

Test Date : 10 Dec 2022

Test Slot : Slot 2

Subject : CHEH-Chemical Sciences

Sl. No.1

QBID:8992001

The order of nucleophilicity of $\text{EtO}^\ominus$, $\text{PhO}^\ominus$, $\text{NO}_3^\ominus$, $\text{CH}_3\text{CO}_2^\ominus$ is

- (1) $\text{NO}_3^\ominus > \text{CH}_3\text{CO}_2^\ominus > \text{PhO}^\ominus > \text{EtO}^\ominus$ (2) $\text{EtO}^\ominus > \text{PhO}^\ominus > \text{CH}_3\text{CO}_2^\ominus > \text{NO}_3^\ominus$
 (3) $\text{EtO}^\ominus > \text{CH}_3\text{CO}_2^\ominus > \text{NO}_3^\ominus > \text{PhO}^\ominus$ (4) $\text{EtO}^\ominus > \text{PhO}^\ominus > \text{NO}_3^\ominus > \text{CH}_3\text{CO}_2^\ominus$

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20241]

2[Option ID=20242]

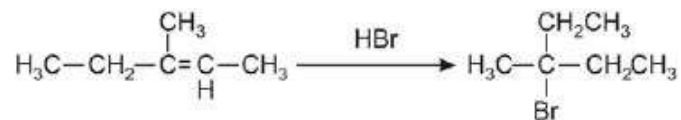
3[Option ID=20243]

4[Option ID=20244]

Sl. No.2

QBID:8992002

Which of the following statement is true for the following transformation?



- (1) The addition of HBr is stereospecific
 (2) The addition of HBr is stereoselective
 (3) The addition of HBr is regioselective
 (4) The addition of HBr is non selective

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20245]

2[Option ID=20246]

3[Option ID=20247]

4[Option ID=20248]

Sl. No.3

QBID:8992003

The base peak in the mass spectrum of 1-pentene is observed at m/z =

- (1) 41 (2) 42
 (3) 55 (4) 70

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20249]

2[Option ID=20250]

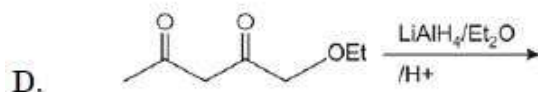
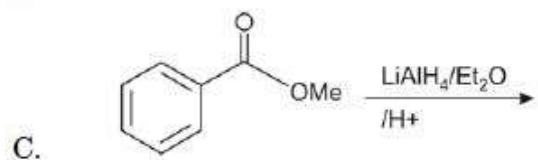
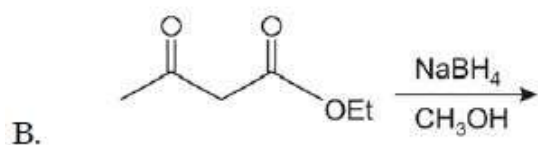
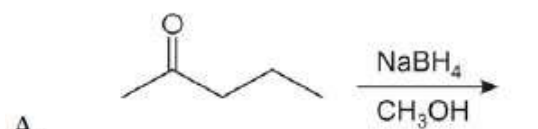
3[Option ID=20251]

4[Option ID=20252]

Sl. No.4

QBID:8992004

Which of the following does not give product (s) containing chiral carbon (s)?



Choose the correct answer from the options given below :

(1) A

(2) B

(3) C

(4) D

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20253]

2[Option ID=20254]

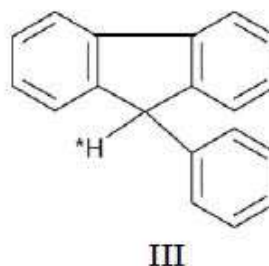
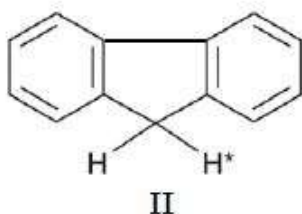
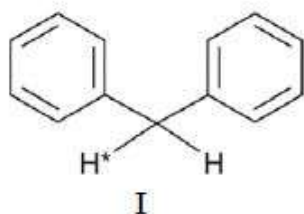
3[Option ID=20255]

4[Option ID=20256]

Sl. No.5

QBID:8992005

The decreasing order of acidity of the labelled hydrogen in the following molecules



(1) I > II > III

(2) III > I > II

(3) III > II > I

(4) II > I > III

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20257]

2[Option ID=20258]

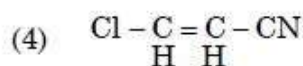
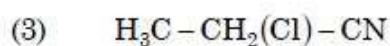
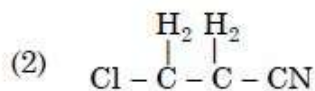
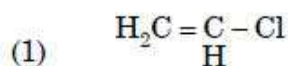
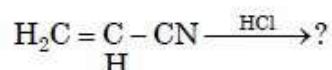
3[Option ID=20259]

4[Option ID=20260]

Sl. No.6

QBID:8992006

What would be the major product in the following reaction?



(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20261]

2[Option ID=20262]

3[Option ID=20263]

4[Option ID=20264]

Sl. No.7

QBID:8992007

The order of C = O stretching frequency in IR spectrum of the following compounds is cyclopentanone, cyclobutanone, cyclohexanone and 1, 2-diphenyl-diketone

(1) 1, 2-diphenyl-diketone > cyclobutanone > cyclopentanone > cyclohexanone

(2) cyclobutanone > cyclopentanone > cyclohexanone > 1, 2-diphenyldiketone

(3) cyclohexanone > cyclopentanone > cyclobutanone > 1, 2-diphenyldiketone

(4) 1, 2-diphenyldiketone > cyclohexanone > cyclopentanone > cyclobutanone

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20265]

2[Option ID=20266]

3[Option ID=20267]

4[Option ID=20268]

Sl. No.8

QBID:8992008

Arrange the following in the increasing order of their carbonyl stretching frequencies in IR spectroscopy

(I) acetamide

(II) ethyl acetate

(III) acetic acid

(1) $\text{II} < \text{I} < \text{III}$

(2) $\text{I} < \text{II} < \text{III}$

(3) $\text{III} < \text{I} < \text{II}$

(4) $\text{I} < \text{III} < \text{II}$

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20269]

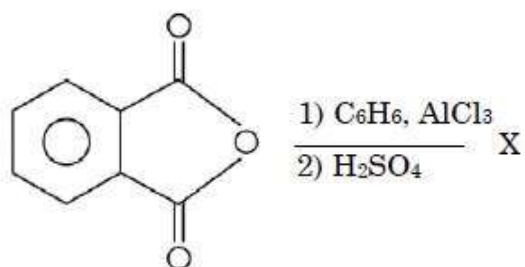
2[Option ID=20270]

3[Option ID=20271]

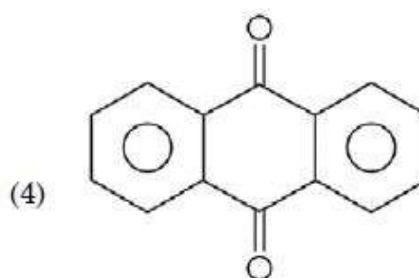
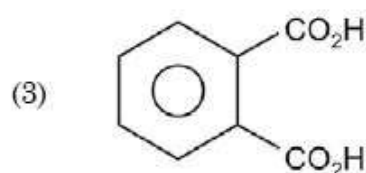
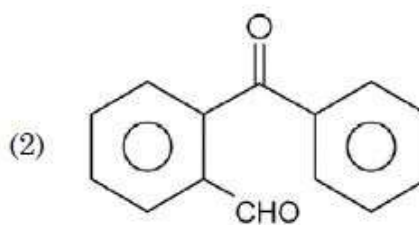
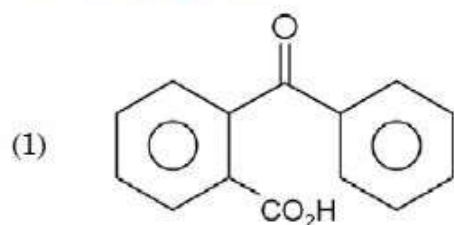
4[Option ID=20272]

Sl. No.9

QBID:8992009



The structure of X is



(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20273]

2[Option ID=20274]

3[Option ID=20275]

4[Option ID=20276]

Sl. No.10

QBID:8992010

Which of the following statement is wrong?

- (1) 4-Chloro pyridine is more reactive than 3-chloro pyrrole towards nucleophilic substitution reaction
- (2) Pyrrole is more reactive than furan towards electrophilic substitution reaction
- (3) Pyrrole is more reactive than benzene towards electrophilic substitution reaction
- (4) Pyridine is more reactive than benzene towards electrophilic substitution reaction

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20277]

2[Option ID=20278]

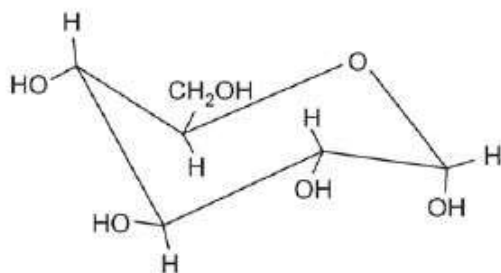
3[Option ID=20279]

4[Option ID=20280]

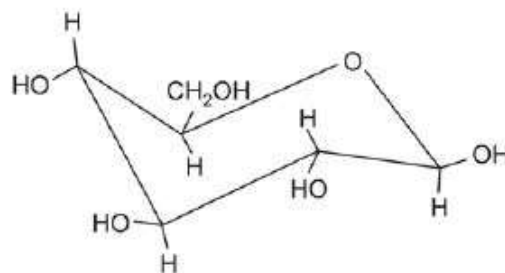
Sl. No.11

QBID:8992011

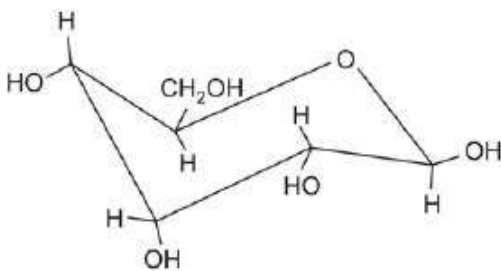
The conformation of the β -anomers of D-Glucopyranose is



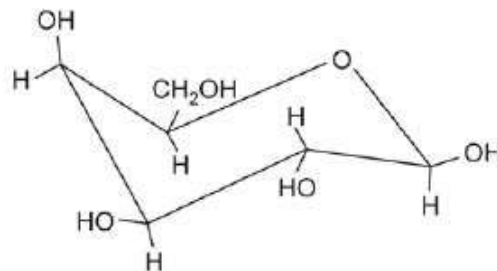
(1)



(2)



(3)



(4)

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20281]

2[Option ID=20282]

3[Option ID=20283]

4[Option ID=20284]

Sl. No.12

QBID:8992012

Which of the following is the key reagent in N-terminal sequencing of peptide and protein by Edman degradation method

(1) 2, 4-dinitro fluoro benzene (DNFB)

(2) Phenyl isothiocyanate (PITC)

(3) Densyl chloride

(4) Cyanogen bromide

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20285]

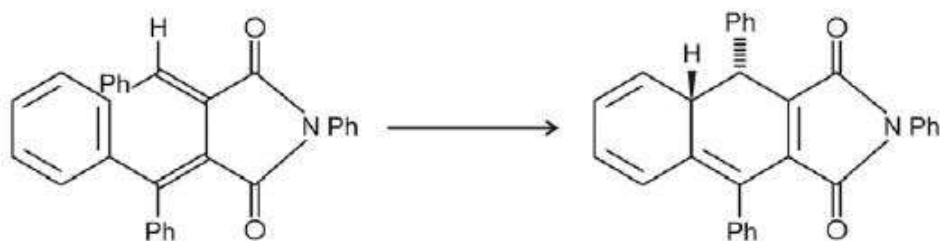
2[Option ID=20286]

3[Option ID=20287]

4[Option ID=20288]

Sl. No.13

QBID:8992013



This reaction goes through

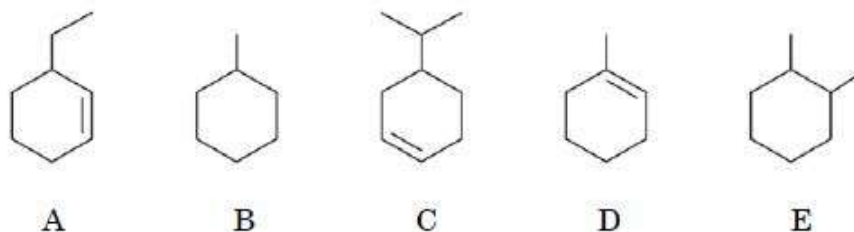
- | | |
|-------------------------------|-------------------------------|
| (1) $h\nu$, disrotatory mode | (2) Heating, disrotatory mode |
| (3) $h\nu$, conrotatory mode | (4) Heating, conrotatory mode |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20289]
2[Option ID=20290]
3[Option ID=20291]
4[Option ID=20292]

Sl. No.14
QBID:8992014

Which of the following molecules have one or more asymmetric centers?

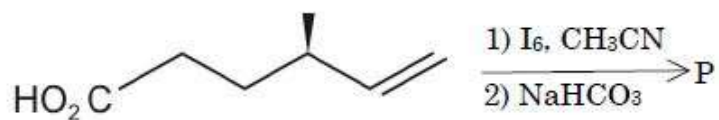


- | | |
|---------------------|---------------------|
| (1) Only A and E | (2) Only B, C and E |
| (3) Only A, C and E | (4) Only A, B and D |

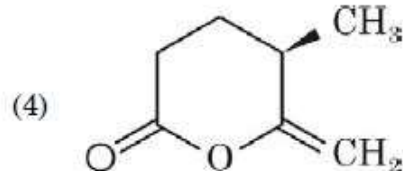
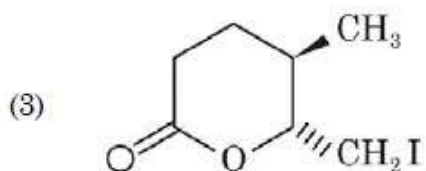
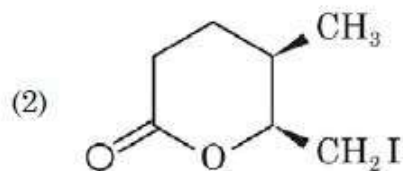
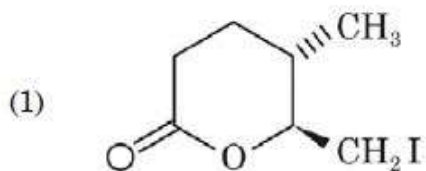
- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20293]
2[Option ID=20294]
3[Option ID=20295]
4[Option ID=20296]

Sl. No.15
QBID:8992015



The product P is



(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20297]

2[Option ID=20298]

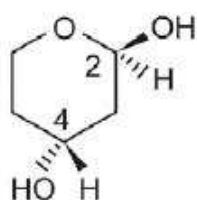
3[Option ID=20299]

4[Option ID=20300]

Sl. No.16

QBID:8992016

Find out absolute configuration (R or S) at C-2 and C-4 of the following molecule?



(1) 2S, 4S

(2) 2R, 4S

(3) 2R, 4R

(4) 2S, 4R

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20301]

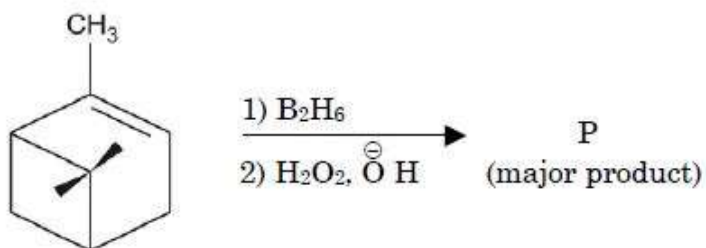
2[Option ID=20302]

3[Option ID=20303]

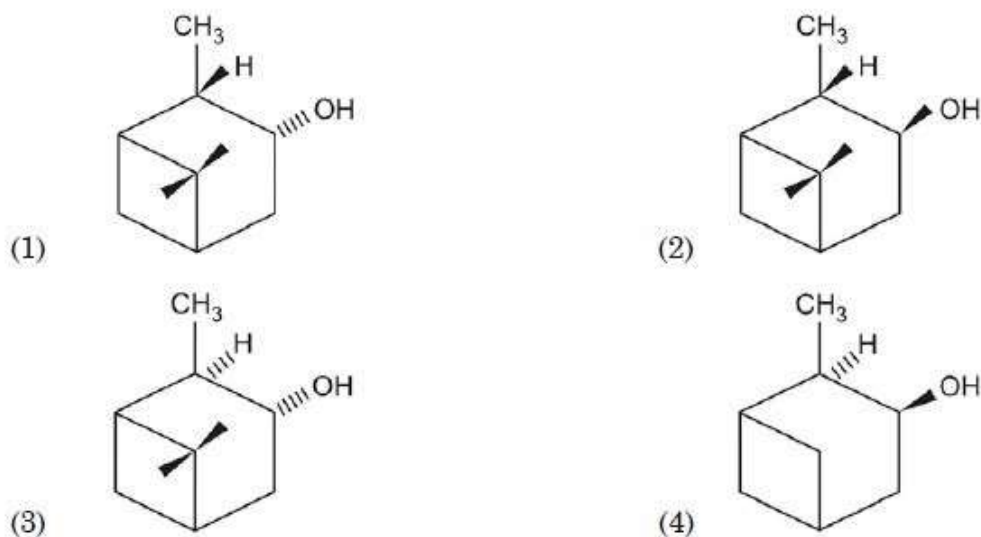
4[Option ID=20304]

Sl. No.17

QBID:8992017



The product P is



- (1) 1
 (2) 2
 (3) 3
 (4) 4

1[Option ID=20305]
 2[Option ID=20306]
 3[Option ID=20307]
 4[Option ID=20308]

Sl. No.18
 QBID:8992018



The correct statement is

- (1) The major product (X) is  and the reaction goes through carbene intermediate
 (2) The major product (X) is $(\text{CH}_3)_2\text{C}=\text{CH}(\text{CH}_3)$ and the reaction goes through free radical intermediate
 (3) The major product is  and the reaction goes through free radical intermediate
 (4) The major product is $(\text{CH}_3)_2\text{C}=\text{CH}(\text{CH}_3)$ and the reaction goes through carbene intermediate

- (1) 1
 (2) 2

(3) 3

(4) 4

1[Option ID=20309]

2[Option ID=20310]

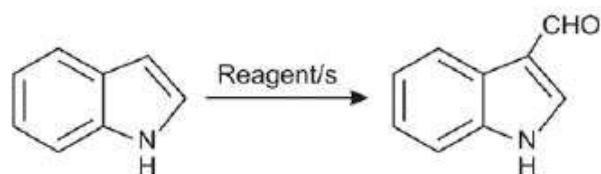
3[Option ID=20311]

4[Option ID=20312]

Sl. No.19

QBID:8992019

The following transformation could be achieved by using reagent



(1) CO/HCl

(2) POCl₃/DMF

(3) HCHO

(4) CO₂/NaBH₄

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20313]

2[Option ID=20314]

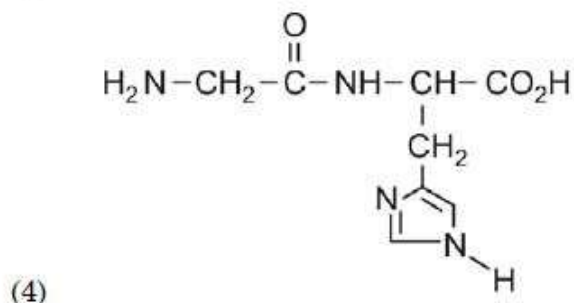
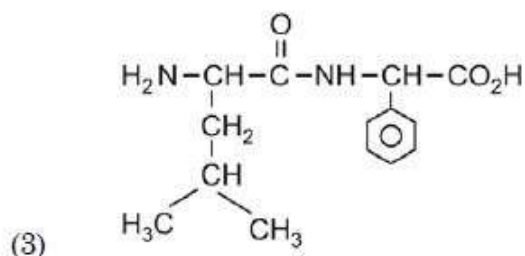
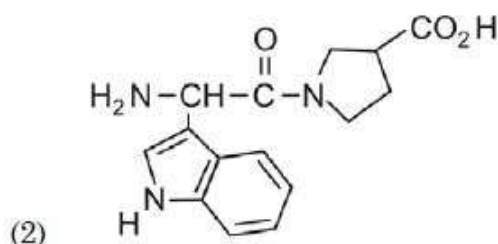
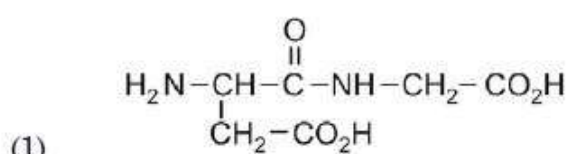
3[Option ID=20315]

4[Option ID=20316]

Sl. No.20

QBID:8992020

The molecule which is not dipeptide is



(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20317]

2[Option ID=20318]

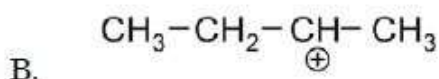
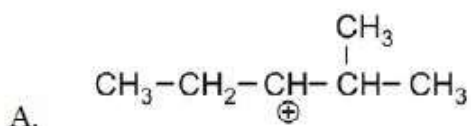
3[Option ID=20319]

4[Option ID=20320]

Sl. No.21

QBID:8992021

Which of the following carbocation most likely rearrange to more stable carbocation?



(1) A and C

(2) B and D

(3) B and C

(4) A and D

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20321]

2[Option ID=20322]

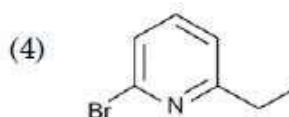
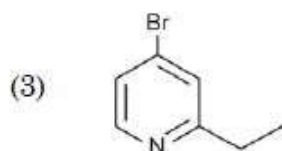
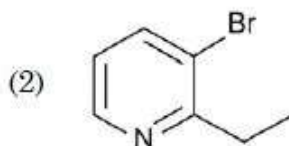
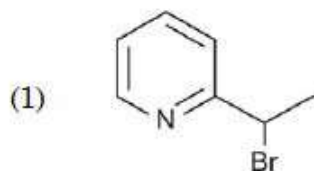
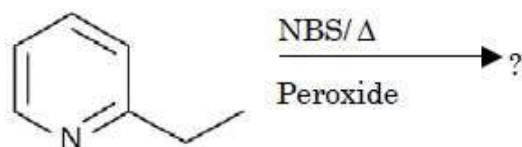
3[Option ID=20323]

4[Option ID=20324]

Sl. No.22

QBID:8992022

What would be the major product in the following reaction?



(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20325]

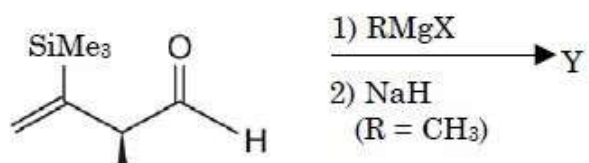
2[Option ID=20326]

3[Option ID=20327]

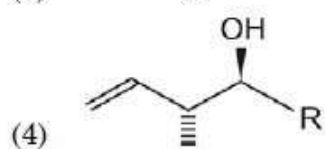
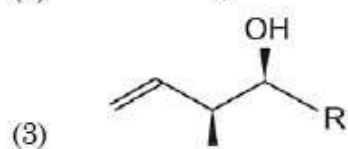
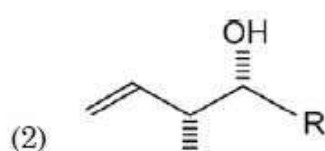
4[Option ID=20328]

Sl. No.23

QBID:8992023



The product Y is



(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20329]

2[Option ID=20330]

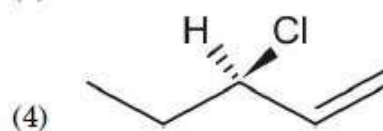
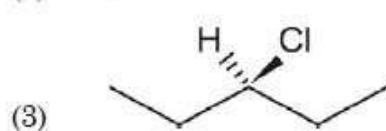
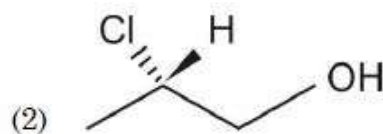
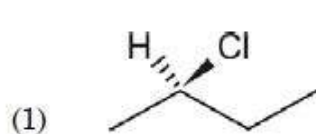
3[Option ID=20331]

4[Option ID=20332]

Sl. No.24

QBID:8992024

Which of the following has (S) configuration?



(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20333]

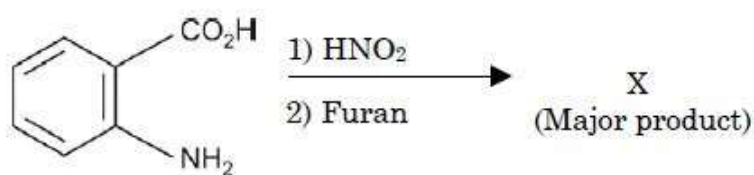
2[Option ID=20334]

3[Option ID=20335]

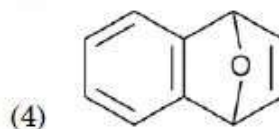
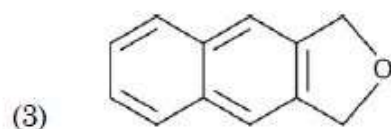
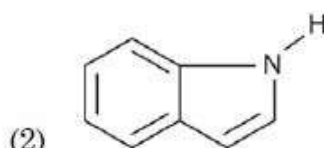
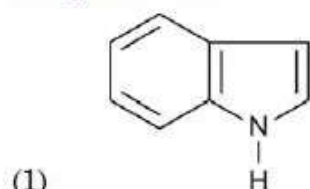
4[Option ID=20336]

Sl. No.25

QBID:8992025



The product X is



(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20337]

2[Option ID=20338]

3[Option ID=20339]

4[Option ID=20340]

Sl. No.26

QBID:8992026

The decreasing order of stability of the following carbanion is

Allyl, Ethyl, Isobutyl

(1) Isobutyl > Allyl > Ethyl

(2) Allyl > Ethyl > Isobutyl

(3) Ethyl > Allyl > Isobutyl

(4) Ethyl > Isobutyl > Allyl

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20341]

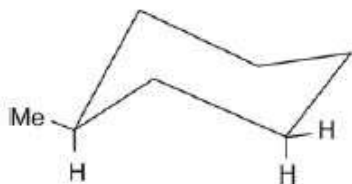
2[Option ID=20342]

3[Option ID=20343]

4[Option ID=20344]

Sl. No.27

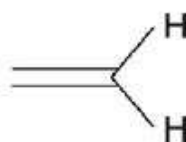
QBID:8992027



(I)



(II)



(III)

The order of geminal coupling constant ($^2J_{HH}$) in the above compounds are

(1) III > II > I

(2) III > I > II

(3) I > II > III

(4) I > III > II

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20345]

2[Option ID=20346]

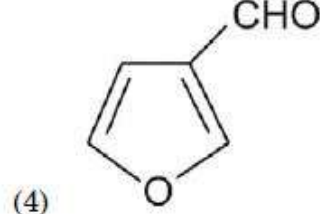
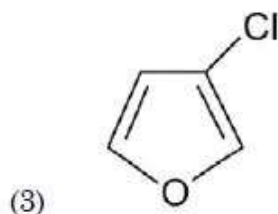
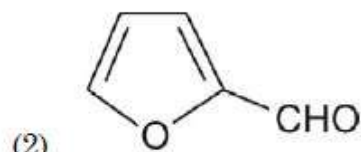
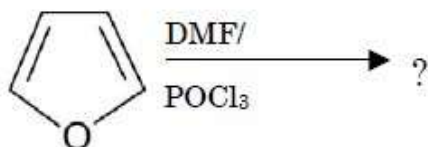
3[Option ID=20347]

4[Option ID=20348]

Sl. No.28

QBID:8992028

Which of the following is the major product of the reaction?



(1) 1

(2) 2

(3) 3

(4) 4

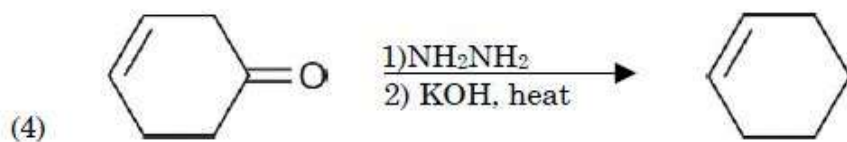
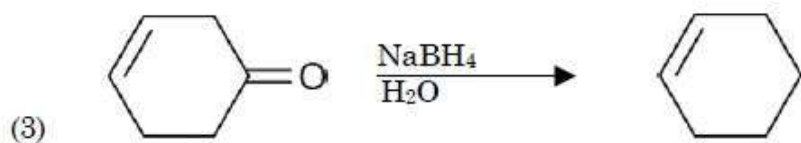
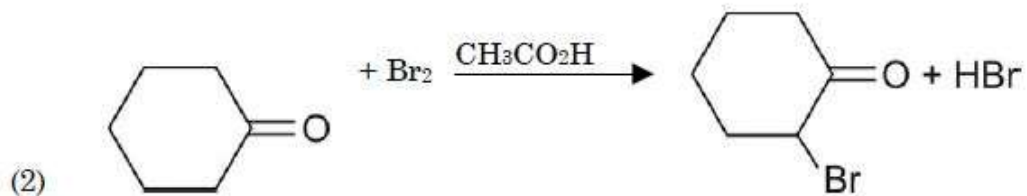
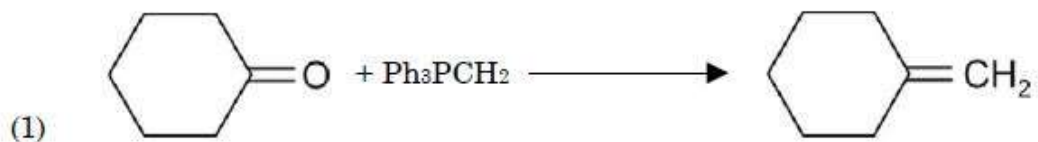
1[Option ID=20349]

2[Option ID=20350]

3[Option ID=20351]

4[Option ID=20352]

Which of the following transformation is incorrect?



(1) 1

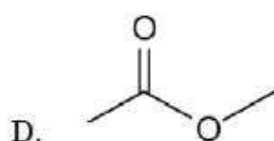
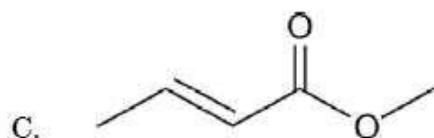
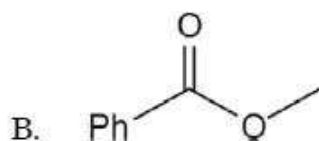
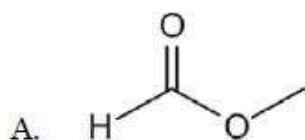
(2) 2

(3) 3

(4) 4

1[Option ID=20353]
2[Option ID=20354]
3[Option ID=20355]
4[Option ID=20356]

Which of the following esters undergo Claisen condensation?



(1) A, C and D

(2) Only D

(3) Only B

(4) C and D

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20357]

2[Option ID=20358]

3[Option ID=20359]

4[Option ID=20360]

Sl. No.31

QBID:8992031

In the mass spectrum of carbon monoxide (CO), nitrogen (N₂) and ethylene (C₂H₄) the molecular ion peak is the base peak. The increasing order of the relative intensity of M + 1 peak will be [Relative abundance : ¹³C = 1.08%, H = 0.016%, ¹⁵N = 0.38% ¹⁷O = 0.04%]

(1) CO < N₂ < C₂H₄

(2) N₂ < CO < C₂H₄

(3) N₂ < C₂H₄ < CO

(4) C₂H₄ < CO < N₂

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20361]

2[Option ID=20362]

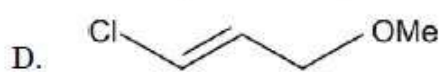
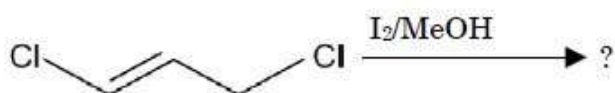
3[Option ID=20363]

4[Option ID=20364]

Sl. No.32

QBID:8992032

Which compound should be the major product in the following reaction?



(1) A

(2) B

(3) C

(4) D

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20365]

2[Option ID=20366]

3[Option ID=20367]

4[Option ID=20368]

Sl. No.33

QBID:8992033

The number of peaks in the proton decoupled ^{13}C spectrum of each of the following two compounds are respectively *p*-bromobenzoic acid and di-isopropylmethanol

(1) 4 and 7

(2) 5 and 4

(3) 5 and 7

(4) 4 and 4

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20369]

2[Option ID=20370]

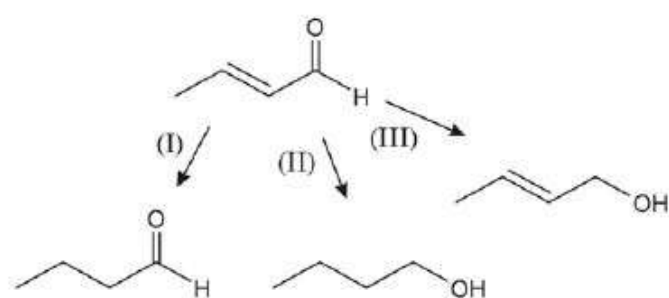
3[Option ID=20371]

4[Option ID=20372]

Sl. No.34

QBID:8992034

Which reducing agent would be used to carry out the following transformation?



(A) H_2 , Pd/C

(B) H_2 , Raney Ni

(C) $\text{NaBH}_4/\text{H}_2\text{O}$

(1) I-(A); II-(B); III-(C)

(2) I-(B); II-(C); III-(A)

(3) I-(C); II-(B); III-(A)

(4) I-(A); II-(C); III-(B)

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20373]

2[Option ID=20374]

3[Option ID=20375]

4[Option ID=20376]

Sl. No.35

QBID:8992035

Wavelength of the electromagnetic radiation can be used to determine the crystal structure is

(1) 100 – 200 Å

(2) 50 – 100 Å

(3) 0.1 – 5 Å

(4) 200 – 300 Å

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20377]

2[Option ID=20378]

3[Option ID=20379]

4[Option ID=20380]

Sl. No.36

QBID:8992036

The living organism cell belongs to what kind of system.

(1) Open

(2) Closed

(3) Isolated

(4) Equilibrium

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20381]

2[Option ID=20382]

3[Option ID=20383]
4[Option ID=20384]

Sl. No.37
QBID:8992037

The relationship between the reaction Gibbs energy and the cell potential is

(1) $\Delta_r G = -nFE_{\text{cell}}$

(2) $\Delta_r G = -nE_{\text{cell}}$

(3) $\Delta_r G = -nFE_{\text{cell}} / R$

(4) $\Delta_r G = nFE_{\text{cell}}$

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20385]
2[Option ID=20386]
3[Option ID=20387]
4[Option ID=20388]

Sl. No.38
QBID:8992038

The electric transition dipole moment (M) for an electronic transition between two states, defined as $\psi_{e,f}$ and $\psi_{e,i}$ can be best written as,

(1) $M = \int \psi_{e,f}^* r_i \psi_{e,i} d\tau_e$

(2) $M = e \int \psi_{e,f}^* r_i \psi_{e,i} d\tau_e$

(3) $M = \mu \int \psi_{e,f}^* \psi_{e,i} d\tau_e$

(4) $M = \int \psi_{e,i}^* \mu \psi_{e,f} d\tau_e$

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20389]
2[Option ID=20390]
3[Option ID=20391]
4[Option ID=20392]

Sl. No.39
QBID:8992039

In the mixing of two perfect gases, which of the following statements is true

(1) $\Delta_{\text{mix}} S < 0$

(2) $\Delta_{\text{mix}} H > 0$

(3) $\Delta_{\text{mix}} H = 0$

(4) $\Delta_{\text{mix}} S = 0$

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20393]
2[Option ID=20394]
3[Option ID=20395]
4[Option ID=20396]

Sl. No.40
QBID:8992040

The Infrared spectrum of $^{75}\text{Br}^{19}\text{F}$ shows an intense line at around 385 cm^{-1} . The force constant of the molecule is calculated as,

- | | |
|--------------------------|--------------------------|
| (1) 133 Nm^{-1} | (2) 129 Nm^{-1} |
| (3) 182 Nm^{-1} | (4) 33 Nm^{-1} |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20397]
2[Option ID=20398]
3[Option ID=20399]
4[Option ID=20400]

Sl. No.41
QBID:8992041

A supersaturated solution of NaCl is a

- | | |
|----------------------|------------------------|
| (1) one-phase system | (2) four-phase system |
| (3) two-phase system | (4) three-phase system |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20401]
2[Option ID=20402]
3[Option ID=20403]
4[Option ID=20404]

Sl. No.42
QBID:8992042

Explanation of black body radiation by Plank is based on the assumption that

- (1) the energies of the oscillators within the blackbody is proportional to an integral multiple of frequency
- (2) the energies of the oscillators within the blackbody is proportional to an integral multiple of wave length
- (3) the energies of the emitted photons from blackbody is proportional to an integral multiple of frequency
- (4) the energies of the emitted photons from blackbody is proportional to the absorbed photon by the blackbody

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20405]
2[Option ID=20406]
3[Option ID=20407]
4[Option ID=20408]

Sl. No.43
QBID:8992043

A real gas approaches an ideal gas behavior mostly under conditions of

- (1) low P and T (2) high P and low T
(3) low P and high T (4) high P and T

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20409]

2[Option ID=20410]

3[Option ID=20411]

4[Option ID=20412]

Sl. No.44

QBID:8992044

The superposition of wave function can be written as, (terms are usual)

- (1) $\psi(x, t) = \sum_n C_n \psi_n(x) e^{-iE_n t / \hbar}$ (2) $\psi(x, t) = \sum_n C_n \psi_n(x) f(t) e^{iwt / \hbar}$
(3) $\psi(x, t) = \sum_n C_n \psi_n(t) e^{-iwt / \hbar}$ (4) $\psi(x, t) = \sum_n C_n \psi_n(x) e^{i \hbar \nu t}$

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20413]

2[Option ID=20414]

3[Option ID=20415]

4[Option ID=20416]

Sl. No.45

QBID:8992045

The molecular partition function is given by

- (1) $e^{-\beta E_i}$ (2) $\frac{1}{e^{-\beta E_i}}$
(3) $\sum_i e^{-\beta E_i}$ (4) $\frac{1}{\sum_i e^{-\beta E_i}}$

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20417]

2[Option ID=20418]

3[Option ID=20419]

4[Option ID=20420]

Sl. No.46

QBID:8992046

The energy gap for nuclear spin transition between two spin states for ^{10}B can be calculated as, (given : nuclear magneton is $5.05 \times 10^{-27} \text{ JT}^{-1}$, g – factor of ^{10}B is 0.6002, magnetic field applied is 2.3487 T)

- | | |
|---------------|---------------|
| (1) 100 MHz | (2) 500 MHz |
| (3) 32.08 MHz | (4) 10.73 MHz |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20421]
2[Option ID=20422]
3[Option ID=20423]
4[Option ID=20424]

Sl. No.47
QBID:8992047

For canonical ensemble, which of the following is true

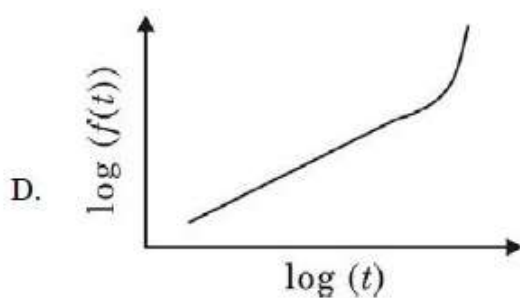
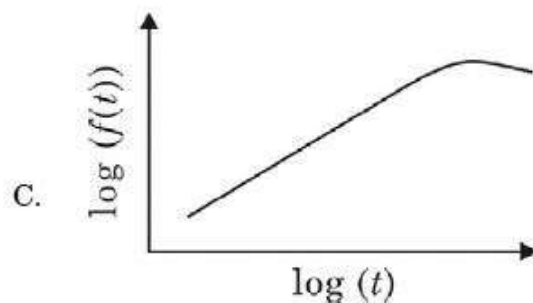
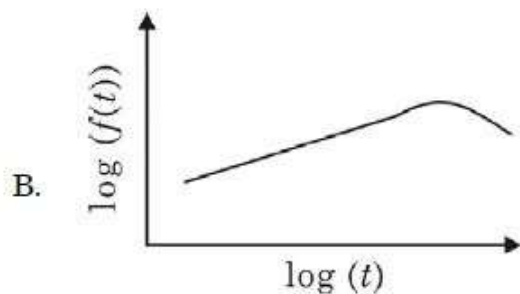
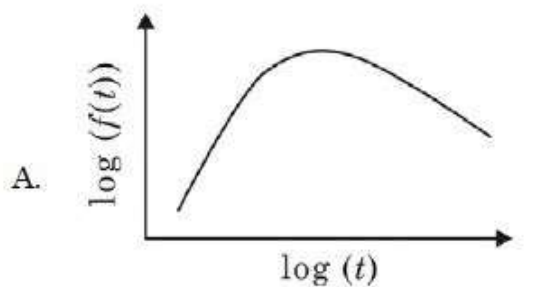
- | | |
|-------------------------------------|--------------------------------------|
| (1) Energy and matter are exchanged | (2) Only energy is exchanged |
| (3) Only matter is exchanged | (4) No energy or matter is exchanged |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20425]
2[Option ID=20426]
3[Option ID=20427]
4[Option ID=20428]

Sl. No.48
QBID:8992048

The function, $f(t) = t^{0.5} \times e^{0.2t}$ can be best described by the plot presented in



(1) A

(2) B

(3) C

(4) D

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20429]

2[Option ID=20430]

3[Option ID=20431]

4[Option ID=20432]

Sl. No.49

QBID:8992049

With respect to physisorption, which of the following statements is incorrect

- | | |
|----------------------|-----------------------|
| (1) $\Delta H < 0$ | (2) $\Delta S > 0$ |
| (3) It is reversible | (4) It is spontaneous |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20433]

2[Option ID=20434]

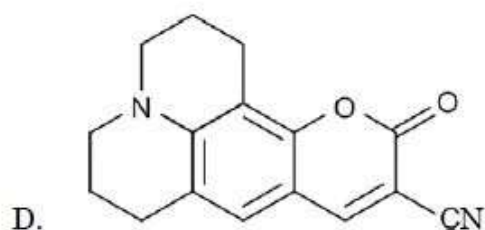
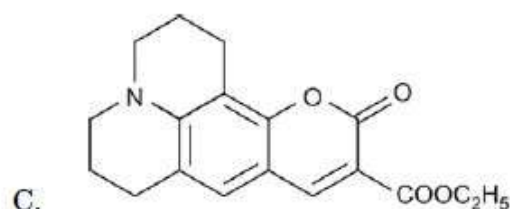
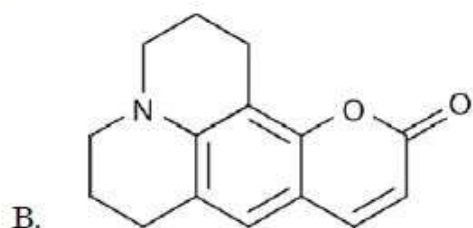
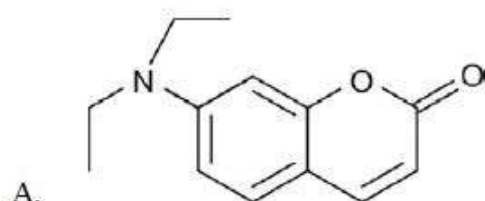
3[Option ID=20435]

4[Option ID=20436]

Sl. No.50

QBID:8992050

The order of high-to-low dipole moment (μ) for the following molecules is



- | | |
|---------------------|---------------------|
| (1) $A > C > B > D$ | (2) $D > C > B > A$ |
| (3) $B > C > D > A$ | (4) $C > D > B > A$ |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20437]

2[Option ID=20438]

3[Option ID=20439]

4[Option ID=20440]

Sl. No.51

QBID:8992051

A power station operates with superheated steam at 573 K and discharges the waste heat into the environment at 293 K. The theoretical efficiency is

- | | |
|------------|-----------|
| (1) 4.89 | (2) 0.489 |
| (3) -0.955 | (4) 0.955 |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20441]

2[Option ID=20442]

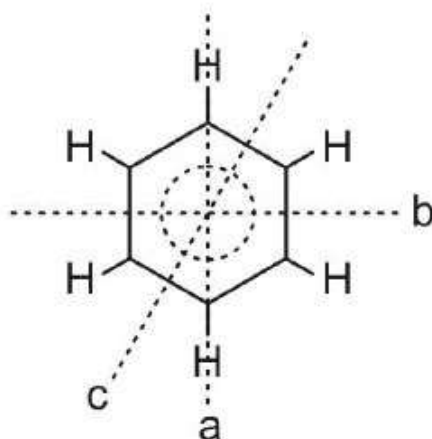
3[Option ID=20443]

4[Option ID=20444]

Sl. No.52

QBID:8992052

The principal moments of inertia for symmetric top-oblate molecule like C_6H_6 have the following relation



- | | |
|-----------------------------------|-----------------------------------|
| (1) $I_a = I_b = \frac{1}{2} I_c$ | (2) $I_a = \frac{1}{2} I_b = I_c$ |
| (3) $I_a = \frac{1}{3} I_b = I_c$ | (4) $I_a = I_b = 2I_c$ |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20445]

2[Option ID=20446]

3[Option ID=20447]

4[Option ID=20448]

Sl. No.53

QBID:8992053

The activation energy of a chemical reaction is 100 kJ mol^{-1} . The change in rate constant when the temperature increases from 30°C to 40°C is

- | | |
|----------------------|----------------------|
| (1) $k_2 = 35.5 k_1$ | (2) $k_1 = 3.55 k_2$ |
| (3) $k_2 = 3.55 k_1$ | (4) $k_1 = 35.5 k_2$ |

- (1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20449]

2[Option ID=20450]

3[Option ID=20451]

4[Option ID=20452]

Sl. No.54

QBID:8992054

The characteristics adsorption of OH- stretch for liquid water is found at around 3300 cm^{-1} . The Raman band for an excitation of water with 450 nm will appear at around

(1) 450 nm

(2) 528 nm

(3) 508 nm

(4) 488 nm

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20453]

2[Option ID=20454]

3[Option ID=20455]

4[Option ID=20456]

Sl. No.55

QBID:8992055

The entropy change of a 1 mol of perfect gas when it expands isothermally from a volume of 5 dm^3 to 15 dm^3

(1) $6.13\text{ JK}^{-1}\text{ mol}^{-1}$

(2) $9.63\text{ JK}^{-1}\text{ mol}^{-1}$

(3) $-9.13\text{ JK}^{-1}\text{ mol}^{-1}$

(4) $9.13\text{ JK}^{-1}\text{ mol}^{-1}$

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20457]

2[Option ID=20458]

3[Option ID=20459]

4[Option ID=20460]

Sl. No.56

QBID:8992056

For an arbitrary function is $y = f(x)$ the $f'(x)$ can be correctly written as

(1) $f'(x) = \lim_{\Delta x \rightarrow 1} \frac{f(x + \Delta x) - f(x)}{\Delta x}$

(2) $f'(x) = \lim_{\Delta x \rightarrow \infty} \frac{f(x + \Delta x) - f(x)}{\Delta x}$

(3) $f'(x) = \lim_{\Delta x \rightarrow 0} \frac{f(x) - f(x + \Delta x)}{\Delta(\Delta x)}$

(4) $f'(x) = \lim_{\Delta x \rightarrow 0} \frac{f(x + \Delta x) - f(x)}{\Delta x}$

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20461]
2[Option ID=20462]
3[Option ID=20463]
4[Option ID=20464]

Sl. No.57

QBID:8992057

The rate constant for a first order reaction is given as 30 s^{-1} . Find out the time it will take to reduce the initial concentration of the reactant to its $1/4^{\text{th}}$ value.

- (1) 4.6 s (2) $4.6 \times 10^{-2} \text{ s}$
(3) $4.6 \times 10^{-3} \text{ s}$ (4) 1.2 s

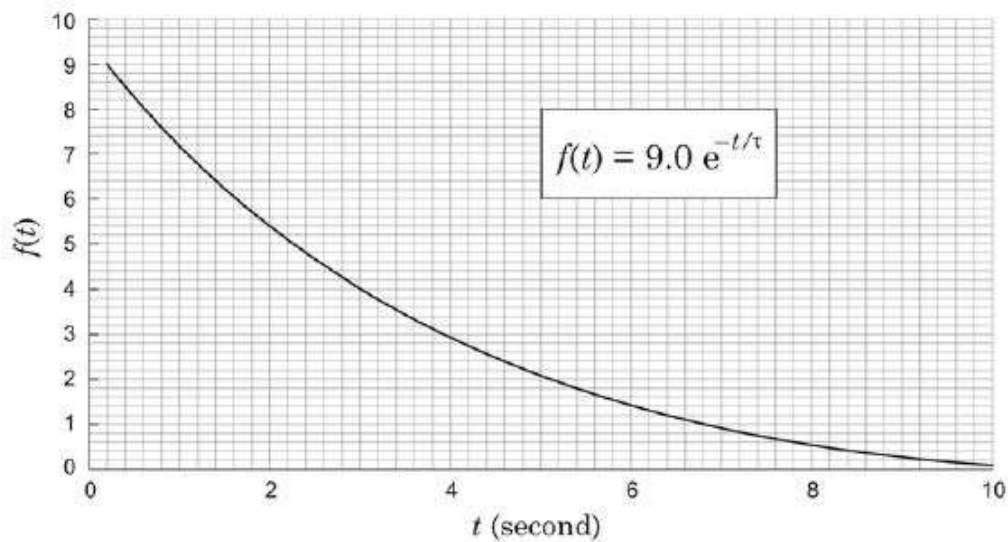
- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20465]
2[Option ID=20466]
3[Option ID=20467]
4[Option ID=20468]

Sl. No.58

QBID:8992058

The response function $f(t)$ of a system decays with time (t) as shown below. If the value of mathematical constant (e) is given by 2.72 then the time – constant (τ) of decay can be found as



- (1) 3.50 (2) 4.50
(3) 2.72 (4) 5.20

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20469]
2[Option ID=20470]
3[Option ID=20471]
4[Option ID=20472]

Sl. No.59
QBID:8992059

Calculate ionic strength of solution containing $0.2 \text{ mol kg}^{-1} \text{ CuSO}_4$

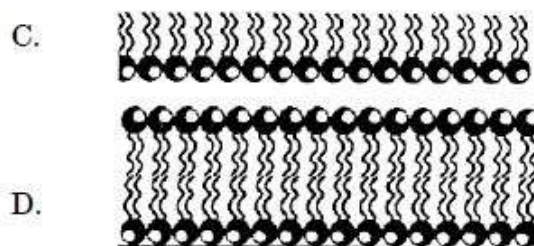
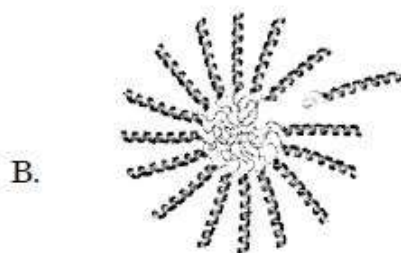
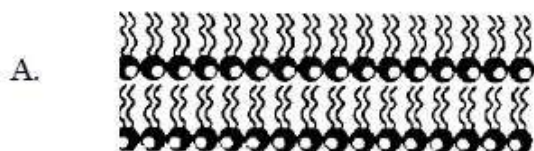
- | | |
|----------|---------|
| (1) 0.8 | (2) 0.1 |
| (3) 0.08 | (4) 1.2 |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20473]
2[Option ID=20474]
3[Option ID=20475]
4[Option ID=20476]

Sl. No.60
QBID:8992060

Which of the following structure is most appropriate for biological lipid-monolayer?



- D.
- (1) A
(2) B
(3) C
(4) D

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20477]
2[Option ID=20478]
3[Option ID=20479]
4[Option ID=20480]

Sl. No.61
QBID:8992061

The equilibrium constant for a reaction with a value of $\Delta G^\circ = -40 \text{ kJ}$ at 100°C is
[$R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$]

- | | |
|------------------------|------------------------|
| (1) 12.89 | (2) 1.29×10^5 |
| (3) 51.7×10^5 | (4) 5.17×10^5 |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20481]
2[Option ID=20482]
3[Option ID=20483]
4[Option ID=20484]

Sl. No.62
QBID:8992062

The extinction coefficient of a substance in methanol at 300 nm is given by $750 \text{ M}^{-1} \text{ cm}^{-1}$.
The percentage reduction of intensity when the light passes through 2 mm path of solution of concentration 4.25 nM is,

- | | |
|---------|---------|
| (1) 75% | (2) 85% |
| (3) 77% | (4) 73% |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20485]
2[Option ID=20486]
3[Option ID=20487]
4[Option ID=20488]

Sl. No.63
QBID:8992063

The half-life of a substance varies with the initial concentration in

- | | |
|--------------------------|----------------------------|
| (1) First order reaction | (2) Second order reaction |
| (3) Zero order reaction | (4) All types of reactions |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20489]
2[Option ID=20490]
3[Option ID=20491]
4[Option ID=20492]

Sl. No.64
QBID:8992064

Assuming butadiene as linear molecule of length ~ 0.578 nm, calculate the energy of absorption for its excitation from ground to excited state as, (given the total π -electrons are 4)

- | | |
|------------------------------|------------------------------|
| (1) 9.02×10^{-19} J | (2) 9.02×10^{-20} J |
| (3) 1.60×10^{-20} J | (4) 3.20×10^{-20} J |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20493]
2[Option ID=20494]
3[Option ID=20495]
4[Option ID=20496]

Sl. No.65
QBID:8992065

The pH of neutral salt is

- | | |
|----------|----------|
| (1) >7 | (2) <7 |
| (3) 7 | (4) 0.7 |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20497]
2[Option ID=20498]
3[Option ID=20499]
4[Option ID=20500]

Sl. No.66
QBID:8992066

The de-Broglie wavelength associated with an electron travelling at 2% of the speed of light is

- | | |
|------------|-------------|
| (1) 243 pm | (2) 2430 pm |
| (3) 121 pm | (4) 486 pm |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20501]
2[Option ID=20502]
3[Option ID=20503]
4[Option ID=20504]

Sl. No.67
QBID:8992067

At $T = 0$, molecular partition function, q will be

- | | |
|--------------|-------|
| (1) 0 | (2) 1 |
| (3) ∞ | (4) 2 |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20505]

2[Option ID=20506]

3[Option ID=20507]

4[Option ID=20508]

Sl. No.68

QBID:8992068

Which of the following configuration is expected to have maximum difference in second and third ionization energies?

- | | |
|---------------------------|---------------------------|
| (1) $1s^2 2s^2 2p^1$ | (2) $1s^2 2s^2 2p^6$ |
| (3) $1s^2 2s^2 2p^6 3s^1$ | (4) $1s^2 2s^2 2p^6 3s^2$ |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20509]

2[Option ID=20510]

3[Option ID=20511]

4[Option ID=20512]

Sl. No.69

QBID:8992069

The sum of the number of neutrons and protons in all the isotopes of hydrogen is

- | | |
|-------|-------|
| (1) 3 | (2) 4 |
| (3) 5 | (4) 6 |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20513]

2[Option ID=20514]

3[Option ID=20515]

4[Option ID=20516]

Sl. No.70

QBID:8992070

Hybridization and shape of $N(SiH_3)_3$ is

- | | |
|--|--------------------------------------|
| (1) sp^3 and tetrahedral, respectively | (2) sp^2 and planar, respectively |
| (3) sp^3 and pyramidal, respectively | (4) sp^2 and angular, respectively |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20517]

2[Option ID=20518]

3[Option ID=20519]
4[Option ID=20520]

Sl. No.71
QBID:8992071

The structures of XeF_2 and $[\text{XeF}_5]$, respectively are

- | | |
|----------------------------------|-------------------------------------|
| (1) Linear and pentagonal planar | (2) Linear and trigonal bipyramidal |
| (3) Bent and pentagonal planar | (4) Bent and square pyramidal |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20521]
2[Option ID=20522]
3[Option ID=20523]
4[Option ID=20524]

Sl. No.72
QBID:8992072

The number of unpaired electrons in the following diatomic molecules, O_2 , O_2^+ , O_2^{2-} , O_2^- , respectively are

- | | |
|----------------|----------------|
| (1) 2, 1, 0, 1 | (2) 0, 1, 2, 1 |
| (3) 1, 0, 2, 2 | (4) 2, 1, 2, 1 |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20525]
2[Option ID=20526]
3[Option ID=20527]
4[Option ID=20528]

Sl. No.73
QBID:8992073

The value of pK_b for $[\text{CN}]^-$, when the value of k_a for HCN is 4.0×10^{-10} , is

- | | |
|---------|---------|
| (1) 4.6 | (2) 2.5 |
| (3) 5 | (4) 6.6 |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20529]
2[Option ID=20530]
3[Option ID=20531]
4[Option ID=20532]

Sl. No.74
QBID:8992074

The order of Bronsted – Lowry base strength of following pyridines on reaction with hydrogen ion is

- (1) 2, 6-dimethylpyridine > 2-methylpyridine > 2-t-butylpyridine > pyridine
- (2) 2-methylpyridine > 2, 6-dimethylpyridine > 2-t-butylpyridine > pyridine
- (3) 2-methylpyridine > pyridine > 2, 6-dimethylpyridine > 2-t-butylpyridine
- (4) pyridine > 2-methylpyridine > 2, 6-dimethylpyridine > 2-t-butylpyridine

- (1) 1
- (2) 2
- (3) 3
- (4) 4

1[Option ID=20533]
2[Option ID=20534]
3[Option ID=20535]
4[Option ID=20536]

Sl. No.75
QBID:8992075

Choose the stronger acid among the following pairs :

A. H_3PO_4 and H_3PO_2

B. HNO_3 and HAsO_3

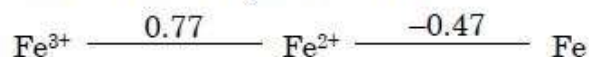
- (1) $\text{H}_3\text{PO}_4 > \text{H}_3\text{PO}_2$ and $\text{HNO}_3 > \text{HAsO}_3$
- (2) $\text{H}_3\text{PO}_2 > \text{H}_3\text{PO}_4$ and $\text{HAsO}_3 > \text{HNO}_3$
- (3) $\text{H}_3\text{PO}_4 > \text{H}_3\text{PO}_2$ and $\text{HAsO}_3 > \text{HNO}_3$
- (4) $\text{H}_3\text{PO}_2 > \text{H}_3\text{PO}_4$ and $\text{HNO}_3 > \text{HAsO}_3$

- (1) 1
- (2) 2
- (3) 3
- (4) 4

1[Option ID=20537]
2[Option ID=20538]
3[Option ID=20539]
4[Option ID=20540]

Sl. No.76
QBID:8992076

The Latimer diagram for Fe is



E° for the reaction $\text{Fe}^{3+} \rightarrow \text{Fe}$ is

- | | |
|------------------------|------------------------|
| (1) -0.057 V | (2) $+0.057 \text{ V}$ |
| (3) -0.15 V | (4) $+0.15 \text{ V}$ |

- (1) 1
- (2) 2
- (3) 3
- (4) 4

1[Option ID=20541]
 2[Option ID=20542]
 3[Option ID=20543]
 4[Option ID=20544]

Sl. No.77
 QBID:8992077

The ions Fe^{2+} , Cl^- and Ce^{3+} can be oxidized by permanganate in acidic solution ($\text{pH} = 0$) are

$$E^\circ_{\text{MnO}_4^-/\text{Mn}^{2+}} = +1.51 \text{ V}, E^\circ_{\text{Fe}^{3+}/\text{Fe}^{2+}} = +0.77 \text{ V}$$

$$E^\circ_{\text{Cl}_2/\text{Cl}^-} = +1.36 \text{ V}, E^\circ_{\text{Ce}^{4+}/\text{Ce}^{3+}} = +1.76 \text{ V}$$

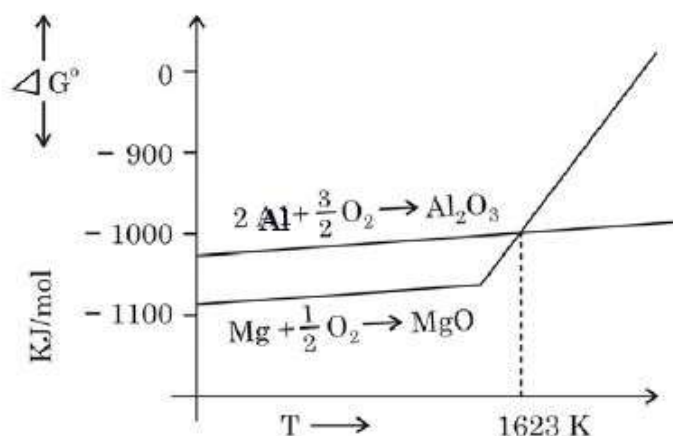
- | | |
|--|---|
| (1) Ce^{3+} only | (2) Fe^{2+} , Cl^- and Ce^{3+} |
| (3) Fe^{2+} and Cl^- | (4) Fe^{2+} only |

- (1) 1
 (2) 2
 (3) 3
 (4) 4

1[Option ID=20545]
 2[Option ID=20546]
 3[Option ID=20547]
 4[Option ID=20548]

Sl. No.78
 QBID:8992078

Which of the following statement is correct w.r.t the following graph?



- | | |
|--|----------------------------------|
| (1) Below 1623 K, Mg reduces Al_2O_3 | (2) Above 1623 K, Al reduces MgO |
| (3) Both (1) and (2) are correct | (4) Both (1) and (2) are wrong |

- (1) 1
 (2) 2
 (3) 3
 (4) 4

1[Option ID=20549]
 2[Option ID=20550]
 3[Option ID=20551]
 4[Option ID=20552]

Sl. No.79
 QBID:8992079

The X and Y in the following reaction respectively are



- | | |
|--|---|
| (1) P_4O_6 and H_3PO_4 | (2) P_4O_{10} and H_3PO_4 |
| (3) P_4O_6 and H_3PO_3 | (4) P_4O_{10} and H_3PO_3 |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20553]

2[Option ID=20554]

3[Option ID=20555]

4[Option ID=20556]

Sl. No.80

QBID:8992080

The metal that directly reacts with nitrogen is

- | | |
|--------|--------|
| (1) Li | (2) K |
| (3) Rb | (4) Cs |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20557]

2[Option ID=20558]

3[Option ID=20559]

4[Option ID=20560]

Sl. No.81

QBID:8992081

The compound having O – O bond is

- | | |
|--------------------------------------|--------------------------------------|
| (1) $\text{H}_2\text{S}_2\text{O}_3$ | (2) $\text{H}_2\text{S}_2\text{O}_4$ |
| (3) $\text{H}_2\text{S}_2\text{O}_7$ | (4) $\text{H}_2\text{S}_2\text{O}_8$ |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20561]

2[Option ID=20562]

3[Option ID=20563]

4[Option ID=20564]

Sl. No.82

QBID:8992082

The formula of pyrosilicate ion is

- | | |
|------------------------------------|--|
| (1) $[\text{SiO}_4]^{4-}$ | (2) $[\text{Si}_2\text{O}_7]^{6-}$ |
| (3) $[\text{Si}_3\text{O}_9]^{6-}$ | (4) $[\text{Si}_6\text{O}_{18}]^{12-}$ |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20565]
2[Option ID=20566]
3[Option ID=20567]
4[Option ID=20568]

Sl. No.83

QBID:8992083

The ground state term symbol of Pr^{3+} is ${}^3\text{H}_4$ with $L = 5$. The magnetic moment of Pr^{3+} is

- | | |
|-------------|-------------|
| (1) 3.58 BM | (2) 4.7 BM |
| (3) 2.44 BM | (4) 1.41 BM |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20569]
2[Option ID=20570]
3[Option ID=20571]
4[Option ID=20572]

Sl. No.84

QBID:8992084

The compound having normal spinel structure is

- | | |
|-------------------------------|-------------------------------|
| (1) NiFe_2O_4 | (2) Fe_3O_4 |
| (3) Mn_3O_4 | (4) CoFe_2O_4 |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20573]
2[Option ID=20574]
3[Option ID=20575]
4[Option ID=20576]

Sl. No.85

QBID:8992085

The spin-only magnetic moment and the spectroscopic ground state term symbol of manganese center in $[\text{MnF}_6]^{3-}$ are

- | | |
|-------------------------------|-------------------------------|
| (1) 4.9 BM and ${}^5\text{D}$ | (2) 3.9 BM and ${}^4\text{F}$ |
| (3) 3.9 BM and ${}^3\text{D}$ | (4) 4.9 BM and ${}^3\text{F}$ |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20577]

2[Option ID=20578]

3[Option ID=20579]

4[Option ID=20580]

Sl. No.86

QBID:8992086

The correct trend in ligand-to-metal charge-transfer (LMCT) energies of the following metal tetraoxidoanions is

- (1) $\text{VO}_4^{3-} > \text{CrO}_4^{2-} > \text{MnO}_4^-$ (2) $\text{MnO}_4^- > \text{CrO}_4^{2-} > \text{VO}_4^{3-}$
(3) $\text{VO}_4^{3-} > \text{MnO}_4^- > \text{CrO}_4^{2-}$ (4) $\text{MnO}_4^- > \text{VO}_4^{3-} > \text{CrO}_4^{2-}$

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20581]

2[Option ID=20582]

3[Option ID=20583]

4[Option ID=20584]

Sl. No.87

QBID:8992087

The electronic transition frequencies for $(\text{Ni}(\text{NH}_3)_6)^{2+}$ are $10,750 \text{ cm}^{-1}$, $17,500 \text{ cm}^{-1}$ and $28,200 \text{ cm}^{-1}$. The calculated value of Δ_0 and B^1 respectively are

- (1) $17,500 \text{ cm}^{-1}$ and 896.6 cm^{-1} (2) $6,750 \text{ cm}^{-1}$ and 896.6 cm^{-1}
(3) $10,750 \text{ cm}^{-1}$ and 896.6 cm^{-1} (4) $28,200 \text{ cm}^{-1}$ and 896.6 cm^{-1}

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20585]

2[Option ID=20586]

3[Option ID=20587]

4[Option ID=20588]

Sl. No.88

QBID:8992088

The EPR active species among the following species is

- (1) KMnO_4 (2) $\text{K}_2\text{Cr}_2\text{O}_7$
(3) VOSO_4 (4) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20589]
2[Option ID=20590]
3[Option ID=20591]
4[Option ID=20592]

Sl. No.89
QBID:8992089

The complex that show highest rate of substitution by H_2O is

- | | |
|---------------------------------------|---------------------------------------|
| (1) $[\text{Co}(\text{NH}_3)_6]^{3+}$ | (2) $[\text{Rh}(\text{NH}_3)_6]^{3+}$ |
| (3) $[\text{Mn}(\text{OH}_2)_6]^{2+}$ | (4) $[\text{Ni}(\text{OH}_2)_6]^{2+}$ |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20593]
2[Option ID=20594]
3[Option ID=20595]
4[Option ID=20596]

Sl. No.90
QBID:8992090

The complex having highest Mo – C stretching frequency is

- | | |
|--|--|
| (1) $\text{Mo}(\text{CO})_6$ | (2) $\text{Mo}(\text{CO})_4(\text{PMe}_3)_2$ |
| (3) $\text{Mo}(\text{CO})_4(\text{P}(\text{OMe})_3)_2$ | (4) $\text{Mo}(\text{CO})_4(\text{PF}_3)_2$ |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20597]
2[Option ID=20598]
3[Option ID=20599]
4[Option ID=20600]

Sl. No.91
QBID:8992091

The percentage of ^{13}CO labelled carbonyl containing product formed by the decarbonylation of $\text{cis} - (\text{CH}_3\text{CO})\text{Mn}(^{13}\text{CO})(\text{CO})_4$ is

- | | |
|---------|----------|
| (1) 50% | (2) 25% |
| (3) 75% | (4) 100% |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20601]
2[Option ID=20602]
3[Option ID=20603]
4[Option ID=20604]

Sl. No.92
QBID:8992092

The correct statement for the hydroformylation of 1-pentene catalyzed by the cobalt catalyst $\text{Co}_2(\text{CO})_8$ is

- (1) The rate of reaction increases with increase in partial pressure of CO above a certain threshold
- (2) The rate of reaction decreased with increase in partial pressure of CO above a certain threshold
- (3) The rate of reaction decreased with decrease in partial pressure of CO above a certain threshold
- (4) The rate of reaction does not depend on the partial pressure of CO

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20605]

2[Option ID=20606]

3[Option ID=20607]

4[Option ID=20608]

Sl. No.93

QBID:8992093

The cluster among the following having Arachino structure is

- (1) $\text{C}_2\text{B}_7\text{H}_{12}^-$
- (2) SB_9H_9
- (3) $\text{GeC}_2\text{B}_9\text{H}_{11}$
- (4) SB_9H_{11}

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20609]

2[Option ID=20610]

3[Option ID=20611]

4[Option ID=20612]

Sl. No.94

QBID:8992094

The bond order of the metal-metal bonds in $[\text{Re}_2\text{Cl}_8]^{3-}$ and $[\text{Mo}_2(\text{SO}_4)_4]^{4-}$ are, respectively

- (1) 4 and 3
- (2) 3.5 and 4
- (3) 3 and 4
- (4) 4 and 3.5

(1) 1

(2) 2

(3) 3

(4) 4

1[Option ID=20613]

2[Option ID=20614]

3[Option ID=20615]

4[Option ID=20616]

Sl. No.95

QBID:8992095

Among the following pairs in which the two species are NOT isolobal is

- (1) Mn(CO)_5 and CH_3 (2) Fe(CO)_4 and O
(3) Co(CO)_3 and R_2Si (4) Mn(CO)_5 and R_5

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20617]
2[Option ID=20618]
3[Option ID=20619]
4[Option ID=20620]

Sl. No.96
QBID:8992096

The correct statement among the following about Myoglobin is

- (1) deoxymyoglobin contain high spin Fe(II) and oxymyoglobin contain low spin Fe(II)
(2) deoxymyoglobin contain high spin Fe(II) and oxymyoglobin contain low spin Fe(III)
(3) deoxymyoglobin contain low spin Fe(II) and oxymyoglobin contain high spin Fe(III)
(4) deoxymyoglobin contain low spin Fe(II) and oxymyoglobin contain high spin Fe(II)

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20621]
2[Option ID=20622]
3[Option ID=20623]
4[Option ID=20624]

Sl. No.97
QBID:8992097

The metal ion and the coordinated ligand(s) present in the active site of carbonic anhydrase are

- (1) Zn^{2+} , 3 imidazole units of histidine and one water molecule
(2) Zn^{2+} , 2 imidazole units of histidine and two water molecule
(3) Cu^{2+} , 4 imidazole units of histidine and one water molecule
(4) Cu^{2+} , 3 imidazole units of histidine and two water molecule

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20625]
2[Option ID=20626]
3[Option ID=20627]
4[Option ID=20628]

Sl. No.98
QBID:8992098

The ^{13}C NMR spectrum of carbonyl groups (CO) in $[\text{Fe}(\eta^4\text{-cis-1, 3-butadiene})(\text{CO})_3]$ at 272 K consists of a sharp single line. The number of carbonyl signal(s) observed at low temperature (195 K) in its spectrum is

- | | |
|-------|-------|
| (1) 3 | (2) 2 |
| (3) 1 | (4) 0 |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20629]
2[Option ID=20630]
3[Option ID=20631]
4[Option ID=20632]

Sl. No.99
QBID:8992099

The precipitating agents for the quantitative gravimetric estimation of Al and Ni respectively are

- | | |
|----------------------------------|---|
| (1) DMG and SCN^- | (2) SCN^- and SO_4^{2-} |
| (3) PO_4^{2-} and oxine | (4) Oxine and DMG |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20633]
2[Option ID=20634]
3[Option ID=20635]
4[Option ID=20636]

Sl. No.100
QBID:8992100

The reaction enthalpy for production of $\text{SF}_6(\text{g})$ from $\text{SF}_4(\text{g})$ given the mean bond enthalpies of F_2 , SF_4 and SF_6 are 158, 343 and 327 kJ mol^{-1} .

- | | |
|--------------|--------------|
| (1) +432 kJ | (2) -432 kJ |
| (3) -43.2 kJ | (4) +43.2 kJ |

- (1) 1
(2) 2
(3) 3
(4) 4

1[Option ID=20637]
2[Option ID=20638]
3[Option ID=20639]
4[Option ID=20640]