing point [Option ID = 3487]

Correct Answer :-

- Osmotic pressure [Option ID = 3485]

82) Melting points of the chlorides of alkali metals decreases in the order [Question ID = 785]

1. LiCl > NaCl > KCl > RbCl > CsCl [Option ID = 3138]
2. LiCl > NaCl > KCl > RbCl > CsCl [Option ID = 3139]
3. LiCl > NaCl > KCl > RbCl > CsCl [Option ID = 3140]
4. LiCl > NaCl > KCl > RbCl > CsCl [Option ID = 3137]

Correct Answer :-

83) Residual entropy is the entropy of [Question ID = 862]

1. An isolated system [Option ID = 3445]
2. A system undergoing reversible reaction [Option ID = 3448]
3. A system at equilibrium [Option ID = 3446]
4. A system at absolute zero of temperature [Option ID = 3447]

Correct Answer :-

- A system at absolute zero of temperature [Option ID = 3447]

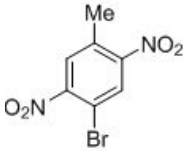
84) Although carbon and oxygen are the constituents of carbonate and oxalate, the reason behind oxalate being an interfering anion [Question ID = 803]

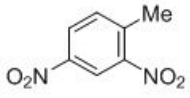
1. Higher oxidizability of oxalate than carbonate [Option ID = 3210]
2. Higher reducibility of oxalate than carbonate [Option ID = 3209]
3. Higher chelating ability of oxalate than carbonate [Option ID = 3211]
4. Higher polarisability of oxalate than carbonate [Option ID = 3212]

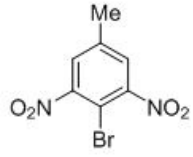
Correct Answer :-

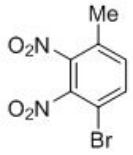
- Higher chelating ability of oxalate than carbonate [Option ID = 3211]

85) The major product formed in the dinitration of 4-bromotoluene is. [Question ID = 837]

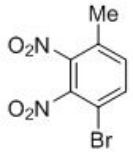
1.  [Option ID = 3348]

2.  [Option ID = 3345]

3.  [Option ID = 3347]

4.  [Option ID = 3346]

Correct Answer :-

-  [Option ID = 3346]

86) Electronic spin a has eigen value [Question ID = 861]

1. h [Option ID = 3443]
2. $h/4\pi$ [Option ID = 3441]
3. $1/2h$ [Option ID = 3442]
4. $1/h$ [Option ID = 3444]

Correct Answer :-

- $h/4\pi$ [Option ID = 3441]

87) Which of the following shows Jahn-Teller Distortion? [Question ID = 799]

1. Co^{2+} [Option ID = 3194]
2. Mn^{2+} [Option ID = 3195]
3. All of these [Option ID = 3196]
4. Fe^{2+} [Option ID = 3193]

Correct Answer :-

- Co^{2+} [Option ID = 3194]

88) Which of the following is an incorrect representation of the order of a reaction: [Question ID = 848]

1. $N_2O_5\,(g) \rightarrow 2N_2\,(g) + \frac{1}{2}\,O_2$ is a 1^{st} order reaction [Option ID = 3389]
2. $2CH_3CHO \rightarrow 2CH_4 + 2CO$ is a 2^{nd} order reaction [Option ID = 3390]
3. None of the above [Option ID = 3392]
4. $S_2O_8^{2-} + 2I^- \rightarrow 2SO_4^{2-} + I_2$ is a 3^{rd} order reaction [Option ID = 3391]

Correct Answer :-

- $S_2O_8^{2-} + 2I^- \rightarrow 2SO_4^{2-} + I_2$ is a 3^{rd} order reaction [Option ID = 3391]

89) Which of the following pair has the same electronic structure? [Question ID = 775]

1. Ag, Sn [Option ID = 3099]
2. Mg, Na^+ [Option ID = 3098]
3. Ca, Ar [Option ID = 3097]

4. Ar, Cl^- [Option ID = 3100]

Correct Answer :-

- Ar, Cl^- [Option ID = 3100]

90) Which of the following is not a colligative property? [Question ID = 842]

1. Osmotic pressure [Option ID = 3368]
2. Relative increase in vapour pressure [Option ID = 3367]
3. Depression of freezing point [Option ID = 3366]
4. Elevation of boiling point [Option ID = 3365]

Correct Answer :-

- Relative increase in vapour pressure [Option ID = 3367]

91) Which of the following statement is false? [Question ID = 859]

1. Oxidation reaction takes place at the cathode of a galvanic cell [Option ID = 3435]
2. The potential of normal hydrogen electrode (NHE) is assigned a value of zero volts [Option ID = 3436]
3. The EMF of a galvanic cell can be measured with a voltmeter [Option ID = 3433]
4. Oxidation reaction takes place at the anode of a galvanic cell [Option ID = 3434]

Correct Answer :-

- Oxidation reaction takes place at the cathode of a galvanic cell [Option ID = 3435]

92) Which one of the following is a superconductor? [Question ID = 796]

1. $YB_2Cu_3O_7$ [Option ID = 3183]
2. $YBe_2Cu_3O_7$ [Option ID = 3184]
3. $YBi_2Cu_3O_7$ [Option ID = 3181]
4. $YBa_2Cu_3O_7$ [Option ID = 3182]

Correct Answer :-

- $YB_2Cu_3O_7$ [Option ID = 3183]

93) Which one of the following plays a major role in EDTA complexometric titrations? [Question ID = 797]

1. Concentration of ligand [Option ID = 3186]
2. Concentration of metal ion [Option ID = 3185]
3. Temperature of the reaction [Option ID = 3188]
4. Nature of buffer [Option ID = 3187]

Correct Answer :-

- Nature of buffer [Option ID = 3187]

94) Pyrosilicates are the silicates in which the two tetrahedral units are linked at [Question ID = 780]

1. Three points [Option ID = 3119]
2. One point [Option ID = 3117]
3. Four points [Option ID = 3120]
4. Two points [Option ID = 3118]

Correct Answer :-

- One point [Option ID = 3117]

95) In a face-centre cubic (FCC) type of crystal lattice, the number of atoms belonging exclusively to each unit cell within the lattice is/are: [Question ID = 865]

1. 4 [Option ID = 3460]
2. 2 [Option ID = 3458]

3. 3 [Option ID = 3459]
4. 1 [Option ID = 3457]

Correct Answer :-

- 4 [Option ID = 3460]

96) Langmuir adsorption isotherm equation shows the variation of extent of adsorption as a function of: [Question ID = 847]

1. pH of medium [Option ID = 3387]
2. Pressure [Option ID = 3385]
3. Temperature [Option ID = 3386]
4. All of these [Option ID = 3388]

Correct Answer :-

- Pressure [Option ID = 3385]

97) According to Lambert-Beer's law, for a solution the transmittance is independent of which following factor? [Question ID = 867]

1. Molar extinction coefficient of the solute in solution. [Option ID = 3468]
2. Path length of the sample holder [Option ID = 3466]
3. Concentration of the solution [Option ID = 3465]
4. Temperature of the system [Option ID = 3467]

Correct Answer :-

- Temperature of the system [Option ID = 3467]

98) The compressibility factor for ideal gas is:

[Question ID = 871]

1. 1 [Option ID = 3483]
2. >1 [Option ID = 3482]
3. Zero [Option ID = 3481]
4. <1 [Option ID = 3484]

Correct Answer :-

- 1 [Option ID = 3483]

99) The following compounds have been arranged in the order of increasing thermal stabilities. Identify the correct order K_2CO_3 (I), $MgCO_3$ (II), $CaCO_3$ (III), $BeCO_3$ (IV)

[Question ID = 784]

1. II<IV<III<I [Option ID = 3136]
2. IV<II<I<III [Option ID = 3135]
3. IV<II<III<I [Option ID = 3134]
4. I<II<III<IV [Option ID = 3133]

Correct Answer :-

- IV<II<I<III [Option ID = 3135]

100) The covalent radius of Li is 123 pm. The crystal radius of Li will be [Question ID = 774]

1. $123/2$ pm [Option ID = 3096]
2. < 123 pm [Option ID = 3095]
3. $= 123$ pm [Option ID = 3094]
4. > 123 pm [Option ID = 3093]

Correct Answer :-

- > 123 pm [Option ID = 3093]