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 25th June 2023 Shift 1
Subject Name :	BASLP PCM
Creation Date :	2023-06-25 13:28:19
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 :	56167429
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 :	56167481
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 :	56167481
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 1 Question Id : 5616743451 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 number of capacitors are connected in series between two points, all the capacitors possess same

Options :

1. ✖ Capacitance
2. ✖ Potential
3. ✔ Charge
4. ✖ Charge and potential both

Question Number : 2 Question Id : 5616743452 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 electric dipole consisting of two charges of ± 0.1 μC has a length of 2.0 cm. This dipole if the dipole is placed in the external field of 10^5 N/C. What is the maximum torque exerted on the dipole?

Options :

1. ✖ 4×10^5 Nm

2. ✖ 4×10^{-4} Nm

3. ✔ 2×10^{-4} Nm

4. ✖ 2×10^{-5} Nm

Question Number : 3 Question Id : 5616743453 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 uniform copper wire of length 1m and cross-sectional area of 0.5 mm² carries a current of 1 A. Suppose there are 8×10^{22} free electrons per cm³ in copper. How long will an electron take to drift from one end of the wire to the other end?

Options :

1. ✖ 1.6×10^3 s

2. ✖ 3.2×10^3 s

3. ✔ 6.4×10^3 s

4. ✖ 8.0×10^3 s

Question Number : 4 Question Id : 5616743454 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 long solenoid is formed by winding 20 turns per cm. What current is necessary to produce a magnetic field of 20 mT inside the solenoid?

Options :

1. ✔ 8.0 A

2. ✖ 7.0 A

3. ✖ 9.0 A

4. ✖ 10.0 A

Question Number : 5 Question Id : 5616743455 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 LCR circuit, capacitance is changed from C to 2 C. For resonance frequency to remain unchanged the induction should be changed from L to

Options :
1. ✖ 4L
2. ✖ 2L

3. ✔ L/2

4. ✖ L/4

Question Number : 6 Question Id : 5616743456 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 an AC generator, when plane of armature is perpendicular to the magnetic field

Options :
1. ✖ Both magnetic flux and emf are maximum
2. ✖ Both magnetic flux and emf are zero
3. ✖ Magnetic flux is zero and emf is maximum
4. ✔ Magnetic flux is maximum and emf is zero

Question Number : 7 Question Id : 5616743457 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 body of mass 0.5 kg mass is tied to one end of a massless inelastic string which is hanging vertically. What minimum horizontal speed should be imparted to the body such that it just reaches the top of the vertical circle with radius equal to the length (L= 2 m) of the string. (Take $g = 10 \, ms^{-2}$)

Options :

1. ✖ $2\sqrt{10} \, ms^{-1}$

2. ✖ $20 \, ms^{-1}$

3. ✔ $10 \, ms^{-1}$

$4\sqrt{10}\ ms^{-1}$

4. ✖

Question Label : Multiple Choice Question

Two waves with intensity ratio 25:4 produce interference. What is the ratio of maximum to minimum intensity?

Options :

1. ✖ 16:25

2. ✖ 25:4

3. ✖ 9:49

4. ✔ 49:9

Question Label : Multiple Choice Question

The conservative forces and the potential energy associated with them are related as

Options :

1. ✖ $\vec{F} = +\frac{dU}{dr}\hat{r}$

2. ✖ $\vec{F} = +\frac{d^2U}{dr^2}\hat{r}$

3. ✔ $\vec{F} = -\frac{dU}{dr}\hat{r}$

4. ✖ $\vec{F} = -\frac{d^2U}{dr^2}\hat{r}$

Question Label : Multiple Choice Question

If 120 J of heat is supplied to a thermodynamic system and its internal energy increases by 40 J, then the amount of work done is:

Options :

1. ✖ 150 J
2. ✔ 80 J
3. ✖ 110 J
4. ✖ 40 J

Question Label : Multiple Choice Question

If the density of hydrogen gas is $0.1 \, kgm^{-3}$ at atm. pressure is $1.0 \times 10^5 Nm^{-2}$, the rms speed of a hydrogen molecule is
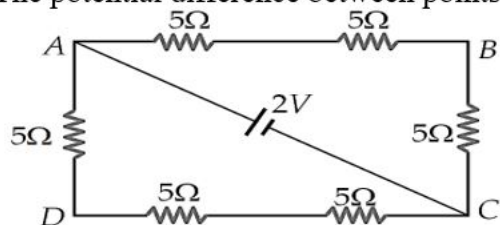
Options :

1. ✖ $1000 \, ms^{-1}$

2. ✖ $1360 \, ms^{-1}$

3. ✔ $1732 \, ms^{-1}$

4. ✖ $2320 \, ms^{-1}$

Question Number : 12 Question Id : 5616743462 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 potential difference between points A and B of the given figure is:

Options :

1. ✖ $\frac{2}{3}V$

2. ✖ $\frac{8}{9}V$

3. ✔ $\frac{4}{3}V$

4. ✖ $2V$

Question Number : 13 Question Id : 5616743463 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 wires of equal length are shaped into a square and a circle if they carry same current, the ratio of magnetic moment of these arrangements is

Options :

1. ✖ $2:\pi$

2. ✖ $\pi:2$

3. ✔ $\pi:4$

4. ✖ $4 : \pi$

A circular coil of 30 turns and radius 7.0 cm carrying current of 6.0 A is suspended vertically in a uniform horizontal magnetic field 1.0 T. The field lines make an angle of 30^0 with the normal of the coil. Calculate the magnitude of the counter torque must be applied to prevent the coil from turning

Options :

1. ✖ 2.39 N-m

2. ✖ 3.38 N-m

3. ✖ 3.12 N-m

4. ✔ 1.38 N-m

The ratio of voltage sensitivity V_S and current sensitivity I_S of a moving coil galv N-m anometer of resistance R_g is:

Options :

1. ✔ $\dfrac{1}{R_g}$

2. ✖ $\dfrac{1}{R_g^2}$

3. ✖ R_g

4. ✖ R_g^2

The ratio of no. of turns of primary coil to secondary coil in a transformer is 1:2. If a cell of 10 V is connected across the primary coil, then voltage across the secondary coil will be:
Options :
1. ✖ 3 V
2. ✖ 6 V

3. ✔ 20 V
4. ✘ 12 V

If a proton and an electron have the same de-Broglie wavelength. If K_p & K_e are their kinetic energies respectively then:

Options :

1. ✔ $$K_e > K_p$$

2. ✘ $$K_e = K_p$$

3. ✘ $$K_p > K_e$$

4. ✘ $$K_e = 2K_p$$

A ball is dropped from the top of a tower of height H. At a height $\frac{H}{2}$, the speed of the ball is $10\ ms^{-1}$. The value of H must be ($g = 10\ ms^{-2}$):

Options :

1. ✘ 8 m
2. ✔ 10 m
3. ✘ 12 m
4. ✘ 16 m

The period of revolution of a satellite of the earth is 10 hours if the separation between the earth and the satellite is increased to 4 times the previous value then what will be the new time period of the satellite?

Options :

1. ✘ 20 h
2. ✔ 80 h
3. ✘ 40 h
4. ✘ 160 h

The Young's modulus of the material of a wire of length L and radius r is $Y\ Nm^{-2}$. If the length and radius are reduced to $L/3$ and $r/2$, then its Young's modulus will become:

Options :

1. ✘ $Y/3$

2. ✔ Y
3. ✔ 2Y
4. ✘ 6Y

Note: For this question, ambiguity is found in question/answer. Candidate will get full marks for this question if any of the correct options are chosen.

Question Number : 21 Question Id : 5616743471 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

How much heat energy is required to convert 2 kg of ice at 0^0C into water at 0^0C? ($L_f = 80$ cal/g).

Options :

1. ✘ $8 \times 10^3 J$

2. ✘ $4.2 \times 10^3 J$

3. ✘ $3.35 \times 10^5 J$

4. ✔ $6.70 \times 10^5 J$

Question Number : 22 Question Id : 5616743472 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 plano-convex lens of focal length 16 cm is to be made. The material available has the refractive index 1.5. What should be the radius of curvature of the convex surface of the lens?

Options :

1. ✘ 12 cm
2. ✔ 8 cm
3. ✘ 24 cm
4. ✘ 16 cm

Question Number : 23 Question Id : 5616743473 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 object is thrown at an angle θ with horizontal having speed of projection u. The magnitude of the change in the y component of velocity between initial and highest point

Options :

1. ✘ $u\ cos\theta$

2. ✘ $2u\ cos\theta$

3. ✔ $u\ sin\theta$

4. ✘ $2u\ sin\theta$

Question Number : 24 Question Id : 5616743474 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 moment of inertia of a uniform circular wire of mass M and radius R about one of the diameter is 1 kgm^2. The radius of the ring is 10 cm. What is the moment of inertia of the ring about an axis passing through one edge and perpendicular to the plane of the circle?

Options :

1. ✔ 4 kgm^2

2. ✘ 2 kgm^2

3. ✘ √3 kgm^2

4. ✘ √2 kgm^2

Question Number : 25 Question Id : 5616743475 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 two soap bubbles of different radius are connected by a tube _____
Options :
1. ✘ Air flows from bigger bubble to the smaller bubble till the sizes become equal
2. ✘ Air flows from bigger bubble to the smaller bubble till the sizes are interchanged
3. ✔ Air flows from smaller bubble to the bigger bubble
4. ✘ There is no flow of air

Question Number : 26 Question Id : 5616743476 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 rms speed of oxygen at room temperature is about 500 m/s. The rms speed of hydrogen at the same temperature is about:

Options :

1. ✘ 125 m/s

2. ✔ 2000 m/s

3. ✘ 8000 m/s

4. ✘ 31 m/s

Question Number : 27 Question Id : 5616743477 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 subjected to two simple harmonic motions in the same direction having equal amplitudes and equal frequency. If the resultant amplitude is equal to the amplitudes of the individuals motions, then phase difference between individuals motions will be:

Options :

1. ✘ $\pi/3$

$$2\pi/3$$
2. ✔

$$\pi/6$$
3. ✖

$$\pi/4$$
4. ✖

Question Number : 28 Question Id : 5616743478 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

How would you arrange 48 cells each of e.m.f 2 V and internal resistance 1.5 Ω so as to pass maximum current through the external resistance of 2 Ω?

Options :
1. ✖ 2 cells in 24 groups
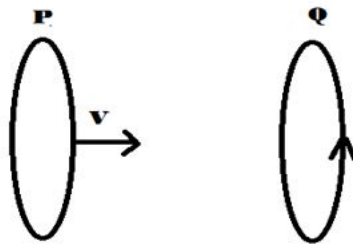2. ✖ 4 cells in 12 groups
3. ✔ 8 cells in 6 groups
4. ✖ 3 cells in 16 groups

Question Number : 29 Question Id : 5616743479 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 coils P and Q as shown in the Fig. A current starts flowing in Q as shown, when P is moved towards Q which is at rest. This current stops flowing when P stops moving. We can infer that

Options :
1. ✔ there is a constant current in the clockwise direction in P
2. ✖ there is a varying current in P
3. ✖ there is no current in P
4. ✔ there is a constant current in the counter clockwise direction in P
Note: For this question, ambiguity is found in question/answer. Candidate will get full marks for this question if any of the correct options are chosen.

Question Number : 30 Question Id : 5616743480 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 ray of light incident at an angle θ on a refracting face of a prism emerges from the other face normally. If the angle of the prism is 5° and the prism is made of a material of refractive index 1.5, the angle of incidence is

Options :
1. ✔ 7.5°

2. ✖ 5°

3. ✖ 15°

4. ✖ 2.5°

Question Number : 31 Question Id : 5616743481 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 proton, a neutron, an electron and an α-particle have same kinetic energy. Then their de Broglie wavelengths will be in the order of

Options :

1. ✖ $\lambda_p = \lambda_n > \lambda_e > \lambda_\alpha$

2. ✔ $\lambda_\alpha < \lambda_p = \lambda_n < \lambda_e$

3. ✖ $\lambda_e < \lambda_p = \lambda_n > \lambda_\alpha$

4. ✖ $\lambda_e = \lambda_p = \lambda_n = \lambda_\alpha$

Question Number : 32 Question Id : 5616743482 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 body projected vertically upwards with a velocity u returns to the starting point in 4 s. If acceleration due to gravity g= 10 m/s^2, then the value of velocity u is

Options :

1. ✖ 5 m/s

2. ✖ 10 m/s

3. ✖ 15m/s

4. ✔ 20m/s

Question Number : 33 Question Id : 5616743483 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 linear momentum of an object is increased by 50%, the change of percentage increase in Kinetic energy is

Options :

1. ✔ 125%

2. ✖ 225%

3. ✖ 25%

4. ✖ 100%

Question Number : 34 Question Id : 5616743484 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 is provided with 200 cal of heat and the work done by the system on the surrounding is 40 J. Then its internal energy

Options :

1. ✖ Increases by 600 J
2. ✖ Decreases by 600 J
3. ✔ Increases by 800 J
4. ✖ Decreases by 800 J

Question Number : 35 Question Id : 5616743485 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 velocity of sound in air at NTP is 330m/s. What will be its value, when the temperature is doubled and the pressure is halved?

Options :

1. ✖ 330m/s

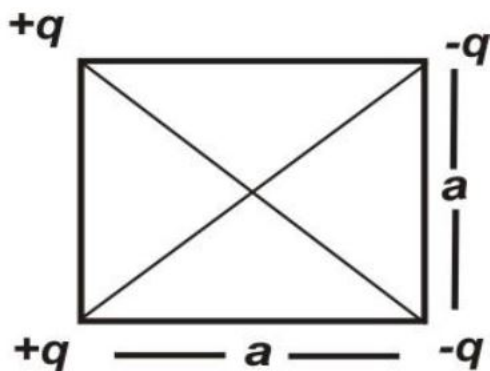2. ✔ $330 \sqrt{2}$ m/s

3. ✖ 165m/s

4. ✖ 660m/s

Question Number : 36 Question Id : 5616743486 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 potential at the centre of the square is

Options :

1. ✖ $\dfrac{1}{4\pi\varepsilon_0}\dfrac{q}{a}$

2. ✔ 0

3. ✖ $\dfrac{1}{4\pi\varepsilon_0}\dfrac{q}{\sqrt{2}a}$

4. ✖ $\dfrac{1}{4\pi\varepsilon_0}\dfrac{q}{4a}$

Question Number : 37 Question Id : 5616743487 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 variation of the instantaneous current I(t) and the instantaneous emf E(t) in a circuit is as shown in the following fig. Which of the following statements is correct?

Options :

1. ✖ The voltage lags behind the current by $\pi/2$

2. ✔ The voltage leads the current by $\pi/2$

3. ✖ The voltage leads the current by π
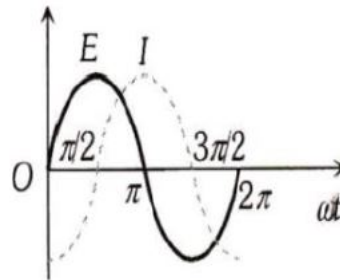
4. ✖ The voltage lags behind the current by π

Question Number : 38 Question Id : 5616743488 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 distance between the planes of the slits and the screen is D in a Young's double slit experiment. When the screen is moved to 4D, what is the effect on the band width of interference fringes?

Options :

1. ✖ Half of the original band width

2. ✔ Four times the original band width

3. ✖ Remains same

4. ✖ One fourth of original band width

Question Number : 39 Question Id : 5616743489 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 total energy of an electron in Hydrogen atom in the ground state is -13.6 eV. The kinetic energy of this electron is

Options :

1. ✖ -13.6 eV

2. ✖ 0

3. ✔ 13.6 eV

4. ✖ 6.8 eV

Question Number : 40 Question Id : 5616743490 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 wheel with 10 metallic spokes each 0.5 m long is rotated with a speed of 120 rev/min in a plane normal to the horizontal component of earth's magnetic field H_E at a place. If H_E = 0.4 G at the place, what is the induced emf between the axle and the rim of the wheel? Note that 1 G = 10^{-4} T.

Options :

1. ✖ 3.14 x 10^{-5} V

2. ✖ 6.28 x 10^{-3} V

3. ✔ 6.28 x 10^{-5} V

4. ✖ 3.14 x 10^{-3} V

Question Number : 41 Question Id : 5616743491 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 period of oscillation of seconds pendulum on the earth is 2 s. If it is taken to moon, its period of oscillation is

Options :

1. ✖ $\frac{2}{\sqrt{6}}$ s

2. ✔ $2\sqrt{6}$ s

$$\frac{\sqrt{6}}{2} \ s$$

3. ✖

$$6\sqrt{2} \ s$$

4. ✖

Question Number : 42 Question Id : 5616743492 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 an adiabatic process, the quantity which remains constant is

Options :

1. ✖ Volume
2. ✖ Temperature
3. ✖ Pressure
4. ✔ Total heat of the system

Question Number : 43 Question Id : 5616743493 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 6.0 kg box moving at 3.0 m/s on a horizontal, frictionless surface runs into a light spring of force constant 75 N/cm Use the work–energy theorem to find the maximum compression of the spring.

Options :

1. ✖ 4.25 cm
2. ✖ 17 cm
3. ✔ 8.5 cm
4. ✖ 6.5 cm

Question Number : 44 Question Id : 5616743494 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 capillary tube of radius r is immersed vertically in a liquid such that liquid rises in it to height h (less than the length of the tube). Mass of liquid in the capillary tube is m. If radius of the capillary tube is increased by 50%, then mass of liquid that will rise in the tube, is

Options :

1. ✖ 2/3 m

2. ✖ 4/9 m

3. ✖ 9/4 m

4. ✔ 3/2 m

Question Number : 45 Question Id : 5616743495 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

Lights of two different frequencies whose photons have energies 1 eV and 2.5 eV respectively successfully illuminates a metal surface whose work function is 0.5 eV, the ratio of maximum kinetic energies in the two cases will be:
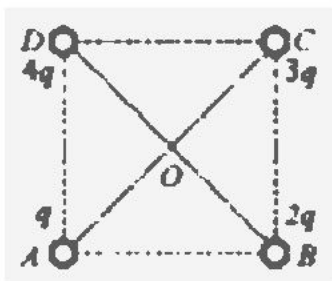
Options :

1. ✖   1:2

2. ✖   2:1

3. ✔   1:4

4. ✖   4:1

Question Number : 46 Question Id : 5616743496 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

Charges q, $2q$, $3q$ and $4q$ are placed at the corners A, B, C and D of a square as shown in the following figure. The direction of electric field at the centre of the square is parallel to side.
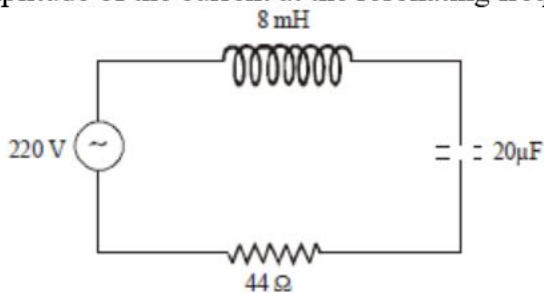

Options :
1. ✖ BD
2. ✔ BC
3. ✖ BA
4. ✖ AC

Question Number : 47 Question Id : 5616743497 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 the series LCR circuit shown in the figure, what is the resonance frequency and the amplitude of the current at the resonating frequency

Options :

1. ✖   2500rad/s and $5\sqrt{2}$A

2. ✔   2500 rad/s and 5/$\sqrt{2}$ A
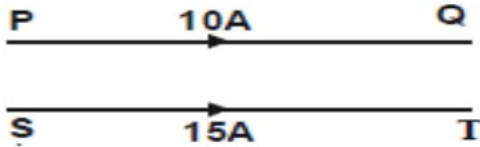
2500 rad/s and 5A

3. ✖

25 rad/s and 5A

4. ✖

Two long parallel wires PQ and ST, carrying like currents 10 A and 15 A respectively, are kept 30 cm apart each other, as shown in the figure. The force acting over a length of 5 m of the wire is

P   **10A**   **Q**

S   **15A**   **T**

Options :

5×10^{-4} N attraction

1. ✔

5×10^{-8} N attraction

2. ✖

5×10^{-8} N repulsion

3. ✖

5×10^{-4} N repulsion

4. ✖

The energy levels of an atom are as shown below with transitions A, B, C and D. Which of them will result in the transition of a photon of wavelength 275 nm?

0eV   A
-2eV   B   C
    -4.5eV
                D
    -10eV

Options :
1. ✖ A
2. ✔ B
3. ✖ C
4. ✖ D

In the following fig. the ratio of current in 3Ω and 1Ω resistances is–

Options :

1. ✖ 1/3

2. ✔ 2/3

3. ✖ 1
4. ✖ 2

Chemistry

Question Number : 51 Question Id : 5616743501 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

Treating a nitrile with Grignard's reagent followed by hydrolysis yields a/an

Options :
1. ✖ Aldehyde
2. ✖ Alcohol
3. ✔ Ketone
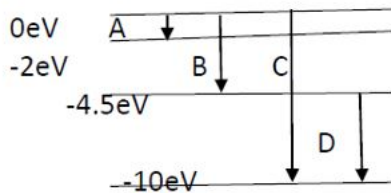4. ✖ Amine

Question Number : 52 Question Id : 5616743502 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

Acylation of N-Ethylethanamine with Ethanoyl Chloride in presence of pyridine produces

Options :

1. ✔ N,N-Diethylethanamide

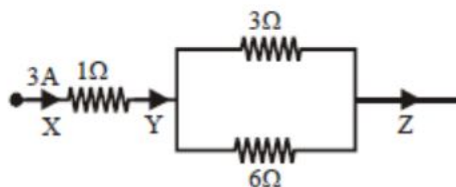2. ✖ N-Diethylethanamide

3. ✖ N,N-Diethylethanamine

4. ✖ Acetanilide

Question Number : 53 Question Id : 5616743503 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
Resorcinaol is common name of
Options :
1. ✖ Benzene-1,2-diol

2. ✖ Benzene-1,4-diol

3. ✖ 3-Methylphenol

4. ✔ Benzene-1,3-diol

Question Number : 54 Question Id : 5616743504 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

Nucleophilic Substitution of Alkyl Halide R-X with $LiAlH_4$ produces

Options :
1. ✖ R-Li
2. ✖ R-Al
3. ✖ Grignard Reagent
4. ✔ RH

Question Number : 55 Question Id : 5616743505 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

Calcite belongs to_____ crystal system.

Options :
1. ✖ Cubic
2. ✖ Tetragonal
3. ✔ Rhombohedral
4. ✖ Monoclinic

Question Number : 56 Question Id : 5616743506 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

1.00 g of a non-electrolyte solute dissolved in 50 g of benzene lowered the freezing point of benzene by 0.40 K. The freezing point depression constant of benzene is 5.12 K kg / mol. Find the molar mass of the solute.

Options :
1. ✖ 256 kg/mol

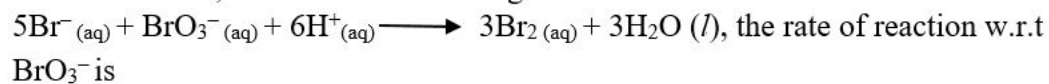2. ✖ 25.6 kg/mol

3. ✖ 25.6 g/mol

4. ✔ 256 g/mol

Question Number : 57 Question Id : 5616743507 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 the reaction, which of the following is true:

$5Br^-_{(aq)} + BrO_3^-_{(aq)} + 6H^+_{(aq)} \longrightarrow 3Br_{2(aq)} + 3H_2O\ (l)$, the rate of reaction w.r.t BrO_3^- is

Options :

1. ✖ Half the rate w.r.t Br^-

2. ✖ Same as that w.r.t H^+

3. ✔ One-third the rate of formation of Br_2

4. ✖ One fourth of the rate of formation of Water

Question Number : 58 Question Id : 5616743508 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

Dispersed phase and dispersion medium in Pumice stone is

Options :

1. ✖ Gas and Liquid
2. ✖ Solid and Liquid
3. ✖ Solid and Solid
4. ✔ Gas and Solid

Question Number : 59 Question Id : 5616743509 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 products of hydrolysis of XeF_4

Options :

1. ✔ $Xe + XeO_3 + HF + O_2$

2. ✖ $XeO_3 + HF$

3. ✖ $Xe + XeO_3 + O_2$

4. ✖ $Xe + HF + O_2$

Question Number : 60 Question Id : 5616743510 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

Conditions in Deacon's process are

Options :

1. ✖ Catalyst $CuCl_2$ at 723 K and 200 bar pressure

Catalyst V_2O_5 at
723 K at 1 bar
pressure

2. ✖

Catalyst K_2O &
Al_2O_3 at 700 K

3. ✖

Catalyst $CuCl_2$ at
723 K

4. ✔

Question Number : 61 Question Id : 5616743511 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 group 16, the symbol of element with atomic number 116 and placed below Po is

Options :
1. ✖ Mc
2. ✔ Lv
3. ✖ Ts
4. ✖ Og

Question Number : 62 Question Id : 5616743512 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 moment is associated with its spin angular momentum and orbital
angular momentum. Spin only magnetic moment value of Cr^{3+} ion is

Options :
1. ✖ 2.87 BM

2. ✖ 3.47 BM

3. ✖ 3.57 BM

4. ✔ 3.87 BM

Question Number : 63 Question Id : 5616743513 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 conductivity of 0.001028 mol / L acetic acid is 4.95×10^{-5} S / cm. Calculate its
dissociation constant if Λ^0m for acetic acid is 390.5 S cm^2 / mol.

Options :
1. ✔ 1.78×10^{-5} mol / L

2. ✖ 17.8×10^{-5} mol / L

3. ✖ 48.15 S cm^2 / mol

0.1233 S cm^2 / mol

4. ✖

Assertion: $([Fe(CN)_6]^{3-}$ ion shows magnetic moment corresponding to two unpaired electrons.
Reason: Because it has d^{2}sp^3 type hybridisation.

Options :

1. ✖
Assertion and reason both are true, reason is correct explanation of assertion

2. ✖
Assertion and reason both are true but reason is not the correct explanation of assertion

3. ✖
Assertion is true, reason is false

4. ✔
Assertion is false, reason is true

The Z_{eff} experienced by the electron decreases with the increase of _____.

Options :
1. ✔ n
2. ✖ l
3. ✖ ml
4. ✖ ms

Bond order in superoxide (O_2^-), di-oxygen (O_2) and peroxide (O_2^{2-}) respectively are

Options :

1. ✖
1, 1.5 and 2

2. ✔ 1.5, 2 and 1

3. ✖ 1, 2 and 1.5

4. ✖ 2, 1.5 and 2

Question Number : 67 Question Id : 5616743517 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

Calculate the molar solubility of $Ni(OH)_2$ in 0.10 M NaOH. The ionic product of $Ni(OH)_2$ is 2.0×10^{-15}.

Options :

1. ✖ 2.0×10^{-15} M

2. ✔ 2.0×10^{-13} M

3. ✖ 2.0×10^{-15} m

4. ✖ 2.0×10^{-10} M

Question Number : 68 Question Id : 5616743518 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

On increasing the pressure, in which direction will the gas phase reaction proceed to re-establish equilibrium, is predicted by applying the Le Chatelier's principle.
Consider the reaction $N_2 (g) + 3H_2 (g) \rightleftharpoons 2NH_3 (g)$
Which of the following is correct, if the total pressure at which the equilibrium is established, is increased without changing the temperature?

Options :
1. ✖ K will increase initially and decrease when pressure is very high
2. ✖ K will increase
3. ✖ K will decrease
4. ✔ K will remain same

Question Number : 69 Question Id : 5616743519 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 an adiabatic process, no transfer of heat takes place between system and surroundings. Choose the correct option for free expansion of an ideal gas under adiabatic condition from the following.

Options :

1. ✖ $q \neq 0, \Delta T = 0, w = 0$

2. ✔ $q = 0, \Delta T = 0, w = 0$

3. ✘ $q = 0, \Delta T < 0, w \neq 0$

4. ✘ $q = 0, \Delta T \neq 0, w = 0$

Question Number : 70 Question Id : 5616743520 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 which of the following compounds, an element exhibits two different oxidation states

Options :

1. ✘ NH_2OH

2. ✘ N_3H

3. ✘ N_2H_4

4. ✔ NH_4NO_3

Question Number : 71 Question Id : 5616743521 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

Among the Carbon, Silicon, Germanium and tin, the order of Catenation is,

Options :

1. ✔ $C \gg Si > Ge > Sn$

2. ✘ $C > Si > Sn \gg Ge$

3. ✘ $Si > C > Ge > Sn$

4. ✘ $C > Si > Sn > Ge$

Question Number : 72 Question Id : 5616743522 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

+R effect is shown by

Options :

1. ✘ $- CN$

2. ✖ –CHO

3. ✖ –NO$_2$

4. ✔ –NHCOR

Question Number : 73 Question Id : 5616743523 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

Heating of Carbolic acid with tricholoro methane and KOH gives 2-Hydroxybenzaldehyde. This reaction is known as:

Options :
1. ✖ Perkin reaction
2. ✖ Cannizzaro reaction
3. ✔ Reimer – Tiemann reaction
4. ✖ Kolbe – Schmidt reaction

Question Number : 74 Question Id : 5616743524 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 compound which is not formed when a mixture of n-butyl bromide and ethyl bromide treated with sodium metal in presence of dry ether is:
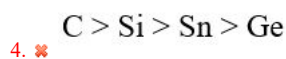
Options :
1. ✖ Butane
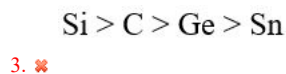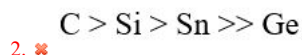2. ✖ Octane
3. ✖ Hexane
4. ✔ Ethane

Question Number : 75 Question Id : 5616743525 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

Chlorobenzene is formed by reaction of chlorine with benzene in the presence of AlCl$_3$. Which of the following species attack the benzene ring in this reaction:

Options :
1. ✖ Cl$^-$

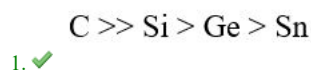2. ✔ Cl$^+$

3. ✖ AlCl$_3$

4. ✖ [AlCl$_4$]$^-$

Question Number : 76 Question Id : 5616743526 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 hybridization state on carbon atom of Methyl carbanion is
Options :
1. ✖ sp

2. ✗ sp^{2}d

3. ✓ sp^3

4. ✗ sp^2

Question Number : 77 Question Id : 5616743527 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 first order reaction has a half-life period of 34.65 s. Its rate constant is

Options :

1. ✗ 2×10^{-4} s^{-1}

2. ✗ 4×10^{-2} s^{-1}

3. ✗ 20 s^{-1}

4. ✓ 2×10^{-2} s^{-1}

Question Number : 78 Question Id : 5616743528 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 nucleoside is made up of
Options :
1. ✓ a base and sugar
2. ✗ a base and phosphoric acid
3. ✗ a sugar and phosphoric acid
4. ✗ a sugar, a base and phosphoric acid

Question Number : 79 Question Id : 5616743529 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

On hydrolysis,

Options :

1. ✓ Sucrose gives one molecule of fructose and one molecule of glucose; maltose gives two molecules of glucose

Sucrose gives two molecules of glucose; maltose gives two molecules of fructose

2. ✖

Sucrose gives two molecules of glucose; maltose give one molecule of fructose and one molecule of glucose

3. ✖

4. ✖ Both give two molecules of glucose

Question Number : 80 Question Id : 5616743530 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
Soap molecules form micelle around oil droplets in such a way that
Options :
1. ✔ Hydrophobic part is in the oil droplet and hydrophilic part is directed away from the oil
2. ✖ Hydrophilic part is in the oil droplet and hydrophobic part is directed away from the oil
3. ✖ Both hydrophilic and hydrophobic parts are away from the oil droplet
4. ✖ Micelle is non-ionic and does not interact with oil droplet

Question Number : 81 Question Id : 5616743531 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 oxidation state of I in IPO_4 is

Options :

1. ✖ $+1$

2. ✔ $+3$

3. ✖ $+5$

4. ✖ $+7$

Question Number : 82 Question Id : 5616743532 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 sequence of ionic mobility in the aqueous solution is
Options :

1. ✖ $K^+ > Na^+ > Rb^+ > Cs^+$

2. ✔ $Cs^+ > Rb^+ > K^+ > Na^+$

3. ✖ $Rb^+ > K^+ > Cs^+ > Na^+$

4. ✖ $Na^+ > K^+ > Rb^+ > Cs^+$

Question Number : 83 Question Id : 5616743533 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

Boron is unable to form BF_6^{3-} ion, because of

Options :
1. ✖ high ionization enthalpy
2. ✖ high electronegativity
3. ✖ low density
4. ✔ non –availability of d orbitals

Question Number : 84 Question Id : 5616743534 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
Aldehydes and ketones can be distinguished by
Options :
1. ✖ Solubility in Water
2. ✖ Mollisch test
3. ✔ Tollen's test

4. ✖ Bromorform test

Question Number : 85 Question Id : 5616743535 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 a hypothetical reaction P➔ Q the rate constant is 0.55 sec^{-1}. If the concentration of P is reduced to half, then the value of rate constant will be:

Options :
1. ✔ $0.55sec^{-1}$

2. ✖ $0.275sec^{-1}$

3. ✖ $1.10\ sec^{-1}$

4. ✖ $2.20sec^{-1}$

Question Number : 86 Question Id : 5616743536 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0
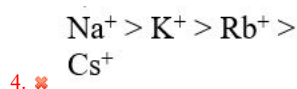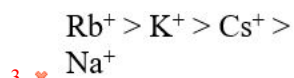**Correct Marks : 1 Wrong Marks : 0**
Question Label : Multiple Choice Question

According to STP the value of molar volume of an ideal gas is:

Options :

1. ✔ 22.4 L mol^{-1}

2. ✔ 22.7 L mol^{-1}

3. ✘ 24.4 L mol^{-1}

4. ✘ 24.7 L mol^{-1}

Note: For this question, ambiguity is found in question/answer. Candidate will get full marks for this question if any of the correct options are chosen.

Question Number : 87 Question Id : 5616743537 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 enthalpy of combustion of methane gas, graphite and dihydrogen gas at 298K are determined to be -890KJ/mole, -393.5KJ/mole and -285.8KJ/mole respectively. The enthalpy of formation of methane gas will be:

Options :

1. ✔ -74.8 KJ/mol

2. ✘ 74.8 KJ/mol

3. ✘ – 748.0 KJ/mol

4. ✘ 748.0 KJ/mol

Question Number : 88 Question Id : 5616743538 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 among the following will contribute towards stability of carbocation bearing alkyl groups attached to it?

Options :
1. ✘ Hyperconjugation only
2. ✘ Inductive effect only
3. ✘ Resonance only
4. ✔ Both hyperconjugation and inductive effect

Question Number : 89 Question Id : 5616743539 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 one of the following pairs of ions will have same electronic configuration?

Options :

1. ✘ Cr^{3+}, Fe^{3+}

2. ✖ Cr^{3+}, Sc^{3+}

3. ✔ Mn^{2+}, Fe^{3+}

4. ✖ Co^{2+}, Fe^{3+}

Question Number : 90 Question Id : 5616743540 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 real gas at very high pressure occupies:

Options :
1. ✔ More volume than that of an ideal gas under identical condition
2. ✖ Less volume than that of an ideal gas under identical condition
3. ✖ Same volume than that of an ideal gas under identical condition
4. ✖ No effect of volume on an ideal gas under identical condition

Question Number : 91 Question Id : 5616743541 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 reagent which does not give an acid chloride with a Carboxylic acid is
Options :

1. ✔ Cl_2

2. ✖ PCl_5

3. ✖ PCl_3

4. ✖ $SOCl_2$

Question Number : 92 Question Id : 5616743542 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 molecule MX_3 has zero dipole moment, the state of hybridization of M is

Options :
1. ✖ sp^3d

2. ✖ sp

3. ✖ sp^3d^2

4. ✔ sp^2

Question Number : 93 Question Id : 5616743543 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 products obtained when $NaOCH_3$ is reacted with $(CH_3)_3CBr$ and CH_3CH_2Br, respectively are

Options :

1. ✖ $(CH_3)_3COCH3$ and $CH_3CH_2OCH_3$

2. ✖ $(CH_3)_3COC(CH_3)_3$ and CH_3OCH_3

3. ✖ $CH_3C(CH_3)=CH2$ and $(CH_3)_3COC(CH_3)_3$

4. ✔ $CH_3C(CH_3)=CH2$ and $CH_3OCH_2CH_3$

Question Number : 94 Question Id : 5616743544 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 compound X forms Y with PCl_5. Compound X also forms Z with Na metal.
The compounds Y and Z react together to form diethyl ether. Therefore, X, Y and Z are

Options :

1. ✖ $C_2H_5OH, C_2H_5ONa, C_2H_5Cl$

2. ✖ $C_2H_5ONa, C_2H_5Cl, C_2H_5OH$

3. ✔ $C_2H_5OH, C_2H_5Cl, C_2H_5ONa$

4. ✖ $C_2H_5Cl, C_2H_5ONa, C_2H_5OH$

Question Number : 95 Question Id : 5616743545 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

Compound A + NH_3 $\xrightarrow{\text{Heat}}$ B $\rightarrow$ Amide. The compound A is an

Options :
1. ✖ Amide
2. ✖ Amine
3. ✔ Carboxylic acid
4. ✖ Ester

Question Number : 96 Question Id : 5616743546 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 complex ions $[Co(NH_3)_5(NO_2)]^{2+}$ and $[Co(NH_3)_5(ONO)]^{2+}$ are called

Options :
1. ✖ Ionization isomer

2. ✔ Linkage isomer
3. ✘ Coordination isomer
4. ✘ Geometrical isomer

Question Number : 97 Question Id : 5616743547 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

On oxidation with alkaline $KMnO_4$ followed by acidification, methylbenzene and ethylbenzene give

Options :
1. ✘ Benzoic acid and phenylacetic acid respectively
2. ✘ Benzoic acid and phenylacetaldehyde
3. ✔ Benzoic acid
4. ✘ Benzaldehyde and phenylacetaldehyde respectively

Question Number : 98 Question Id : 5616743548 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 frequency of yellow radiation having wavelength $5800A^0$ is

Options :

1. ✔
$5.17 \times 10^{14} \, s^{-1}$

2. ✘
$5800 \times 10^{-10} \, s^{-1}$

3. ✘
$1.724 \times 10^4 \, cm^{-1}$

4. ✘
$1368 \times 10^3 \, s^{-1}$

Question Number : 99 Question Id : 5616743549 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 an incorrect statement?

Options :

1. ✘
Be and Al form BeF_4^{2-} and AlF_6^{3-}

2. ✔ Al and Be readily react with acids

3. ✘
Al^{3+} and Be^{2+} have similar ionic radii

4. ✘ Al and Be form bridged halides

Question Number : 100 Question Id : 5616743550 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

Phenol on reaction with sodium dichromate in con. H_2SO_4 gives (
reacts with V_2 moles of grignard reagent. The compound (A) is

Options :

1. ✖ Acetophenone
2. ✖ Benzaldehyde
3. ✔ Benzoquinone
4. ✖ Benzoic acid

Mathematics

Question Number : 101 Question Id : 5616743551 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 domain of the function $f : R$ to R defined by $f(x) = \sqrt{x^2 - 3x + 2}$ is

Options :

1. ✖ $(-\infty, 1)$

2. ✖ $[1,2]$

3. ✖ $(2, \infty)$

4. ✔ $(-\infty, 1] \cup [2, \infty)$

Question Number : 102 Question Id : 5616743552 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

Solution set of the equation $\sin^{-1} x + \sin^{-1}(1-x) = \cos^{-1} x$ is

Options :

1. ✖ $\{0\}$

2. ✖ $\left\{\dfrac{1}{2}\right\}$

$\left\{0, \dfrac{1}{2}\right\}$

3. ✔

$\{-1, 1\}$

4. ✘

Question Number : 103 Question Id : 5616743553 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 students who take both the subjects mathematics and chemistry is 30. This represents 10% of the enrolment in mathematics and 12% of the enrolment in chemistry. How many students take at least one of these two subjects?

Options :

1. ✘ 480
2. ✘ 490
3. ✘ 560
4. ✔ 520

Question Number : 104 Question Id : 5616743554 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 $\cos(\alpha + \beta) = \dfrac{4}{5}$ and $\sin(\alpha - \beta) = \dfrac{5}{13}$, where $0 \le \alpha, \beta \le \dfrac{\pi}{4}$, then $\tan 2\alpha$ is

Options :

1. ✘ $\dfrac{25}{16}$

2. ✘ $\dfrac{19}{12}$

3. ✔ $\dfrac{56}{33}$

4. ✘ $\dfrac{20}{7}$

Question Number : 105 Question Id : 5616743555 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 $n(A) = m$, and $n(B) = n$. Then the total number of non-empty relations that can be defined from A to B is

Options :

1. ✘ m^n

2. ✘ $n^m - 1$

$mn - 1$

3. ✖

$2^{mn} - 1$

4. ✔

Question Number : 106 Question Id : 5616743556 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 principal value of $cos^{-1}(-\frac{1}{2})$ is

Options :

1. ✔ $\dfrac{2\pi}{3}$

2. ✖ $\dfrac{3\pi}{4}$

3. ✖ $\dfrac{5\pi}{4}$

4. ✖ $\dfrac{5\pi}{3}$

Question Number : 107 Question Id : 5616743557 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 domain and range of the real function f defined by f (x) = $\frac{4-x}{x-4}$ is given by

Options :

1. ✖ Domain = R, Range = {−1, 1}

2. ✖ Domain = R−{1}, Range = R

3. ✔ Domain = R − {4}, Range = {− 1}

4. ✖ Domain = R − {− 4}, Range = {−1, 1}

Question Number : 108 Question Id : 5616743558 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 S = set of points inside the square, T = the set of points inside the triangle and C = the set of points inside the circle. If the triangle and circle intersect each other and are contained in a square. Then

Options :

1. ✗ $S \cap T \cap C = \varphi$

2. ✗ $S \cup T \cup C = C$

3. ✓ $S \cup T \cup C = S$

4. ✗ $S \cup T = S \cap C$

Question Number : 109 Question Id : 5616743559 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 $f : R \rightarrow R$ be defined as $f(x) = 2x + sinx$. Choose the correct answer.

Options :

1. ✓ f is one-one and onto

2. ✗ f is many-one onto

3. ✗ f is one-one but not onto

4. ✗ f is neither one-one nor onto

Question Number : 110 Question Id : 5616743560 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 $A = \begin{bmatrix} 1 & -1 & 1 \\ 2 & 1 & -3 \\ 1 & 1 & 1 \end{bmatrix}$ and $(10)B = \begin{bmatrix} 4 & 2 & 2 \\ -5 & 0 & \alpha \\ 1 & -2 & 3 \end{bmatrix}$

If B is the inverse of the matrix A , then α is

Options :

1. ✓ 5
2. ✗ 1
3. ✗ -1
4. ✗ -2

Question Number : 111 Question Id : 5616743561 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 a square matrix of order 3 and |A| = 3 then | A.adjA| is

Options :

1. ✗ 3
2. ✗ 9

3. ✔ 27
4. ✘ 81

Question Number : 112 Question Id : 5616743562 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 a square matrix such that $A^2=A$, and if $(3I-2A)^3=pA+qI$ (I-Identity Matrix, p, q are real constants) then p+q is

Options :

1. ✘ -2
2. ✘ 0
3. ✘ -1
4. ✔ 1

Question Number : 113 Question Id : 5616743563 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 four digit numbers divisible by 4 can be made with the digits 1,2,3,4,5 if the repetition of digits is not allowed is

Options :

1. ✘ 42
2. ✔ 24
3. ✘ 28
4. ✘ 16

Question Number : 114 Question Id : 5616743564 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

Solution set of the quadratic equation: $ix^2 - x + 12i = 0$ $(where\ i = \sqrt{-1})$ is

Options :

1. ✘ $\{3i, 4i\}$

2. ✘ $\{-3i, -4i\}$

3. ✘ $\{-3i, 4i\}$

4. ✔ $\{3i, -4i\}$

Question Number : 115 Question Id : 5616743565 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 matrix $A = \begin{bmatrix} 0 & 0 & 5 \\ 0 & 5 & 0 \\ 5 & 0 & 0 \end{bmatrix}$ is a

Options :

1. ✘ scalar matrix
2. ✘ diagonal matrix

3. ✖ unit matrix

4. ✔ square matrix

Question Number : 116 Question Id : 5616743566 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 and B are symmetric matrices of the same order, then $(AB' - BA')$ is a

Options :

1. ✔ Skew symmetric matrix

2. ✖ Null matrix

3. ✖ Symmetric matrix

4. ✖ Identity matrix

Question Number : 117 Question Id : 5616743567 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 five geometric means between $\frac{1}{3}$ and 243 is

Options :

1. ✖ 79

2. ✖ 80

3. ✔ 81

4. ✖ 82

Question Number : 118 Question Id : 5616743568 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 7th & 13th terms of an AP be 34 and 64 respectively, find 18th term

Options :

1. ✖ 87

2. ✖ 88

3. ✔ 89

4. ✖ 90

Question Number : 119 Question Id : 5616743569 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 λ be the ratio of the roots of the quadratic equation in x ,
$3m^2x^2 + m(m - 4)x + 2 = 0$, then the least value of m
for which $\lambda + \frac{1}{\lambda} = 1$ is

Options :

1. ✔ $4 - 3\sqrt{2}$

2. ✖ $4 - 2\sqrt{3}$

3. ✖ $4 - \sqrt{3}$

4. ✖ $4 + 2\sqrt{3}$

Question Number : 120 Question Id : 5616743570 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 integral $I = \int_0^\pi e^{\sin^2 x} \cos^3 x \, dx$ is

Options :

1. ✖ π

2. ✖ $\dfrac{\pi}{2}$

3. ✖ 1

4. ✔ 0

Question Number : 121 Question Id : 5616743571 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 relationship between 'a' and 'b' so that the function 'f' defined by
$$f(x) = \begin{cases} ax + 1 \ , \text{if } x \le 3 \\ bx + 3 \ , \text{if } x > 3 \end{cases} \text{ continuous at } x = 3 \text{ is}$$

Options :

1. ✔ $a - b = 2/3$

2. ✖ $b - 3a = 2/3$

3. ✖ $3a - 2b = 3$

4. ✖ $a - b = 3/2$

Question Number : 122 Question Id : 5616743572 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 integrating factor of the differential equation $(2x - 1) \dfrac{dy}{dx} = cosec \ y$ is

Options :

1. ✔ $e^{2 \cos y}$

2. ✖ $e^{2 \cos x}$

3. ✖ $e^{2 \sin y}$

$$e^{2\sin x}$$

4. ✖

If $f(9) = 9$, $f'(9) = 4$, then $\lim\limits_{x \to 9} \dfrac{\sqrt{f(x)} - 3}{\sqrt{x} - 3}$ is

Options :

1. ✖ 1
2. ✖ 2
3. ✖ -1
4. ✔ 4

If $e^x + e^y = e^{x+y}$ then $\dfrac{dy}{dx}$ is

Options :

1. ✖
$$- e^{x-y}$$

2. ✖
$$e^{y-x}$$

3. ✔
$$- e^{y-x}$$

4. ✖
$$e^{x-y}$$

Derivative of $\cos^{-1}\left(\dfrac{1-x^2}{1+x^2}\right)$ w.r.t $\tan^{-1}\left(\dfrac{2x}{1-x^2}\right)$ is :

Options :
1. ✖ 0

2. ✖
$$\dfrac{1}{1-x^2}$$

3. ✖
$$\dfrac{1}{1+x^2}$$

4. ✔ 1

Question Number : 126 Question Id : 5616743576 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 slope of the curve $y = e^x \cos x$, $x \epsilon (-\pi, \pi)$, is maximum at

Options :

1. ✖ $x = \dfrac{\pi}{2}$

2. ✖ $x = \dfrac{\pi}{4}$

3. ✔ $x = 0$

4. ✖ $x = \pi$

Question Number : 127 Question Id : 5616743577 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 $\int_{-1}^{4} f(x) dx = 4$ and $\int_{2}^{4} (3 - f(x)) dx = 7$, then the value of $\int_{-1}^{2} f(x) dx$ is

Options :

1. ✖ 3
2. ✖ 1
3. ✔ 5
4. ✖ 4

Question Number : 128 Question Id : 5616743578 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 $f(x) = |x| + |x - 1|$ is

Options :

1. ✔ continuous at x = 0 as well as at x = 1

2. ✖ continuous at x = 1 but not at x = 0

3. ✖ discontinuous at x = 0 as well as at x = 1

continuous at x = 0
but not at x = 1
4. ✖

Question Number : 129 Question Id : 5616743579 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 sum of order and degree of differential equation $\left[1 + \left(\frac{d^2y}{dx^2}\right)^3\right]^{4/5} = \frac{d^3y}{dx^3}$ is

Options :

1. ✖ 3
2. ✖ 4
3. ✖ 5
4. ✔ 8

Question Number : 130 Question Id : 5616743580 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 $y = |x - 2|$, $x = 1$, $x = 3$ and the x − axis is

Options :

1. ✔ 1
2. ✖ 2
3. ✖ 3
4. ✖ 4

Question Number : 131 Question Id : 5616743581 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 θ such that $\frac{3+2i\sin\theta}{1-2i\sin\theta}$ is purely imaginary is

Options :

1. ✔ $\frac{\pi}{3}$

2. ✖ $\frac{\pi}{4}$

3. ✖ $\frac{\pi}{6}$

4. ✖ $\frac{\pi}{2}$

Question Number : 132 Question Id : 5616743582 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

The particular solution of the differential equation

$(1+y^2)\tan^{-1}x\,dx + 2y(1+x^2)\,dy = 0$ when $x = \dfrac{\pi}{4}$, $y = 0$ is

Options :

1. ✔ $\left(\tan^{-1}x\right)^2 + \log\left(1+y^2\right) = 1$

2. ✖ $\left(\tan^{-1}x\right) + \log\left(1+y^2\right) = 1$

3. ✖ $\left(\tan^{-1}x\right)^2 + \log\left(1+y^2\right)^2 = \dfrac{1}{2}$

4. ✖ $\left(\tan^{-1}x\right) + \log\left(1+y^2\right) = \dfrac{1}{2}$

Question Number : 133 Question Id : 5616743583 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 curves $4x = y^2$ and $4xy = k$ cut at right angles, then $2k^2$ is

Options :
1. ✖ 16
2. ✖ 8
3. ✖ 512
4. ✔ 1024

Question Number : 134 Question Id : 5616743584 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 $e^y(x+1) = 1$ then $\dfrac{d^2y}{dx^2}$ is equal to

Options :

1. ✖ $\dfrac{dy}{dx}$

2. ✔ $\left(\dfrac{dy}{dx}\right)^2$

$$\left(\frac{dy}{dx}\right)^3$$

3. ✖

$$\left(\frac{dy}{dx}\right)^4$$

4. ✖

Question Number : 135 Question Id : 5616743585 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 distance between the point $(-1, -5, -10)$ and the point of intersection of the line $\frac{x-2}{3} = \frac{y+1}{4} = \frac{z-2}{12}$ with the plane $x - y + z - 5 = 0$ is

Options :

1. ✖ 17 units

2. ✔ 13 units

3. ✖   8.5 units

4. ✖   6.5 units

Question Number : 136 Question Id : 5616743586 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 rod AB of length 15cm rests in between two coordinate axes in such a way that the end points A lies on X-axis and end point B lies on y-axis. A point P is taken on the rod in such a way that AP=6cm. Then the eccentricity of the locus of the conic, traced by the point P is

Options :

1. ✖ $\dfrac{2}{\sqrt{5}}$

2. ✖ $\dfrac{3}{\sqrt{5}}$

3. ✔ $\dfrac{\sqrt{5}}{3}$

4. ✖ $\dfrac{1}{\sqrt{5}}$

Question Number : 137 Question Id : 5616743587 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 $\vec{a}, \vec{b}, \vec{c}$ are unit vectors then the maximum value of

$\left|\vec{a} - \vec{b}\right|^2 + \left|\vec{b} - \vec{c}\right|^2 + \left|\vec{c} - \vec{a}\right|^2$ is

Options :

1. ✖ 8
2. ✖ 10
3. ✔ 9
4. ✖ 12

Question Number : 138 Question Id : 5616743588 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 curve for which the slope of the tangent at any point is equal to the ratio of the abscissa to the ordinate of the point is:

Options :

1. ✖ an ellipse
2. ✖ parabola
3. ✖ circle
4. ✔ rectangular hyperbola

Question Number : 139 Question Id : 5616743589 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 foot of perpendicular from the point (-2,3) on the line $2x - y - 3 = 0$ is

Options :

1. ✖ (-2,3)

2. ✔ (2,1)

3. ✖ (3,2)

4. ✖ (1,2)

Question Number : 140 Question Id : 5616743590 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 lines $\frac{x-2}{1} = \frac{y-3}{1} = \frac{4-z}{k}$ and $\frac{x-1}{k} = \frac{y-4}{2} = \frac{z-5}{-2}$ are mutually perpendicular then the value of k is

Options :

1. ✔ $-\frac{2}{3}$

2. ✖ $\frac{2}{3}$

3. ✖ -2
4. ✖ 2

Question Number : 141 Question Id : 5616743591 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 the latus rectum of the ellipse $3x^2 + y^2 = 12$ is

Options :

1. ✖ 4
2. ✖ 3
3. ✖ 8

4. ✔ $\frac{4}{\sqrt{3}}$

Question Number : 142 Question Id : 5616743592 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 a parallelogram whose diagonals in it are given by the vectors
$2\hat{i} - \hat{j} + \hat{k}$ and $\hat{i} + 3\hat{j} - \hat{k}$ is

Options :

$\frac{1}{2}\sqrt{52}$

1. ✖

$\frac{3}{2}\sqrt{62}$

2. ✖

$\frac{5}{2}\sqrt{32}$

3. ✖

$\frac{1}{2}\sqrt{62}$

4. ✔

Question Number : 143 Question Id : 5616743593 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 area of the circle $4x^2 + 4y^2 + 8x - 16y + \lambda = 0$ is 9π sq. units, then the value of λ is

Options :

1. ✖ 4

2. ✖ -4

3. ✖ 16

4. ✔   -16

Question Number : 144 Question Id : 5616743594 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 6 red, 4 black, 4 yellow and 3 white balls. Two balls are drawn at random from the bag. Then the probability that both the drawn balls are of different colours is

Options :

1. ✖ $\dfrac{33}{68}$

2. ✖ $\dfrac{35}{68}$

3. ✔ $\dfrac{53}{68}$

4. ✖ $\dfrac{67}{68}$

Question Number : 145 Question Id : 5616743595 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 mean and standard deviation of 100 items are 50 and 4 respectively, then the sum of all items and the sum of squares of all items are respectively

Options :

1. ✔ 5000 & 251600

2. ✖ 5000 & 256100

3. ✖ 5000 & 215600

4. ✖ 5000 & 255600

Question Number : 146 Question Id : 5616743596 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 non-leap year, the probability of having 53 Tuesdays or 53 Wednesdays is

Options :

1. ✖
$$\frac{1}{7}$$

2. ✔
$$\frac{2}{7}$$

3. ✖
$$\frac{3}{7}$$

4. ✖
$$\frac{4}{7}$$

Question Number : 147 Question Id : 5616743597 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

Mean deviation about mean for the data 3,10,10,4,7,10,5   is

Options :

1. ✖
   3.75

2. ✔
   2.57

3. ✖ 3
4. ✖ 2

Question Number : 148 Question Id : 5616743598 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 statement is correct?

Options :

1. ✖
   Every L.P.P.
   admits an optimal
   solution

2. ✖
   A L.P.P. admits
   unique optimal
   solution

A L.P.P. admits
only two optimal
solutions

3. ✖

If a L.P.P. admits two
optimal solutions,
then it has an infinite
number of optimal
solutions

4. ✔

Question Number : 149 Question Id : 5616743599 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

Maximize z= 2x + 3y
Subject to constraints x+y ≤ 4, x≥0, y≥ 0 from the options given below

Options :

$(0, 0)$

1. ✖

$(4, 0)$

2. ✖

$(0, 4)$

3. ✔

$(4, 4)$

4. ✖

Question Number : 150 Question Id : 5616743600 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 and B be two events such that P (A) = 0.6, P (B) = 0.2 and P (A/B) = 0.5 then P (A′ / B′) equals.

Options :

$$\frac{1}{10}$$

1. ✖

$$\frac{3}{10}$$

2. ✖

$$\frac{3}{8}$$

3. ✔

$$\frac{6}{7}$$

4. ✖