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Subject Name : B TECH
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Total Marks : 300
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Group Number : 1
Group Id : 864351235
Group Maximum Duration : 0
Group Minimum Duration : 180
Show Attended Group? : No
Edit Attended Group? : No
Break time : 0
Group Marks : 300
Is this Group for Examiner? : No

Physics Section A
Section Id : 864351848
Section Number : 1
Section type : Online
Question Type: MCQ
Is Question Mandatory: No

Correct Marks: 4 Wrong Marks: 1

A simple pendulum of mass 'm', length 'l' and charge '+q' suspended in the electric field produced by two conducting parallel plates as shown. The value of deflection of pendulum in equilibrium position will be:

\[
\tan^{-1} \left[ \frac{q}{mg} \times \frac{C_1(V_1 + V_2)}{(C_1 + C_2)(d - t)} \right]
\]
2. \[ \tan^{-1} \left( \frac{q}{mg} \times \frac{C_2(V_1 + V_2)}{(C_1 + C_2)(d-t)} \right) \]

3. \[ \tan^{-1} \left( \frac{q}{mg} \times \frac{C_1(V_2 - V_1)}{(C_1 + C_2)(d-t)} \right) \]

4. \[ \tan^{-1} \left( \frac{q}{mg} \times \frac{C_2(V_2 - V_1)}{(C_1 + C_2)(d-t)} \right) \]

Question Type: MCQ Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1

Options:
Find the truth table for the function $Y$ of $A$ and $B$ represented in the following figure.

Options:
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Question Type: MCQ  Is Question Mandatory: No

Correct Marks: 4 Wrong Marks: 1

Options:

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2.
Question Type: MCQ  Is Question Mandatory: No

Correct Marks: 4  Wrong Marks: 1

A particle of mass $M$ originally at rest is subjected to a force whose direction is constant but magnitude varies with time according to the relation

$$F = F_0 \left[ 1 - \left( \frac{t-T}{T} \right)^2 \right]$$

Where $F_0$ and $T$ are constants. The force acts only for the time interval $2T$. The velocity $v$ of the particle after time $2T$ is:

Options:

1. $\frac{F_0 T}{3M}$
2. \( \frac{4F_0 T}{3M} \)

3. \( \frac{F_0 T}{2M} \)

4. \( \frac{2F_0 T}{M} \)

---

**Question Type:** MCQ  
**Is Question Mandatory:** No  
**Correct Marks:** 4  
**Wrong Marks:** 1

Options:

1. \( \frac{F_0 T}{3M} \)

2. \( \frac{4F_0 T}{3M} \)

3. \( \frac{F_0 T}{2M} \)

4. \( \frac{2F_0 T}{M} \)
Match List I with List II.

<table>
<thead>
<tr>
<th>List I</th>
<th>List II</th>
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<tbody>
<tr>
<td>(a) Capacitance, C</td>
<td>(i) $M^1 L^1 T^{-3} A^{-1}$</td>
</tr>
<tr>
<td>(b) Permittivity of free space, $\varepsilon_0$</td>
<td>(ii) $M^{-1} L^{-3} T^4 A^2$</td>
</tr>
<tr>
<td>(c) Permeability of free space, $\mu_0$</td>
<td>(iii) $M^{-1} L^{-2} T^4 A^2$</td>
</tr>
<tr>
<td>(d) Electric field, E</td>
<td>(iv) $M^1 L^1 T^{-2} A^{-2}$</td>
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Choose the correct answer from the options given below:

Options:

1. (a) → (iii), (b) → (iv), (c) → (ii), (d) → (i)

2. (a) → (iv), (b) → (ii), (c) → (iii), (d) → (i)

3. (a) → (iii), (b) → (ii), (c) → (iv), (d) → (i)

4. (a) → (iv), (b) → (iii), (c) → (ii), (d) → (i)
**Question Type :** MCQ  
**Is Question Mandatory :** No

**Correct Marks :** 4  **Wrong Marks :** 1

One mole of an ideal gas is taken through an adiabatic process where the temperature rises from 27°C to 37°C. If the ideal gas is composed of polyatomic molecule that has 4 vibrational modes, which of the following is true?

\[ R = 8.314 \text{ J mol}^{-1} \text{ K}^{-1} \]

**Options :**

1. Work done by the gas is close to 582 J
2. work done on the gas is close to 582 J

3. work done by the gas is close to 332 J

4. work done on the gas is close to 332 J

**Question Type : MCQ Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

\[ R = 8.314 \text{ J mol}^{-1} \text{K}^{-1} \]

**Options :**

1. ఎంతమాత్రి చెందిన యాన్ని 582 J లేదు ప్రక్రియ

2. ఎంతమాత్రి చెందిన యాన్ని 582 J లేదు ప్రక్రియ

3. ఎంతమాత్రి చెందిన యాన్ని 332 J లేదు ప్రక్రియ

4. ఎంతమాత్రి చెందిన యాన్ని 332 J లేదు ప్రక్రియ

**Question Type : MCQ Is Question Mandatory : No**
Given below is the plot of a potential energy function $U(x)$ for a system, in which a particle is in one dimensional motion, while a conservative force $F(x)$ acts on it. Suppose that $E_{\text{mech}} = 8 \, \text{J}$, the incorrect statement for this system is:

[where K.E. = kinetic energy]

Options:

1. at $x = x_2$, K.E. is greatest and the particle is moving at the fastest speed.

2. at $x < x_1$, K.E. is smallest and the particle is moving at the slowest speed.

3. at $x > x_4$, K.E. is constant throughout the region.

4. at $x = x_3$, K.E. = 4 J.
విశ్లేషించి F(x) అనే మాధ్యమంగా ఉండి ముందు మొత్తం లేయిన పరిమాణం U(x) ను సమాధానం చేసి పరిమాణం చరిత్రను పంపించాలి. అధిష్ఠణ F_{mech} = 8J అయితే x లో పరిమాణం ఉంటే సమాధానం చేసి పరిమాణం చరిత్రను పంపించాలి.

Options:

1. $x=x_2$ లో పరిమాణం చరిత్ర నిర్ధారించండి పరిమాణం ఎంపికచేది అయించండి దిగుమాటితే విశ్లేషించండి.

2. $x < x_1$ లో పరిమాణం చరిత్ర నిర్ధారించండి పరిమాణం ఎంపికచేది అయించండి దిగుమాటితే విశ్లేషించండి.

3. $x > x_4$ లో పరిమాణం చరిత్ర నిర్ధారించండి పరిమాణం ఎంపికచేది అయించండి దిగుమాటితే విశ్లేషించండి.

4. $x = x_3$ లో పరిమాణం ఎంపికచేది అయించండి దిగుమాటితే = 4 J.
Consider the following statements:

A. Atoms of each element emit characteristics spectrum.
B. According to Bohr’s Postulate, an electron in a hydrogen atom, revolves in a certain stationary orbit.
C. The density of nuclear matter depends on the size of the nucleus.
D. A free neutron is stable but a free proton decay is possible.
E. Radioactivity is an indication of the instability of nuclei.

Choose the correct answer from the options given below:

Options:

1. A, B and E only
2. A, C and E only
3. B and D only
4. A, B, C, D and E

Question Type: MCQ Is Question Mandatory: No

Correct Marks: 4 Wrong Marks: 1
చిత్రం సంఖ్యాంశాల గాని ఉండేందుకం?

A. చిత్రం సంఖ్యాంశాల సమూహం నిర్ధారించాలనుకున్నది సమూహం ఉంటే.
B. చిత్రం సంఖ్యాంశాల సమూహం నిర్ధారించాలను ఉంటే నిర్ధారించాలను ఉంటే.
C. చిత్రం సంఖ్యాంశాల సమూహం నిర్ధారించాలను ఉంటే రిమ్యాండ్ ఉంటే.
D. చిత్రం సంఖ్యాంశాల సమూహం నిర్ధారించాలను ఉంటే రిమ్యాండ్ ఉంటే.
E. చిత్రం సంఖ్యాంశాల సమూహం నిర్ధారించాలను ఉంటే రిమ్యాండ్ ఉంటే.

చిత్రం సంఖ్యాంశాల గాని ఉండేందుకం?

Options:

1. A, B లోనివైన E ఎంచుకుండా

2. A, C లోనివైన E ఎంచుకుండా

3. B లోనివైన D ఎంచుకుండా

4. A, B, C, D లోనివైన E ఎంచుకుండా
A raindrop with radius \( R = 0.2 \) mm falls from a cloud at a height \( h = 2000 \) m above the ground. Assume that the drop is spherical throughout its fall and the force of buoyance may be neglected, then the terminal speed attained by the raindrop is:

\[
\begin{align*}
\text{Density of water } f_w &= 1000 \text{ kg m}^{-3} \\
\text{and Density of air } f_a &= 1.2 \text{ kg m}^{-3}, \\
g &= 10 \text{ m/s}^2 \\
\text{Coefficient of viscosity of air } &= 1.8 \times 10^{-5} \text{ Nsm}^{-2}
\end{align*}
\]

**Options:**

1. 250.6 ms\(^{-1}\)
2. 4.94 ms\(^{-1}\)
3. 14.4 ms\(^{-1}\)
4. 43.56 ms\(^{-1}\)

**Question Type:** MCQ  **Is Question Mandatory:** No

**Correct Marks:** 4  **Wrong Marks:** 1
A physical quantity ‘y’ is represented by the formula \( y = m^2 r^{-4} g^x l^{\frac{3}{2}} \).

If the percentage errors found in \( y, m, r, l \) and \( g \) are 18, 1, 0.5, 4 and \( p \) respectively, then find the value of \( x \) and \( p \).

**Options:**

1. \( 4 \) and \( \pm 3 \)
2. \( 5 \) and \( \pm 2 \)
3. \( 8 \) and \( \pm 2 \)
4. \( \frac{16}{3} \) and \( \pm \frac{3}{2} \)
Two Carnot engines A and B operate in series such that engine A absorbs heat at $T_1$ and rejects heat to a sink at temperature $T$. Engine B absorbs half of the heat rejected by Engine A and rejects heat to the sink at $T_3$. When work done in both the cases is equal, the value of $T$ is:

Options:

1. $\frac{2}{3} T_1 + \frac{1}{3} T_3$

2. $\frac{3}{2} T_1 + \frac{1}{3} T_3$
3. \( \frac{2}{3} T_1 + \frac{3}{2} T_3 \)

4. \( \frac{1}{3} T_1 + \frac{2}{3} T_3 \)

**Question Type:** MCQ

**Is Question Mandatory:** No

**Correct Marks:** 4  
**Wrong Marks:** 1

Options:

1. \( \frac{2}{3} T_1 + \frac{1}{3} T_3 \)

2. \( \frac{3}{2} T_1 + \frac{1}{3} T_3 \)

3. \( \frac{2}{3} T_1 + \frac{3}{2} T_3 \)

4. \( \frac{1}{3} T_1 + \frac{2}{3} T_3 \)
The planet Mars has two moons, if one of them has a period 7 hours, 30 minutes and an orbital radius of $9.0 \times 10^3$ km. Find the mass of Mars.

Given $\frac{4\pi^2}{G} = 6 \times 10^{11} \text{ N}^{-1} \text{ m}^{-2} \text{ kg}^2$

Options:

1. $5.96 \times 10^{19}$ kg
2. $3.25 \times 10^{21}$ kg
3. $6.00 \times 10^{23}$ kg
4. $7.02 \times 10^{25}$ kg
An object of mass 0.5 kg is executing simple harmonic motion. Its amplitude is 5 cm and time period (T) is 0.2 s. What will be the potential energy of the object at an instant \( t = \frac{T}{4} \) starting from mean position. Assume that the initial phase of the oscillation is zero.

Options:

1. \( 6.2 \times 10^{-3} \) J
2. \( 1.2 \times 10^3 \) J
3. 0.62 J
4. \( 6.2 \times 10^3 \) J
0.5 kg విప్పిన సంచారం నుండి నీటి విప్పిన సంచారం సమాఘాతం సమాఘాతం. చెది విప్పిన సమాఘాతం 5 cm మైదానం
తయారు చేయును (1) 0.2 సెకండ్లు ప్రమాణం చేస్తోంది. సమాఘాతం రేటు 4సెకండ్లు కీల్కాలు
తుండంటే 1.2 x 10^3 J రేటు విప్పిన సంచారం సమాఘాతం విప్పిన సంచారం?

Options:
1. 6.2 x 10^{-3} J
2. 1.2 x 10^3 J
3. 0.62 J
4. 6.2 x 10^3 J

Question Type: MCQ Is Question Mandatory: No

Correct Marks: 4 Wrong Marks: 1

An automobile of mass ‘m’ accelerates starting from origin and initially at rest, while the engine supplies constant power $P$. The position is given as a function of time by:

Options:

1. \[ \left( \frac{9P}{8m} \right)^{\frac{1}{2}} t^{\frac{3}{2}} \]
2. \[ \left( \frac{8P}{9m} \right)^{\frac{1}{2}} t^{\frac{2}{3}} \]
3. \( \left( \frac{8P}{9m} \right)^{\frac{1}{2}} \frac{3}{t^2} \)

4. \( \left( \frac{9m}{8P} \right)^{\frac{1}{2}} \frac{3}{t^2} \)

**Question Type:** MCQ  **Is Question Mandatory:** No

**Correct Marks:** 4  **Wrong Marks:** 1

3. \( \left( \frac{8P}{9m} \right)^{\frac{1}{2}} \frac{3}{t^2} \)

1. \( \left( \frac{9P}{8m} \right)^{\frac{1}{2}} \frac{3}{t^2} \)

2. \( \left( \frac{8P}{9m} \right)^{\frac{1}{2}} \frac{2}{t^3} \)

3. \( \left( \frac{8P}{9m} \right)^{\frac{1}{2}} \frac{3}{t^2} \)

4. \( \left( \frac{9m}{8P} \right)^{\frac{1}{2}} \frac{3}{t^2} \)
Figure A and B show two long straight wires of circular cross-section (a and b with a < b), carrying current I which is uniformly distributed across the cross-section. The magnitude of magnetic field B varies with radius r and can be represented as:
3.

4.

Question Type: MCQ Is Question Mandatory: No

Correct Marks: 4 Wrong Marks: 1

Options: 1.
Question Type: MCQ  Is Question Mandatory: No

Correct Marks: 4 Wrong Marks: 1
Two identical particles of mass 1 kg each go round a circle of radius R, under the action of their mutual gravitational attraction. The angular speed of each particle is:

Options:

1. \( \sqrt{\frac{G}{2R^3}} \)

2. \( \frac{1}{2} \sqrt{\frac{G}{R^3}} \)

3. \( \frac{1}{2R} \sqrt{\frac{1}{G}} \)

4. \( \sqrt{\frac{2G}{R^3}} \)
3. \[\frac{1}{2R} \sqrt{\frac{1}{G}}\]

4. \[\sqrt{\frac{2G}{R^3}}\]

**Question Type: MCQ Is Question Mandatory: No**

**Correct Marks: 4 Wrong Marks: 1**

An electron and proton are separated by a large distance. The electron starts approaching the proton with energy 3 eV. The proton captures the electron and forms a hydrogen atom in second excited state. The resulting photon is incident on a photosensitive metal of threshold wavelength 4000 Å. What is the maximum kinetic energy of the emitted photoelectron?

**Options:**

1. 3.3 eV
2. No photoelectron would be emitted
3. 7.61 eV
4. 1.41 eV

**Question Type: MCQ Is Question Mandatory: No**

**Correct Marks: 4 Wrong Marks: 1**
The expected graphical representation of the variation of angle of deviation \( \delta \) with angle of incidence \( i \) in a prism is:

Options:

1. [Graph showing \( \delta \) increasing linearly with \( i \)]
Question Type: MCQ Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1

Options:
1. 

2. 

3. 

4. 

Question Type: MCQ Is Question Mandatory: No

Correct Marks: 4 Wrong Marks: 1
A 100 Ω resistance, a 0.1 μF capacitor and an inductor are connected in series across a 250 V supply at variable frequency. Calculate the value of inductance of inductor at which resonance will occur. Given that the resonant frequency is 60 Hz.

Options:

1. $7.03 \times 10^{-5}$ H
2. 70.3 H
3. 0.70 H
4. 70.3 mH

Question Type: MCQ Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1
The resistance of a conductor at 15°C is 16 Ω and at 100°C is 20 Ω. What will be the temperature coefficient of resistance of the conductor?

Options:
1. 0.003°C⁻¹
2. 0.010°C⁻¹
3. 0.033°C⁻¹
4. 0.042°C⁻¹
What will be the magnitude of electric field at point O as shown in figure? Each side of the figure is \( l \) and perpendicular to each other?

**Options:**

1. \( \frac{1}{4\pi \varepsilon_0} \frac{q}{l^2} \)

2. \( \frac{1}{4\pi \varepsilon_0} \frac{2q}{2l^2} \sqrt{2} \)

3. \( \frac{1}{4\pi \varepsilon_0} \frac{q}{(2l^2)} (2\sqrt{2} - 1) \)

4. \( \frac{q}{4\pi \varepsilon_0 (2l)^2} \)
Question Type: MCQ Is Question Mandatory: No

Correct Marks: 4 Wrong Marks: 1

Which of the following expressions correctly represents the electric potential at point O due to the given arrangement of charges?

A. \( \frac{1}{4\pi \varepsilon_0} \frac{q}{l^2} \)

B. \( \frac{1}{4\pi \varepsilon_0} \frac{2q}{2l^2} \sqrt{2} \)

C. \( \frac{1}{4\pi \varepsilon_0} \frac{q}{(2l^2)} (2\sqrt{2} - 1) \)

D. \( \frac{q}{4\pi \varepsilon_0 (2l)^2} \)
The maximum amplitude for an amplitude modulated wave is found to be 12 V while the minimum amplitude is found to be 3 V. The modulation index is 0.6x where x is ________.

Response Type: Numeric

Evaluation Required For SA: Yes

Show Word Count: Yes

Answers Type: Equal

Text Areas: PlainText Possible

Answers:

1
For the circuit shown, the value of current at time t=3.2 s will be _______ A.

[Voltage distribution V(t) is shown by Fig. (1) and the circuit is shown in Fig. (2) ]
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText Possible
Answers :

1

Question Type : SA
Correct Marks : 4 Wrong Marks : 0

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
In the given figure the magnetic flux through the loop increases according to the relation $\phi_B(t) = 10t^2 + 20t$, where $\phi_B$ is in milliwebers and $t$ is in seconds.

The magnitude of current through $R = 2$ $\Omega$ resistor at $t = 5$ s is ______ mA.
The $K\alpha$ X-ray of molybdenum has wavelength 0.071 nm. If the energy of a molybdenum atom with a K electron knocked out is 27.5 keV, the energy of this atom when an L electron is knocked out will be ________ keV. (Round off to the nearest integer)

\[ h = 4.14 \times 10^{-15} \text{ eVs}, \quad c = 3 \times 10^8 \text{ ms}^{-1} \]
Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The water is filled up to a height of 12 m in a tank having vertical sidewalls. A hole is made in one of the walls at a depth ‘h’ below the water level. The value of ‘h’ for which the emerging stream of water strikes the ground at the maximum range is ________ m.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers :

1
Question Type : SA
Correct Marks : 4 Wrong Marks : 0

1

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes

Answers Type : Equal
Text Areas : PlainText Possible
Answers : 1

Question Type : SA
Correct Marks : 4 Wrong Marks : 0
In the given figure, two wheels P and Q are connected by a belt B. The radius of P is three times as that of Q. In case of same rotational kinetic energy, the ratio of rotational inertias \( \left( \frac{I_1}{I_2} \right) \) will be \( x : 1 \). The value of \( x \) will be ________.
In the figure, circles P and Q are concentric, with circle Q having a radius of 3R. The area of circle P is equal to half the area of circle Q.

\[
\frac{I_1}{I_2} = \text{ratio of } x:1 \Rightarrow \text{find } x.
\]

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Equal
Text Areas: PlainText Possible
Answers:

1

Question Type: SA
Correct Marks: 4 Wrong Marks: 0
A small block slides down from the top of hemisphere of radius \( R = 3 \) m as shown in the figure. The height ‘\( h \)’ at which the block will lose contact with the surface of the sphere is ________ m.

(Assume there is no friction between the block and the hemisphere)

**Response Type**: Numeric

**Evaluation Required For SA**: Yes

**Show Word Count**: Yes

**Answers Type**: Equal

**Text Areas**: PlainText Possible

**Answers**:

1

**Question Type**: SA

**Correct Marks**: 4 **Wrong Marks**: 0
వ్యాసానికి సందర్భం లేదా నియంత్రించండి. రేఖా అండపు లేదా ఏండా రేఖా విస్త్రస్తి పరిమాణం నుండి విస్తరించి పడింది.

_______ m లేదా h పరిమాణం లేదా విస్త్రస్తి పరిమాణం నుండి విస్తరించి పడింది.

(ఏండా విస్తరించింది వ్యాసానికి సందర్భం లేదా నియంత్రించండి)

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText Possible
Answers :

1

Question Type : SA
Correct Marks : 4 Wrong Marks : 0
A swimmer wants to cross a river from point A to point B. Line AB makes an angle of $30^\circ$ with the flow of river. Magnitude of velocity of the swimmer is same as that of the river. The angle $\theta$ with the line AB should be ________ $^\circ$, so that the swimmer reaches point B.
A particle executes simple harmonic motion represented by displacement function as

\[ x(t) = A \sin (\omega t + \phi) \]

If the position and velocity of the particle at \( t = 0 \) s are 2 cm and \( 2\omega \) cm s\(^{-1}\) respectively, then its amplitude is \( x\sqrt{2} \) cm where the value of \( x \) is ________.
Answers Type : Equal

Text Areas : PlainText Possible

Answers :

1

Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The difference in the number of waves when yellow light propagates through air and vacuum columns of the same thickness is one. The thickness of the air column is _______ mm.  
[Refractive index of air = 1.0003, wavelength of yellow light in vacuum = 6000 Å]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText Possible

Answers :

1

Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The difference in the number of waves when yellow light propagates through air and vacuum columns of the same thickness is one. The thickness of the air column is _______ mm.  
[Refractive index of air = 1.0003, wavelength of yellow light in vacuum = 6000 Å]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal
Question Type : SA

Correct Marks : 4 Wrong Marks : 0

\[ \text{The molecular weight of \( \text{H}_2 \text{O} \) is 18 g/mol. Therefore, how many molecules of \( \text{H}_2 \text{O} \) would be in 2.5 g of \( \text{H}_2 \text{O} ? \) } \]

\[ \text{Answer: \( \text{Number of molecules} = \frac{2.5 \text{ g}}{18 \text{ g/mol}} \times \text{Avogadro's number} \times \text{molecular weight of \( \text{H}_2 \text{O} \)} \]

\[ \text{Response Type: Numeric} \]

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal Text

Areas : PlainText Possible

Answers : 1
Question Type : MCQ Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Select the correct statements.

(A) Crystalline solids have long range order.
(B) Crystalline solids are isotropic.
(C) Amorphous solids are sometimes called pseudo solids.
(D) Amorphous solids soften over a range of temperatures.
(E) Amorphous solids have a definite heat of fusion.

Choose the most appropriate answer from the options given below :

Options :
1. (A), (C), (D) only
2. (A), (B), (E) only
3. (C), (D) only
4. (B), (D) only
If the Thompson model of the atom was correct, then the result of Rutherford’s gold foil experiment would have been:

Options:

1. (A), (C), (D) నాటిడితే

2. (A), (B), (E) నాటిడితే

3. (C), (D) నాటిడితే

4. (B), (D) నాటిడితే
1. All of the α-particles pass through the gold foil without decrease in speed.

2. α-Particles pass through the gold foil deflected by small angles and with reduced speed.

3. α-Particles are deflected over a wide range of angles.

4. All α-particles get bounced back by 180°.
Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

Assertion A: SO₂(g) is adsorbed to a larger extent than H₂(g) on activated charcoal.

Reason R: SO₂(g) has a higher critical temperature than H₂(g).

In the light of the above statements, choose the most appropriate answer from the options given below.

Options:

1. Both A and R are correct and R is the correct explanation of A.
2. Both A and R are correct but R is not the correct explanation of A.
3. A is correct but R is not correct.
4. A is not correct but R is correct.
The CORRECT order of first ionisation enthalpy is:

Options:
1. Mg < Al < P < S
2. Mg < Al < S < P
3. \( Mg < S < Al < P \)

4. \( Al < Mg < S < P \)

**Question Type: MCQ**  
**Is Question Mandatory:** No  
**Correct Marks:** 4  
**Wrong Marks:** 1

**Options:**
1. \( Mg < Al < P < S \)
2. \( Mg < Al < S < P \)
3. \( Mg < S < Al < P \)
4. \( Al < Mg < S < P \)

---

**Question Type: MCQ**  
**Is Question Mandatory:** No  
**Correct Marks:** 4  
**Wrong Marks:** 1

The addition of silica during the extraction of copper from its sulphide ore

**Options:**
1. converts copper sulphide into copper silicate
2. reduces copper sulphide into metallic copper
3. converts iron oxide into iron silicate
   reduces the melting point of the reaction mixture

---

Question Type: MCQ Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1
Options:

1. 
2. 
3. 
4. 

---

Question Type: MCQ Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1
The number of neutrons and electrons, respectively, present in the radioactive isotope of hydrogen is:
Options:
1. 2 and 1
2. 3 and 1
3. 2 and 2
4. 1 and 1

Question Type : MCQ Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1
Options :
1. 2 మాటల్ 1
2. 3 మాటల్ 1
3. 2 మాటల్ 2
4. 1 మాటల్ 1

Question Type : MCQ Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1
Match List - I with List - II:

<table>
<thead>
<tr>
<th>List - I</th>
<th>List - II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Li</td>
<td>(i) photoelectric cell</td>
</tr>
<tr>
<td>(b) Na</td>
<td>(ii) absorbent of CO₂</td>
</tr>
<tr>
<td>(c) K</td>
<td>(iii) coolant in fast breeder nuclear reactor</td>
</tr>
<tr>
<td>(d) Cs</td>
<td>(iv) treatment of cancer</td>
</tr>
<tr>
<td></td>
<td>(v) bearings for motor engines</td>
</tr>
</tbody>
</table>

Choose the correct answer from the options given below:

Options:

1. (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)
2. (a) - (v), (b) - (i), (c) - (ii), (d) - (iv)
3. (a) - (v), (b) - (ii), (c) - (iv), (d) - (i)
4. (a) - (v), (b) - (iii), (c) - (ii), (d) - (i)

Question Type: MCQ Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1
Number of Cl=O bonds in chlorous acid, chloric acid and perchloric acid respectively are:

<table>
<thead>
<tr>
<th>Option</th>
<th>Chlorous Acid</th>
<th>Chloric Acid</th>
<th>Perchloric Acid</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Li</td>
<td>(i) रो० रललवाम</td>
<td>(ii) CO₂ चन्द्ररक्षकम्</td>
<td>(iii) रात्रि द्वारा विहृतीम् रात्रिका</td>
</tr>
<tr>
<td>(b) Na</td>
<td>(iv) रात्रि रद्दित्वा विश्रवत</td>
<td>(v) मन्त्रित्व अवशीत्वाय विश्रवत</td>
<td>(iv) रात्रि द्वारा विहृतीम्</td>
</tr>
<tr>
<td>(c) K</td>
<td>(ii) CO₂ चन्द्ररक्षकम्</td>
<td>(iii) रात्रि द्वारा विहृतीम् रात्रिका</td>
<td>(i) रो० रललवाम</td>
</tr>
<tr>
<td>(d) Cs</td>
<td>(i) रो० रललवाम</td>
<td>(ii) CO₂ चन्द्ररक्षकम्</td>
<td>(i) रो० रललवाम</td>
</tr>
</tbody>
</table>

Options:
1. (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)
2. (a) - (v), (b) - (i), (c) - (ii), (d) - (iv)
3. (a) - (v), (b) - (ii), (c) - (iv), (d) - (i)
4. (a) - (v), (b) - (iii), (c) - (ii), (d) - (i)
1. 1, 1 and 3
2. 3, 1 and 1
3. 1, 2 and 3
4. 4, 1 and 0

Question Type: MCQ Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1

Question Type: MCQ Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1
To an aqueous solution containing ions such as $\text{Al}^{3+}$, $\text{Zn}^{2+}$, $\text{Ca}^{2+}$, $\text{Fe}^{3+}$, $\text{Ni}^{2+}$, $\text{Ba}^{2+}$ and $\text{Cu}^{2+}$ was added conc. HCl, followed by $\text{H}_2\text{S}$. The total number of cations precipitated during this reaction is/are:

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

Question Type: MCQ Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1

Options:
1. 3
2. 2
3. 1
4. 4
Given below are two statements:

Statement I: \([\text{Mn(CN)}_6]^{3-}\), \([\text{Fe(CN)}_6]^{3-}\) and \([\text{Co(C}_2\text{O}_4)]^{3-}\) are d\(^2\)sp\(^3\) hybridised.

Statement II: \([\text{MnCl}_6]^{3-}\) and \([\text{FeF}_6]^{3-}\) are paramagnetic and have 4 and 5 unpaired electrons, respectively.

In the light of the above statements, choose the correct answer from the options given below:

Options:

1. Both statement I and statement II are true

2. Both statement I and statement II are false

3. Statement I is correct but statement II is false

4. Statement I is incorrect but statement II is true
Options:

1. 

2. 

3. 

4. 

Question Type: MCQ

Correct Marks: 4
Wrong Marks: 1
Match List - I with List - II:

<table>
<thead>
<tr>
<th>List - I</th>
<th>List - II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(compound)</td>
<td>(effect/affected species)</td>
</tr>
<tr>
<td>(a) Carbon monoxide</td>
<td>(i) Carcinogenic</td>
</tr>
<tr>
<td>(b) Sulphur dioxide</td>
<td>(ii) Metabolized by pyrus plants</td>
</tr>
<tr>
<td>(c) Polychlorinated biphenyls</td>
<td>(iii) Haemoglobin</td>
</tr>
<tr>
<td>(d) Oxides of nitrogen</td>
<td>(iv) Stiffness of flower buds</td>
</tr>
</tbody>
</table>

Choose the correct answer from the options given below:

Options:

1. (a) - (iii), (b) - (iv), (c) - (i), (d) - (ii)
2. (a) - (iii), (b) - (iv), (c) - (ii), (d) - (i)
3. (a) - (iv), (b) - (i), (c) - (iii), (d) - (ii)
4. (a) - (i), (b) - (ii), (c) - (iii), (d) - (iv)
Options : (a) - (iii), (b) - (iv), (c) - (i), (d) - (ii)

2. (a) - (iii), (b) - (iv), (c) - (ii), (d) - (i)

3. (a) - (iv), (b) - (i), (c) - (iii), (d) - (ii)

4. (a) - (i), (b) - (ii), (c) - (iii), (d) - (iv)

Question Type : MCQ Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Which one of the following set of elements can be detected using sodium fusion extract?

Options :

1.
Nitrogen, Phosphorous, Carbon, Sulfur

2. Sulfur, Nitrogen, Phosphorous, Halogens

3. Phosphorous, Oxygen, Nitrogen, Halogens

4. Halogens, Nitrogen, Oxygen, Sulfur

---

Question Type: MCQ Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1

Nitrogen, Phosphorous, Carbon, Sulfur

2. Sulfur, Nitrogen, Phosphorous, Halogens

3. Phosphorous, Oxygen, Nitrogen, Halogens

4. Halogens, Nitrogen, Oxygen, Sulfur

---

Question Type: MCQ Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1

Nitrogen, Phosphorous, Carbon, Sulfur

2. Sulfur, Nitrogen, Phosphorous, Halogens

3. Phosphorous, Oxygen, Nitrogen, Halogens

4. Halogens, Nitrogen, Oxygen, Sulfur

---

Question Type: MCQ Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1

Nitrogen, Phosphorous, Carbon, Sulfur

2. Sulfur, Nitrogen, Phosphorous, Halogens

3. Phosphorous, Oxygen, Nitrogen, Halogens

4. Halogens, Nitrogen, Oxygen, Sulfur
Given below are two statements:

Statement I: Hyperconjugation is a permanent effect.

Statement II: Hyperconjugation in ethyl cation \((CH_3-CH_2)^+\) involves the overlapping of \(C_{sp^2}-H_{1s}\) bond with empty 2p orbital of other carbon.

Choose the correct option:

Options:

1. Both statement I and statement II are true

2. Both statement I and statement II are false

3. Statement I is correct but statement II is false

4. Statement I is incorrect but statement II is true

Question Type: MCQ Is Question Mandatory: No

Correct Marks: 4 Wrong Marks: 1
Consider the above reaction, the major product “P” formed is:

Options:
1.

2.

3.

4.

Question Type: MCQ
Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1
Options:

1. 

2. 

3. 

4. 
Consider the above reaction, and choose the correct statement:

Options:

1. Compound A will be the major product

2. Compound B will be the major product

3. Both compounds A and B are formed equally

4. The reaction is not possible in acidic medium
Consider the above reaction and identify "Y".

Options:

1. −COOH
2. −CH₂NH₂
3. −CHO
4. −CONH₂
Correct Marks: 4 Wrong Marks: 1

\[
\begin{align*}
\text{R} \ - \ 	ext{CN} & \xrightarrow{\text{i)} \ \text{DIBAL-H}} \text{R} \ - \ \text{Y} \\
& \xrightarrow{\text{ii)} \ \text{H}_2\text{O}} \text{R} \\
\end{align*}
\]

The correct sequence of correct reagents for the following transformation is:

Options:
1. \(\text{–COOH}\)
2. \(\text{–CH}_2\text{NH}_2\)
3. \(\text{–CHO}\)
4. \(\text{–CONH}_2\)

Question Type: MCQ Is Question Mandatory: No

Correct Marks: 4 Wrong Marks: 1
2. (i) Fe, HCl  (ii) NaNO₂, HCl, 0°C  (iii) H₂O/H⁺  (iv) Cl₂, FeCl₃

3. (i) Fe, HCl  (ii) Cl₂, HCl  (iii) NaNO₂, HCl, 0°C  (iv) H₂O/H⁺

4. (i) Cl₂, FeCl₃  (ii) NaNO₂, HCl, 0°C  (iii) Fe, HCl  (iv) H₂O/H⁺

Question Type: MCQ Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1

Options:

1. (i) Cl₂, FeCl₃  (ii) Fe, HCl  (iii) NaNO₂, HCl, 0°C  (iv) H₂O/H⁺

2. (i) Fe, HCl  (ii) NaNO₂, HCl, 0°C  (iii) H₂O/H⁺  (iv) Cl₂, FeCl₃

3. (i) Fe, HCl  (ii) Cl₂, HCl  (iii) NaNO₂, HCl, 0°C  (iv) H₂O/H⁺

4. (i) Cl₂, FeCl₃  (ii) NaNO₂, HCl, 0°C  (iii) Fe, HCl  (iv) H₂O/H⁺
What is A in the following reaction?

\[ \text{PhCH}_2\text{Br} \xrightarrow{(i) \text{KOH/KOH}} \xrightarrow{(ii) \text{OH}/\text{H}_2\text{O}} A \] (Major Product)

Options:

1. 

2. 

3. 

Correct Marks: 4 Wrong Marks: 1
4. Question Type: MCQ Is Question Mandatory: No

Correct Marks: 4 Wrong Marks: 1

Options:

1. 

2. 

\[ \text{苯} \quad \text{CH}_2\text{Br} \quad \text{O} \quad \text{N} \quad \text{K} \quad \text{O} \quad \text{A} \quad \text{CH}_2\text{OH} \]

\[ \text{(i)} \quad \text{OH/H}_2\text{O} \quad \text{(ⅱ)} \quad \text{A} \quad \text{(ⅱ)} \quad \text{OH/H}_2\text{O} \]
Given below are two statements:

**Statement I**: Penicillin is a bacteriostatic type antibiotic.

**Statement II**: The general structure of Penicillin is:

Choose the correct option:

**Options**:

1. Both statement I and statement II are true
2. Both statement I and statement II are false

3. Statement I is correct but statement II is false

4. Statement I is incorrect but statement II is true

Question Type : MCQ Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Options:
1. Statement I is true  Statement II is false
2. Statement I is false Statement II is true
Question Type: MCQ Is Question Mandatory: No

Correct Marks: 4 Wrong Marks: 1

Compound A gives D-Galactose and D-Glucose on hydrolysis. The compound A is:

Options:
1. Maltose
2. Lactose
3. Sucrose
4. Amylose
Chemistry Section B

Section Id : 864351851
Section Number : 4
Section type : Online
Mandatory or Optional : Mandatory
Number of Questions : 10
Number of Questions to be attempted : 5
Section Marks : 20
Enable Mark as Answered Mark for Review and Clear Response : Yes

Sub-Section Number : 1
Sub-Section Id : 8643511078
Question Shuffling Allowed : Yes

Question Type : SA
Correct Marks : 4 Wrong Marks : 0
\[2\text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{SO}_3(\text{g})\]

The above reaction is carried out in a vessel starting with partial pressures \(P_{\text{SO}_2} = 250\ \text{m bar}, \ P_{\text{O}_2} = 750\ \text{m bar}\) and \(P_{\text{SO}_3} = 0\ \text{bar}\). When the reaction is complete, the total pressure in the reaction vessel is \[\text{_______ m bar} \] (Round off to the Nearest Integer).

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Equal
Text Areas: PlainText Possible
Answers:
1

Question Type: SA
Correct Marks: 4 Wrong Marks: 0
\[2\text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{SO}_3(\text{g})\]

ఇది రాశిలీ కొట్టడం, మొదటి ఆడలు, \(P_{\text{SO}_2} = 250\ \text{m bar}, \ P_{\text{O}_2} = 750\ \text{m bar}\) లోకిపాటం \(P_{\text{SO}_3} = 0\ \text{సమయం}

మొదటి రాశిలైనను కొట్టింది. ప్రతి రాశి ఆడాలు ఉంటాయి, మొదటి రాశిలైన మొత్తం \[\text{_______ m bar} \] (దక్షిణాను ప్రతి రాశిలైన సమయంలో).

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Equal
Text Areas: PlainText Possible
Answers:
1
The total number of electrons in all bonding molecular orbitals of $O_2^{2-}$ is ________.

(Round off to the Nearest Integer).

**Question Type**: SA  
**Correct Marks**: 4  **Wrong Marks**: 0

**Response Type**: Numeric  
**Evaluation Required For SA**: Yes  
**Show Word Count**: Yes  
**Answers Type**: Equal  
**Text Areas**: PlainText Possible

**Answers**: 1
When 400 mL of 0.2 M $\text{H}_2\text{SO}_4$ solution is mixed with 600 mL of 0.1 M $\text{NaOH}$ solution, the increase in temperature of the final solution is $\text{______} \times 10^{-2}$ K. (Round off to the Nearest Integer).

[Use: $\text{H}^+(\text{aq}) + \text{OH}^-(\text{aq}) \rightarrow \text{H}_2\text{O} : \Delta_{\text{f}}H = -57.1$ kJ mol$^{-1}$]

Specific heat of $\text{H}_2\text{O} = 4.18$ J K$^{-1}$ g$^{-1}$

density of $\text{H}_2\text{O} = 1.0$ g cm$^{-3}$

Assume no change in volume of solution on mixing.]
In a solvent 50% of an acid HA dimerizes and the rest dissociates. The van't Hoff factor of the acid is \( \text{_______} \times 10^{-2} \). (Round off to the Nearest Integer).

Question Type: SA
Correct Marks: 4 Wrong Marks: 0

Technically, the problem statement and solution are the same for the second and third question types. However, the language and structure differ slightly, reflecting the context of the question and the expected answer format.
The equilibrium constant for the reaction

\[ A(s) \rightleftharpoons M(s) + \frac{1}{2} O_2(g) \]

is \( K_p = 4 \). At equilibrium, the partial pressure of \( O_2 \) is ______ atm. (Round off to the Nearest Integer).
A(s) → M(s) + \frac{1}{2} O_2(g) \text{ atm.}

\text{Evaluation Required For SA : Yes}

\text{Show Word Count : Yes}

\text{Answers Type : Equal}

\text{Text Areas : PlainText Possible}

\text{Answers :}

1

\text{Question Type : SA}

\text{Correct Marks : 4 Wrong Marks : 0}

For the cell \text{Cu(s)} | \text{Cu}^{2+}(aq) (0.1 \text{ M}) || \text{Ag}^+(aq) (0.01 \text{ M}) | \text{Ag(s)}
the cell potential \( E_1 = 0.3095 \text{ V} \)

For the cell \text{Cu(s)} | \text{Cu}^{2+}(aq) (0.01 \text{ M}) || \text{Ag}^+(aq) (0.001 \text{ M}) | \text{Ag(s)}
the cell potential = ________ \times 10^{-2} \text{ V.} \text{ (Round off to the Nearest Integer)}.

[Use : \frac{2.303 \text{ RT}}{F} = 0.059]
Question Type: SA

Correct Marks: 4 Wrong Marks: 0

\[ \text{Cu(s)}|\text{Cu}^{2+}(aq) \ (0.1 \text{ M})||\text{Ag}^+(aq) \ (0.01 \text{ M})|\text{Ag(s)} \]

\[ E_1 = 0.3095 \text{ V} \]

\[ \text{Cu(s)}|\text{Cu}^{2+}(aq) \ (0.01 \text{ M})||\text{Ag}^+(aq) \ (0.001 \text{ M})|\text{Ag(s)} \]

\[ E_2 = \text{________} \times 10^{-2} \text{ V}. \text{ (explain the calculation and units of the result).} \]

\[ \left[ \frac{2.303 \text{ RT}}{F} \right] = 0.059 \]

Response Type: Numeric

Evaluation Required For SA: Yes

Show Word Count: Yes

Answers Type: Equal

Text Areas: PlainText

Possible Answers:

1
For the first order reaction $A \to 2B$, 1 mole of reactant $A$ gives 0.2 moles of $B$ after 100 minutes. The half life of the reaction is _______ min. (Round off to the Nearest Integer).

[Use : $\ln 2 = 0.69$, $\ln 10 = 2.3$]

Properties of logarithms : $\ln x^y = y \ln x$;

$$\ln \left( \frac{x}{y} \right) = \ln x - \ln y$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText Possible

Answers :

1

Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$A \to 2B$, మెరి 1నే ప్రతి ప్రాంతం, 1 ప్రాంత చేయడానికి $A$, 100 మినిటులు సమయం 0.2 మినిటు బాధితం. కలప సమయం________ మినిటులు. (మరింత తెలుగు సంస్కరణ) [ $\ln 2 = 0.69$, $\ln 10 = 2.3$ ;

$\ln x^y = y \ln x$;

$$\ln \left( \frac{x}{y} \right) = \ln x - \ln y$$

Response Type : Numeric
3 moles of metal complex with formula $\text{Co(en)}_2\text{Cl}_3$ gives 3 moles of silver chloride on treatment with excess of silver nitrate. The secondary valency of Co in the complex is ________.
(Round off to the Nearest Integer).

Question Type: SA
Correct Marks: 4 Wrong Marks: 0
Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Equal
Text Areas: PlainText Possible
Answers: 
1

$\text{Co(en)}_2\text{Cl}_3$ వేల కే 3 మొత్తం కే 3 వేల లేక ఇతర లేదా మరికొన్ని మామూలు నిష్పత్తులు నిలిచాం లేదా స్థాయి ప్రకటించబడదు.
3 మొత్తం తప్పించడానికి అవసరం. నిష్పత్తులు నిలించడానికి స్థాయి కోసం Co ________. (హార్డ్ సమాధాన).

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
The dihedral angle in staggered form of Newman projection of 1,1,1-Trichloro ethane is ________ degree. (Round off to the Nearest Integer).
10.0 mL of 0.05 M KMnO₄ solution was consumed in a titration with 10.0 mL of given oxalic acid dihydrate solution. The strength of given oxalic acid solution is \( \underline{\text{______}} \times 10^{-2} \) g/L.

(Round off to the Nearest Integer).

**Question Type :** SA  
**Correct Marks :** 4  
**Wrong Marks :** 0

**Response Type :** Numeric  
**Evaluation Required For SA :** Yes  
**Show Word Count :** Yes  
**Answers Type :** Equal  
**Text Areas :** PlainText Possible

**Answers :**

1

10.0 mL యొక్క కంటెన్ట్ ను పంచించి 0.05 M KMnO₄ లక్షణానామ ఎంపికలో చేయారు. 10.0 mL యొక్క KMnO₄ లక్షణానామ ఎంపికలో చేయారు. 

**Question Type :** SA  
**Correct Marks :** 4  
**Wrong Marks :** 0

10.0 mL యొక్క KMnO₄ లక్షణానామ ఎంపికలో చేయారు. 

**Response Type :** Numeric  
**Evaluation Required For SA :** Yes  
**Show Word Count :** Yes  
**Answers Type :** Equal Text  
**Text Areas :** PlainText Possible

**Answers :**
Let \( f: \mathbb{R} \to \mathbb{R} \) be defined as

\[
f(x+y) + f(x-y) = 2f(x) f(y), \quad f\left(\frac{1}{2}\right) = -1.\]

Then, the value of

\[
\sum_{k=1}^{20} \frac{1}{\sin(k) \sin(k + f(k))}
\]

is equal to:

Options:

1. \( \sec^2(1) \sec(21) \cos(20) \)
2. \( \csc^2(21) \cos(20) \cos(2) \)

3. \( \csc^2(1) \csc(21) \sin(20) \)

4. \( \sec^2(21) \sin(20) \sin(2) \)

---

**Question Type:** MCQ  
**Is Question Mandatory:** No

**Correct Marks:** 4  
**Wrong Marks:** 1

\[ f: \mathbb{R} \to \mathbb{R} \text{ is defined} \]

\[ f(x+y) + f(x-y) = 2f(x)f(y), \quad f\left(\frac{1}{2}\right) = -1 \text{ at } x = 1 \text{ is impossible. So,} \]

\[ \sum_{k=1}^{20} \frac{1}{\sin(k) \sin(k + f(k))} \text{ find :} \]

**Options:**

1. \( \sec^2(1) \sec(21) \cos(20) \)

2. \( \csc^2(21) \cos(20) \cos(2) \)

3. \( \csc^2(1) \csc(21) \sin(20) \)

4. \( \sec^2(21) \sin(20) \sin(2) \)
Let the mean and variance of the frequency distribution

\[ x: x_1 = 2 \quad x_2 = 6 \quad x_3 = 8 \quad x_4 = 9 \]
\[ f: \quad 4 \quad 4 \quad \alpha \quad \beta \]

be 6 and 6.8 respectively. If \( x_3 \) is changed from 8 to 7, then the mean for the new data will be:

Options:

1. \( \frac{17}{3} \)

2. 5

3. \( \frac{16}{3} \)

4. 4
Consider a circle C which touches the y-axis at (0, 6) and cuts off an intercept $6\sqrt{5}$ on the x-axis. Then the radius of the circle C is equal to:

Options:

1. 8
2. $\sqrt{53}$
3. 9
4. $\sqrt{82}$
Correct Marks : 4 Wrong Marks : 1

Two sides of a parallelogram are along the lines $4x + 5y = 0$ and $7x + 2y = 0$. If the equation of one of the diagonals of the parallelogram is $11x + 7y = 9$, then other diagonal passes through the point:

Options :

1. $(1, 2)$

2. $(2, 2)$

3. $(2, 1)$

4. $(1, 3)$
Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let \( f : [0, \infty) \rightarrow [0, 3] \) be a function defined by

\[
f(x) = \begin{cases} \max \{ \sin t : 0 \leq t \leq x \}, & 0 \leq x \leq \pi \\ 2 + \cos x, & x > \pi \end{cases}
\]

Then which of the following is true?

Options:

1. \( f \) is not continuous exactly at two points in \((0, \infty)\)
2. \( f \) is continuous everywhere but not differentiable exactly at two points in \((0, \infty)\)

3. \( f \) is continuous everywhere but not differentiable exactly at one point in \((0, \infty)\)

4. \( f \) is differentiable everywhere in \((0, \infty)\)

---

Question Type : MCQ Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

\( f : [0, \infty) \rightarrow [0, 3] \) అనుసంధానం

\[
f(x) = \begin{cases} 
\sin t : 0 \leq t \leq x, & 0 \leq x \leq \pi \\
2 + \cos x, & x > \pi 
\end{cases}
\]

ఇ తరువాత ఎలిచిప్పాదాయి. ఇది ఎన్ని రాశిప్పువరైనది ?

Options :

1. \((0, \infty)\) లో ఫలితం కూడా ఈనాంటు సమయం ఉండడం మరియు అనుసంధానం అయింది

2. \( f \) మధ్య మెమ్పొల్లిత రాశి \((0, \infty)\) లో ఈనాంటు సమయం ఉండడం మరియు అనుసంధానం అయింది

3. \( f \) మధ్య మెమ్పొల్లిత రాశి \((0, \infty)\) లో ఈనాంటు సమయం ఉండడం మరియు అనుసంధానం అయింది

4. \((0, \infty)\) లో ప్రత్యేకమైన రాశిలో ఫలితం అద్భుతం ఉండడం
Which of the following is the negation of the statement “for all M > 0, there exists xεS such that x ≥ M”?

Options:

1. there exists M > 0, there exists xεS such that x < M
2. there exists M > 0, there exists xεS such that x ≥ M
3. there exists M > 0, such that x < M for all xεS
4. there exists M > 0, such that x ≥ M for all xεS

“అంటే M > 0 లా యింటా మేము అందు మేము అందు సాధారణత ఇందు ఇందు కావు కావు కావు కావు

Options:

1. x < M అంతే మేము అందు మేము అందు కావు కావు
2. x ≥ M అంతే మేము అందు మేము అందు కావు కావు
3. అంటే xεS అందు మేము అందు మేము అందు కావు కావు
4. అంటే xεS అందు మేము అందు మేము అందు కావు కావు
The area of the region bounded by \( y - x = 2 \) and \( x^2 = y \) is equal to:

Options:

1. \( \frac{2}{3} \)
2. \( \frac{4}{3} \)
3. \( \frac{9}{2} \)
4. \( \frac{16}{3} \)

\[ y - x = 2 \text{ మరియం } x^2 = y \text{ అతనేత నిశ్చితమైన విభాగానికి పరిమితమైన విభాగం:} \]

Options:

1. \( \frac{2}{3} \)
2. \( \frac{4}{3} \)

3. \( \frac{9}{2} \)

4. \( \frac{16}{3} \)

Question Type: MCQ Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1

Let \( y = y(x) \) be the solution of the differential equation \((x-x^3)dy = (y+y^2-x^3)dx\), \( x > 2 \).
If \( y(3) = 3 \), then \( y(4) \) is equal to:

Options:
1. 12
2. 8
3. 16
4. 4

Question Type: MCQ Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1
The point P \((a, b)\) undergoes the following three transformations successively:

(a) reflection about the line \(y = x\).

(b) translation through 2 units along the positive direction of \(x\)-axis.

(c) rotation through angle \(\frac{\pi}{4}\) about the origin in the anti-clockwise direction.

If the co-ordinates of the final position of the point P are \(\left( -\frac{1}{\sqrt{2}}, \frac{7}{\sqrt{2}} \right)\), then the value of \(2a + b\) is equal to:

Options:
1. 5
2. 7
3. 9
4. 13

Question Type : MCQ Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Options :
1. 5
2. 7
3. 9
4. 13
A possible value of \(x\), for which the ninth term in the expansion of
\[
\left\{3\log_3 25^{x-1} + 7 + 3\left(-\frac{1}{8}\right)\log_3 (5^{x-1}+1)\right\}^{10}
\]

in the increasing powers of \(-\frac{1}{8}\log_3 (5^{x-1}+1)\)

is equal to 180, is:

Options:
1. 0
2. 1
3. -1
4. 2
Question Type : MCQ  Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Let \( \mathbb{C} \) be the set of all complex numbers. Let
\[
S_1 = \{z \in \mathbb{C} : |z - 2| \leq 1 \} \quad \text{and} \\
S_2 = \{z \in \mathbb{C} : z(1 + i) + \overline{z}(1 - i) \geq 4 \}.
\]

Then, the maximum value of \( |z - \frac{5}{2}|^2 \) for \( z \in S_1 \cap S_2 \) is equal to:

Options :

1. \( \frac{3 + 2\sqrt{2}}{4} \)
2. \( \frac{3 + 2\sqrt{2}}{2} \)
3. \( \frac{5 + 2\sqrt{2}}{2} \)
4. \[ \frac{5 + 2\sqrt{2}}{4} \]

**Question Type:** MCQ  
**Is Question Mandatory:** No  
**Correct Marks:** 4  
**Wrong Marks:** 1

**Options:**
1. \[ \frac{3 + 2\sqrt{2}}{4} \]
2. \[ \frac{3 + 2\sqrt{2}}{2} \]
3. \[ \frac{5 + 2\sqrt{2}}{2} \]
4. \[ \frac{5 + 2\sqrt{2}}{4} \]
Let \( f: (a, b) \rightarrow \mathbb{R} \) be twice differentiable function such that \( f(x) = \int_a^x g(t)dt \) for a differentiable function \( g(x) \). If \( f(x) = 0 \) has exactly five distinct roots in \((a, b)\), then \( g(x)g'(x) = 0 \) has at least:

Options:

1. three roots in \((a, b)\)
2. five roots in \((a, b)\)
3. seven roots in \((a, b)\)
4. twelve roots in \((a, b)\)
Question Type: MCQ  Is Question Mandatory: No

Correct Marks: 4  Wrong Marks: 1

Let $A$ and $B$ be two $3 \times 3$ real matrices such that $(A^2 - B^2)$ is an invertible matrix. If $A^5 = B^5$ and $A^3 B^2 = A^2 B^3$, then the value of the determinant of the matrix $A^3 + B^3$ is equal to:

Options:

1. 0
2. 1
3. 2
4. 4

Question Type: MCQ  Is Question Mandatory: No

Correct Marks: 4  Wrong Marks: 1

$A^2 - B^2$ మధ్య ఎంత ప్రత్యేకత ఉంది. అంతే ప్రమాణంలో $A$ మరియు $B$ యెందుకు 3×3 మాтриక్స్ కనబడతాయి.

$A^5 = B^5$ మరియు $A^3 B^2 = A^2 B^3$ అనే ప్రమాణం లో $A^3 + B^3$ దశానికి ఎంత ప్రత్యేకత ఉండి?

Options:

1. 0
Question Type: MCQ Is Question Mandatory: No

Correct Marks: 4 Wrong Marks: 1

Let $\mathbb{N}$ be the set of natural numbers and a relation $R$ on $\mathbb{N}$ be defined by 

$$R = \{(x, y) \in \mathbb{N} \times \mathbb{N} : x^3 - 3x^2y - xy^2 + 3y^3 = 0\}$$

Then the relation $R$ is:

Options:

1. reflexive and symmetric, but not transitive
2. reflexive but neither symmetric nor transitive
3. symmetric but neither reflexive nor transitive
4. an equivalence relation

Question Type: MCQ Is Question Mandatory: No

Correct Marks: 4 Wrong Marks: 1
Let \( \alpha = \max_{x \in \mathbb{R}} \{ 8 \sin^3 3x, 4 \cos 3x \} \) and \( \beta = \min_{x \in \mathbb{R}} \{ 8 \sin^3 3x, 4 \cos 3x \} \).

If \( 8x^2 + bx + c = 0 \) is a quadratic equation whose roots are \( \sqrt[3]{\alpha} \) and \( \sqrt[3]{\beta} \), then the value of \( c - b \) is equal to:

Options:
1. 42
2. 43
3. \(47\)

4. \(50\)

**Question Type : MCQ Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

\[
\alpha = \frac{1}{\pi} \int_{\pi}^{3\pi} \{8\sin 3x, 4\cos 3x\} \quad \beta = \frac{1}{\pi} \int_{\pi}^{3\pi} \{8\sin 3x, 4\cos 3x\} \quad \text{evaluate.}
\]

\[8x^2 + bx + c = 0 \quad \text{will have two real roots} \quad \alpha = \frac{1}{2} \quad \beta = \frac{1}{2} \quad \text{then} \quad c - b = \text{what}?
\]

**Options :**

1. \(42\)
2. \(43\)
3. \(47\)
4. \(50\)

**Question Type : MCQ Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

The value of \(\lim_{x \to 0} \left( \frac{x}{\sqrt{1 - \sin x} - \frac{1}{\sqrt{1 + \sin x}}} \right)\) is equal to:

**Options :**

1. \(0\)
2. \(-1\)

3. \(-4\)

4. \(4\)

Question Type: MCQ Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1

\[
\lim_{{x \to 0}} \left( \frac{x}{{\sqrt[3]{{1 - \sin x}} - \sqrt[3]{{1 + \sin x}}} \right) \text{ is equal to}: \\
\]

Options:
1. 0
2. \(-1\)
3. \(-4\)
4. 4

Question Type: MCQ Is Question Mandatory: No
Correct Marks: 4 Wrong Marks: 1

A student appeared in an examination consisting of 8 true - false type questions. The student guesses the answers with equal probability. The smallest value of \(n\) so that the probability of guessing at least \(n\) correct answers is less than \(\frac{1}{2}\) is:
Options:
1. 3
2. 4
3. 5
4. 6

Question Type: MCQ Is Question Mandatory: No

Correct Marks: 4 Wrong Marks: 1

8 एक्षी-दहू उड़ा स्वरूप विद्युत कर्म एवं प्रकाश के विषय में विस्तार कथा। रासायनिक काल्पनिक कोणते मिश्रण समाधान कीजिया।

रासायनिक समीकरण: राशि 'n' काल्पनिक रासायनिक काल्पनिक कोणते कोणते $\frac{1}{2}$ असे होते।

निकाल 'n' कीमत 8 विषय में: 

Options:
1. 3
2. 4
3. 5
4. 6

Question Type: MCQ Is Question Mandatory: No
Correct Marks : 4 Wrong Marks : 1

For real numbers \( \alpha \) and \( \beta \neq 0 \), if the point of intersection of the straight lines

\[
\frac{x - \alpha}{1} = \frac{y - 1}{2} = \frac{z - 1}{3} \quad \text{and} \quad \frac{x - 4}{\beta} = \frac{y - 6}{3} = \frac{z - 7}{3},
\]

lies on the plane \( x + 2y - z = 8 \), then \( \alpha - \beta \) is equal to:

Options:

1. \( 3 \)
2. \( 5 \)
3. \( 7 \)
4. \( 9 \)

Question Type : MCQ Is Question Mandatory : No
4. \(9\)

**Question Type : MCQ Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

If \(\tan\left(\frac{\pi}{9}\right), x, \tan\left(\frac{7\pi}{18}\right)\) are in arithmetic progression and \(\tan\left(\frac{\pi}{9}\right), y, \tan\left(\frac{5\pi}{18}\right)\) are also in arithmetic progression, then \(|x - 2y|\) is equal to:

**Options :**

1. 0
2. 1
3. 3
4. 4

**Question Type : MCQ Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

\[\tan\left(\frac{\pi}{9}\right), x, \tan\left(\frac{7\pi}{18}\right)\] are in arithmetic progression and \[\tan\left(\frac{\pi}{9}\right), y, \tan\left(\frac{5\pi}{18}\right)\] are also in arithmetic progression.

Then \(|x - 2y|\) is equal to:

**Options :**

1. 0
2. 1

3. 3

4. 4

**Question Type : MCQ Is Question Mandatory : No**

**Correct Marks : 4 Wrong Marks : 1**

Let \( \vec{a}, \vec{b} \) and \( \vec{c} \) be three vectors such that \( \vec{a} = \vec{b} \times (\vec{b} \times \vec{c}) \). If magnitudes of the vectors \( \vec{a}, \vec{b} \) and \( \vec{c} \) are \( \sqrt{2}, 1 \) and 2 respectively and the angle between \( \vec{b} \) and \( \vec{c} \) is \( \theta \left( 0 < \theta < \frac{\pi}{2} \right) \), then the value of \( 1 + \tan \theta \) is equal to:

**Options :**

1. 1

2. 2

3. \( \sqrt{3} + 1 \)

4. \( \frac{\sqrt{3} + 1}{\sqrt{3}} \)
\[ \vec{a}, \vec{b} \text{ and } \vec{c} \text{ such that } \vec{a} = \vec{b} \times (\vec{b} \times \vec{c}) \text{ does not hold for all } \vec{a}, \vec{b} \text{ and } \vec{c}. \]

\[ \sqrt{2}, 1 \text{ and } 2 \text{ are such that } \vec{b} \times \vec{c} = \vec{a} \text{ does not hold.} \]

\[ \theta \left(0 < \theta < \frac{\pi}{2}\right) \text{ and } 1 + \tan \theta \text{ is equal} = \]

Options:

1. 1

2. 2

3. \( \frac{\sqrt{3} + 1}{\sqrt{3}} \)

4. \( \sqrt{3} + 1 \)

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Mathematics Section B

Section Id : 864351853

Section Number : 6

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 10

Number of Questions to be attempted : 5

Section Marks : 20

Enable Mark as Answered Mark for Review and
Yes Clear

Response:

Sub-Section Number: 1
Sub-Section Id: 8643511080
Question Shuffling Allowed: Yes

Question Type: SA
Correct Marks: 4 Wrong Marks: 0

If the real part of the complex number \( z = \frac{3 + 2i \cos \theta}{1 - 3i \cos \theta} \), \( \theta \in \left(0, \frac{\pi}{2}\right) \) is zero, then the value of \( \sin^2 \theta + \cos^2 \theta \) is equal to ________.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Equal Text
Areas: PlainText Possible
Answers: 1

Question Type: SA
Correct Marks: 4 Wrong Marks: 0

\( z = \frac{3 + 2i \cos \theta}{1 - 3i \cos \theta} \), \( \theta \in \left(0, \frac{\pi}{2}\right) \)

\( \text{ значение } = \) ________.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
If $A = \begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & 1 \\ 0 & 0 & 1 \end{bmatrix}$ and $M = A + A^2 + A^3 + \ldots + A^{20}$, then the sum of all the elements of the matrix $M$ is equal to _______.

Question Type: SA

Correct Marks: 4 Wrong Marks: 0

Response Type: Numeric

Evaluation Required For SA: Yes

Show Word Count: Yes

Answers Type: Equal

Text Areas: PlainText Possible

Answers:

1

If $A = \begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & 1 \\ 0 & 0 & 1 \end{bmatrix}$ అంచనా $M = A + A^2 + A^3 + \ldots + A^{20}$, తేది మూలిక M తేది మూలిక నంది నంది నంది

వినిపుల ఉండి _______.

Question Type: SA

Correct Marks: 4 Wrong Marks: 0

Response Type: Numeric

Evaluation Required For SA: Yes

Show Word Count: Yes

Answers Type: Equal

Text Areas: PlainText Possible

Answers:

1
Let $n$ be a non-negative integer. Then the number of divisors of the form $4n+1$ of the number $(10)^{10} \cdot (11)^{11} \cdot (13)^{13}$ is equal to _______.

Question Type: SA

Correct Marks: 4 Wrong Marks: 0

Response Type: Numeric

Evaluation Required For SA: Yes

Show Word Count: Yes

Answers Type: Equal

Text Areas: PlainText Possible

Answers:

1
The distance of the point P(3, 4, 4) from the point of intersection of the line joining the points Q(3, -4, -5) and R(2, -3, 1) and the plane 2x + y + z = 7, is equal to ________.

Evaluation Required For SA : Yes

Show Word Count : Yes

Correct Marks : 4 Wrong Marks : 0

Question Type : SA

Responses:

1

Question Type : SA

Responses:

1

Question Type : SA

Responses:
Let \( y = y(x) \) be the solution of the differential equation \( dy = e^{ax} + y \, dx; \, a \in \mathbb{N} \).

If \( y(\log_e 2) = \log_e 2 \) and \( y(0) = \log_e \left( \frac{1}{2} \right) \), then the value of \( a \) is equal to ________.

**Response Type**: Numeric

**Evaluation Required For SA**: Yes

**Show Word Count**: Yes

**Answers Type**: Equal

**Text Areas**: PlainText Possible

**Answers**: 

1

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Let \( a \in \mathbb{N}, \, dy = e^{ax} + y \, dx \) तथा \( y = y(x) \) का योग्यता \( y(\log_e 2) = \log_e 2 \)

\( \text{यहाँ} \, y(0) = \log_e \left( \frac{1}{2} \right) \) तथा \( a \) का योग्यता = ________

**Response Type**: Numeric

**Evaluation Required For SA**: Yes

**Show Word Count**: Yes

**Answers Type**: Equal

**Text Areas**: PlainText Possible

**Answers**: 

1
If \( \int_0^\pi (\sin^3 x) e^{-\sin^2 x} \, dx = \alpha - \frac{\beta}{e} \int_0^1 \sqrt{t} e^t \, dt \), then \( \alpha + \beta \) is equal to \( ________ \).

Response Type: Numeric

Evaluation Required For SA: Yes

Show Word Count: Yes

Answers Type: Equal

Text Areas: PlainText Possible

Answers:

1

If \( \int_0^\pi (\sin^3 x) e^{-\sin^2 x} \, dx = \alpha - \frac{\beta}{e} \int_0^1 \sqrt{t} e^t \, dt \), then \( \alpha + \beta \) is equal to \( ________ \).

Response Type: Numeric

Evaluation Required For SA: Yes

Show Word Count: Yes

Answers Type: Equal

Text Areas: PlainText Possible

Answers:

1

Question Type: SA

Correct Marks: 4 Wrong Marks: 0
Let \( \mathbf{a} = \hat{i} - \alpha \hat{j} + \beta \hat{k} \), \( \mathbf{b} = 3 \hat{i} + \beta \hat{j} - \alpha \hat{k} \) and \( \mathbf{c} = -\alpha \hat{i} - 2 \hat{j} + \hat{k} \), where \( \alpha \) and \( \beta \) are integers. If \( \mathbf{a} \cdot \mathbf{b} = -1 \) and \( \mathbf{b} \cdot \mathbf{c} = 10 \), then \( (\mathbf{a} \times \mathbf{b}) \cdot \mathbf{c} \) is equal to \( \square \).

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Equal
Text Areas: PlainText Possible
Answers:

1

Question Type: SA
Correct Marks: 4 Wrong Marks: 0

\( \alpha, \beta \) ສໍາລັບ ທ່ານໜຶ່ງ, \( \mathbf{a} = \hat{i} - \alpha \hat{j} + \beta \hat{k} \), \( \mathbf{b} = 3 \hat{i} + \beta \hat{j} - \alpha \hat{k} \) ລາຍການ \( \mathbf{c} = -\alpha \hat{i} - 2 \hat{j} + \hat{k} \)

ທ່ານໜຶ່ງ. \( \mathbf{a} \cdot \mathbf{b} = -1 \) ແລະ \( \mathbf{b} \cdot \mathbf{c} = 10 \), ໃນຂອງ \( (\mathbf{a} \times \mathbf{b}) \cdot \mathbf{c} = \square \).

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Equal
Text Areas: PlainText Possible
Answers:

1

Question Type: SA
Correct Marks: 4 Wrong Marks: 0
Let $E$ be an ellipse whose axes are parallel to the co-ordinates axes, having its center at $(3, -4)$, one focus at $(4, -4)$ and one vertex at $(5, -4)$. If $mx - y = 4$, $m > 0$ is a tangent to the ellipse $E$, then the value of $5m^2$ is equal to ________.

Response Type: Numeric

Evaluation Required For SA: Yes

Show Word Count: Yes

Answers Type: Equal

Text Areas: PlainText Possible

Answers:

1

Question Type: SA

Correct Marks: 4 Wrong Marks: 0

E ఎందుకు దిగి లింగం దిగి రెండు వివరాలలో నిష్పత్తిని లభించారు, ఈంటి మధ్య (3, -4) లేదా ఎండుకు దిగి (4, -4) మధ్య చేపు (5, -4) మధ్య రెండు. $mx - y = 4$, $m > 0$ ఎందుకు దిగి లింగం $E$ ఎండుకు దిగి $5m^2$ మిచ్చను నిష్పత్తి = ________.

Response Type: Numeric

Evaluation Required For SA: Yes

Show Word Count: Yes

Answers Type: Equal

Text Areas: PlainText Possible

Answers:

1

Question Type: SA

Correct Marks: 4 Wrong Marks: 0
Let \( A = \{ n \in \mathbb{N} \mid n^2 \leq n + 10,000 \} \), \( B = \{ 3k + 1 \mid k \in \mathbb{N} \} \) and \( C = \{ 2k \mid k \in \mathbb{N} \} \), then the sum of all the elements of the set \( A \cap (B - C) \) is equal to _______.

**Response Type**: Numeric

**Evaluation Required For SA**: Yes

**Show Word Count**: Yes

**Answers Type**: Equal

**Text Areas**: PlainText Possible

**Answers**:

1

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**Question Type**: SA

**Correct Marks**: 4 **Wrong Marks**: 0

\[ A = \{ n \in \mathbb{N} \mid n^2 \leq n + 10,000 \}, \quad B = \{ 3k + 1 \mid k \in \mathbb{N} \} \quad \text{and} \quad C = \{ 2k \mid k \in \mathbb{N} \} \quad \text{are defined. The sum of} \]

\[ A \cap (B - C) \quad \text{elements is equal to } _____. \]

**Response Type**: Numeric

**Evaluation Required For SA**: Yes

**Show Word Count**: Yes

**Answers Type**: Equal

**Text Areas**: PlainText Possible

**Answers**:

1

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**Question Type**: SA

**Correct Marks**: 4 **Wrong Marks**: 0

The number of real roots of the equation

\[ e^{4x} - e^{3x} - 4e^{2x} - e^x + 1 = 0 \]

is equal to _______.

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Question Type: SA

Correct Marks: 4 Wrong Marks: 0

\[ e^{4x} - e^{3x} - 4e^{2x} - e^x + 1 = 0 \]  ఎంపించినందు దీనిపై మార్కులు మంచి మాత్రమే మాత్రమే  

Response Type: Numeric

Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Equal Text
Areas: PlainText Possible

Answers: 

1