

JEE 2nd to 6th Sep 2020

Application No.	
Candidate Name	
Roll No.	
Test Date	
Test Time	
Subject	

Section : Physics

Q.1 Assume that the displacement (s) of air is proportional to the pressure difference (Δp) created by a sound wave. Displacement (s) further depends on the speed of sound (v), density of air (ρ) and the frequency (f). If $\Delta p \sim 10 \text{ Pa}$, $v \sim 300 \text{ m/s}$, $\rho \sim 1 \text{ kg/m}^3$ and $f \sim 1000 \text{ Hz}$, then s will be of the order of (take the multiplicative constant to be 1)

- Options
1. $\frac{3}{100} \text{ mm}$
 2. 10 mm
 3. $\frac{1}{10} \text{ mm}$
 4. 1 mm

Question Type : MCQ

Question ID : 40503611765

Option 1 ID : 40503642600

Option 2 ID : 40503642597

Option 3 ID : 40503642599

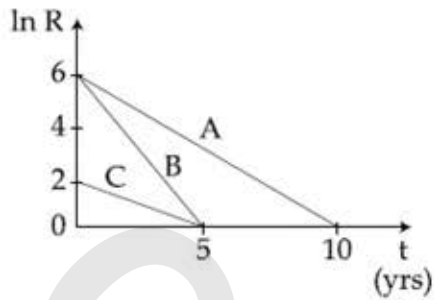
Option 4 ID : 40503642598

Status : Answered

Chosen Option : 2

Q.2

Activities of three radioactive substances A, B and C are represented by the curves A, B and C, in the figure. Then their half-lives $T_{\frac{1}{2}}(A) : T_{\frac{1}{2}}(B) : T_{\frac{1}{2}}(C)$ are in the ratio :



- Options
1. 2 : 1 : 1
 2. 3 : 2 : 1
 3. 2 : 1 : 3
 4. 4 : 3 : 1

Question Type : MCQ

Question ID : 40503611773

Option 1 ID : 40503642631

Option 2 ID : 40503642629

Option 3 ID : 40503642632

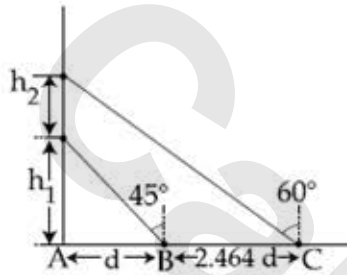
Option 4 ID : 40503642630

Status : Answered

Chosen Option : 3

Q.3

A balloon is moving up in air vertically above a point A on the ground. When it is at a height h_1 , a girl standing at a distance d (point B) from A (see figure) sees it at an angle 45° with respect to the vertical. When the balloon climbs up a further height h_2 , it is seen at an angle 60° with respect to the vertical if the girl moves further by a distance $2.464 d$ (point C). Then the height h_2 is (given $\tan 30^\circ = 0.5774$) :



- Options
1. $1.464 d$
 2. $0.732 d$
 3. $0.464 d$
 4. d

Question Type : MCQ

Question ID : 40503611757

Option 1 ID : 40503642565

Option 2 ID : 40503642566

Option 3 ID : 40503642567

Option 4 ID : 40503642568

Status : Answered

Chosen Option : 1

Q.4

An electron is constrained to move along the y -axis with a speed of $0.1c$ (c is the speed of light) in the presence of electromagnetic wave, whose electric field

$$\vec{E} = 30 \hat{j} \sin(1.5 \times 10^7 t - 5 \times 10^{-2} x) \text{ V/m.}$$

The maximum magnetic force experienced by the electron will be :

(given $c = 3 \times 10^8 \text{ ms}^{-1}$ and electron charge $= 1.6 \times 10^{-19} \text{ C}$)

- Options
1. $3.2 \times 10^{-18} \text{ N}$
 2. $2.4 \times 10^{-18} \text{ N}$
 3. $4.8 \times 10^{-19} \text{ N}$
 4. $1.6 \times 10^{-19} \text{ N}$

Question Type : MCQ

Question ID : 40503611771

Option 1 ID : 40503642623

Option 2 ID : 40503642621

Option 3 ID : 40503642622

Option 4 ID : 40503642624

Status : Not Answered

Chosen Option : --

Q.5

A helicopter rises from rest on the ground vertically upwards with a constant acceleration g . A food packet is dropped from the helicopter when it is at a height h . The time taken by the packet to reach the ground is close to [g is the acceleration due to gravity] :

Options

1. $t = \frac{2}{3} \sqrt{\frac{h}{g}}$

2. $t = 1.8 \sqrt{\frac{h}{g}}$

3. $t = 3.4 \sqrt{\frac{h}{g}}$

4. $t = \sqrt{\frac{2h}{3g}}$

Question Type : MCQ

Question ID : 40503611758

Option 1 ID : 40503642572

Option 2 ID : 40503642569

Option 3 ID : 40503642571

Option 4 ID : 40503642570

Status : Answered

Chosen Option : 4

Q.6

A galvanometer of resistance G is converted into a voltmeter of range $0-1V$ by connecting a resistance R_1 in series with it. The additional resistance that should be connected in series with R_1 to increase the range of the voltmeter to $0-2V$ will be :

Options

1. G 2. R_1 3. $R_1 - G$ 4. $R_1 + G$

Question Type : MCQ

Question ID : 40503611769

Option 1 ID : 40503642613

Option 2 ID : 40503642615

Option 3 ID : 40503642614

Option 4 ID : 40503642616

Status : Answered

Chosen Option : 3

Q.7 Two capacitors of capacitances C and $2C$ are charged to potential differences V and $2V$, respectively. These are then connected in parallel in such a manner that the positive terminal of one is connected to the negative terminal of the other. The final energy of this configuration is :

Options

1. $\frac{25}{6} CV^2$
2. $\frac{3}{2} CV^2$
3. zero
4. $\frac{9}{2} CV^2$

Question Type : MCQ

Question ID : 40503611767

Option 1 ID : 40503642607

Option 2 ID : 40503642606

Option 3 ID : 40503642605

Option 4 ID : 40503642608

Status : Answered

Chosen Option : 1

Q.8 With increasing biasing voltage of a photodiode, the photocurrent magnitude :

Options

1. remains constant
2. increases initially and after attaining certain value, it decreases
3. increases linearly
4. increases initially and saturates finally

Question Type : MCQ

Question ID : 40503611774

Option 1 ID : 40503642634

Option 2 ID : 40503642636

Option 3 ID : 40503642635

Option 4 ID : 40503642633

Status : Answered

Chosen Option : 2

Q.9 The value of the acceleration due to gravity is g_1 at a height $h = \frac{R}{2}$ ($R =$ radius of the earth) from the surface of the earth. It is again equal to g_1 at a depth d below the surface of the earth. The ratio $\left(\frac{d}{R}\right)$ equals :

Options

1. $\frac{4}{9}$
2. $\frac{5}{9}$
3. $\frac{1}{3}$
4. $\frac{7}{9}$

Question Type : MCQ

Question ID : 40503611760

Option 1 ID : 40503642578

Option 2 ID : 40503642579

Option 3 ID : 40503642577

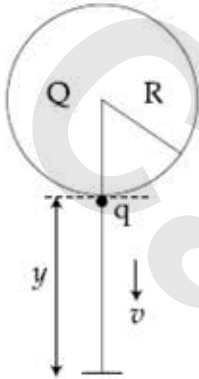
Option 4 ID : 40503642580

Status : Answered

Chosen Option : 4

Q.10

A solid sphere of radius R carries a charge $Q + q$ distributed uniformly over its volume. A very small point like piece of it of mass m gets detached from the bottom of the sphere and falls down vertically under gravity. This piece carries charge q . If it acquires a speed v when it has fallen through a vertical height y (see figure), then : (assume the remaining portion to be spherical).



Options

1. $v^2 = y \left[\frac{qQ}{4\pi\epsilon_0 R^2 y m} + g \right]$
2. $v^2 = y \left[\frac{qQ}{4\pi\epsilon_0 R(R + y)m} + g \right]$
3. $v^2 = 2y \left[\frac{Qq R}{4\pi\epsilon_0 (R + y)^3 m} + g \right]$
4. $v^2 = 2y \left[\frac{qQ}{4\pi\epsilon_0 R(R + y)m} + g \right]$

Question Type : MCQ

Question ID : 40503611766

Option 1 ID : 40503642604

Option 2 ID : 40503642601

Option 3 ID : 40503642602

Option 4 ID : 40503642603

Status : Not Answered

Chosen Option : --

Q.11

A wheel is rotating freely with an angular speed ω on a shaft. The moment of inertia of the wheel is I and the moment of inertia of the shaft is negligible. Another wheel of moment of inertia $3I$ initially at rest is suddenly coupled to the same shaft. The resultant fractional loss in the kinetic energy of the system is :

Options

1. $\frac{5}{6}$
2. $\frac{1}{4}$
3. 0
4. $\frac{3}{4}$

Question Type : MCQ

Question ID : 40503611759

Option 1 ID : 40503642575

Option 2 ID : 40503642573

Option 3 ID : 40503642576

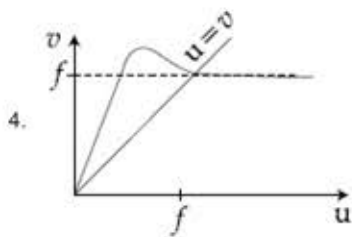
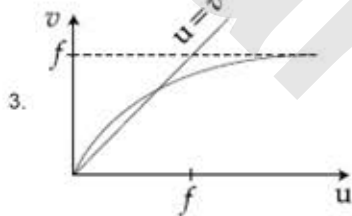
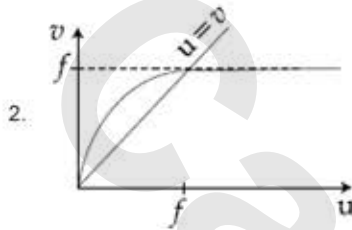
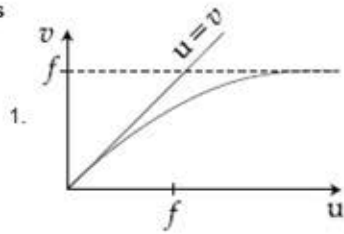
Option 4 ID : 40503642574

Status : Not Answered

Chosen Option : --

Q.12 For a concave lens of focal length f , the relation between object and image distances u and v , respectively, from its pole can best be represented by ($u=v$ is the reference line) :

Options



Question Type : MCQ

Question ID : 40503611772

Option 1 ID : 40503642628

Option 2 ID : 40503642625

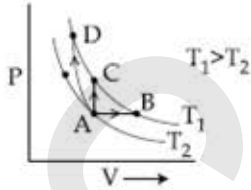
Option 3 ID : 40503642626

Option 4 ID : 40503642627

Status : Answered

Chosen Option : 2

- Q.13 Three different processes that can occur in an ideal monoatomic gas are shown in the P vs V diagram. The paths are labelled as $A \rightarrow B$, $A \rightarrow C$ and $A \rightarrow D$. The change in internal energies during these process are taken as E_{AB} , E_{AC} and E_{AD} and the workdone as W_{AB} , W_{AC} and W_{AD} . The correct relation between these parameters are :



- Options
1. $E_{AB} = E_{AC} < E_{AD}$, $W_{AB} > 0$, $W_{AC} = 0$, $W_{AD} < 0$
 2. $E_{AB} = E_{AC} = E_{AD}$, $W_{AB} > 0$, $W_{AC} = 0$, $W_{AD} > 0$
 3. $E_{AB} < E_{AC} < E_{AD}$, $W_{AB} > 0$, $W_{AC} > W_{AD}$
 4. $E_{AB} > E_{AC} > E_{AD}$, $W_{AB} < W_{AC} < W_{AD}$

Question Type : MCQ

Question ID : 40503611763

Option 1 ID : 40503642590

Option 2 ID : 40503642589

Option 3 ID : 40503642591

Option 4 ID : 40503642592

Status : Answered

Chosen Option : 4

Q.14 Number of molecules in a volume of 4 cm^3 of a perfect monoatomic gas at some temperature T and at a pressure of 2 cm of mercury is close to ? (Given, mean kinetic energy of a molecule (at T) is $4 \times 10^{-14} \text{ erg}$, $g = 980 \text{ cm/s}^2$, density of mercury = 13.6 g/cm^3)

- Options
1. 4.0×10^{18}
 2. 4.0×10^{16}
 3. 5.8×10^{16}
 4. 5.8×10^{18}

Question Type : MCQ

Question ID : 40503611764

Option 1 ID : 40503642596

Option 2 ID : 40503642594

Option 3 ID : 40503642593

Option 4 ID : 40503642595

Status : Answered

Chosen Option : 1

Q.15 A square loop of side $2a$, and carrying current I , is kept in XZ plane with its centre at origin. A long wire carrying the same current I is placed parallel to the z -axis and passing through the point $(0, b, 0)$, ($b > a$). The magnitude of the torque on the loop about z -axis is given by :

- Options
1. $\frac{\mu_0 I^2 a^2}{2\pi b}$
 2. $\frac{\mu_0 I^2 a^3}{2\pi b^2}$
 3. $\frac{2\mu_0 I^2 a^2}{\pi b}$
 4. $\frac{2\mu_0 I^2 a^3}{\pi b^2}$

Question Type : MCQ

Question ID : 40503611770

Option 1 ID : 40503642620

Option 2 ID : 40503642619

Option 3 ID : 40503642617

Option 4 ID : 40503642618

Status : Not Answered

Chosen Option : --

Q.16 A physical quantity z depends on four

observables a , b , c and d , as $z = \frac{a^2 b^{\frac{2}{3}}}{\sqrt{c} d^3}$.

The percentages of error in the measurement of a , b , c and d are 2%, 1.5%, 4% and 2.5% respectively. The percentage of error in z is :

Options 1. 12.25%

2. 16.5%

3. 13.5%

4. 14.5%

Question Type : MCQ

Question ID : 40503611756

Option 1 ID : 40503642561

Option 2 ID : 40503642564

Option 3 ID : 40503642563

Option 4 ID : 40503642562

Status : Not Answered

Chosen Option : --

Q.17 A hollow spherical shell at outer radius R floats just submerged under the water surface. The inner radius of the shell is r . If the specific gravity of the shell material

is $\frac{27}{8}$ w.r.t water, the value of r is :

Options 1. $\frac{8}{9}R$

2. $\frac{4}{9}R$

3. $\frac{2}{3}R$

4. $\frac{1}{3}R$

Question Type : MCQ

Question ID : 40503611762

Option 1 ID : 40503642588

Option 2 ID : 40503642586

Option 3 ID : 40503642585

Option 4 ID : 40503642587

Status : Not Answered

Chosen Option : --

Q.18 In a resonance tube experiment when the tube is filled with water up to a height of 17.0 cm from bottom, it resonates with a given tuning fork. When the water level is raised the next resonance with the same tuning fork occurs at a height of 24.5 cm. If the velocity of sound in air is 330 m/s, the tuning fork frequency is :

- Options
1. 2200 Hz
 2. 550 Hz
 3. 1100 Hz
 4. 3300 Hz

Question Type : MCQ
Question ID : 40503611775
Option 1 ID : 40503642640
Option 2 ID : 40503642638
Option 3 ID : 40503642637
Option 4 ID : 40503642639
Status : Not Answered
Chosen Option : --

Q.19 An electrical power line, having a total resistance of 2Ω , delivers 1 kW at 220 V. The efficiency of the transmission line is approximately :

- Options
1. 72 %
 2. 91 %
 3. 85 %
 4. 96 %

Question Type : MCQ
Question ID : 40503611768
Option 1 ID : 40503642612
Option 2 ID : 40503642611
Option 3 ID : 40503642610
Option 4 ID : 40503642609
Status : Answered
Chosen Option : 2

Q.20

A bullet of mass 5 g, travelling with a speed of 210 m/s, strikes a fixed wooden target. One half of its kinetic energy is converted into heat in the bullet while the other half is converted into heat in the wood. The rise of temperature of the bullet if the specific heat of its material is 0.030 cal/(g-°C) (1 cal = 4.2×10^7 ergs) close to :

- Options
1. 87.5°C
 2. 83.3°C
 3. 119.2°C
 4. 38.4°C

Question Type : MCQ

Question ID : 40503611761

Option 1 ID : 40503642583

Option 2 ID : 40503642584

Option 3 ID : 40503642581

Option 4 ID : 40503642582

Status : Answered

Chosen Option : 4

Q.21

A force $\vec{F} = (\hat{i} + 2\hat{j} + 3\hat{k})$ N acts at a point $(4\hat{i} + 3\hat{j} - \hat{k})$ m. Then the magnitude of torque about the point $(\hat{i} + 2\hat{j} + \hat{k})$ m will be \sqrt{x} N-m. The value of x is _____.

Given 3
Answer :

Question Type : SA

Question ID : 40503611777

Status : Answered

- Q.22** A beam of electrons of energy E scatters from a target having atomic spacing of 1\AA . The first maximum intensity occurs at $\theta = 60^\circ$. Then E (in eV) is _____.
- (Planck constant $h = 6.64 \times 10^{-34}$ Js,
 $1\text{ eV} = 1.6 \times 10^{-19}$ J,
 electron mass $m = 9.1 \times 10^{-31}$ kg)

Given 8
 Answer :

Question Type : SA
 Question ID : 40503611780
 Status : Answered

- Q.23** A particle of mass $200\text{ MeV}/c^2$ collides with a hydrogen atom at rest. Soon after the collision the particle comes to rest, and the atom recoils and goes to its first excited state. The initial kinetic energy of the particle (in eV) is $\frac{N}{4}$. The value of N is :
- (Given the mass of the hydrogen atom to be $1\text{ GeV}/c^2$) _____.

Given --
 Answer :

Question Type : SA
 Question ID : 40503611776
 Status : Not Answered

- Q.24** A compound microscope consists of an objective lens of focal length 1 cm and an eye piece of focal length 5 cm with a separation of 10 cm .
- The distance between an object and the objective lens, at which the strain on the eye is minimum is $\frac{n}{40}\text{ cm}$. The value of n is _____.

Given --
 Answer :

Question Type : SA
 Question ID : 40503611779
 Status : Not Answered

- Q.25** Two concentric circular coils, C_1 and C_2 , are placed in the XY plane. C_1 has 500 turns, and a radius of 1 cm. C_2 has 200 turns and radius of 20 cm. C_2 carries a time dependent current $I(t) = (5t^2 - 2t + 3)A$ where t is in s. The emf induced in C_1 (in mV), at the instant $t = 1$ s is $\frac{4}{x}$. The value of x is _____.

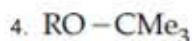
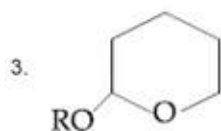
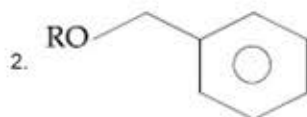
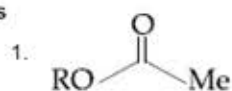
Given --
Answer :

Question Type : SA
Question ID : 40503611778
Status : Not Answered

Section : Chemistry

- Q.1** Which of the following derivatives of alcohols is unstable in an aqueous base ?

Options



Question Type : MCQ
Question ID : 40503611786
Option 1 ID : 40503642666
Option 2 ID : 40503642668
Option 3 ID : 40503642669
Option 4 ID : 40503642667
Status : Answered
Chosen Option : 3

Q.2 The values of the crystal field stabilization energies for a high spin d^6 metal ion in octahedral and tetrahedral fields, respectively, are :

- Options
1. $-0.4 \Delta_o$ and $-0.6 \Delta_t$
 2. $-2.4 \Delta_o$ and $-0.6 \Delta_t$
 3. $-1.6 \Delta_o$ and $-0.4 \Delta_t$
 4. $-0.4 \Delta_o$ and $-0.27 \Delta_t$

Question Type : MCQ

Question ID : 40503611793

Option 1 ID : 40503642694

Option 2 ID : 40503642695

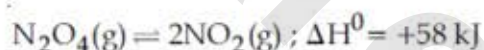
Option 3 ID : 40503642696

Option 4 ID : 40503642697

Status : Answered

Chosen Option : 3

Q.3 Consider the following reaction :



For each of the following cases (a, b), the direction in which the equilibrium shifts is :

- (a) Temperature is decreased.
- (b) Pressure is increased by adding N_2 at constant T.

- Options
1. (a) towards product, (b) towards reactant
 2. (a) towards reactant, (b) towards product
 3. (a) towards reactant, (b) no change
 4. (a) towards product, (b) no change

Question Type : MCQ

Question ID : 40503611798

Option 1 ID : 40503642714

Option 2 ID : 40503642715

Option 3 ID : 40503642716

Option 4 ID : 40503642717

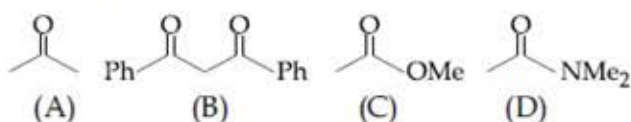
Status : Not Answered

Chosen Option : --

Q.4

The increasing order of the acidity of the α -hydrogen of the following compounds

is :



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

Question Type : MCQ

Question ID : 40503611785

Option 1 ID : 40503642663

Option 2 ID : 40503642665

Option 3 ID : 40503642662

Option 4 ID : 40503642664

Status : Not Answered

Chosen Option : --

Q.5

A diatomic molecule X_2 has a body-centred cubic (bcc) structure with a cell edge of 300 pm. The density of the molecule is 6.17 g cm^{-3} . The number of molecules present in 200 g of X_2 is :

(Avogadro constant (N_A) = $6 \times 10^{23} \text{ mol}^{-1}$)

- Options
1. $40 N_A$
 2. $8 N_A$
 3. $4 N_A$
 4. $2 N_A$

Question Type : MCQ

Question ID : 40503611795

Option 1 ID : 40503642704

Option 2 ID : 40503642705

Option 3 ID : 40503642703

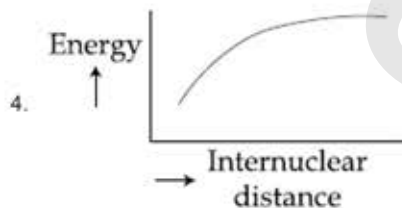
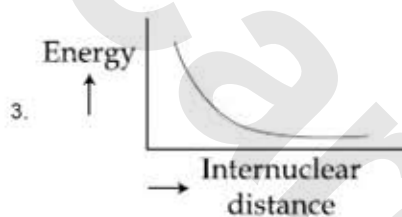
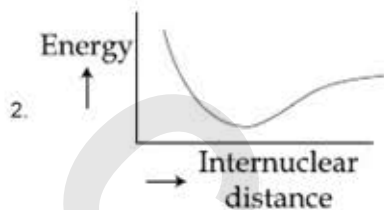
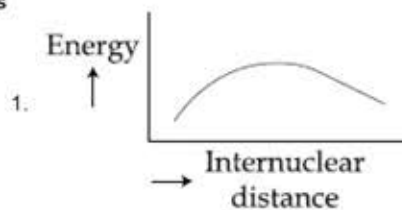
Option 4 ID : 40503642702

Status : Answered

Chosen Option : 3

Q.6 The potential energy curve for the H_2 molecule as a function of internuclear distance is :

Options



Question Type : MCQ

Question ID : 40503611797

Option 1 ID : 40503642713

Option 2 ID : 40503642712

Option 3 ID : 40503642710

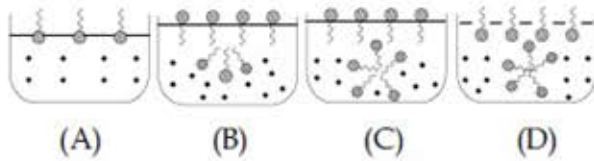
Option 4 ID : 40503642711

Status : Answered

Chosen Option : 1

Q.7

Identify the correct molecular picture showing what happens at the critical micellar concentration (CMC) of an aqueous solution of a surfactant (● polar head; ~ non-polar tail ; • water).



(A)

(B)

(C)

(D)

Options 1. (D)

2. (B)

3. (A)

4. (C)

Question Type : MCQ

Question ID : 40503611800

Option 1 ID : 40503642725

Option 2 ID : 40503642723

Option 3 ID : 40503642722

Option 4 ID : 40503642724

Status : Answered

Chosen Option : 2

Q.8

The difference between the radii of 3rd and 4th orbits of Li²⁺ is ΔR_1 . The difference between the radii of 3rd and 4th orbits of He⁺ is ΔR_2 . Ratio $\Delta R_1 : \Delta R_2$ is :

Options 1. 8 : 3

2. 3 : 8

3. 2 : 3

4. 3 : 2

Question Type : MCQ

Question ID : 40503611796

Option 1 ID : 40503642707

Option 2 ID : 40503642706

Option 3 ID : 40503642709

Option 4 ID : 40503642708

Status : Answered

Chosen Option : 4

Q.9 In the sixth period, the orbitals that are filled are :

- Options
1. 6s, 4f, 5d, 6p
 2. 6s, 5d, 5f, 6p
 3. 6s, 5f, 6d, 6p
 4. 6s, 6p, 6d, 6f

Question Type : MCQ

Question ID : 40503611788

Option 1 ID : 40503642677

Option 2 ID : 40503642676

Option 3 ID : 40503642675

Option 4 ID : 40503642674

Status : Answered

Chosen Option : 3

Q.10 The most appropriate reagent for conversion of C_2H_5CN into $CH_3CH_2CH_2NH_2$ is :

- Options
1. $NaBH_4$
 2. CaH_2
 3. $LiAlH_4$
 4. $Na(CN)BH_3$

Question Type : MCQ

Question ID : 40503611784

Option 1 ID : 40503642659

Option 2 ID : 40503642661

Option 3 ID : 40503642658

Option 4 ID : 40503642660

Status : Answered

Chosen Option : 1

Q.11 If a person is suffering from the deficiency of nor-adrenaline, what kind of drug can be suggested ?

- Options
1. Anti-inflammatory
 2. Antidepressant
 3. Antihistamine
 4. Analgesic

Question Type : MCQ
Question ID : 40503611787
Option 1 ID : 40503642672
Option 2 ID : 40503642673
Option 3 ID : 40503642670
Option 4 ID : 40503642671
Status : Not Answered
Chosen Option : --

Q.12 Which of the following is not an essential amino acid ?

- Options
1. Tyrosine
 2. Leucine
 3. Valine
 4. Lysine

Question Type : MCQ
Question ID : 40503611781
Option 1 ID : 40503642649
Option 2 ID : 40503642647
Option 3 ID : 40503642646
Option 4 ID : 40503642648
Status : Answered
Chosen Option : 2

Q.13 The correct electronic configuration and spin-only magnetic moment (BM) of Gd^{3+} ($Z=64$), respectively, are :

- Options
1. $[Xe] 4f^7$ and 8.9
 2. $[Xe] 4f^7$ and 7.9
 3. $[Xe] 5f^7$ and 8.9
 4. $[Xe] 5f^7$ and 7.9

Question Type : MCQ

Question ID : 40503611792

Option 1 ID : 40503642691

Option 2 ID : 40503642690

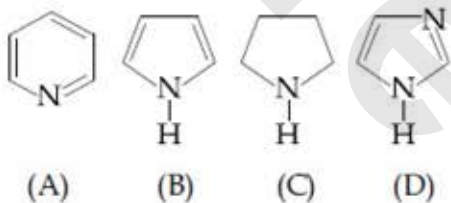
Option 3 ID : 40503642693

Option 4 ID : 40503642692

Status : Answered

Chosen Option : 3

Q.14 The increasing order of basicity of the following compounds is :



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

Question Type : MCQ

Question ID : 40503611782

Option 1 ID : 40503642650

Option 2 ID : 40503642651

Option 3 ID : 40503642653

Option 4 ID : 40503642652

Status : Answered

Chosen Option : 1

Q.15 A flask contains a mixture of compounds A and B. Both compounds decompose by first-order kinetics. The half-lives for A and B are 300 s and 180 s, respectively. If the concentrations of A and B are equal initially, the time required for the concentration of A to be four times that of B (in s) is : (Use $\ln 2 = 0.693$)

- Options
1. 180
 2. 900
 3. 300
 4. 120

Question Type : MCQ
Question ID : 40503611799
Option 1 ID : 40503642721
Option 2 ID : 40503642720
Option 3 ID : 40503642718
Option 4 ID : 40503642719
Status : Answered
Chosen Option : 4

Q.16 The structure of PCl_5 in the solid state is :

- Options
1. tetrahedral $[\text{PCl}_4]^+$ and octahedral $[\text{PCl}_6]^-$
 2. square planar $[\text{PCl}_4]^+$ and octahedral $[\text{PCl}_6]^-$
 3. square pyramidal
 4. trigonal bipyramidal

Question Type : MCQ
Question ID : 40503611791
Option 1 ID : 40503642688
Option 2 ID : 40503642689
Option 3 ID : 40503642687
Option 4 ID : 40503642686
Status : Not Answered
Chosen Option : --

Q.17 An Ellingham diagram provides information about :

- Options
1. the conditions of pH and potential under which a species is thermodynamically stable.
 2. the temperature dependence of the standard Gibbs energies of formation of some metal oxides.
 3. the pressure dependence of the standard electrode potentials of reduction reactions involved in the extraction of metals.
 4. the kinetics of the reduction process.

Question Type : MCQ

Question ID : 40503611789

Option 1 ID : 40503642679

Option 2 ID : 40503642680

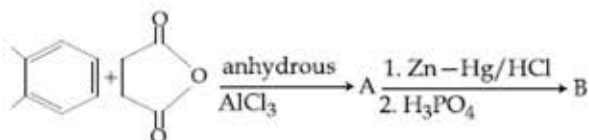
Option 3 ID : 40503642681

Option 4 ID : 40503642678

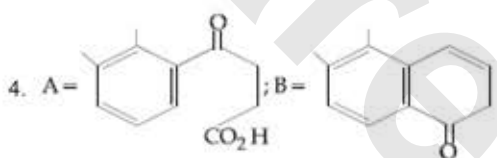
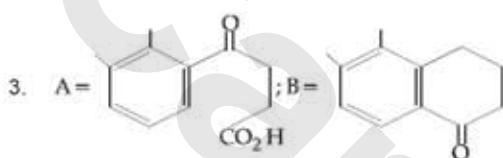
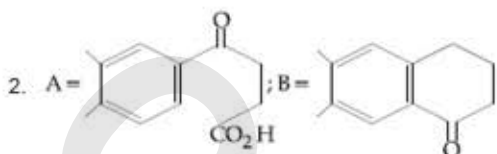
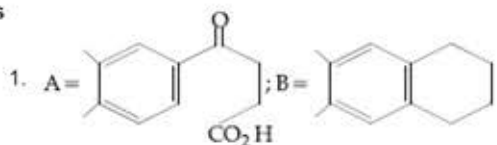
Status : Not Answered

Chosen Option : --

Q.18 In the following reaction sequence the major products A and B are :



Options



Question Type : MCQ

Question ID : 40503611783

Option 1 ID : 40503642655

Option 2 ID : 40503642657

Option 3 ID : 40503642656

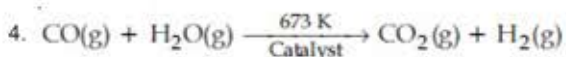
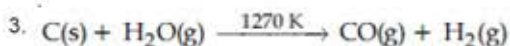
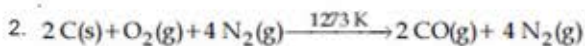
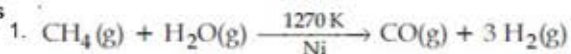
Option 4 ID : 40503642654

Status : Not Answered

Chosen Option : --

Q.19 The equation that represents the water-gas shift reaction is :

Options



Question Type : MCQ

Question ID : 40503611790

Option 1 ID : 40503642683

Option 2 ID : 40503642685

Option 3 ID : 40503642682

Option 4 ID : 40503642684

Status : Answered

Chosen Option : 2

Q.20 The condition that indicates a polluted environment is :

- Options
1. eutrophication
 2. 0.03% of CO₂ in the atmosphere
 3. BOD value of 5 ppm
 4. pH of rain water to be 5.6

Question Type : MCQ
Question ID : 40503611794
Option 1 ID : 40503642701
Option 2 ID : 40503642699
Option 3 ID : 40503642700
Option 4 ID : 40503642698
Status : Answered
Chosen Option : 3

Q.21 The minimum number of moles of O₂ required for complete combustion of 1 mole of propane and 2 moles of butane is _____.

Given 3.16
Answer :

Question Type : SA
Question ID : 40503611802
Status : Answered

Q.22 The total number of coordination sites in ethylenediaminetetraacetate (EDTA⁴⁻) is _____.

Given 3.16
Answer :

Question Type : SA
Question ID : 40503611801
Status : Answered

Q.23 The number of chiral carbon(s) present in peptide, Ile-Arg-Pro, is _____.

Given 8
Answer :

Question Type : SA
Question ID : 40503611805
Status : Answered

Q.24 A soft drink was bottled with a partial pressure of CO_2 of 3 bar over the liquid at room temperature. The partial pressure of CO_2 over the solution approaches a value of 30 bar when 44 g of CO_2 is dissolved in 1 kg of water at room temperature. The approximate pH of the soft drink is _____ $\times 10^{-1}$.

(First dissociation constant of $\text{H}_2\text{CO}_3 = 4.0 \times 10^{-7}$; $\log 2 = 0.3$; density of the soft drink = 1 g mL^{-1})

Given 62.89
Answer :

Question Type : SA
Question ID : 40503611803
Status : Answered

Q.25 An oxidation-reduction reaction in which 3 electrons are transferred has a ΔG^0 of $17.37 \text{ kJ mol}^{-1}$ at 25°C . The value of E_{cell}^0 (in V) is _____ $\times 10^{-2}$.
($1 \text{ F} = 96,500 \text{ C mol}^{-1}$)

Given 3160
Answer :

Question Type : SA
Question ID : 40503611804
Status : Answered

Section : Mathematics

Q.1 If $y = y(x)$ is the solution of the differential equation $\frac{5 + e^x}{2 + y} \cdot \frac{dy}{dx} + e^x = 0$ satisfying $y(0) = 1$, then a value of $y(\log_e 13)$ is :

Options 1. 1

2. -1

3. 0

4. 2

Question Type : MCQ
Question ID : 40503611818
Option 1 ID : 40503642779
Option 2 ID : 40503642780
Option 3 ID : 40503642781
Option 4 ID : 40503642782
Status : Answered
Chosen Option : 4

Q.2 The product of the roots of the equation

$$9x^2 - 18|x| + 5 = 0, \text{ is :}$$

Options

1. $\frac{5}{9}$
2. $\frac{25}{81}$
3. $\frac{5}{27}$
4. $\frac{25}{9}$

Question Type : MCQ

Question ID : 40503611808

Option 1 ID : 40503642741

Option 2 ID : 40503642742

Option 3 ID : 40503642740

Option 4 ID : 40503642739

Status : Answered

Chosen Option : 3

Q.3 The negation of the Boolean expression

$x \leftrightarrow \sim y$ is equivalent to :

Options

1. $(x \wedge y) \vee (\sim x \wedge \sim y)$
2. $(x \wedge y) \wedge (\sim x \vee \sim y)$
3. $(x \wedge \sim y) \vee (\sim x \wedge y)$
4. $(\sim x \wedge y) \vee (\sim x \wedge \sim y)$

Question Type : MCQ

Question ID : 40503611825

Option 1 ID : 40503642810

Option 2 ID : 40503642809

Option 3 ID : 40503642807

Option 4 ID : 40503642808

Status : Answered

Chosen Option : 3

Q.4 The mean and variance of 7 observations are 8 and 16, respectively. If five observations are 2, 4, 10, 12, 14, then the absolute difference of the remaining two observations is :

- Options
- 1
 - 4
 - 2
 - 3

Question Type : MCQ
Question ID : 40503611823
Option 1 ID : 40503642799
Option 2 ID : 40503642802
Option 3 ID : 40503642800
Option 4 ID : 40503642801
Status : Answered
Chosen Option : 3

Q.5 If $2^{10} + 2^9 \cdot 3^1 + 2^8 \cdot 3^2 + \dots + 2 \cdot 3^9 + 3^{10} = S - 2^{11}$, then S is equal to :

- Options
- $3^{11} - 2^{12}$
 - 3^{11}
 - $\frac{3^{11}}{2} + 2^{10}$
 - $2 \cdot 3^{11}$

Question Type : MCQ
Question ID : 40503611812
Option 1 ID : 40503642757
Option 2 ID : 40503642755
Option 3 ID : 40503642758
Option 4 ID : 40503642756
Status : Answered
Chosen Option : 3

Q.6

If $3^{2 \sin 2\alpha} - 1$, 14 and $3^{4 - 2 \sin 2\alpha}$ are the first three terms of an A.P. for some α , then the sixth term of this A.P. is :

- Options
1. 66
 2. 81
 3. 65
 4. 78

Question Type : MCQ

Question ID : 40503611811

Option 1 ID : 40503642753

Option 2 ID : 40503642751

Option 3 ID : 40503642754

Option 4 ID : 40503642752

Status : Answered

Chosen Option : 2

Q.7

If the volume of a parallelepiped, whose coterminus edges are given by the vectors

$$\vec{a} = \hat{i} + \hat{j} + n\hat{k}, \quad \vec{b} = 2\hat{i} + 4\hat{j} - n\hat{k} \quad \text{and}$$

$$\vec{c} = \hat{i} + n\hat{j} + 3\hat{k} \quad (n \geq 0), \quad \text{is } 158 \text{ cu. units,}$$

then :

- Options
1. $\vec{a} \cdot \vec{c} = 17$
 2. $\vec{b} \cdot \vec{c} = 10$
 3. $n = 7$
 4. $n = 9$

Question Type : MCQ

Question ID : 40503611822

Option 1 ID : 40503642798

Option 2 ID : 40503642797

Option 3 ID : 40503642795

Option 4 ID : 40503642796

Status : Answered

Chosen Option : 2

Q.8

If S is the sum of the first 10 terms of the series

$$\tan^{-1}\left(\frac{1}{3}\right) + \tan^{-1}\left(\frac{1}{7}\right) + \tan^{-1}\left(\frac{1}{13}\right) + \tan^{-1}\left(\frac{1}{21}\right) + \dots,$$

then $\tan(S)$ is equal to :

Options

1. $\frac{5}{6}$

2. $\frac{5}{11}$

3. $-\frac{6}{5}$

4. $\frac{10}{11}$

Question Type : MCQ

Question ID : 40503611824

Option 1 ID : 40503642803

Option 2 ID : 40503642806

Option 3 ID : 40503642805

Option 4 ID : 40503642804

Status : Answered

Chosen Option : 2

Q.9

If the four complex numbers z , \bar{z} , $\bar{z} - 2\text{Re}(\bar{z})$ and $z - 2\text{Re}(z)$ represent the vertices of a square of side 4 units in the Argand plane, then $|z|$ is equal to :

Options

1. $4\sqrt{2}$

2. 4

3. $2\sqrt{2}$

4. 2

Question Type : MCQ

Question ID : 40503611807

Option 1 ID : 40503642735

Option 2 ID : 40503642738

Option 3 ID : 40503642737

Option 4 ID : 40503642736

Status : Answered

Chosen Option : 2

Q.10 A survey shows that 73% of the persons working in an office like coffee, whereas 65% like tea. If x denotes the percentage of them, who like both coffee and tea, then x cannot be :

- Options
1. 63
 2. 36
 3. 54
 4. 38

Question Type : MCQ
Question ID : 40503611806
Option 1 ID : 40503642733
Option 2 ID : 40503642734
Option 3 ID : 40503642732
Option 4 ID : 40503642731
Status : Answered
Chosen Option : 2

Q.11 If the co-ordinates of two points A and B are $(\sqrt{7}, 0)$ and $(-\sqrt{7}, 0)$ respectively and P is any point on the conic, $9x^2 + 16y^2 = 144$, then PA + PB is equal to :

- Options
1. 16
 2. 8
 3. 6
 4. 9

Question Type : MCQ
Question ID : 40503611820
Option 1 ID : 40503642787
Option 2 ID : 40503642790
Option 3 ID : 40503642788
Option 4 ID : 40503642789
Status : Not Answered
Chosen Option : --

Q.12 If the point P on the curve, $4x^2 + 5y^2 = 20$ is farthest from the point Q(0, -4), then PQ^2 is equal to :

- Options
1. 36
 2. 48
 3. 21
 4. 29

Question Type : MCQ
Question ID : 40503611815
Option 1 ID : 40503642767
Option 2 ID : 40503642770
Option 3 ID : 40503642769
Option 4 ID : 40503642768
Status : Not Answered
Chosen Option : --

Q.13 Let $\lambda \in \mathbb{R}$. The system of linear equations
 $2x_1 - 4x_2 + \lambda x_3 = 1$
 $x_1 - 6x_2 + x_3 = 2$
 $\lambda x_1 - 10x_2 + 4x_3 = 3$
is inconsistent for :

- Options
1. exactly one negative value of λ .
 2. exactly one positive value of λ .
 3. every value of λ .
 4. exactly two values of λ .

Question Type : MCQ
Question ID : 40503611810
Option 1 ID : 40503642749
Option 2 ID : 40503642748
Option 3 ID : 40503642747
Option 4 ID : 40503642750
Status : Not Answered
Chosen Option : --

Q.14 If the minimum and the maximum values

of the function $f: \left[\frac{\pi}{4}, \frac{\pi}{2}\right] \rightarrow \mathbf{R}$, defined by

$$f(\theta) = \begin{vmatrix} -\sin^2\theta & -1-\sin^2\theta & 1 \\ -\cos^2\theta & -1-\cos^2\theta & 1 \\ 12 & 10 & -2 \end{vmatrix}$$

are m and M respectively, then the ordered pair (m, M) is equal to :

- Options
1. $(0, 2\sqrt{2})$
 2. $(-4, 0)$
 3. $(-4, 4)$
 4. $(0, 4)$

Question Type : MCQ

Question ID : 40503611809

Option 1 ID : 40503642744

Option 2 ID : 40503642745

Option 3 ID : 40503642743

Option 4 ID : 40503642746

Status : Not Answered

Chosen Option : --

Q.15 If (a, b, c) is the image of the point $(1, 2, -3)$ in the line,

$$\frac{x+1}{2} = \frac{y-3}{-2} = \frac{z}{-1}, \text{ then } a+b+c \text{ is}$$

equal to :

- Options
1. 2
 2. -1
 3. 3
 4. 1

Question Type : MCQ

Question ID : 40503611821

Option 1 ID : 40503642793

Option 2 ID : 40503642791

Option 3 ID : 40503642794

Option 4 ID : 40503642792

Status : Not Answered

Chosen Option : --

Q.16 If the function

$$f(x) = \begin{cases} k_1(x - \pi)^2 - 1, & x \leq \pi \\ k_2 \cos x, & x > \pi \end{cases} \text{ is twice}$$

differentiable, then the ordered pair (k_1, k_2) is equal to :

Options

1. $\left(\frac{1}{2}, 1\right)$

2. $(1, 0)$

3. $\left(\frac{1}{2}, -1\right)$

4. $(1, 1)$

Question Type : MCQ

Question ID : 40503611814

Option 1 ID : 40503642763

Option 2 ID : 40503642766

Option 3 ID : 40503642765

Option 4 ID : 40503642764

Status : Not Answered

Chosen Option : --

Q.17 If the common tangent to the parabolas, $y^2 = 4x$ and $x^2 = 4y$ also touches the circle, $x^2 + y^2 = c^2$, then c is equal to :

Options

1. $\frac{1}{2\sqrt{2}}$

2. $\frac{1}{\sqrt{2}}$

3. $\frac{1}{4}$

4. $\frac{1}{2}$

Question Type : MCQ

Question ID : 40503611819

Option 1 ID : 40503642786

Option 2 ID : 40503642783

Option 3 ID : 40503642785

Option 4 ID : 40503642784

Status : Not Answered

Chosen Option : --

Q.18

If α is the positive root of the equation,

$$p(x) = x^2 - x - 2 = 0, \text{ then}$$

$$\lim_{x \rightarrow \alpha^+} \frac{\sqrt{1 - \cos(p(x))}}{x + \alpha - 4} \text{ is equal to :}$$

Options

1. $\frac{3}{2}$

2. $\frac{3}{\sqrt{2}}$

3. $\frac{1}{\sqrt{2}}$

4. $\frac{1}{2}$

Question Type : MCQ

Question ID : 40503611813

Option 1 ID : 40503642762

Option 2 ID : 40503642761

Option 3 ID : 40503642760

Option 4 ID : 40503642759

Status : Answered

Chosen Option : 2

Q.19

$$\text{If } \int (e^{2x} + 2e^x - e^{-x} - 1) e^{(e^x + e^{-x})} dx$$

$$= g(x) e^{(e^x + e^{-x})} + c, \text{ where } c \text{ is a constant}$$

of integration, then $g(0)$ is equal to :

Options 1. e

2. e^2

3. 1

4. 2

Question Type : MCQ

Question ID : 40503611816

Option 1 ID : 40503642773

Option 2 ID : 40503642774

Option 3 ID : 40503642771

Option 4 ID : 40503642772

Status : Answered

Chosen Option : 2

Q.20

The value of $\int_{-\pi/2}^{\pi/2} \frac{1}{1 + e^{\sin x}} dx$ is :

- Options
1. $\frac{\pi}{4}$
 2. π
 3. $\frac{\pi}{2}$
 4. $\frac{3\pi}{2}$

Question Type : MCQ

Question ID : 40503611817

Option 1 ID : 40503642777

Option 2 ID : 40503642778

Option 3 ID : 40503642776

Option 4 ID : 40503642775

Status : Answered

Chosen Option : 2

Q.21

Let $f(x) = x \cdot \left[\frac{x}{2} \right]$, for $-10 < x < 10$, where

$[t]$ denotes the greatest integer function.

Then the number of points of discontinuity of f is equal to _____.

Given 1
Answer :

Question Type : SA

Question ID : 40503611828

Status : Answered

Q.22

If the line, $2x - y + 3 = 0$ is at a distance

$\frac{1}{\sqrt{5}}$ and $\frac{2}{\sqrt{5}}$ from the lines $4x - 2y + \alpha = 0$

and $6x - 3y + \beta = 0$, respectively, then the sum of all possible values of α and β is _____.

Given 26
Answer :

Question Type : SA

Question ID : 40503611829

Status : Answered

Q.23 The number of words, with or without meaning, that can be formed by taking 4 letters at a time from the letters of the word 'SYLLABUS' such that two letters are distinct and two letters are alike, is _____.

Given 120
Answer :

Question Type : SA
Question ID : 40503611826
Status : Answered

Q.24 The natural number m , for which the coefficient of x in the binomial expansion of $\left(x^m + \frac{1}{x^2}\right)^{22}$ is 1540, is _____.

Given 8
Answer :

Question Type : SA
Question ID : 40503611827
Status : Answered

Q.25 Four fair dice are thrown independently 27 times. Then the expected number of times, at least two dice show up a three or a five, is _____.

Given 0.76
Answer :

Question Type : SA
Question ID : 40503611830
Status : Answered