All India Institute of Speech and Hearing

Notations :

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

Question Paper Name :	BASLP PCM 24th July 2022 Shift 1
Subject Name :	BASLP PCM
Creation Date :	2022-07-24 13:06:21
Duration :	150
Total Marks :	150
Display Marks:	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No

BASLP PCM

Group Number :	1
Group Id :	56167412
Group Maximum Duration :	0
Group Minimum Duration :	150
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	150
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Physics

Section Id :	56167430
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	50
Number of Questions to be attempted :	50
Section Marks :	50
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	56167430
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 5616741351 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Ratio of masses of the nuclei of isotopes of lightest element are in the ratio

Options :

1. ✔ 1:2:3

2. ✖ 2:1:4

3. ✖ 3:2:4

4. ✖ 1:2:5

Question Number : 2 Question Id : 5616741352 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

An insect trapped in a circular groove of radius 20 cm moves along the groove steadily and completes 14 revolutions in 88 s. Is the acceleration vector a constant vector? Calculate its magnitude.

Options :

1. ✖ Acceleration is a constant vector and its magnitude is 0.2 m/s^2

2. ✔ Acceleration is not a constant vector but its magnitude is 0.2 m/s^2

3. ✖ Acceleration is a constant vector and its magnitude is 0.4 m/s^2 always changing

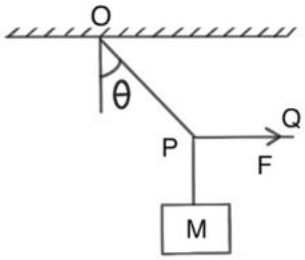
4. ✖ Acceleration is not a constant vector but its magnitude is 0.4 m/s^2

Question Number : 3 Question Id : 5616741353 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A mass M is suspended by a rope from a rigid support at O. Another rope is tied at P and is pulled horizontally with a force F. If rope PQ makes $\angle\theta$ with vertical, then tension in the string PQ is:



Options :

1. ✖ $F\ Sin\ \theta$

2. ✔ $F\ /\ Sin\ \theta$

3. ✖ $F\ Cos\ \theta$

4. ✖ $F\ /\ Cos\ \theta$

Question Number : 4 Question Id : 5616741354 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The Young's modulus of steel is twice that of brass. Two wires of same length and same area of cross-section, one of steel and another of brass are suspended from the same roof. If we want the lower end of the wire to be at the same level, then the weights added to the steel and brass wire must be in the ratio of

Options :

1. ✖ 1:1

2. ✖ 1:2

3. ✔ 2:1

4. ✖ 3:2

Question Number : 5 Question Id : 5616741355 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A piece of solid weighs 120 gwt in air and 80 gwt in the water. The relative density of the solid is

Options :

1. ✔ 3
2. ✖ 3/2
3. ✖ 2
4. ✖ 2/3

Question Number : 6 Question Id : 5616741356 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Triple points of neon and carbon dioxide are 24.57 K and 216.55 K, respectively. What are these temperatures Fahrenheit scales, respectively?

Options :

1. ✔ -415.44^0 F, -69.88^0 F

2. ✖ 415.44^0 F, 69.88^0 F

3. ✖ -69.88^0 F, -415.44^0 F

4. ✖ 69.88^0 F, 415.44^0 F

Question Number : 7 Question Id : 5616741357 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

In a given process for an ideal gas, $dW = 0$ and $dQ < 0$. Then for the gas:

Options :

1. ✔ Temperature will decrease
2. ✖ Volume will increase
3. ✖ Pressure will remain constant
4. ✖ Temperature will increase

Question Number : 8 Question Id : 5616741358 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The displacement of a particle varies with time according to the relation, $y = a\ Sin\ \omega t + b\ Cos\ \omega t$.

Options :

1. ✖ The motion is oscillatory but not SHM.

2. ✖ The motion is SHM with amplitude $a + b$

3. ✖ The motion is SHM with amplitude $a^2 + b^2$

4. ✔ The motion is SHM with amplitude $\sqrt{a^2 + b^2}$

Question Number : 9 Question Id : 5616741359 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A magnetic needle lying parallel to a magnetic field require W unit of work to turn it through 60^0. Calculate the torque required to keep the needle in this position.

Options :

1. ✖ 2 W
2. ✖ W
3. ✔ $\sqrt{3}$ W

4. ✖ $W/\sqrt{3}$

Question Number : 10 Question Id : 5616741360 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

When a magnet is being moved towards a coil, the induced emf does not depend upon

Options :

1. ✖ The number of turns of the coil.
2. ✖ The motion of the magnet.
3. ✖ The magnetic moment of the magnet.
4. ✔ The resistance of the coil.

Question Number : 11 Question Id : 5616741361 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A lens will not be able to produce an image when

Options :

1. ✖ index of refraction of lens is greater than index of refraction of surrounding medium.
2. ✖ index of refraction of lens is less than index of refraction of surrounding medium.
3. ✔ index of refraction of lens equals index of refraction of surrounding medium.
4. ✖ lens will always produce an image regardless of refraction.

Question Number : 12 Question Id : 5616741362 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The flux linked with a coil at any instant 't' is given by $\phi = 10t^2 - 50t + 250$. The induced emf at $t = 3$s is

Options :

1. ✖ 10 V
2. ✖ 190 V
3. ✖ -190 V
4. ✔ -10 V

Question Number : 13 Question Id : 5616741363 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A particle is projected at angle $\tan^{-1}\left(\frac{4}{3}\right)$ from a point O. The ratio of the maximum range to the maximum height of the particle is

Options :

1. ✖ 2
2. ✔ 3
3. ✖ 4
4. ✖ 5

Question Number : 14 Question Id : 5616741364 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

In terms of Rydberg's constant R, the wave number of the first Balmer line in H-spectrum is

Options :

1. ✖ R

2. ✖ $\frac{3R}{4}$

3. ✔ $\frac{5R}{36}$

4. ✖ $\frac{8R}{9}$

Question Number : 15 Question Id : 5616741365 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Four point charges $+8Q, -3Q, +5Q$ and $-10Q$ are kept inside a closed surface. What will be the net flux through the surface

Options :

1. ✖ 26 Vm
2. ✔ 0 Vm
3. ✖ 10 Vm
4. ✖ 8 Vm

Question Number : 16 Question Id : 5616741366 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A system of two point charges $+8\,\mu C$ and $-2\mu C$ is formed by placing these charges at positions $(-9\ cm, 0, 0)$ and $(+9\ cm, 0, 0)$ respectively. What is the binding energy of this system of charges?

Options :

1. ✖ $+49.3\ J$

2. ✖ $+1.6\ J$

3. ✔ $+0.8\ J$

4. ✖ $-0.8\ J$

Question Number : 17 Question Id : 5616741367 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Speed of electromagnetic waves in vacuum, in terms of permittivity of free space ϵ_0 and permeability of free space μ_0, is given as

Options :

1. ✖ $\sqrt{\mu_0\epsilon_0}$

2. ✔ $\frac{1}{\sqrt{\mu_0\epsilon_0}}$

3. ✖ $\frac{\mu_0}{\epsilon_0}$

4. ✖ $\frac{1}{\mu_0\epsilon_0}$

Question Number : 18 Question Id : 5616741368 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The magnetic flux linked with a coil at any instant t is $\phi = (6t^2 - 8t + 5)\,Wb$, the emf induced in the coil at $t = 2$ second is

Options :

1. ✔ $-16\,V$

2. ✖ $-24\,V$

3. ✖ $+12\,V$

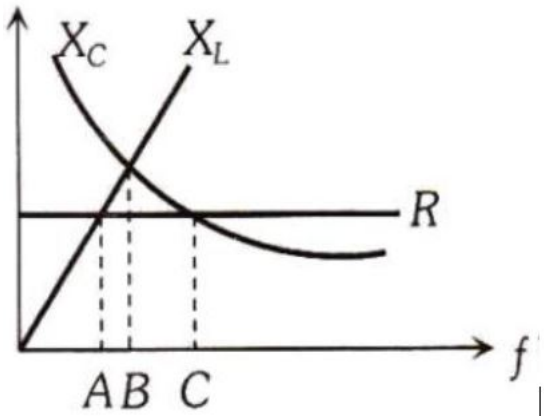
4. ✖ $+16\,V$

Question Number : 19 Question Id : 5616741369 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The figure shows variation of X_L & X_C with frequency f in a series LCR circuit. Then for what frequency point, the circuit is capacitive.



Options :

1. ✔ A

2. ✖ B

3. ✖ C

4. ✖ A and B

Question Number : 20 Question Id : 5616741370 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If the percentage error in the measurement of radius of a circle is 3%, then the percentage error in the calculation of its circumference and area respectively are

Options :

1. ✖ 6%; 4%

2. ✖ 3%; 4%

3. ✔ 3%; 6%

4. ✖ 6%; 9%

Question Number : 21 Question Id : 5616741371 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If kinetic energy of a body gets doubled when its speed is increased by 2 ms^{-1} then its speed before this change would have been

Options :

1. ✖ $(\sqrt{2}+1)\,ms^{-1}$

2. ✖ $2(\sqrt{2}-1)\,ms^{-1}$

3. ✔ $2(\sqrt{2}+1)\,ms^{-1}$

4. ✖ $(\sqrt{2}-1)\,ms^{-1}$

Question Number : 22 Question Id : 5616741372 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The minimum number of diodes required for a centre-tap full wave rectifier is

Options :

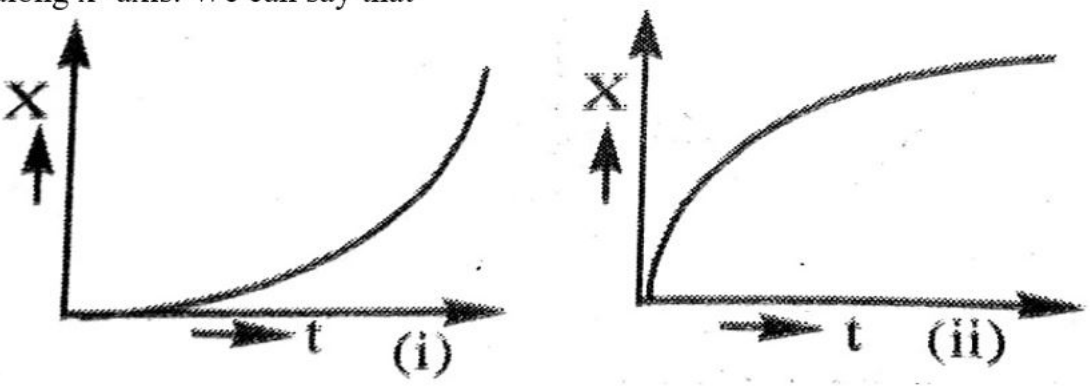
1. ✔ 2
2. ✖ 4
3. ✖ 1
4. ✖ 3

Question Number : 23 Question Id : 5616741373 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Figures (i) and (ii) below shows the displacement – time graphs of two particles moving along x- axis. We can say that



Options :

1. ✖ Both the particles are having uniformly accelerated motion
2. ✖ Both the particles are having a uniformly retarded motion.
3. ✔ Particle (i) is having a uniformly accelerated motion while (ii) is having a uniformly retarded motion
4. ✖ Particle (i) is having a uniformly retarded motion while (ii) is having a uniformly accelerated motion

Question Number : 24 Question Id : 5616741374 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A shell is fired from a cannon with a velocity V at an angle θ with the horizontal direction. At the highest point in its path, it explodes into two pieces of equal masses. One of the pieces retraces its path to the cannon. The speed of the other immediately after the explosion is

Options :

1. ✔ $3V \cos \theta$
2. ✖ $2V \cos \theta$
3. ✖ $4.5V \cos \theta$
4. ✖ $3.5V \cos \theta$

Question Number : 25 Question Id : 5616741375 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The length of a metal wire is l_1 when tension in it is T_1 and is l_2 when the tension is T_2. The natural length of the wire is

Options :

1. ✖ $(l_1+ l_2)/2$

2. ✖ $\sqrt{l_1 l_2}$

3. ✔ $\frac{l_1T_2-l_2T_1}{T_2-T_1}$

4. ✖ $\frac{l_1T_2+l_2T_1}{T_2+T_1}$

Question Number : 26 Question Id : 5616741376 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The coefficient of the linear expansion of a thin, uniform, metal rod is α. If the temperature of this rod is changed by Δt what will be the change for its moment of inertia I about a line parallel to itself?

Options :

1. ✖ Zero

2. ✖ $\alpha I \Delta t$

3. ✔ $2\alpha I \Delta t$

4. ✖ $3\alpha I \Delta t$

Question Number : 27 Question Id : 5616741377 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following statements is correct for any thermodynamic system?

Options :

1. ✖ The internal energy changes in all processes

2. ✔ Internal energy and entropy are state functions

3. ✖ The change in entropy can never be zero

4. ✖ The work done in an adiabatic process is always zero.

Question Number : 28 Question Id : 5616741378 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A string, fixed at both ends vibrates in a resonant mode with a separation of 2.0 cm between the consecutive nodes. For the next higher resonant frequency, this separation is reduced to 1.6 cm. Length of the string will be

Options :

1. ✔ 8.0 cm

2. ✖ 8.5 cm

3. ✖ 9.0 cm
4. ✖ 5.0 cm

Question Number : 29 Question Id : 5616741379 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A circular current loop of magnetic moment M is in an arbitrary orientation in an external magnetic field B. The work done by the magnetic field to rotate the loop by 30° about an axis perpendicular to its plane is

Options :

1. ✖ MB
2. ✖ $\frac{\sqrt{3}MB}{2}$
3. ✖ MB/2
4. ✔ Zero

Question Number : 30 Question Id : 5616741380 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

One requires 11 eV of energy to dissociate a carbon monoxide molecule into carbon and oxygen atoms. The minimum frequency of the appropriate electromagnetic radiation to achieve the dissociation lies in

Options :

1. ✖ Visible region
2. ✖ Infrared region
3. ✔ Ultraviolet region
4. ✖ Microwave region

Question Number : 31 Question Id : 5616741381 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

In a Young's double slit experiment, the source is white light. One of the holes is covered by a red filter and another by a blue filter. In this case

Options :

1. ✖ there shall be alternate interference patterns of red and blue
2. ✖ there shall be an interference pattern for red distinct from that for blue.
3. ✔ there shall be no interference fringes.
4. ✖ there shall be an interference pattern for red mixing with one for blue.

Question Number : 32 Question Id : 5616741382 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If percentage error in a, b, c & d is given by 2%, 4%, 1%, 3 % respectively and $Z = \frac{a^2 b}{c\,d}$, then percentage error in Z is given by

Options :

1. ✖ 2%
2. ✔ 12%
3. ✖ 4%
4. ✖ 21%

Question Number : 33 Question Id : 5616741383 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A ball of mass 10 g hits a hard surface vertically with a speed of 5 m/s and rebounds with the same speed. The ball remains in contact with the surface for 0.01 s. The average force exerted by the surface on the ball is

Options :

1. ✖ 100 N
2. ✖ 1 N
3. ✔ 10 N
4. ✖ 0.1 N

Question Number : 34 Question Id : 5616741384 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Weight of a body on surface of earth is 63 N. When this object is taken above earth surface at a height equals to half the radius, its weight becomes

Options :

1. ✔ 28 N
2. ✖ 10 N
3. ✖ 0 N
4. ✖ 63 N

Question Number : 35 Question Id : 5616741385 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

In a simple harmonic motion, when displacement is one-half the amplitude, what is the ratio of kinetic energy to the total energy ?

Options :

1. ✖ 4:1
2. ✔ 3:4
3. ✖ 1:4
4. ✖ 4:3

Question Number : 36 Question Id : 5616741386 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

An incompressible fluid flows steadily through a cylindrical pipe which has radius 2R at initial point A and radius R at end point B of the pipe further along the flow direction. If the velocity at point A is v, then the velocity at point B is

Options :

1. ✖ v/2
2. ✖ v
3. ✖ 2v
4. ✔ 4v

Question Number : 37 Question Id : 5616741387 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

In a potentiometer arrangement, a cell of emf 1.25 V gives a balance point at 35.0 cm length of the wire. If the cell is replaced by another cell and the balance point shifts to 63.0 cm, what is the emf of the second cell?

Options :

1. ✖ 0.7 V
2. ✖ 1 V
3. ✔ 2.25 V

4. ✖ 3,5 V

Question Number : 38 Question Id : 5616741388 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Double-convex lenses are to be manufactured from a glass of refractive index 1.55, with both faces of the same radius of curvature. What is the radius of curvature required if the focal length is to be 20cm?

Options :

1. ✖ 20 cm
2. ✖ 11 cm
3. ✖ 10 cm
4. ✔ 22 cm

Question Number : 39 Question Id : 5616741389 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

E_e, E_p, E_α are the respective kinetic energies of an electron, a proton, and an alpha particle. All these particles have the same De- Broglie wavelength. Then, which of the following is correct?

Options :

1. ✔ $E_\alpha < E_p < E_e$
2. ✖ $E_e < E_p < E_\alpha$
3. ✖ $E_e < E_\alpha < E_p$
4. ✖ $E_p < E_\alpha < E_e$

Question Number : 40 Question Id : 5616741390 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Two particles having equal masses, but the charges in the ratio 1:2 are projected perpendicular to a uniform magnetic field with the speeds in the ratio 2:3. The ratio of the radii of the circular paths along which two particles move is

Options :

1. ✔ 4:3
2. ✖ 3:4
3. ✖ 2:3
4. ✖ 3:2

Question Number : 41 Question Id : 5616741391 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A monkey 'A' climbs up and another monkey 'B' climbs down a rope hanging from a tree with same uniform acceleration separately. The tension in the both cases, climbing up and climbing down is same. g is acceleration due to gravity. If the ratio of the mass of monkey A to mass of monkey B is 2:3, then acceleration is

Options :

1. ✔ g/5

2. ✖ 5 g
3. ✖ 2g
4. ✖ g/2

Question Number : 42 Question Id : 5616741392 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The tension, and the diameter of a sonometer wire (which has a fundamental frequency υ) are doubled. Then what will be the new fundamental frequency?

Options :

1. ✖ 2 υ
2. ✔ υ
3. ✖ υ /2
4. ✖ 3 υ

Question Number : 43 Question Id : 5616741393 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A man of mass 60 kg stands on a weighing machine inside a lift which is moving
Upwards with uniform speed of 10 m/s
Upwards with uniform acceleration of 5 m/s^2
What will be reading in the scale in each case (g= 10 m/s^2)

Options :

1. ✖ 90 kg, 60 kg
2. ✖ 60 kg in each case
3. ✔ 60 kg, 90 kg
4. ✖ 90 kg in each case

Question Number : 44 Question Id : 5616741394 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

An automobile travelling with a speed of 50 km per hour, can brake to stop within a distance of 20 m. If car is going twice as fast i.e., 100 km per hour , the stopping distance will be

Options :

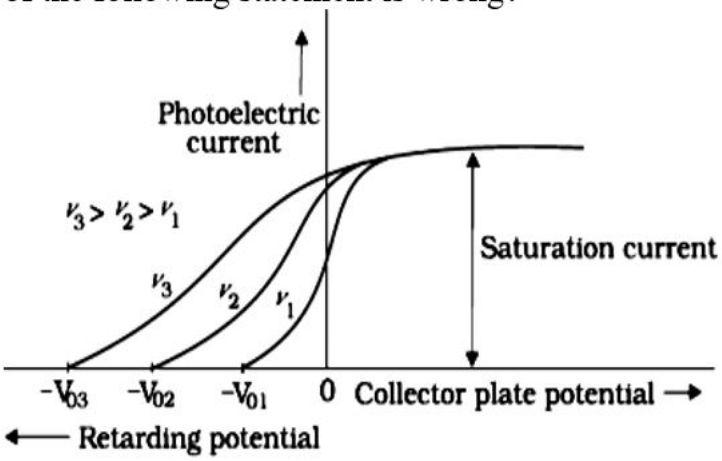
1. ✖ 20 m
2. ✖ 40 m
3. ✖ 60 m
4. ✔ 80 m

Question Number : 45 Question Id : 5616741395 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The graph below shows the variation of Photoelectric current with anode potential, which of the following statement is wrong?



Options :

1. ✔ Stopping potential does not depend upon the frequency
2. ✖ Saturation current does not depend upon the frequency
3. ✖ Intensity of light for all the three radiations are equal
4. ✖ Kinetic energy decreases as stopping potential increases

Question Number : 46 Question Id : 5616741396 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The displacement x (in metres) of a particle performing simple harmonic motion is related to time t (in seconds) as
$x=0.05 \cos (4\pi t + \pi/3)$.
The frequency of the motion will be

Options :

1. ✖ 0.5 Hz
2. ✖ 1.0 Hz
3. ✖ 1.5 Hz
4. ✔ 2.0 Hz

Question Number : 47 Question Id : 5616741397 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Light of wavelength 500 nm falls from a distant source on a single slit 0.5 mm wide. Find the fringe width of central maxima of the diffraction pattern if the separation between slit and screen is 2m.

Options :

1. ✔ 4 mm
2. ✖ 2 mm
3. ✖ 0.2 mm
4. ✖ 0.4 mm

Question Number : 48 Question Id : 5616741398 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Resistance in the two gaps of a meter bridge is 10 ohm and 30 ohm respectively. If the resistances are interchanged the balance point shifts by

Options :

1. ✖ 33.3 cm
2. ✖ 66.67 cm
3. ✖ 25 cm
4. ✔ 50 cm

Question Number : 49 Question Id : 5616741399 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The oscillating magnetic field in a plane electromagnetic wave is given as,
$B_y = (8 \times 10^{-6}) \sin [2 \times 10^{11} t + 300\pi x]$ tesla
Then, the wavelength of the electromagnetic wave will be

Options :

1. ✖ 0.80 cm

2. ✖ 1×10^{3}m

3. ✖ 2×10^{-2} cm

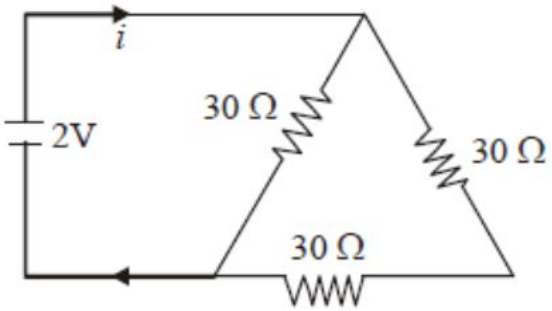
4. ✔ 0.67 cm

Question Number : 50 Question Id : 5616741400 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The current in the network of resistances as shown in the figure will be



Options :

1. ✖ 1/45 A

2. ✔ 1/10 A

3. ✖ 1/5 A

4. ✖ 1/15 A

Chemistry

Section Id :	56167431
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	50
Number of Questions to be attempted :	50
Section Marks :	50
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	56167431
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 5616741401 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following groups of elements, both the elements form oxides and nitrides on heating with air

Options :

1. ✔ Magnesium, Lithium
2. ✖ Magnesium, Sodium
3. ✖ Potassium, Lithium
4. ✖ Sodium, Calcium

Question Number : 52 Question Id : 5616741402 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Oxidation numbers of oxygen in OF_2 and H_2O_2 respectively are :

Options :

1. ✖ +2 and 0
2. ✔ +2 and -1
3. ✖ +2 and -2
4. ✖ -2 and -2

Question Number : 53 Question Id : 5616741403 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following compound's crystal shows both Frenkel & Schottky defects ?

Options :

1. ✖ NaCl
2. ✔ AgBr
3. ✖ AgI
4. ✖ AgCl

Question Number : 54 Question Id : 5616741404 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

During the denaturation of protein the structure of protein that remains intact is

Options :

1. ✔ Primary
2. ✖ Secondary
3. ✖ Quaternary
4. ✖ Tertiary

Question Number : 55 Question Id : 5616741405 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following statements is NOT true regarding glucose ?

Options :

1. ✖ The carbonyl group present in it is an aldehydic group
2. ✖ It is also known as dextrose
3. ✔ It is a laevorotatory compound.

4. ✖ Glucose exists in D-configuration

Question Number : 56 Question Id : 5616741406 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

NaCl & $MgSO_4$ belong to which type(s) of electrolyte respectively:

Options :

1. ✔ 1-1 and 2-2
2. ✖ 2-1 and 1-1
3. ✖ 1-1 and 1-1
4. ✖ 2-2 and 2-1

Question Number : 57 Question Id : 5616741407 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The correct order of bond dissociation enthalpy for group 17 elements is

Options :

1. ✔ $Cl_2 > Br_2 > F_2 > I_2$
2. ✖ $I_2 > Br_2 > Cl_2 > F_2$
3. ✖ $Br_2 > Cl_2 > I_2 > F_2$
4. ✖ $F_2 > Cl_2 > Br_2 > I_2$

Question Number : 58 Question Id : 5616741408 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The spin only magnetic moment of V^{+3} ion is

Options :

1. ✖ 1.73
2. ✔ 3.87
3. ✖ 2.83
4. ✖ 4.9

Question Number : 59 Question Id : 5616741409 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Actinoid contraction occurs due to poor shielding from

Options :

1. ✖ 4p electrons
2. ✖ 4d electrons
3. ✔ 5f electrons
4. ✖ 5d electrons

Question Number : 60 Question Id : 5616741410 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The shapes of $[Ni(CN)_4]^{2-}$ and $[NiCl_4]^{2-}$ respectively are

Options :

1. ✖ Tetrahedral and Square planar
2. ✖ Tetrahedral and Tetrahedral
3. ✖ Square planar and Square planar
4. ✔ Square planar and Tetrahedral

Question Number : 61 Question Id : 5616741411 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following is the correct statement about SN^2 reaction

Options :

1. ✖ Four coordinate transition state and inversion of configuration
2. ✖ Five coordinate transition state and carbocation intermediate
3. ✔ Five coordinate transition state and inversion of configuration
4. ✖ Four coordinate transition state and carbocation intermediate

Question Number : 62 Question Id : 5616741412 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Conversion of But-1-ene to alcohol by hydroboration-oxidation yields

Options :

1. ✔ Butan-1-ol
2. ✖ Propan-1-ol
3. ✖ Butan-2-ol
4. ✖ Pentan-2-ol

Question Number : 63 Question Id : 5616741413 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Cumene on oxidation with O_2 followed by acidification gives compound A wh reaction with $CHCl_3$ in the presence of NaoH followed by acidification gives con B. The compound A and B respectively are

Options :

1. ✔ Phenol and Salicylaldehyde
2. ✖ Benzoic acid and Salicylaldehyde.
3. ✖ Benzoic acid and Benzoylchloride
4. ✖ Phenol and Benzaldehyde

Question Number : 64 Question Id : 5616741414 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Choose the correct statement about the conjugate bases PhO^- $(CH_3)_3CO^-$

Options :

PhO^- is a weak base because due to resonance and $(CH_3)_3CO^-$ is strong base and unstable

1. ✔

Due to electronegative nature of O^- both PhO^- and $(CH_3)_3CO^-$ are stable and are strong bases

2. ✖

PhO^- and $(CH_3)_3CO^-$ are weak bases due to the electronegative nature of O^-

3. ✖

PhO^- is a strong base

and $(CH_3)_3CO^-$ is a

weak base

4. ✖

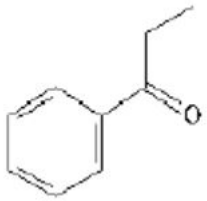
Question Number : 65 Question Id : 5616741415 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

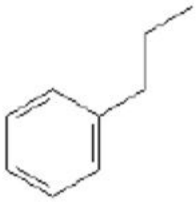
Question Label : Multiple Choice Question

The reaction of benzene with propanoyl chloride in the presence of anhydrous aluminum chloride, followed by Clemmensen reduction gives

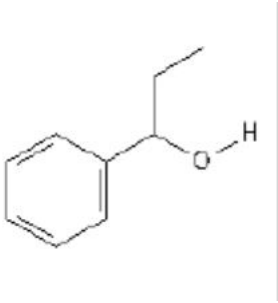
Options :



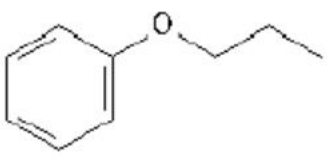
1. ✖



2. ✔



3. ✖



4. ✖

Question Number : 66 Question Id : 5616741416 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Number of angular nodes in the orbital whose first two quantum numbers are n=3, l=2 is

Options :

1. ✖ 3
2. ✔ 2
3. ✖ 1
4. ✖ 0

Question Number : 67 Question Id : 5616741417 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The geometry of $BeCl_2$, H_2O & BF_3 respectively are :

Options :

1. ✖ Bent, Linear and Tetrahedral
2. ✔ Linear, Bent.and Trigonal planar
3. ✖ Linear, Linear and See saw
4. ✖ Linear, Bent and T-shape

Question Number : 68 Question Id : 5616741418 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A compound contains 64.87% carbon, 13.51% hydrogen and the rest is oxygen. The molecular mass of the compound is 74g. The number of oxygen atom(s) in a single molecule of the compound is :

Options :

1. ✔ 1
2. ✖ 2
3. ✖ 3
4. ✖ 4

Question Number : 69 Question Id : 5616741419 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Positive resonance effect is shown by

Options :

1. ✔ $-NH_2$
2. ✖ $-NO_2$
3. ✖ $-CN$
4. ✖ $-CHO$

Question Number : 70 Question Id : 5616741420 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

In a first order reaction molar concentration of a reaction decreases from 0.1 to 0.01 in 100 seconds. The rate constant of the reaction is

Options :

1. $2.303\ s^{-1}$ ✖

2. $0.02303\ s^{-1}$ ✔

3. $0.2303\ s^{-1}$ ✖

4. $0.002303\ s^{-1}$ ✖

Question Number : 71 Question Id : 5616741421 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Consider the following equation:

$$Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$$

With reference to the above, which of the following is the correct statement?

Options :

1. Zn is reduced to Zn^{2+} ✖

2. Zn is oxidized to Zn^{2+} ✔

3. Cu^{2+} is oxidized to Cu ✖

4. Zn is less electro positive than Cu ✖

Question Number : 72 Question Id : 5616741422 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The standard reduction potentials for Zn^{2+} | Zn, Ni^{2+} | Ni and Fe^{2+} | Fe are -0.76, -0.23 and -0.44 respectively. The reaction : $X + Y^{2+} \rightarrow X^{2+} + Y$ will be spontaneous when

Options :

1. ✖ $X = Ni$, $Y = Zn$
2. ✖ $X = Fe$, $Y = Zn$
3. ✔ $X = Zn$, $Y = Ni$
4. ✖ $X = Ni$, $Y = Fe$

Question Number : 73 Question Id : 5616741423 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The absolute change in the number of carbon atoms during Hoffmann bromamide degradation reaction

Options :

1. ✔ 1
2. ✖ 2
3. ✖ 3
4. ✖ 4

Question Number : 74 Question Id : 5616741424 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The product obtained when $NaOCH_2CH_3$ is reacted with CH_3CH_2Br, is

Options :

1. ✖ $CH_3CH_2CH_2CH_3$
2. ✖ $CH_3CH_2OCH_3$
3. ✖ $CH_3C(CH_3)=CH2$
4. ✔ $CH_3CH_2OCH_2CH_3$

Question Number : 75 Question Id : 5616741425 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The correct arrangement of the ligands in order of increasing field strength according to the spectrochemical series is

Options :

1. ✖ $SCN^- > H_2O > NH_3 > CO$
2. ✔ $CO > NH_3 > H_2O > SCN^-$

3. ✖ $SCN^- > NH_3 > CO > H_2O$

4. ✖ $CO > SCN^- > NH_3 > H_2O$

Question Number : 76 Question Id : 5616741426 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following will be least reactive in nucleophilic substitution?

Options :

1. ✖ $CH_3CH_2CH_2Cl$

2. ✖ $(CH_3)_3CCl$

3. ✖ $CH_2=CHCH_2Cl$

4. ✔ $CH_2=CHCl$

Question Number : 77 Question Id : 5616741427 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following gives the iodoform test?

Options :

1. ✖ CH_3OH

2. ✔ $CH_3COCH_2CH_3$

3. ✖ $HCHO$

4. ✖ CH_3COOH

Question Number : 78 Question Id : 5616741428 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The solubility product of a sparingly soluble salt AX_2 is 3.2×10^{-11}. Its solubility (in mole L^{-1}) is

Options :

1. ✖ 3.1×10^{-4}

2. ✔ 2×10^{-4}

4×10^{-4}

3. ✖

5.6×10^{-6}

4. ✖

Question Number : 79 Question Id : 5616741429 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following mixture solution has pH = 1.0

Options :

100 ml of M/10 HCl

+ 100 ml of M/10

NaOH

1. ✖

55 ml of M/10 HCl

+ 45 ml of M/10

NaOH

2. ✖

10 ml of M/10 HCl

+ 90 ml of M/10

NaOH

3. ✖

75 ml of M/5 HCl +

25 ml of M/5 NaOH

4. ✔

Question Number : 80 Question Id : 5616741430 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which statement is correct at constant T, for a reaction:

$CO\ (g) + \frac{1}{2}\ O_2\ (g) \rightarrow CO_2(g)$

Options :

1. ✖ $\Delta H = \Delta U$

2. ✔ $\Delta H < \Delta U$

3. ✖ $\Delta H > \Delta U$

4. ✖ ΔH is independent of physical state of CO and CO_2

Question Number : 81 Question Id : 5616741431 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

An organic compound contains C = 40%, H = 6.7% and remaining is oxygen. What is the empirical formula?

Options :

1. ✔ CH_2O

2. ✖ C_2H_6O

3. ✖ $C_3H_4O_2$

4. ✖ C_2H_4O

Question Number : 82 Question Id : 5616741432 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Four metals A, B, C, D have standard electrode potential as -3.05, -1.66, -0.40, +0.8V respectively. The metal that will be most reducing is

Options :

1. ✔ A
2. ✖ B
3. ✖ C
4. ✖ D

Question Number : 83 Question Id : 5616741433 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question
The hybrid states of C in diamond and graphite are respectively
Options :
1. ✖ sp^3, sp^3
2. ✖ sp^2, sp^2
3. ✖ sp^2, sp^3
4. ✔ sp^3, sp^2

Question Number : 84 Question Id : 5616741434 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
Question Label : Multiple Choice Question
The correct IUPAC name for 3- hydroxy- 3- ethyl -3- methyl propane is
Options :
1. ✖ 2-hydroxy -2- ethyl butane
2. ✔ 3-methyl pentan-3-ol
3. ✖ 3 hydroxy 3 methane butan-2-ol
4. ✖ 2-hydroxy -2- ethyl pentane

Question Number : 85 Question Id : 5616741435 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
Correct Marks : 1 Wrong Marks : 0
Question Label : Multiple Choice Question
Consider an endothermic reaction: $X \rightarrow Y$

With activation energies E_b and E_f respectively for the backward and forward reaction respectively. In general,

Options :
1. ✔ $E_b < E_f$
2. ✖ $E_b > E_f$
3. ✖ $E_b = E_f$
4. ✖ There is no definite relation between E_b and E_f

Question Number : 86 Question Id : 5616741436 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

An organic compound (A) on nitration followed by reduction with sn/HCl gives compound (B). (B) on treatment with $CHCl_3$ and alcoholic KOH gives (C). (C) on catalytic reaction gives N-methyl-amiline. The compound A is

Options :

1. ✖ Nitrobenzene
2. ✖ Aniline
3. ✖ Methylamine
4. ✔ Benzene

Question Number : 87 Question Id : 5616741437 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Increasing the temperature of a aqueous solution will cause

Options :

1. ✖ Molality to increase
2. ✔ Molarity to decrease
3. ✖ Mole fraction to decrease
4. ✖ Percentage by weight to decrease

Question Number : 88 Question Id : 5616741438 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following has the maximum number of unpaired electrons

Options :

1. ✖ Mg^{2+}
2. ✖ Ti^{3+}
3. ✖ V^{3+}
4. ✔ Fe^{2+}

Question Number : 89 Question Id : 5616741439 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

What is the weight of 3.01×10^{23} molecules of ammonia ?

Options :

1. ✖ 17 gm
2. ✔ 8.5 gm
3. ✖ 34 gm
4. ✖ None of these

Question Number : 90 Question Id : 5616741440 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time

: N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The orbital having m = -2 should not be present in the following sub-shell

Options :

1. ✖ d
2. ✖ f
3. ✖ g
4. ✔ p

Question Number : 91 Question Id : 5616741441 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

However great the pressure, a gas cannot be liquified above its

Options :

1. ✖ Boyle temperature
2. ✖ Inversion Temperature
3. ✔ Critical temperature
4. ✖ Room temperature

Question Number : 92 Question Id : 5616741442 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A gas occupies a volume of 2.4 L at a pressure of 740 mm of Hg. Keeping the temperature constant, the volume at standard pressure is:

Options :

1. ✖ 2.4 L
2. ✔ 2.34 L
3. ✖ 2.5 L
4. ✖ 1.2 L

Question Number : 93 Question Id : 5616741443 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

When Phenol is treated with $CHCl_3$ and NaOH, the product formed is

Options :

1. ✖ Benzaldehyde
2. ✔ Salicylaldehyde
3. ✖ Salicylic acid
4. ✖ Benzoic acid

Question Number : 94 Question Id : 5616741444 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

One of the products of Aldol Condensation reaction of a mixture of ethanal and propanal is

Options :

1. ✔ 2-Methylbut-2-enal
2. ✖ But-3-enal
3. ✖ 2-Methylbut-3-enal
4. ✖ 3-Methylbut-2-enal

Question Number : 95 Question Id : 5616741445 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Aniline reacts with concentrated sulphuric acid to form _____which on heating with sulphuric acid at 453-473K produce _____.

Options :

1. ✖ anilinesulphate and p-aminobenzene sulphonic acid
2. ✔ anilinium hydrogensulphate and p-aminobenzene sulphonic acid
3. ✖ anilinium hydrogensulphate and p-aminobenzene sulphonate
4. ✖ anilinium sulphate and p-aminobenzene sulphonic acid

Question Number : 96 Question Id : 5616741446 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

896 mL vapour of a hydrocarbon 'A' having carbon 87.80% and hydrogen 12.19% 3.28g at STP. Hydrogenation of 'A' gives 2-methylpentane.Also 'A' on hydration presence of H_2SO_4 and $HgSO_4$ gives a ketone 'B'having molecular formula C_6H_{12} The ketone 'B' gives a positive iodoform test. Find the structure of 'A'.

Options :

1. ✔ $(CH_3)_2CH\text{-}CH_2\text{-}C\equiv CH$

2. ✖ $(CH_3)_2CHC\equiv C\text{-}\ CH_2CH_3$

3. ✖ $CH_3CH_2\text{-}\ C\equiv C\text{-}\ CH_3$

4. ✖ $CH_3CH_2CH_2\text{-}\ C\equiv C\text{-}H$

Question Number : 97 Question Id : 5616741447 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Experimental rate expression of chlorination of chloroform is

Options :

1. ✖ $Rate = k\,[CHCl_3]\,[Cl_2]$

2. ✖ $Rate = k\,[CHCl_3]^{½}\,[Cl_2]$

3. ✔ $Rate = k\,[CHCl_3]\,[Cl_2]^{½}$

4. ✖ $Rate = k\,[CHCl_3]^{½}\,[Cl_2]^{½}$

Question Number : 98 Question Id : 5616741448 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

In the reaction,

$$R - OH + HX \rightarrow RX + H_2O$$

The reactivity of alcohols is,

Options :

1. ✔ Tertiary > Secondary > Primary

2. ✖ Tertiary < Secondary < Primary

3. ✖ Tertiary < Secondary > Primary

4. ✖ Secondary > Primary > Tertiary

Question Number : 99 Question Id : 5616741449 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Nuclear acids are polymers of

Options :

1. ✔ Nucleotides
2. ✖ Nucleosides
3. ✖ Nuclei of heavy metals
4. ✖ Proteins

Question Number : 100 Question Id : 5616741450 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Choose the correct statement

Options :

1. ✖ Sucrose is a disaccharide and reducing in nature
2. ✖ Maltose is a disaccharide and non-reducing in nature
3. ✔ Glucose is a monosaccharide has an aldehydic group and is a reducing sugar
4. ✖ Fructose is a monosaccharide has an aldehydic group and is a reducing sugar

Mathematics

Section Id :	56167432
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	50
Number of Questions to be attempted :	50
Section Marks :	50
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	56167432
Question Shuffling Allowed :	Yes

Question Number : 101 Question Id : 5616741451 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If $f:R \to R$ by $f(x) = x^2 + 1$ and $g: R \to R$ by $g(x) = x + 2$ then $(fog)(2)$ is

Options :

1. ✖ 15
2. ✖ 16
3. ✔ 17
4. ✖ 18

Question Number : 102 Question Id : 5616741452 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The value of $\frac{1-tan^2 15^0}{1+tan^2 15^0}$ is:

Options :

1. ✖ 1

2. ✖ $\sqrt{3}$

3. ✔ $\frac{\sqrt{3}}{2}$

4. ✖ 2

Question Number : 103 Question Id : 5616741453 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Which of the following is true?

Options :

1. ✖ $\sin 1^0 > \sin 1$

2. ✔ $\sin 1^0 < \sin 1$

3. ✖ $\sin 1^0 = \sin 1$

4. ✖ $\cos 1^0 < \cos 1$

Question Number : 104 Question Id : 5616741454 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

For any two sets A and B, $A \cap (A \cup B)'$ is equal to

Options :

1. ✖ A

2. ✔ ϕ

3. ✖ B

4. ✖ $A \cap B$

Question Number : 105 Question Id : 5616741455 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The $\cos x = -\frac{4}{5}, \pi < x < \frac{3\pi}{2}$, then $\cos\frac{x}{2}$ is

Options :

1. ✖ $\frac{3}{\sqrt{10}}$

2. ✔ $-\frac{1}{\sqrt{10}}$

3. ✖ $\frac{1}{\sqrt{10}}$

4. ✖ $\frac{-3}{\sqrt{10}}$

Question Number : 106 Question Id : 5616741456 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If $S = \{1,2,3, \ldots, 100\}$. the number of non − empty subsets A of S such that the product of elements in A is even is

Options :

1. ✖ $2^{50} - 1$

2. ✔ $2^{50}(2^{50} - 1)$

3. ✖ $2^{100} - 1$

4. ✖ 2^{50}

Question Number : 107 Question Id : 5616741457 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Let R be relation defined on the set of natural number N as follows:
$R = \{(x,y)/x \in N, y \in N, 2x + y = 41\}$ then R is

Options :

1. ✖ reflexive, symmetric but not transitive

2. ✖ symmetric and transitive but not reflexive

3. ✖ equivalence relation

4. ✔ neither reflexive, nor symmetric and nor transitive.

Question Number : 108 Question Id : 5616741458 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Let A={1,2,3}, then the number of equivalence relations in set A containing (1,2) and (2,1) is

Options :

1. ✖ 1
2. ✔ 2
3. ✖ 3
4. ✖ 0

Question Number : 109 Question Id : 5616741459 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The value of $\sin^{-1}\left(\cos\frac{53\pi}{5}\right)$ is

Options :

1. ✔ $\frac{\pi}{10}$
2. ✖ $\frac{3\pi}{5}$
3. ✖ $-\frac{\pi}{10}$
4. ✖ $\frac{\pi}{5}$

Question Number : 110 Question Id : 5616741460 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The value of $\tan 1° \tan 2° \tan 3° \ldots \tan 89°$ is

Options :

1. ✖ 0
2. ✔ 1
3. ✖ $\frac{1}{2}$
4. ✖ $\frac{1}{3}$

Question Number : 111 Question Id : 5616741461 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If A is matrix of order $m \times n$ and B is a matrix such that AB' and $B'A$ are both defined, then order of matrix B is

Options :

1. ✖ $m \times m$

2. ✖ $n \times n$

3. ✖ $n \times m$

4. ✔ $m \times n$

Question Number : 112 Question Id : 5616741462 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The number of words from the letters of the word 'BHARAT' in which B & H will never come together, is

Options :

1. ✖ 360
2. ✔ 240
3. ✖ 120
4. ✖ 60

Question Number : 113 Question Id : 5616741463 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If the 7^{th} term of a Geometric Progression is 9, then the product of first 13 terms is:

Options :

1. ✖ 7^9

2. ✖ 9^7

3. ✖ 13^9

4. ✔ 9^{13}

Question Number : 114 Question Id : 5616741464 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If the p^{th}, q^{th} and r^{th} terms of a G.P. are a, b and c respectively then the value of $a^{q-r}.b^{r-p}.c^{p-q}$ is:

Options :

1. ✖ 0
2. ✔ 1
3. ✖ a.b.c

4. ✖ $\frac{1}{a.b.c}$

Question Number : 115 Question Id : 5616741465 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The value of $\frac{i^{4n+1}-i^{4n-1}}{2}$ is

Options :

1. ✖ 1
2. ✖ 0
3. ✔ i
4. ✖ - i

Question Number : 116 Question Id : 5616741466 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

There are two values of a which makes determinant , $\Delta = \begin{vmatrix} 1 & -2 & 5 \\ 2 & a & -1 \\ 0 & 4 & 2a \end{vmatrix} = 86$, then the sum of these numbers is

Options :

1. ✖ 4
2. ✖ 5
3. ✔ -4
4. ✖ 9

Question Number : 117 Question Id : 5616741467 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If $A = [a_{ij}]$ is a square matrix of order 2 such that $a_{ij} = \begin{cases} 1, \text{when } i \neq j \\ 0, \text{when } i = j \end{cases}$, then A^2 is

Options :

1. ✖ $\begin{bmatrix} 1 & 0 \\ 1 & 0 \end{bmatrix}$
2. ✖ $\begin{bmatrix} 1 & 1 \\ 0 & 0 \end{bmatrix}$
3. ✖ $\begin{bmatrix} 1 & 1 \\ 1 & 0 \end{bmatrix}$
4. ✔ $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

Question Number : 118 Question Id : 5616741468 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If $a_1, a_2, a_3 \ldots a_{20}$ are in Arithmetic Progressionand $a_1 + a_{20} = 45$, then $a_1 + a_2 + a_3 + \cdots + a_{20}$ is equal to

Options :

1. ✔ 450
2. ✖ 900
3. ✖ 350
4. ✖ 630

Question Number : 119 Question Id : 5616741469 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If $\vec{a}+\vec{b}+\vec{c} = 0$, $|\vec{a}| = 3$, $|\vec{b}| = 5$ and $|\vec{c}| = 7$, then the angle between $\vec{a}$ and $\vec{b}$ is

Options :

1. ✔ π
2. ✖ $\frac{\pi}{3}$
3. ✖ $\frac{\pi}{4}$
4. ✖ $\frac{\pi}{6}$

Question Number : 120 Question Id : 5616741470 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If $\frac{|x-2|}{x-2} \geq 0, x \in R$ then

Options :

1. ✖ $x \in (-\infty, 2)$
2. ✖ $x \in [2, \infty)$
3. ✖ $x \in (-\infty, 2]$
4. ✔ $x \in (2, \infty)$

Question Number : 121 Question Id : 5616741471 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

There are 14 points in the plane of which 6 are collinear. How many different straight lines can be formed by joining these 14 points in all the possible ways?

Options :

1. ✔ 77
2. ✖ 76
3. ✖ 84
4. ✖ 99

Question Number : 122 Question Id : 5616741472 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

$$\text{If } f(x) = \begin{cases} \dfrac{\sin 3x}{\tan 2x} & ; \text{ if } x < 0 \\ 2k & ; \text{ if } x = 0 \\ \dfrac{\log(1+3x)}{e^{2x}-1} & ; \text{ if } x > 0 \end{cases}$$

is continuous at $x = 0$, then the value of k is

Options :

1. ✖ $\frac{3}{2}$
2. ✔ $\frac{3}{4}$
3. ✖ $\frac{1}{3}$
4. ✖ $\frac{1}{2}$

Question Number : 123 Question Id : 5616741473 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The order and degree of differential equation $5\left(\frac{d^2y}{dx^2}\right)^3 + \left(\frac{dy}{dx}\right)^4 - \cos\left(\frac{dy}{dx}\right) + 2 = 0$ are:

Options :

1. ✖ Order is 3, Degree is 4
2. ✖ Order is 2, Degree is 4
3. ✖ Order is 2, Degree is 3

4. ✔ Order is 2, Degree is not defined

Question Number : 124 Question Id : 5616741474 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If $x \in R$, the minimum values of the expression $3^x + 3^{(1-x)}$ is

Options :

1. ✔ $2\sqrt{3}$
2. ✖ $3\sqrt{2}$
3. ✖ $3\sqrt{3}$
4. ✖ $2\sqrt{2}$

Question Number : 125 Question Id : 5616741475 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The value of the integral $\int e^{\tan^{-1}x}\left(\frac{1+x+x^2}{1+x^2}\right)dx$ is:

Options :

1. ✔ $xe^{\tan^{-1}x} + c$
2. ✖ $x^2e^{\tan^{-1}x} + c$
3. ✖ $\frac{1}{x}e^{\tan^{-1}x} + c$
4. ✖ $\frac{1}{x^2}e^{\tan^{-1}x} + c$

Question Number : 126 Question Id : 5616741476 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The area of the region bounded by the curves $y^2 = 9x$ *and* $y = 3x$

Options :

1. ✖ $\frac{3}{2}$
2. ✖ $\frac{5}{2}$

3. ✖ $\frac{7}{2}$

4. ✔ $\frac{1}{2}$

Question Number : 127 Question Id : 5616741477 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The derivative of sin^2x $w.r.t\ (logx)^2$ *is*

Options :

1. ✔ $\frac{xsinxcosx}{logx} + c$

2. ✖ $\frac{sinxcosx}{logx} + c$

3. ✖ $\frac{sinx}{logx} + c$

4. ✖ xlogx+c

Question Number : 128 Question Id : 5616741478 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

$\int \frac{dx}{sin^2xcos^2x}$ is equal to

Options :

1. ✖ tanx + cotx + c

2. ✖ $(\text{tanx} + \text{cotx})^2 + \text{c}$

3. ✔ tanx - cotx + c

4. ✖ $(\text{tanx} - \text{cotx})^2 + \text{c}$

Question Number : 129 Question Id : 5616741479 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The solution of the differential equation $(1+x^2)\frac{dy}{dx} - x = 2tan^{-1}x$

Options :

1. ✖ $\frac{3}{2}\log|3+x^2| + 2(tan^{-1}x)^2 + c$

2. ✖ $\frac{5}{2}\log|3+x^2| + 7(\tan^{-1}x)^2 + c$

3. ✔ $\frac{1}{2}\log|1+x^2| + (\tan^{-1}x)^2 + c$

4. ✖ $\frac{7}{2}\log|3+x^2| + 5(\tan^{-1}x)^2 + c$

Question Number : 130 Question Id : 5616741480 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Derivative of $\tan^{-1}(\sqrt{1+x^2} - x)$ with respect to x is

Options :

1. ✖ 1

2. ✖ -1

3. ✖ $\frac{1}{2}$

4. ✔ $-\frac{1}{2}$

Question Number : 131 Question Id : 5616741481 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The point on the curve $y^2 = x$ where the tangent makes an angle of $\frac{\pi}{4}$ with x-axis is

Options :

1. ✖ $(\frac{1}{2}, \frac{1}{4})$

2. ✔ $(\frac{1}{4}, \frac{1}{2})$

3. ✖ $(4,2)$

4. ✖ $(1,1)$

Question Number : 132 Question Id : 5616741482 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If $x = \sqrt{a^{\sin^{-1}\theta}}$ and $y = \sqrt{a^{\cos^{-1}\theta}}$ then $\frac{dy}{dx}$ is:

Options :

1. ✖ $\frac{x}{y}$

2. ✖ $\frac{y}{x}$

3. ✖ $-\frac{x}{y}$

4. ✔ $-\frac{y}{x}$

Question Number : 133 Question Id : 5616741483 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

$$\lim_{x\to 0} \frac{\tan 2x - x}{3x - \sin x}$$

Options :

1. ✖ 2

2. ✔ 1/2

3. ✖ -1/2

4. ✖ 1/4

Question Number : 134 Question Id : 5616741484 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The function f (x) = $\begin{cases} \frac{sinx}{x} + cosx\,, if\ x \neq 0 \\ k\ if x = 0 \end{cases}$

is continuous at x=0, then the value of k

Options :

1. ✖ 3

2. ✔ 2
3. ✖ 1
4. ✖ 4

Question Number : 135 Question Id : 5616741485 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If y = sin (x+9)/cos x, then $\frac{dy}{dx}$ at x = 0 is

Options :

1. ✔ cos 9
2. ✖ sin 9
3. ✖ 0
4. ✖ 1

Question Number : 136 Question Id : 5616741486 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The area bounded by the curve $y = 2\ \sin x$ and the $x - axis$ from $x = 0$ to $x = 2\pi$ is:

Options :

1. ✔ 8 sq. units
2. ✖ 10 sq. units
3. ✖ 12 sq. units
4. ✖ 14 sq. units

Question Number : 137 Question Id : 5616741487 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If $x_1,\ x_2,\ x_3$ and $y_1,\ y_2,\ y_3$ are both in G.P. with the same common ratio, then the points $(x_1, y_1),\ (x_2, y_2)$ and (x_3, y_3) lie on a:

Options :

1. ✔ Straight line
2. ✖ Circle
3. ✖ Parabola
4. ✖ Ellipse

Question Number : 138 Question Id : 5616741488 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Two vertices of a triangle are (-2, -1) and (3, 2) and third vertex lies on the line x + y=5. If the area of the triangle is 4 sq. units, then the third vertex is

Options :

1. ✔ (2,3) or (4,1)
2. ✖ (5,0) or (1,4)
3. ✖ (0,5) or (4,1)

(3,2) or (1,4)

4. ✖

Question Number : 139 Question Id : 5616741489 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The value of λ, for which the following lines

$\frac{5-x}{-4} = \frac{y-7}{4} = \frac{z+3}{-5}$ and $\frac{x-8}{7} = \frac{2y-8}{2} = \frac{z-5}{\lambda}$ are coplanar is

Options :

1. ✔ 3

2. ✖ -3

3. ✖ 7

4. ✖ -7

Question Number : 140 Question Id : 5616741490 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A straight line L through the point (3, -2) is inclined at an angle 60^0 to the line $\sqrt{3}x + y = 1$. If L also intersects the x- axis , then the equation of L is

Options :

1. ✖ $y + \sqrt{3}x + 2 - 3\sqrt{3} = 0$

2. ✖ $y - \sqrt{3}x + 2 - 3\sqrt{3} = 0$

3. ✔ $y - \sqrt{3}x + 2 + 3\sqrt{3} = 0$

4. ✖ $y + \sqrt{3}x + 2 + 3\sqrt{3} = 0$

Question Number : 141 Question Id : 5616741491 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The value of c for which the line $y = 3x + c$ touches the ellipse $16x^2 + y^2 = 16$ is

Options :

1. ✖ 1
2. ✔ 5
3. ✖ 4
4. ✖ 3

Question Number : 142 Question Id : 5616741492 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

Let $\vec{a}$ and $\vec{b}$ be two unit vectors and θ is the angle between them. Then $\vec{a} + \vec{b}$ is a unit vector if

Options :

1. ✖ $\theta = \frac{\pi}{4}$

2. ✖ $\theta = \frac{\pi}{3}$

3. ✖ $\theta = \frac{\pi}{2}$

4. ✔ $\theta = \frac{2\pi}{3}$

Question Number : 143 Question Id : 5616741493 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If $P(A \cap B) = 7/10$, $P(B) = 17/20$, $P(A/B) = ?$

Options :

1. ✔ 14/17

2. ✖ 17/20

3. ✖ 7/8

4. ✖ 1/8

Question Number : 144 Question Id : 5616741494 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A bag contains 4 red and 6 black balls. A ball is drawn at random from the bag, its colour is observed and this ball along with two additional balls of same colour is returned to the bag. If now a ball is drawn at random from the bag , then the probability that this drawn ball is red, is

Options :

1. ✖ $\frac{1}{5}$

2. ✖ $\frac{3}{4}$

3. ✖ $\frac{4}{5}$

4. ✔ $\frac{2}{5}$

Question Number : 145 Question Id : 5616741495 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

There are 5 positive numbers and 6 negative numbers. Three numbers are chosen at random and multiplied. The probability that the product being a negative number is

Options :

1. ✖ $\frac{11}{24}$

2. ✔ $\frac{16}{33}$

3. ✖ $\frac{17}{33}$

4. ✖ $\frac{16}{35}$

Question Number : 146 Question Id : 5616741496 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

A bag contains 4 balls. Two balls are drawn at random and found to be both are white. Then the probability that the bag contains all white balls is

Options :

1. ✖ $\frac{2}{5}$

2. ✖ $\frac{4}{5}$

3. ✖ $\frac{1}{5}$

4. ✔ $\frac{3}{5}$

Question Number : 147 Question Id : 5616741497 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

If 3 three numbers are selected from the first 13 natural numbers, then the probability that the numbers are in A.P. is:

Options :

1. ✖ $\frac{12}{143}$

2. ✖ $\frac{15}{143}$

3. ✔ $\frac{18}{143}$

4. ✖ $\frac{21}{143}$

Question Number : 148 Question Id : 5616741498 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The probabilities of A, B and C solving a problem are 1/3, 2/7 and 3/8 respectively. If all the three try to solve the problem simultaneously, then the probability that exactly two of them can solve it, is

Options :

1. ✔ $\frac{37}{168}$

2. ✖ $\frac{27}{168}$

3. ✖ $\frac{25}{168}$

4. ✖ $\frac{22}{168}$

Question Number : 149 Question Id : 5616741499 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The solution set of the inequality $-12 < 4 - \frac{3x}{-5} \leq 2$ is

Options :

1. ✖ $\left(-\frac{80}{3}, -\frac{10}{3}\right)$

2. $\left(-\frac{80}{3}, -\frac{10}{3}\right]$

3. $\left[\frac{80}{3}, -\frac{10}{3}\right)$

4. $\left[\frac{80}{3}, \frac{10}{3}\right)$

Question Number : 150 Question Id : 5616741500 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0

Question Label : Multiple Choice Question

The corner points of the feasible region determined by the system of linear constraints are (0.10), (5,5), (15,15), (0,20). Let $Z = px + qy$, where $p, q > 0$. Conditions on p and q so that the maximum value of Z occurs at both the points (15,15) and (0,20) is

Options :

1. $p = q$

2. $p = 2q$

3. $q = 2p$

4. $q = 3p$