

National Testing Agency

Question Paper Name: Paper I EH 9th Jan 2019 Shift 1 Set 2
Subject Name: Paper I EH
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Display Marks: Yes
Share Answer Key With Delivery Engine: Yes
Actual Answer Key: Yes

Paper I

Group Number : 1
Group Id : 416529125
Group Maximum Duration : 0
Group Minimum Duration : 180
Revisit allowed for view? : No
Revisit allowed for edit? : No
Break time: 0
Group Marks: 360

Physics

Section Id : 416529157
Section Number : 1
Section type : Online
Mandatory or Optional: Mandatory
Number of Questions: 30
Number of Questions to be attempted: 30
Section Marks: 120
Display Number Panel: Yes
Group All Questions: No

Sub-Section Number: 1
Sub-Section Id: 416529166
Question Shuffling Allowed : Yes

Question Number : 1 Question Id : 41652910046 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

A copper wire is stretched to make it 0.5% longer. The percentage change in its electrical resistance if its volume remains unchanged is :

Options :

41652939642. 0.5 %

41652939643. 1.0 %

41652939644. 2.5 %

41652939645. 2.0 %

Question Number : 1 Question Id : 41652910046 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक ताँबे के तार को खींचकर 0.5% से लम्बा कर दिया जाता है। यदि इसका आयतन नहीं बदलता है तो, इसके विद्युत-प्रतिरोध में प्रतिशत परिवर्तन का मान होगा :

Options :

41652939642. 0.5 %

41652939643. 1.0 %

41652939644. 2.5 %

41652939645. 2.0 %

Question Number : 2 Question Id : 41652910047 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A particle is moving with a velocity

$$\vec{v} = K(y\hat{i} + x\hat{j}), \text{ where } K \text{ is a constant.}$$

The general equation for its path is :

Options :

41652939646. $y^2 = x^2 + \text{constant}$

41652939647. $y = x^2 + \text{constant}$

41652939648. $y^2 = x + \text{constant}$

41652939649. $xy = \text{constant}$

Question Number : 2 Question Id : 41652910047 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक कण वेग $\vec{v} = K(y\hat{i} + x\hat{j})$ दर से चल रहा है, जहाँ K एक नियतांक है। इस कण के पथ का व्यापक समीकरण होगा :

Options :

41652939646. $y^2 = x^2 + \text{नियतांक}$

41652939647. $y = x^2 + \text{नियतांक}$

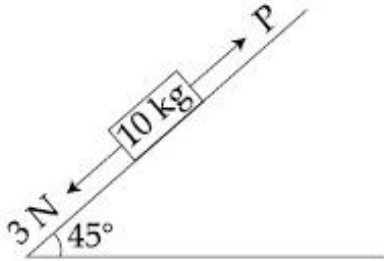
41652939648. $y^2 = x + \text{नियतांक}$

41652939649. $xy = \text{नियतांक}$

Question Number : 3 Question Id : 41652910048 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A block of mass 10 kg is kept on a rough inclined plane as shown in the figure. A force of 3 N is applied on the block. The coefficient of static friction between the plane and the block is 0.6. What should be the minimum value of force P, such that the block doesnot move downward ? (take $g = 10 \text{ ms}^{-2}$)



Options :

41652939650. 25 N

41652939651. 32 N

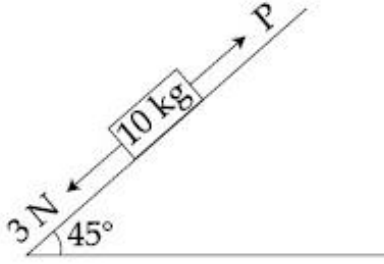
41652939652. 23 N

41652939653. 18 N

Question Number : 3 Question Id : 41652910048 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

10 kg द्रव्यमान का एक गुटका, एक खुरदुरे आनत समतल पर, चित्रानुसार रखा है। गुटके पर 3 N का बल लगाते हैं। गुटके तथा आनत-समतल के बीच स्थैतिक घर्षणांक 0.6 है। बल P का न्यूनतम मान क्या होगा जिससे कि गुटका नीचे की ओर गति नहीं करेगा ? ($g = 10 \text{ ms}^{-2}$ लीजिये)



Options :

41652939650. 25 N

41652939651. 32 N

41652939652. 23 N

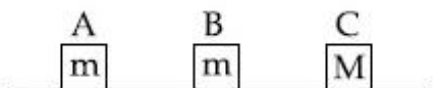
41652939653. 18 N

Question Number : 4 Question Id : 41652910049 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Three blocks A, B and C are lying on a smooth horizontal surface, as shown in the figure. A and B have equal masses, m while C has mass M . Block A is given an initial speed v towards B due to which it collides with B perfectly inelastically. The combined mass collides with C, also

perfectly inelastically $\frac{5}{6}$ th of the initial kinetic energy is lost in whole process. What is value of M/m ?



Options :

41652939654. 3

41652939655. 4

41652939656. 2

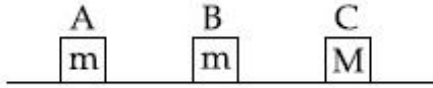
41652939657. 5

Question Number : 4 Question Id : 41652910049 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

चित्रानुसार एक चिकने क्षैतिज समतल पर तीन गुटके A, B एवं C रखे हैं। A एवं B का द्रव्यमान बराबर तथा m है, जबकि C का द्रव्यमान M है। गुटके A को एक आरम्भिक गति v , B की ओर दी जाती जिससे यह B से एक पूर्णतया अप्रत्यास्थ टक्कर करता है। यह संयुक्त द्रव्यमान गुटके C से भी एक पूर्णतया अप्रत्यास्थ टक्कर करता है। इन टक्करों में आरम्भिक गतिज ऊर्जा का $\frac{5}{6}$

भाग क्षयित हो जाता है। M/m का मान होगा :



Options :

41652939654. 3

41652939655. 4

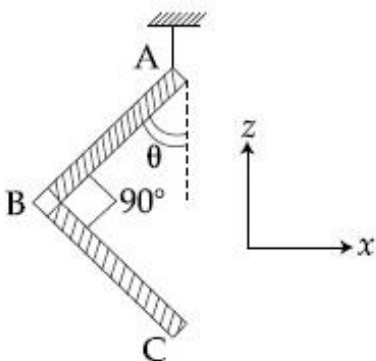
41652939656. 2

41652939657. 5

Question Number : 5 Question Id : 41652910050 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

An L-shaped object, made of thin rods of uniform mass density, is suspended with a string as shown in figure. If $AB = BC$, and the angle made by AB with downward vertical is θ , then :



Options :

$$\tan\theta = \frac{1}{2}$$

41652939658.

$$\tan\theta = \frac{1}{3}$$

41652939659.

$$\tan\theta = \frac{2}{\sqrt{3}}$$

41652939660.

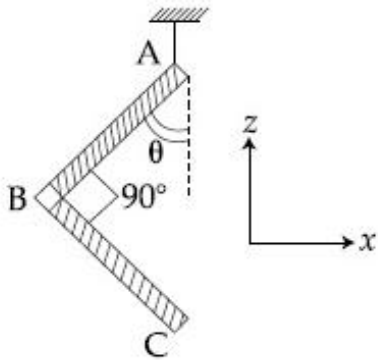
$$\tan\theta = \frac{1}{2\sqrt{3}}$$

41652939661.

Question Number : 5 Question Id : 41652910050 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एकसमान द्रव्यमान घनत्व की छड़ों से बनायी हुई L-की आकृति के एक वस्तु को चित्रानुसार, एक डोरी से लटकाया गया है। यदि $AB = BC$, तथा AB द्वारा ऊर्ध्वाधर निम्न दिशा से बनाया कोण θ है, तो :



Options :

$$\tan\theta = \frac{1}{2}$$

41652939658.

$$\tan\theta = \frac{1}{3}$$

41652939659.

$$\tan\theta = \frac{2}{\sqrt{3}}$$

41652939660.

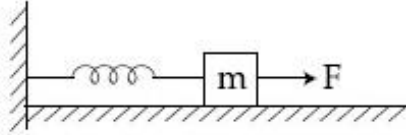
$$\tan\theta = \frac{1}{2\sqrt{3}}$$

41652939661.

Question Number : 6 Question Id : 41652910051 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A block of mass m , lying on a smooth horizontal surface, is attached to a spring (of negligible mass) of spring constant k . The other end of the spring is fixed, as shown in the figure. The block is initially at rest in its equilibrium position. If now the block is pulled with a constant force F , the maximum speed of the block is :



Options :

41652939662. $\frac{2F}{\sqrt{mk}}$

41652939663. $\frac{F}{\pi\sqrt{mk}}$

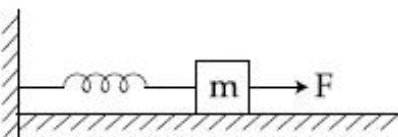
41652939664. $\frac{F}{\sqrt{mk}}$

41652939665. $\frac{\pi F}{\sqrt{mk}}$

Question Number : 6 Question Id : 41652910051 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

चिकनी सतह पर रखे m द्रव्यमान के एक गुटके को स्प्रिंग नियतांक k की एक कमानी (जिसका द्रव्यमान नगण्य है) से जोड़ा गया है। कमानी का दूसरा सिरा चित्रानुसार, अचल है। आरम्भ में गुटका अपनी साम्यावस्था में स्थायी है। यदि गुटके को एक नियत बल F से खींचा जाये तो गुटके की अधिकतम चाल होगी :



Options :

41652939662. $\frac{2F}{\sqrt{mk}}$

41652939663. $\frac{F}{\pi\sqrt{mk}}$

41652939664. $\frac{F}{\sqrt{mk}}$

41652939665. $\frac{\pi F}{\sqrt{mk}}$

Question Number : 7 Question Id : 41652910052 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

If the angular momentum of a planet of mass m , moving around the Sun in a circular orbit is L , about the center of the Sun, its areal velocity is :

Options :

41652939666. $\frac{L}{m}$

41652939667. $\frac{2L}{m}$

41652939668. $\frac{L}{2m}$

41652939669. $\frac{4L}{m}$

Question Number : 7 Question Id : 41652910052 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

यदि सूर्य के परितः वृत्तीय कक्ष में घूमते हुए द्रव्यमान m के एक ग्रह का, सूर्य के केन्द्र के सापेक्ष, कोणीय संवेग L है तो, इसकी क्षेत्रीय गति होगी :

Options :

41652939666. $\frac{L}{m}$

41652939667. $\frac{2L}{m}$

41652939668. $\frac{L}{2m}$

41652939669. $\frac{4L}{m}$

Question Number : 8 Question Id : 41652910053 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A rod, of length L at room temperature and uniform area of cross section A , is made of a metal having coefficient of linear expansion $\alpha/^\circ\text{C}$. It is observed that an external compressive force F , is applied on each of its ends, prevents any change in the length of the rod, when its temperature rises by ΔT K. Young's modulus, Y , for this metal is :

Options :

41652939670. $\frac{F}{A\alpha(\Delta T - 273)}$

41652939671. $\frac{F}{A\alpha\Delta T}$

41652939672. $\frac{F}{2A\alpha\Delta T}$

41652939673. $\frac{2F}{A\alpha\Delta T}$

Question Number : 8 Question Id : 41652910053 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

रेखीय प्रसार गुणांक $\alpha/^\circ\text{C}$ वाली धातु से बनी लम्बाई L , तथा एक समान अनुप्रस्थ काट के क्षेत्रफल A की एक छड़ को कक्ष तापमान पर रखा गया है। जब एक बाह्य संदाबी बल F को इसके प्रत्येक सिरों पर लगाते हैं, तो ΔT K की तापमान वृद्धि होने पर, छड़ की लम्बाई में कोई परिवर्तन नहीं पाया जाता है। इस धातु का यंग प्रत्यास्थता गुणांक, Y होगा :

Options :

41652939670.
$$\frac{F}{A\alpha(\Delta T - 273)}$$

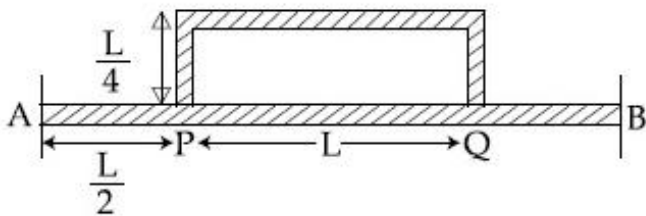
41652939671.
$$\frac{F}{A\alpha\Delta T}$$

41652939672.
$$\frac{F}{2A\alpha\Delta T}$$

41652939673.
$$\frac{2F}{A\alpha\Delta T}$$

Question Number : 9 Question Id : 41652910054 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
 Single Line Question Option : No Option Orientation : Vertical
 Correct Marks : 4 Wrong Marks : 1

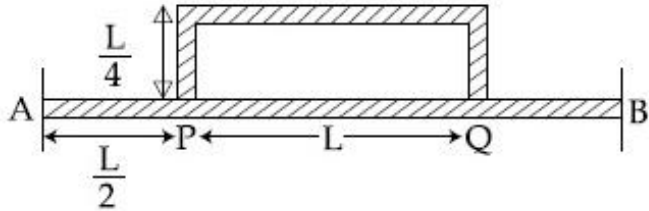
Temperature difference of 120°C is maintained between two ends of a uniform rod AB of length $2L$. Another bent rod PQ, of same cross-section as AB and length $\frac{3L}{2}$, is connected across AB (See figure). In steady state, temperature difference between P and Q will be close to :



- Options :
- 41652939674. 60°C
 - 41652939675. 75°C
 - 41652939676. 35°C
 - 41652939677. 45°C

Question Number : 9 Question Id : 41652910054 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
 Single Line Question Option : No Option Orientation : Vertical
 Correct Marks : 4 Wrong Marks : 1

2L लम्बाई की एक छड़ AB के दो सिरों के बीच तापान्तर 120°C रखा गया है। एक और इसी अनुप्रस्थ काट की $\frac{3L}{2}$ लम्बाई की मुड़ी हुयी छड़ PQ को चित्रानुसार AB से जोड़ा गया है। स्थिरावस्था में P तथा Q के बीच तापमान के अन्तर का सन्निकट मान होगा :



Options :

41652939674. 60°C

41652939675. 75°C

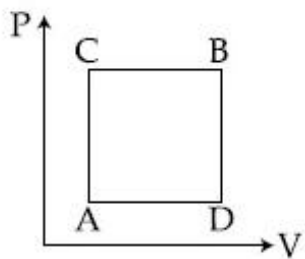
41652939676. 35°C

41652939677. 45°C

Question Number : 10 Question Id : 41652910055 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A gas can be taken from A to B via two different processes ACB and ADB.



When path ACB is used 60 J of heat flows into the system and 30 J of work is done by the system. If path ADB is used work done by the system is 10 J. The heat Flow into the system in path ADB is :

Options :

41652939678. 100 J

41652939679. 20 J

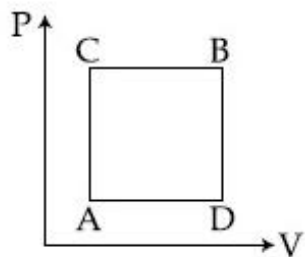
41652939680. 80 J

41652939681. 40 J

Question Number : 10 Question Id : 41652910055 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक गैस को अवस्था A से B में दो भिन्न प्रक्रमों ACB तथा ADB द्वारा ले जा सकते हैं। प्रक्रम ACB में 60 J ऊष्मा निकाय में जाती है तथा निकाय द्वारा 30 J कार्य किया जाता है। यदि प्रक्रम ADB में निकाय द्वारा 10 J कार्य किया जाता है तो इसमें, निकाय में ऊष्मा प्रवाह का मान होगा :



Options :

41652939678. 100 J

41652939679. 20 J

41652939680. 80 J

41652939681. 40 J

Question Number : 11 Question Id : 41652910056 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A mixture of 2 moles of helium gas (atomic mass = 4 u), and 1 mole of argon gas (atomic mass = 40 u) is kept at 300 K in a container. The ratio of their rms speeds

$\left[\frac{V_{\text{rms}}(\text{helium})}{V_{\text{rms}}(\text{argon})} \right]$, is close to :

Options :

41652939682. 0.32

41652939683. 0.45

41652939684. 2.24

41652939685. 3.16

Question Number : 11 Question Id : 41652910056 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक पात्र में 2 मोल हीलियम (परमाणु द्रव्यमान = 4 u)
तथा 1 मोल आर्गन (परमाणु द्रव्यमान = 40 u) गैसों
का मिश्रण 300 K पर रखा गया है। परमाणुओं के वर्ग

माध्य मूल वेगों के अनुपात, $\left[\frac{V_{rms}(\text{हीलियम})}{V_{rms}(\text{आर्गन})} \right]$, का

निकट मान होगा :

Options :

41652939682. 0.32

41652939683. 0.45

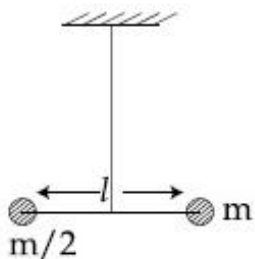
41652939684. 2.24

41652939685. 3.16

Question Number : 12 Question Id : 41652910057 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Two masses m and $\frac{m}{2}$ are connected at the
two ends of a massless rigid rod of length
 l . The rod is suspended by a thin wire of
torsional constant k at the centre of mass of
the rod-mass system (see figure). Because
of torsional constant k , the restoring torque
is $\tau = k\theta$ for angular displacement θ . If the
rod is rotated by θ_0 and released, the tension
in it when it passes through its mean
position will be :



Options :

41652939686. $\frac{k\theta_0^2}{2l}$

41652939687. $\frac{k\theta_0^2}{l}$

41652939688. $\frac{2k\theta_0^2}{l}$

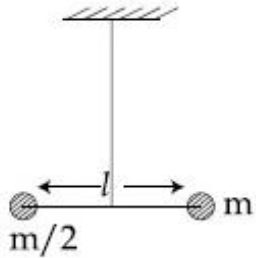
41652939689. $\frac{3k\theta_0^2}{l}$

Question Number : 12 Question Id : 41652910057 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

द्रव्यमान m तथा $\frac{m}{2}$ के दो पिण्डों को एक लम्बाई ' l '

की द्रव्यमानरहित छड़ के सिरों पर जोड़ा गया है। इस छड़ को एक मरोड़ांक k के तार से, छड़-द्रव्यमान संयोजन के द्रव्यमान केन्द्र से, चित्रानुसार, लटकाया गया है। मरोड़ांक k के कारण छड़ के कोणीय विस्थापन θ से, उस पर बल आघूर्ण $\tau = k\theta$ लगता है। यदि छड़ को θ_0 कोण से घुमा कर छोड़ देते हैं तो, इसमें तनाव का मान, जब छड़ अपनी माध्य अवस्था से गुजरती है, होगा :



Options :

41652939686. $\frac{k\theta_0^2}{2l}$

41652939687. $\frac{k\theta_0^2}{l}$

41652939688. $\frac{2k\theta_0^2}{l}$

$$\frac{3k\theta_0^2}{l}$$

41652939689.

Question Number : 13 Question Id : 41652910058 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A heavy ball of mass M is suspended from the ceiling of a car by a light string of mass m ($m \ll M$). When the car is at rest, the speed of transverse waves in the string is 60 ms^{-1} . When the car has acceleration a , the wave-speed increases to 60.5 ms^{-1} . The value of a , in terms of gravitational acceleration g , is closest to :

Options :

41652939690. $\frac{g}{10}$

41652939691. $\frac{g}{5}$

41652939692. $\frac{g}{20}$

41652939693. $\frac{g}{30}$

Question Number : 13 Question Id : 41652910058 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

द्रव्यमान M की एक भारी गेंद को एक कार की छत से एक द्रव्यमान m की हल्की डोरी ($m \ll M$) से लटकाया गया है। जब कार स्थिरावस्था में है तो डोरी में अनुप्रस्थ तरंगों की गति 60 ms^{-1} है। जब कार का त्वरण a है, तरंग गति 60.5 ms^{-1} हो जाती है। a का, गुरुत्वीय त्वरण g के रूप में, सन्निकट मान होगा :

Options :

41652939690. $\frac{g}{10}$

41652939691. $\frac{g}{5}$

$$\frac{g}{20}$$

41652939692.

$$\frac{g}{30}$$

41652939693.

Question Number : 14 Question Id : 41652910059 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Three charges $+Q$, q , $+Q$ are placed respectively, at distance, 0 , $d/2$ and d from the origin, on the x -axis. If the net force experienced by $+Q$, placed at $x=0$, is zero, then value of q is :

Options :

41652939694. $+Q/4$

41652939695. $-Q/4$

41652939696. $+Q/2$

41652939697. $-Q/2$

Question Number : 14 Question Id : 41652910059 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$+Q$, q तथा $+Q$ के तीन आवेशों को x -अक्ष पर मूलबिन्दु से क्रमशः दूरी 0 , $d/2$ तथा d पर रखा गया है। यदि $x=0$ पर रखे $+Q$ आवेश पर कुल बल शून्य है, तो q का मान होगा :

Options :

41652939694. $+Q/4$

41652939695. $-Q/4$

41652939696. $+Q/2$

41652939697. $-Q/2$

Question Number : 15 Question Id : 41652910060 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

For a uniformly charged ring of radius R , the electric field on its axis has the largest magnitude at a distance h from its centre.

Then value of h is :

Options :

41652939698. R

41652939699. $R\sqrt{2}$

41652939700. $\frac{R}{\sqrt{2}}$

41652939701. $\frac{R}{\sqrt{5}}$

Question Number : 15 Question Id : 41652910060 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

त्रिज्या R के एक एकसमान आवेशित वलय के विद्युत क्षेत्र का मान उसके अक्ष पर केन्द्र से h दूरी पर अधिकतम है। h का मान होगा :

Options :

41652939698. R

41652939699. $R\sqrt{2}$

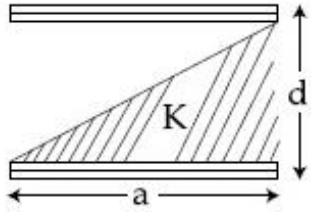
41652939700. $\frac{R}{\sqrt{2}}$

41652939701. $\frac{R}{\sqrt{5}}$

Question Number : 16 Question Id : 41652910061 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A parallel plate capacitor is made of two square plates of side 'a', separated by a distance d ($d \ll a$). The lower triangular portion is filled with a dielectric of dielectric constant K, as shown in the figure. Capacitance of this capacitor is :



Options :

41652939702. $\frac{1}{2} \frac{K\epsilon_0 a^2}{d}$

41652939703. $\frac{K\epsilon_0 a^2}{d} \ln K$

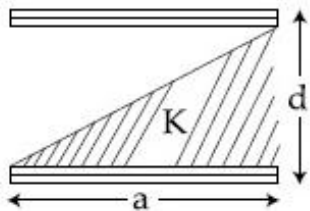
41652939704. $\frac{K\epsilon_0 a^2}{2d(K+1)}$

41652939705. $\frac{K\epsilon_0 a^2}{d(K-1)} \ln K$

Question Number : 16 Question Id : 41652910061 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

भुजा a वाली दो वर्गाकार प्लेटों को दूरी d पर रखकर एक समान्तर प्लेट संधारित्र बनाया जाता है। दिया है ($d \ll a$)। इसमें परावैद्युतांक K के परावैद्युत को चित्रानुसार लगाते हैं जिससे इसके निचले त्रिभुजाकार भाग में परावैद्युत पदार्थ रहता है। इस संधारित्र की धारिता होगी :



Options :

41652939702. $\frac{1}{2} \frac{K\epsilon_0 a^2}{d}$

$$\frac{K\epsilon_0 a^2}{d} \ln K$$

41652939703.

$$\frac{K\epsilon_0 a^2}{2d(K+1)}$$

41652939704.

$$\frac{K\epsilon_0 a^2}{d(K-1)} \ln K$$

41652939705.

Question Number : 17 Question Id : 41652910062 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Drift speed of electrons, when 1.5 A of current flows in a copper wire of cross section 5 mm^2 , is v . If the electron density in copper is $9 \times 10^{28}/\text{m}^3$ the value of v in mm/s is close to (Take charge of electron to be $= 1.6 \times 10^{-19} \text{ C}$)

Options :

41652939706. 3

41652939707. 2

41652939708. 0.2

41652939709. 0.02

Question Number : 17 Question Id : 41652910062 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

ताँबे के 5 mm^2 अनुप्रस्थ काट के क्षेत्रफल के एक तार से जब 1.5 A की धारा बहती है तो इलेक्ट्रॉनों का अपवाह वेग (drift velocity) v है। यदि ताँबे में इलेक्ट्रॉनों की संख्या का घनत्व $9 \times 10^{28}/\text{m}^3$ है, तो v का, mm/s में, सन्निकट मान होगा, (दिया है : इलेक्ट्रॉन का आवेश $= 1.6 \times 10^{-19} \text{ C}$)

Options :

41652939706. 3

41652939707. 2

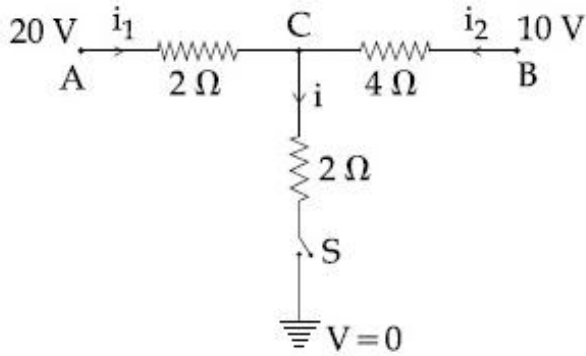
41652939708. 0.2

41652939709. 0.02

Question Number : 18 Question Id : 41652910063 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

When the switch S , in the circuit shown, is closed, then the value of current i will be :



Options :

41652939710. 2 A

41652939711. 3 A

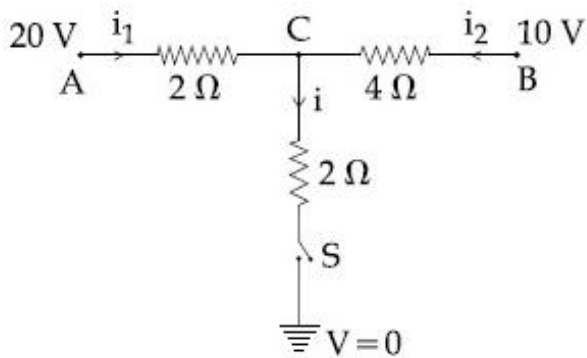
41652939712. 4 A

41652939713. 5 A

Question Number : 18 Question Id : 41652910063 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

दिये गये परिपथ में जब स्विच S को बन्द करते हैं, तो धारा i का मान होगा :



Options :

41652939710. 2 A

41652939711. 3 A

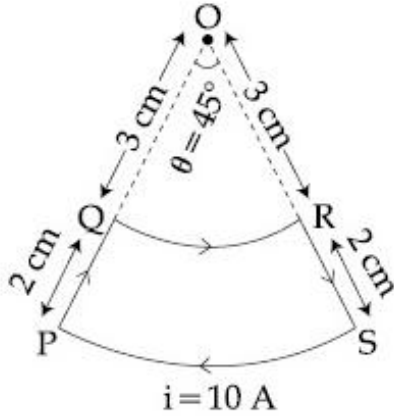
41652939712. 4 A

41652939713. 5 A

Question Number : 19 Question Id : 41652910064 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A current loop, having two circular arcs joined by two radial lines is shown in the figure. It carries a current of 10 A. The magnetic field at point O will be close to :



Options :

41652939714. 1.5×10^{-5} T

41652939715. 1.5×10^{-7} T

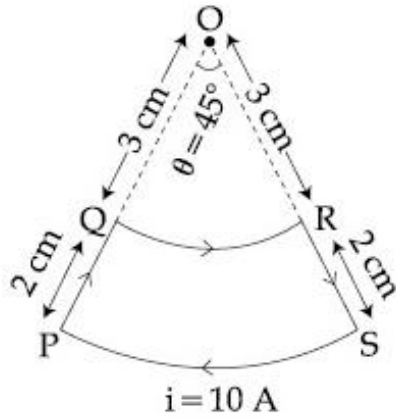
41652939716. 1.0×10^{-5} T

41652939717. 1.0×10^{-7} T

Question Number : 19 Question Id : 41652910064 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

दो वृत्ताकार चापों तथा त्रिज्यक रेखाओं से बना एक धारा पाश, चित्र में दिखाया है। पाश में 10 A की धारा प्रवाहित हो रही है। बिन्दु O पर चुम्बकीय क्षेत्र का सन्निकट मान होगा :



Options :

41652939714. 1.5×10^{-5} T

41652939715. 1.5×10^{-7} T

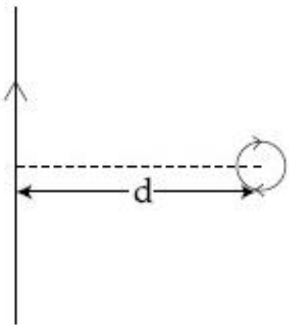
41652939716. 1.0×10^{-5} T

41652939717. 1.0×10^{-7} T

Question Number : 20 Question Id : 41652910065 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

An infinitely long current carrying wire and a small current carrying loop are in the plane of the paper as shown. The radius of the loop is a and distance of its centre from the wire is d ($d \gg a$). If the loop applies a force F on the wire then :



Options :

41652939718. $F = 0$

$$F \propto \left(\frac{a}{d}\right)$$

41652939719.

$$F \propto \left(\frac{a}{d}\right)^2$$

41652939720.

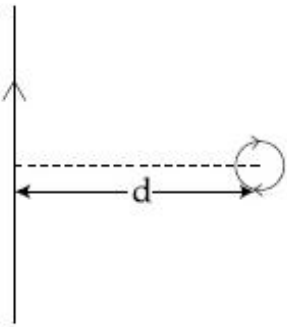
$$F \propto \left(\frac{a^2}{d^3}\right)$$

41652939721.

Question Number : 20 Question Id : 41652910065 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक अनन्त लंबाई का धारावाहक तार तथा एक छोटा सा धारावाहक पाश कागज के समतल में चित्रानुसार रखे हैं। पाश की त्रिज्या a तथा तार से इसके केन्द्र की दूरी d है ($d \gg a$)। यदि पाश द्वारा तार पर बल F है तो :



Options :

41652939718. $F = 0$

$$F \propto \left(\frac{a}{d}\right)$$

41652939719.

$$F \propto \left(\frac{a}{d}\right)^2$$

41652939720.

$$F \propto \left(\frac{a^2}{d^3}\right)$$

41652939721.

Question Number : 21 Question Id : 41652910066 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A bar magnet is demagnetized by inserting it inside a solenoid of length 0.2 m, 100 turns, and carrying a current of 5.2 A. The coercivity of the bar magnet is :

Options :

41652939722. 1200 A/m

41652939723. 520 A/m

41652939724. 285 A/m

41652939725. 2600 A/m

Question Number : 21 Question Id : 41652910066 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक छड़ चुम्बक को 0.2 मी. लम्बी तथा 100 फेरों वाली एक परिनालिका के अन्दर रखकर विचुम्बकित करते हैं। परिनालिका में 5.2 A धारा प्रवाहित हो रही है। छड़ चुम्बक की निग्राहिता है :

Options :

41652939722. 1200 A/m

41652939723. 520 A/m

41652939724. 285 A/m

41652939725. 2600 A/m

Question Number : 22 Question Id : 41652910067 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A conducting circular loop made of a thin wire, has area $3.5 \times 10^{-3} \text{ m}^2$ and resistance 10Ω . It is placed perpendicular to a time dependent magnetic field $B(t) = (0.4\text{T})\sin(50\pi t)$. The field is uniform in space. Then the net charge flowing through the loop during $t = 0 \text{ s}$ and $t = 10 \text{ ms}$ is close to :

Options :

41652939726. 6 mC

41652939727. 7 mC

41652939728. 14 mC

41652939729. 21 mC

Question Number : 22 Question Id : 41652910067 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक पतले चालक तार से बने हुए वृत्ताकार पाश का क्षेत्रफल $3.5 \times 10^{-3} \text{ m}^2$ तथा प्रतिरोध 10Ω है। इसे एक लम्बवत् चुम्बकीय क्षेत्र, जो कि समय पर निर्भर किंतु एकसमान है, $B(t) = (0.4T)\sin(50\pi t)$ में रखा गया है। समय $t = 0 \text{ s}$ से $t = 10 \text{ ms}$ तक पाश में बहने वाले नेट आवेश का मान होगा :

Options :

41652939726. 6 mC

41652939727. 7 mC

41652939728. 14 mC

41652939729. 21 mC

Question Number : 23 Question Id : 41652910068 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A plane electromagnetic wave of frequency 50 MHz travels in free space along the positive x-direction. At a particular point in space and time, $\vec{E} = 6.3 \hat{j} \text{ V/m}$. The corresponding magnetic field \vec{B} , at that point will be :

Options :

41652939730. $6.3 \times 10^{-8} \hat{k} \text{ T}$

41652939731. $2.1 \times 10^{-8} \hat{k} \text{ T}$

41652939732. $18.9 \times 10^8 \hat{k} \text{ T}$

41652939733. $18.9 \times 10^{-8} \hat{k} T$

Question Number : 23 Question Id : 41652910068 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

आवृत्ति 50 MHz की समतल विद्युत चुम्बकीय तरंग धनात्मक x दिशा की दिशा में, मुक्त आकाश में जा रही है। आकाश में एक निश्चित समय तथा बिन्दु पर

$\vec{E} = 6.3 \hat{j} \text{ V/m}$ है। तो इसके संगत चुम्बकीय क्षेत्र

\vec{B} होगा :

Options :

41652939730. $6.3 \times 10^{-8} \hat{k} T$

41652939731. $2.1 \times 10^{-8} \hat{k} T$

41652939732. $18.9 \times 10^8 \hat{k} T$

41652939733. $18.9 \times 10^{-8} \hat{k} T$

Question Number : 24 Question Id : 41652910069 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A convex lens is put 10 cm from a light source and it makes a sharp image on a screen, kept 10 cm from the lens. Now a glass block (refractive index 1.5) of 1.5 cm thickness is placed in contact with the light source. To get the sharp image again, the screen is shifted by a distance d . Then d is :

Options :

41652939734. 0

41652939735. 0.55 cm towards the lens

41652939736. 0.55 cm away from the lens

41652939737. 1.1 cm away from the lens

Question Number : 24 Question Id : 41652910069 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक उत्तल लेंस को एक प्रकाश स्रोत से 10 cm दूरी पर रखने से उसका स्पष्ट प्रतिबिंब लेंस से 10 cm दूरी पर रखी स्क्रीन पर बनता है। जब एक काँच (अपवर्तनांक 1.5) के 1.5 cm मोटे गुटके को प्रकाश स्रोत के बिल्कुल सटाकर रखते हैं तो, पुनः स्पष्ट प्रतिबिम्ब को पाने के लिये स्क्रीन को d दूरी से खिसकाना पड़ता है। तो d का मान होगा :

Options :

41652939734. शून्य

41652939735. 0.55 cm लेंस की तरफ

41652939736. 0.55 cm लेंस से दूर

41652939737. 1.1 cm लेंस से दूर

Question Number : 25 Question Id : 41652910070 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Two coherent sources produce waves of different intensities which interfere. After interference, the ratio of the maximum intensity to the minimum intensity is 16. The intensity of the waves are in the ratio :

Options :

41652939738. 4 : 1

41652939739. 16 : 9

41652939740. 25 : 9

41652939741. 5 : 3

Question Number : 25 Question Id : 41652910070 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

दो कलासम्बद्ध तरंग स्रोतों से उत्पन्न विभिन्न तीव्रताओं की तरंगों का व्यतिकरण होता है। व्यतिकरण के बाद अधिकतम तथा न्यूनतम तीव्रताओं का अनुपात 16 है, तो तरंगों की तीव्रताओं का अनुपात होगा :

Options :

41652939738. 4 : 1

41652939739. 16 : 9

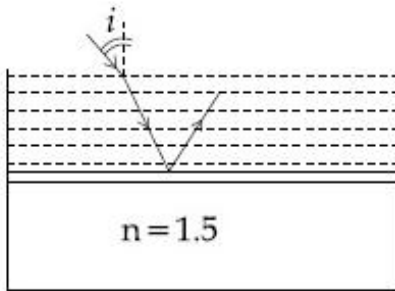
41652939740. 25 : 9

41652939741. 5 : 3

Question Number : 26 Question Id : 41652910071 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Consider a tank made of glass (refractive index 1.5) with a thick bottom. It is filled with a liquid of refractive index μ . A student finds that, irrespective of what the incident angle i (see figure) is for a beam of light entering the liquid, the light reflected from the liquid-glass interface is never completely polarized. For this to happen, the minimum value of μ is :



Options :

41652939742. $\frac{4}{3}$

41652939743. $\frac{3}{\sqrt{5}}$

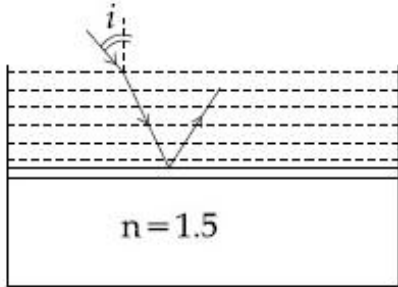
41652939744. $\frac{5}{\sqrt{3}}$

41652939745. $\sqrt{\frac{5}{3}}$

Question Number : 26 Question Id : 41652910071 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

काँच (अपवर्तनांक = 1.5) से बने एक टैंक की तली मोटी है। इसमें अपवर्तनांक μ का एक द्रव भरा है। एक छात्र पाता है कि किसी भी आपतन कोण i (चित्र देखिये) पर द्रव में आपतित प्रकाश की किरण के लिये द्रव-काँच अन्तर्पृष्ठ से परावर्तित किरण, कभी भी पूर्णतया ध्रुवित नहीं होती है। ऐसा होने के लिये, μ का न्यूनतम मान होगा :



Options :

41652939742. $\frac{4}{3}$

41652939743. $\frac{3}{\sqrt{5}}$

41652939744. $\frac{5}{\sqrt{3}}$

41652939745. $\sqrt{\frac{5}{3}}$

Question Number : 27 Question Id : 41652910072 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Surface of certain metal is first illuminated with light of wavelength $\lambda_1 = 350$ nm and then, by light of wavelength $\lambda_2 = 540$ nm. It is found that the maximum speed of the photo electrons in the two cases differ by a factor of 2. The work function of the metal (in eV) is close to :

$$\text{(Energy of photon} = \frac{1240}{\lambda(\text{in nm})} \text{eV)}$$

Options :

41652939746. 1.8

41652939747. 5.6

41652939748. 1.4

41652939749. 2.5

Question Number : 27 Question Id : 41652910072 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक धातु के पृष्ठ को, पहले $\lambda_1 = 350 \text{ nm}$ तरंगदैर्घ्य के प्रकाश और फिर $\lambda_2 = 540 \text{ nm}$ तरंगदैर्घ्य के प्रकाश से, प्रकाशित करते हैं। इससे उत्सर्जित फोटोइलेक्ट्रॉनों की अधिकतम चालों में 2 का अनुपात पाया जाता है। धातु के कार्यफलन का, eV में, मान होगा :

$$(\text{फोटॉन की ऊर्जा} = \frac{1240}{\lambda(\text{in nm})} \text{eV})$$

Options :

41652939746. 1.8

41652939747. 5.6

41652939748. 1.4

41652939749. 2.5

Question Number : 28 Question Id : 41652910073 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A sample of radioactive material A, that has an activity of 10 mCi ($1 \text{ Ci} = 3.7 \times 10^{10}$ decays/s), has twice the number of nuclei as another sample of a different radioactive material B which has an activity of 20 mCi. The correct choices for half-lives of A and B would then be respectively :

Options :

41652939750. 20 days and 10 days

41652939751. 20 days and 5 days

41652939752. 5 days and 10 days

41652939753. 10 days and 40 days

Question Number : 28 Question Id : 41652910073 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

रेडियोधर्मी पदार्थ A के एक नमूने की एक्टिवता 10 mCi ($1 \text{ Ci} = 3.7 \times 10^{10} \text{ decays/s}$) है। इस नमूने में नाभिकों की संख्या दूसरे रेडियोधर्मी पदार्थ B के नमूने के नाभिकों की संख्या की दुगुनी है। दूसरे नमूने की एक्टिवता 20 mCi है। A और B की, क्रमशः, अर्धआयु के बारे में कौन-सा कथन सत्य है?

Options :

41652939750. 20 दिन एवं 10 दिन

41652939751. 20 दिन एवं 5 दिन

41652939752. 5 दिन एवं 10 दिन

41652939753. 10 दिन एवं 40 दिन

Question Number : 29 Question Id : 41652910074 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Mobility of electrons in a semiconductor is defined as the ratio of their drift velocity to the applied electric field. If, for an n-type semiconductor, the density of electrons is 10^{19} m^{-3} and their mobility is $1.6 \text{ m}^2/(\text{V}\cdot\text{s})$ then the resistivity of the semiconductor (since it is an n-type semiconductor contribution of holes is ignored) is close to :

Options :

41652939754. $0.2 \Omega\text{m}$

41652939755. $2 \Omega\text{m}$

41652939756. $4 \Omega\text{m}$

41652939757. $0.4 \Omega\text{m}$

Question Number : 29 Question Id : 41652910074 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

इलेक्ट्रॉनों की गतिशीलता उनके अपवाह वेग तथा लगाए हुये विद्युत क्षेत्र के अनुपात से परिभाषित होती है। यदि एक n-टाइप के अर्धचालक में इलेक्ट्रॉनों का संख्या घनत्व 10^{19} m^{-3} तथा उनकी गतिशीलता $1.6 \text{ m}^2/(\text{V}\cdot\text{s})$ है तो, इसकी प्रतिरोधकता का सन्निकट मान होगा, (n-टाइप अर्धचालक में होलों का योगदान उपेक्षणीय है) :

Options :

41652939754. $0.2 \Omega\text{m}$

41652939755. $2 \Omega\text{m}$

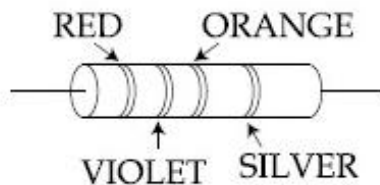
41652939756. $4 \Omega\text{m}$

41652939757. $0.4 \Omega\text{m}$

Question Number : 30 Question Id : 41652910075 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A resistance is shown in the figure. Its value and tolerance are given respectively by :



Options :

41652939758. $270 \Omega, 5 \%$

41652939759. $27 \text{ k}\Omega, 10 \%$

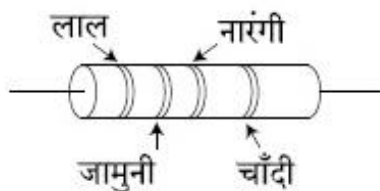
41652939760. $27 \text{ k}\Omega, 20 \%$

41652939761. $270 \Omega, 10 \%$

Question Number : 30 Question Id : 41652910075 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक प्रतिरोध को चित्र में दर्शाया गया है। इसका मान तथा सह्यता क्रमशः, होंगे :



Options :

41652939758. 270 Ω , 5 %

41652939759. 27 k Ω , 10 %

41652939760. 27 k Ω , 20 %

41652939761. 270 Ω , 10 %

Chemistry

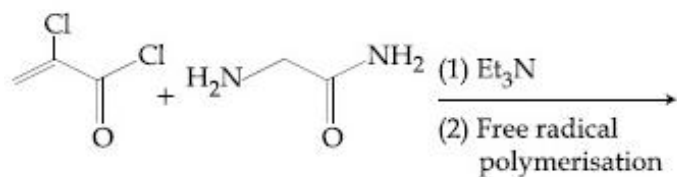
Section Id :	416529158
Section Number :	2
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	30
Number of Questions to be attempted:	30
Section Marks:	120
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	416529167
Question Shuffling Allowed :	Yes

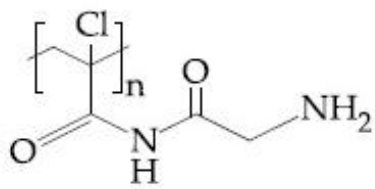
Question Number : 31 Question Id : 41652910076 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

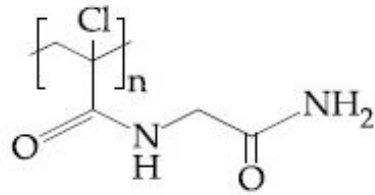
Major product of the following reaction is :



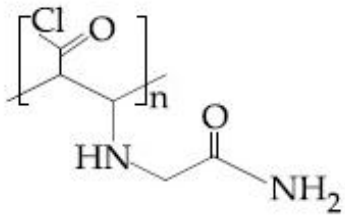
Options :



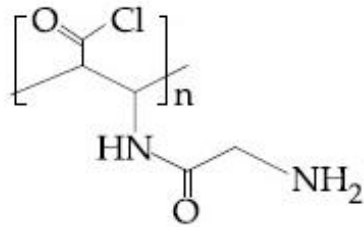
41652939762.



41652939763.



41652939764.

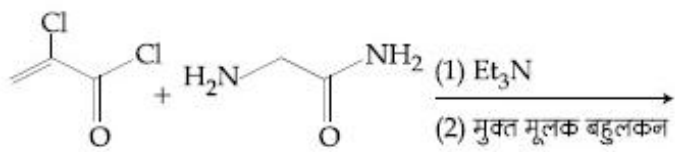


41652939765.

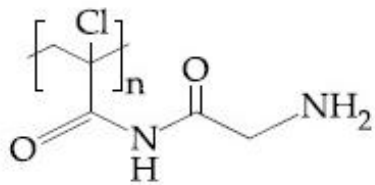
Question Number : 31 Question Id : 41652910076 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

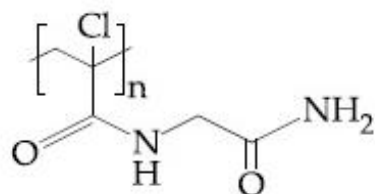
निम्नलिखित अभिक्रिया का मुख्य उत्पाद है :



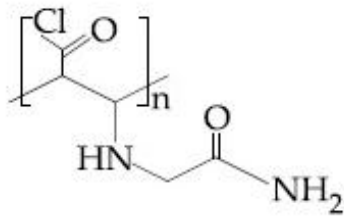
Options :



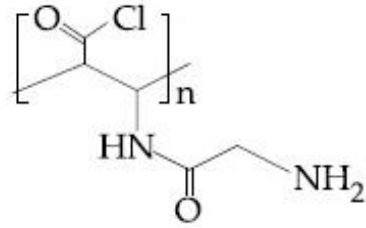
41652939762.



41652939763.



41652939764.



41652939765.

Question Number : 32 Question Id : 41652910077 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
 Single Line Question Option : No Option Orientation : Vertical
 Correct Marks : 4 Wrong Marks : 1

The increasing order of pKa of the following amino acids in aqueous solution is :

Gly Asp Lys Arg

Options :

41652939766. Gly < Asp < Arg < Lys

41652939767. Asp < Gly < Lys < Arg

41652939768. Arg < Lys < Gly < Asp

41652939769. Asp < Gly < Arg < Lys

Question Number : 32 Question Id : 41652910077 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
 Single Line Question Option : No Option Orientation : Vertical
 Correct Marks : 4 Wrong Marks : 1

जलीय विलयन में निम्नलिखित ऐमीनों अम्लों के pKa का बढ़ता क्रम है :

Gly Asp Lys Arg

Options :

41652939766. Gly < Asp < Arg < Lys

41652939767. Asp < Gly < Lys < Arg

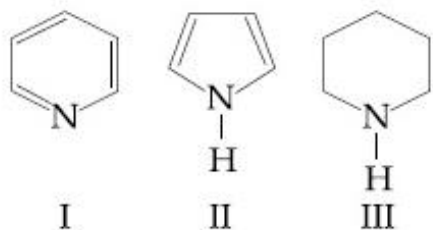
41652939768. Arg < Lys < Gly < Asp

41652939769. Asp < Gly < Arg < Lys

Question Number : 33 Question Id : 41652910078 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Arrange the following amines in the decreasing order of basicity :



Options :

41652939770. III > II > I

41652939771. III > I > II

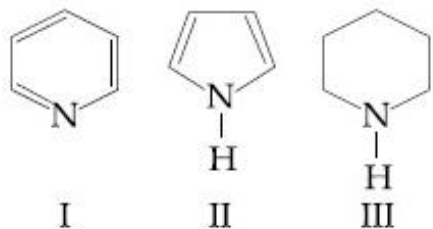
41652939772. I > III > II

41652939773. I > II > III

Question Number : 33 Question Id : 41652910078 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

क्षारकता के घटते क्रम में निम्न ऐमीनों को व्यवस्थित कीजिए :



Options :

41652939770. III > II > I

41652939771. III > I > II

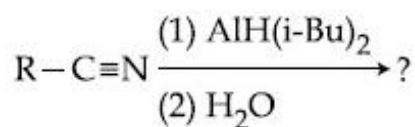
41652939772. I > III > II

41652939773. I > II > III

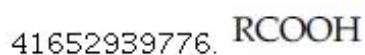
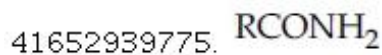
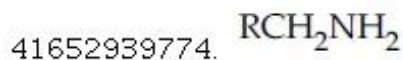
Question Number : 34 Question Id : 41652910079 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The major product of following reaction is :



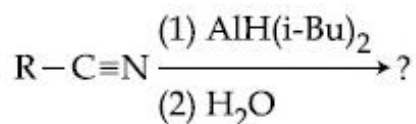
Options :



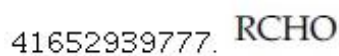
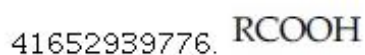
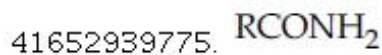
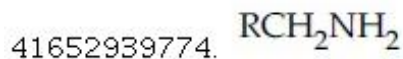
Question Number : 34 Question Id : 41652910079 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया का मुख्य उत्पाद है :



Options :



Question Number : 35 Question Id : 41652910080 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The correct decreasing order for acid strength is :

Options :



41652939780. $\text{NO}_2\text{CH}_2\text{COOH} > \text{FCH}_2\text{COOH} >$
 $\text{CNCH}_2\text{COOH} > \text{ClCH}_2\text{COOH}$

41652939781. $\text{FCH}_2\text{COOH} > \text{NCCH}_2\text{COOH} >$
 $\text{NO}_2\text{CH}_2\text{COOH} > \text{ClCH}_2\text{COOH}$

Question Number : 35 Question Id : 41652910080 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

अम्ल सामर्थ्य के लिए सही घटता क्रम है :

Options :

41652939778. $\text{NO}_2\text{CH}_2\text{COOH} > \text{NCCH}_2\text{COOH} >$
 $\text{FCH}_2\text{COOH} > \text{ClCH}_2\text{COOH}$

41652939779. $\text{CNCH}_2\text{COOH} > \text{O}_2\text{NCH}_2\text{COOH} >$
 $\text{FCH}_2\text{COOH} > \text{ClCH}_2\text{COOH}$

41652939780. $\text{NO}_2\text{CH}_2\text{COOH} > \text{FCH}_2\text{COOH} >$
 $\text{CNCH}_2\text{COOH} > \text{ClCH}_2\text{COOH}$

41652939781. $\text{FCH}_2\text{COOH} > \text{NCCH}_2\text{COOH} >$
 $\text{NO}_2\text{CH}_2\text{COOH} > \text{ClCH}_2\text{COOH}$

Question Number : 36 Question Id : 41652910081 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The compounds A and B in the following
reaction are, respectively :



Options :

41652939782. A = Benzyl alcohol, B = Benzyl
isocyanide

41652939783. A = Benzyl chloride, B = Benzyl
isocyanide

41652939784. A = Benzyl chloride, B = Benzyl
cyanide

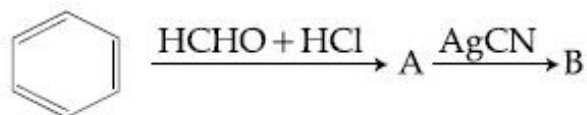
41652939785. A = Benzyl alcohol, B = Benzyl
cyanide

Question Number : 36 Question Id : 41652910081 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया में यौगिक A तथा B क्रमशः

हैं :



Options :

A = बेन्जिल ऐल्कोहाल, B = बेन्जिल
आइसोसायनाइड

41652939782.

A = बेन्जिल क्लोराइड, B = बेन्जिल
आइसोसायनाइड

41652939783.

A = बेन्जिल क्लोराइड, B = बेन्जिल सायनाइड

41652939784.

A = बेन्जिल ऐल्कोहाल, B = बेन्जिल सायनाइड

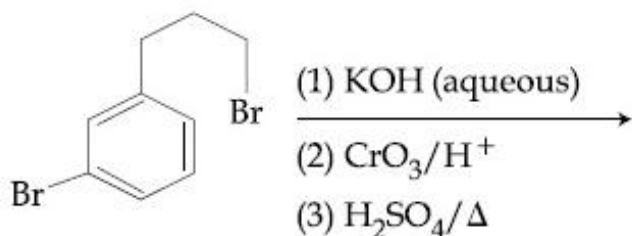
41652939785.

Question Number : 37 Question Id : 41652910082 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

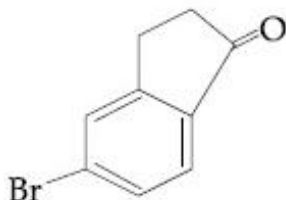
Correct Marks : 4 Wrong Marks : 1

The major product of the following reaction

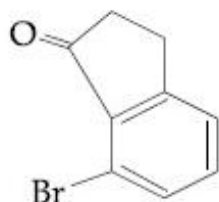
is :



Options :

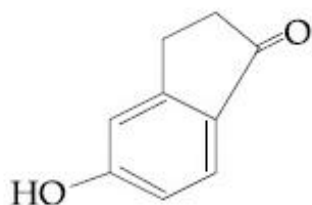


41652939786.

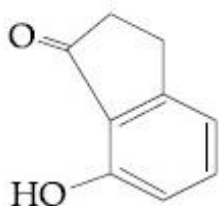


41652939787.

41652939788.



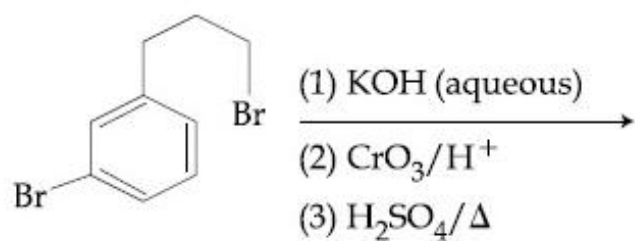
41652939789.



Question Number : 37 Question Id : 41652910082 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

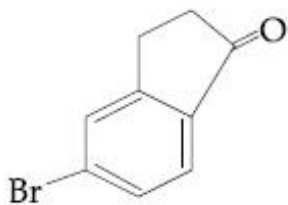
Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया का मुख्य उत्पाद है :

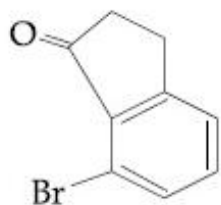


Options :

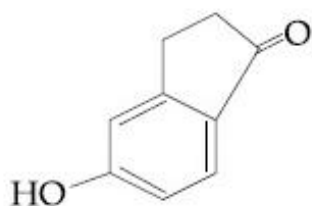
41652939786.

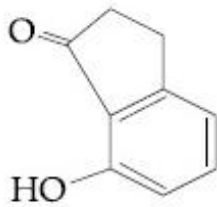


41652939787.



41652939788.





41652939789.

Question Number : 38 Question Id : 41652910083 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Which amongst the following is the strongest acid ?

Options :

41652939790. CHCl_3

41652939791. CHBr_3

41652939792. CHI_3

41652939793. $\text{CH}(\text{CN})_3$

Question Number : 38 Question Id : 41652910083 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

निम्न में से कौन प्रबलतम अम्ल है ?

Options :

41652939790. CHCl_3

41652939791. CHBr_3

41652939792. CHI_3

41652939793. $\text{CH}(\text{CN})_3$

Question Number : 39 Question Id : 41652910084 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The correct match between Item-I and Item-II is :

Item-I (drug)		Item-II (test)
A Chloroxylenol	P	Carbylamine test
B Norethindrone	Q	Sodium hydrogen-carbonate test
C Sulphapyridine	R	Ferric chloride test
D Penicillin	S	Bayer's test

Options :

41652939794. A→R ; B→P ; C→S ; D→Q

41652939795. A→Q ; B→P ; C→S ; D→R

41652939796. A→Q ; B→S ; C→P ; D→R

41652939797. A→R ; B→S ; C→P ; D→Q

Question Number : 39 Question Id : 41652910084 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

मदों-I तथा II के मध्य सही सुमेल है :

मद-I (औषधि)		मद-II (परीक्षण)
A क्लोरोजइलिनाल	P	कार्बिलऐमीन परीक्षण
B नारएथिनड्रान	Q	सोडियम हाइड्रोजन कार्बोनेट परीक्षण
C सल्फापिरिडीन	R	फेरिक क्लोराइड परीक्षण
D पेनिसिलिन	S	बेअर परीक्षण

Options :

41652939794. A→R ; B→P ; C→S ; D→Q

41652939795. A→Q ; B→P ; C→S ; D→R

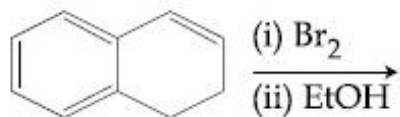
41652939796. $A \rightarrow Q ; B \rightarrow S ; C \rightarrow P ; D \rightarrow R$

41652939797. $A \rightarrow R ; B \rightarrow S ; C \rightarrow P ; D \rightarrow Q$

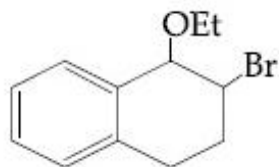
Question Number : 40 Question Id : 41652910085 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

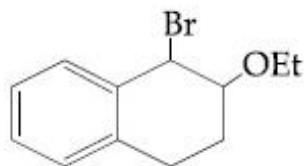
The major product of the following reaction
is :



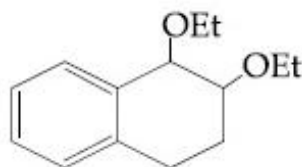
Options :



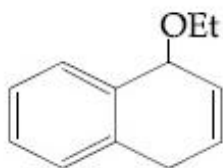
41652939798.



41652939799.



41652939800.

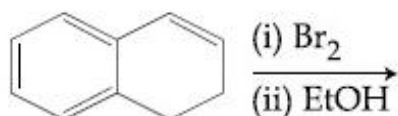


41652939801.

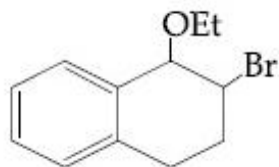
Question Number : 40 Question Id : 41652910085 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

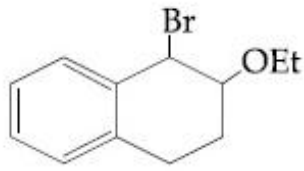
निम्नलिखित अभिक्रिया का मुख्य उत्पाद है :



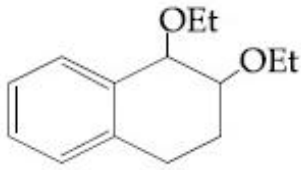
Options :



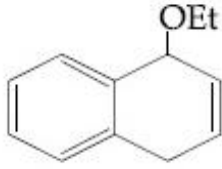
41652939798.



41652939799.



41652939800.



41652939801.

Question Number : 41 Question Id : 41652910086 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In general, the properties that decrease and increase down a group in the periodic table, respectively, are :

Options :

41652939802. electronegativity and atomic radius.

41652939803. electronegativity and electron gain enthalpy.

41652939804. atomic radius and electronegativity.

41652939805. electron gain enthalpy and electronegativity.

Question Number : 41 Question Id : 41652910086 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

सामान्यतः, आवर्त सारणी के वर्ग में नीचे जाने पर घटने तथा बढ़ने वाले गुणधर्म क्रमशः हैं :

Options :

41652939802. विद्युत-ऋणात्मकता तथा परमाणु त्रिज्या

41652939803. विद्युत-ऋणात्मकता तथा इलेक्ट्रॉन लब्धि एंथैल्पी

41652939804. परमाणु त्रिज्या तथा विद्युत-ऋणात्मकता

41652939805. इलेक्ट्रॉन लब्धि एंथैल्पी तथा विद्युत ऋणात्मकता

Question Number : 42 Question Id : 41652910087 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The ore that contains both iron and copper
is :

Options :

41652939806. malachite

41652939807. azurite

41652939808. dolomite

41652939809. copper pyrites

Question Number : 42 Question Id : 41652910087 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

आयरन तथा कापर दोनों जिस अयस्क में उपस्थित हैं
वह है :

Options :

41652939806. मैलेकाइट

41652939807. ऐजुराइट

41652939808. डोलोमाइट

41652939809. कॉपर पाइराइट

Question Number : 43 Question Id : 41652910088 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The isotopes of hydrogen are :

Options :

41652939810. Protium and deuterium only

41652939811. Tritium and protium only

41652939812. Protium, deuterium and tritium

41652939813. Deuterium and tritium only

Question Number : 43 Question Id : 41652910088 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

हाइड्रोजन के समस्थानिक हैं :

Options :

41652939810. प्रोटियम तथा ड्यूटीरियम मात्र

41652939811. ट्राइटियम तथा प्रोटियम मात्र

41652939812. प्रोटियम, ड्यूटीरियम तथा ट्राइटियम

41652939813. ड्यूटीरियम तथा ट्राइटियम मात्र

Question Number : 44 Question Id : 41652910089 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The alkaline earth metal nitrate that does not crystallise with water molecules, is :

Options :

41652939814. $Mg(NO_3)_2$

41652939815. $Ca(NO_3)_2$

41652939816. $Sr(NO_3)_2$

41652939817. $Ba(NO_3)_2$

Question Number : 44 Question Id : 41652910089 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

क्षारीय मृदा धातु नाइट्रेट जिसका जल के अणुओं के साथ क्रिस्टलीकरण नहीं होता है, वह है :

Options :

41652939814. $Mg(NO_3)_2$

41652939815. $Ca(NO_3)_2$

41652939816. $Sr(NO_3)_2$

41652939817. $Ba(NO_3)_2$

Question Number : 45 Question Id : 41652910090 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The one that is extensively used as a piezoelectric material is :

Options :

41652939818. quartz

41652939819. tridymite

41652939820. mica

41652939821. amorphous silica

Question Number : 45 Question Id : 41652910090 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

दाब-विद्युत पदार्थ की तरह विस्तीर्ण उपयोग में आने वाला अयस्क है :

Options :

41652939818. क्वार्ट्ज

41652939819. ट्राइडाइमाइट

41652939820. माइका

41652939821. अक्रिस्टलीय सिलिका

Question Number : 46 Question Id : 41652910091 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Aluminium is usually found in +3 oxidation state. In contrast, thallium exists in +1 and +3 oxidation states. This is due to :

Options :

41652939822. lanthanoid contraction

41652939823. diagonal relationship

41652939824. lattice effect

41652939825. inert pair effect

Question Number : 46 Question Id : 41652910091 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

ऐलुमीनियम सामान्यतया +3 ऑक्सीकरण अवस्था में पाया जाता है। इसके विपरीत, थैलियम +1 तथा +3 ऑक्सीकरण अवस्थाओं में रहता है। इसका कारण है :

Options :

41652939822. लैन्थेनॉयड आकुंचन

41652939823. विकर्ण संबंध

41652939824. लैटिस प्रभाव

41652939825. अक्रिय युग्म प्रभाव

Question Number : 47 Question Id : 41652910092 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Correct statements among a to d regarding silicones are :

- (a) They are polymers with hydrophobic character.
- (b) They are biocompatible.
- (c) In general, they have high thermal stability and low dielectric strength.
- (d) Usually, they are resistant to oxidation and used as greases.

Options :

41652939826. (a), (b) and (c) only

41652939827. (a), (b), (c) and (d)

41652939828. (a) and (b) only

41652939829. (a), (b) and (d) only

Question Number : 47 Question Id : 41652910092 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

a से d में से सिलिकॉन के संबंध में सही कथन हैं :

- (a) ये बहुलक जल-विरागी प्रकृति के होते हैं।
- (b) इनकी जैवसंगतिता होती है।
- (c) साधारणतया, इनका उच्च ऊष्मा स्थायित्व तथा निम्न परावैद्युत सामर्थ्य होता है।
- (d) सामान्यतया, ये ऑक्सीकरण प्रतिरोधी होते हैं तथा ग्रीज की तरह उपयोग में लाये जाते हैं।

Options :

41652939826. केवल (a), (b) तथा (c)

41652939827. (a), (b), (c) तथा (d)

41652939828. केवल (a) तथा (b)

41652939829. केवल (a), (b) तथा (d)

Question Number : 48 Question Id : 41652910093 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The highest value of the calculated spin-only magnetic moment (in BM) among all the transition metal complexes is :

Options :

41652939830. 5.92

41652939831. 4.90

41652939832. 6.93

41652939833. 3.87

Question Number : 48 Question Id : 41652910093 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

सभी संक्रमण धातु संकुलों में सर्वाधिक परिकलित प्रचरण मात्र चुंबकीय आघूर्ण (BM में) है :

Options :

41652939830. 5.92

41652939831. 4.90

41652939832. 6.93

41652939833. 3.87

Question Number : 49 Question Id : 41652910094 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Two complexes $[\text{Cr}(\text{H}_2\text{O})_6]\text{Cl}_3$ (A) and $[\text{Cr}(\text{NH}_3)_6]\text{Cl}_3$ (B) are violet and yellow coloured, respectively. The incorrect statement regarding them is :

Options :

41652939834. both are paramagnetic with three unpaired electrons.

41652939835. Δ_0 value for (A) is less than that of (B).

41652939836. both absorb energies corresponding to their complementary colors.

41652939837. Δ_0 values of (A) and (B) are calculated from the energies of violet and yellow light, respectively.

Question Number : 49 Question Id : 41652910094 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

दो संकुल $[\text{Cr}(\text{H}_2\text{O})_6]\text{Cl}_3$ (A) तथा $[\text{Cr}(\text{NH}_3)_6]\text{Cl}_3$ (B) क्रमशः बैंगनी तथा पीले रंग के हैं। इनके संबंध में गलत कथन है :

Options :

41652939834. दोनों तीन अयुग्मित इलेक्ट्रॉनों के साथ अनुचुंबकीय हैं।

41652939835. (A) के लिए Δ_0 का मान (B) की तुलना में कम है।

41652939836. दोनों अपने पूरक रंगों के अनुकूल ऊर्जा का अवशोषण करते हैं।

(A) तथा (B) के Δ_0 मानों का परिकलन क्रमशः
बैंगनी तथा पीले प्रकाश की ऊर्जाओं के द्वारा
किया जाता है।

41652939837.

Question Number : 50 Question Id : 41652910095 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A water sample has ppm level concentration of the following metals :
Fe = 0.2 ; Mn = 5.0 ; Cu = 3.0 ; Zn = 5.0. The metal that makes the water sample unsuitable for drinking is :

Options :

41652939838. Fe

41652939839. Mn

41652939840. Cu

41652939841. Zn

Question Number : 50 Question Id : 41652910095 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक जल के प्रतिदर्श में निम्नलिखित धातुओं के ppm सान्द्रता का स्तर है :

Fe = 0.2 ; Mn = 5.0 ; Cu = 3.0 ; Zn = 5.0.

धातु जिसके कारण जल प्रतिदर्श पीने योग्य नहीं है वह है :

Options :

41652939838. Fe

41652939839. Mn

41652939840. Cu

41652939841. Zn

Question Number : 51 Question Id : 41652910096 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A solution of sodium sulfate contains 92 g of Na^+ ions per kilogram of water. The molality of Na^+ ions in that solution in mol kg^{-1} is :

Options :

41652939842. 4

41652939843. 8

41652939844. 12

41652939845. 16

Question Number : 51 Question Id : 41652910096 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

सोडियम सल्फेट के एक विलयन में प्रति किलोग्राम जल में 92 g Na^+ आयन हैं। Na^+ आयन की उस विलयन में मोलालिटी (mol kg^{-1} में) होगी :

Options :

41652939842. 4

41652939843. 8

41652939844. 12

41652939845. 16

Question Number : 52 Question Id : 41652910097 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

0.5 moles of gas A and x moles of gas B exert a pressure of 200 Pa in a container of volume 10 m^3 at 1000 K. Given R is the gas constant in $\text{JK}^{-1}\text{mol}^{-1}$, x is :

Options :

41652939846. $\frac{4 - R}{2R}$

41652939847. $\frac{4 + R}{2R}$

41652939848. $\frac{2R}{4 - R}$

41652939849. $\frac{2R}{4 + R}$

Question Number : 52 Question Id : 41652910097 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

1000 K पर 10 m^3 आयतन के एक पात्र में 0.5 mol गैस A तथा $x \text{ mol}$ गैस B, 200 Pa का दाब बनाते हैं। यदि R गैस स्थिरांक ($\text{JK}^{-1}\text{mol}^{-1}$ में) हो तो x है :

Options :

41652939846. $\frac{4 - R}{2R}$

41652939847. $\frac{4 + R}{2R}$

41652939848. $\frac{2R}{4 - R}$

41652939849. $\frac{2R}{4 + R}$

Question Number : 53 Question Id : 41652910098 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

For emission line of atomic hydrogen from $n_i = 8$ to $n_f = n$, the plot of wave number ($\bar{\nu}$)

against $\left(\frac{1}{n^2}\right)$ will be (The Rydberg constant, R_H is in wave number unit)

Options :

41652939850. Linear with intercept $-R_H$

41652939851. Linear with slope $-R_H$

41652939852. Non linear

41652939853. Linear with slope R_H

Question Number : 53 Question Id : 41652910098 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

परमाणु हाइड्रोजन के $n_i = 8$ से $n_f = n$ तक की उत्सर्जन लाइन के लिए $\frac{1}{n^2}$ के विरुद्ध तरंग संख्या ($\bar{\nu}$) का प्लॉट होगा, (रिडबर्ग स्थिरांक, R_H तरंग संख्या के मात्रक में)

Options :

41652939850. $-R_H$ अन्तःखण्ड के साथ रैखिक

41652939851. $-R_H$ स्लोप के साथ रैखिक

41652939852. अरैखिक

41652939853. R_H स्लोप के साथ रैखिक

Question Number : 54 Question Id : 41652910099 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

According to molecular orbital theory, which of the following is true with respect to Li_2^+ and Li_2^- ?

Options :

41652939854. Both are unstable

41652939855. Li_2^+ is stable and Li_2^- is unstable

41652939856. Li_2^+ is unstable and Li_2^- is stable

41652939857. Both are stable

Question Number : 54 Question Id : 41652910099 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

आण्विक कक्षक सिद्धान्त के अनुसार Li_2^+ तथा Li_2^- के संबंध में निम्नलिखित में से कौन सत्य है?

Options :

41652939854. दोनों अस्थायी हैं

41652939855. Li_2^+ स्थायी है तथा Li_2^- अस्थायी है

41652939856. Li_2^+ अस्थायी है तथा Li_2^- स्थायी है

दोनों स्थायी हैं

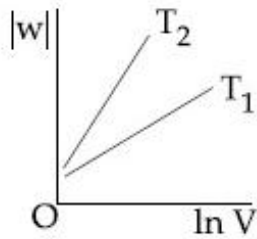
41652939857.

Question Number : 55 Question Id : 41652910100 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

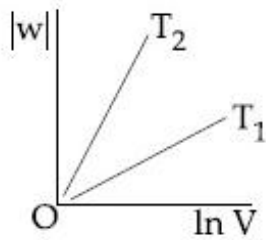
Correct Marks : 4 Wrong Marks : 1

Consider the reversible isothermal expansion of an ideal gas in a closed system at two different temperatures T_1 and T_2 ($T_1 < T_2$). The correct graphical depiction of the dependence of work done (w) on the final volume (V) is :

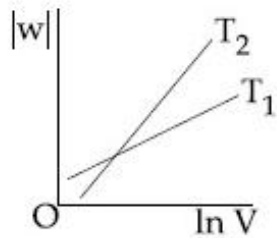
Options :



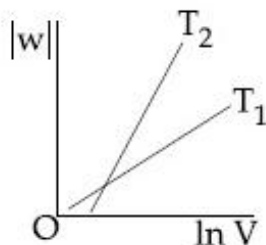
41652939858.



41652939859.



41652939860.



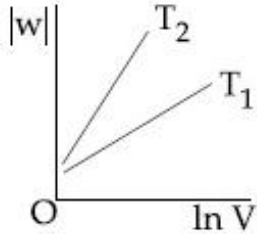
41652939861.

Question Number : 55 Question Id : 41652910100 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

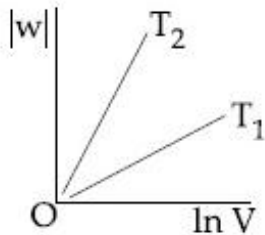
Correct Marks : 4 Wrong Marks : 1

दो भिन्न तापों T_1 तथा T_2 ($T_1 < T_2$) पर एक बंद निकाय में एक आदर्श गैस के उत्क्रमणीय समतापी प्रसार पर विचार कीजिए। किये गये कार्य (w) की अंतिम आयतन (V) पर निर्भरता का सही आलेखिक चित्रण है :

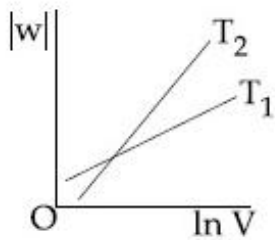
Options :



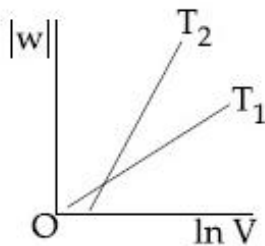
41652939858.



41652939859.



41652939860.



41652939861.

Question Number : 56 Question Id : 41652910101 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Which one of the following statements regarding Henry's law is not correct ?

Options :

The partial pressure of the gas in vapour phase is proportional to the mole fraction of the gas in the solution.

41652939862.

Different gases have different K_H (Henry's law constant) values at the same temperature.

41652939863.

Higher the value of K_H at a given pressure, higher is the solubility of the gas in the liquids.

41652939864.

The value of K_H increases with increase of temperature and K_H is function of the nature of the gas

41652939865.

Question Number : 56 Question Id : 41652910101 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

हेनरी नियम के संबंध में निम्नलिखित कथनों में से कौन सा एक सही नहीं है?

Options :

वाष्प प्रावस्था में गैस का आंशिक दाब विलयन में गैस के मोलांश के समानुपाती होता है।

41652939862.

एक ही ताप पर, विभिन्न गैसों के K_H (हेनरी नियम स्थिरांक) भिन्न होते हैं।

41652939863.

एक दिये गये दाब पर, द्रव में गैस की विलेयता अधिक होने पर K_H का मान अधिक होता है।

41652939864.

K_H का मान ताप के बढ़ने पर बढ़ता है तथा K_H गैस की प्रकृति का फलन है।

41652939865.

Question Number : 57 Question Id : 41652910102 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

20 mL of 0.1 M H_2SO_4 solution is added to 30 mL of 0.2 M NH_4OH solution. The pH of the resultant mixture is : [pK_b of $NH_4OH = 4.7$].

Options :

5.0

41652939866.

5.2

41652939867.

9.0

41652939868.

41652939869. 9.4

Question Number : 57 Question Id : 41652910102 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

20 mL 0.1 M H_2SO_4 के वलयन को 30 mL
0.2 M NH_4OH के विलय में मिलाने पर प्राप्त मिश्रण
के pH का मान है : [NH_4OH का $\text{p}K_b = 4.7$].

Options :

41652939866. 5.0

41652939867. 5.2

41652939868. 9.0

41652939869. 9.4

Question Number : 58 Question Id : 41652910103 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The anodic half-cell of lead-acid battery is
recharged using electricity of 0.05 Faraday.
The amount of PbSO_4 electrolyzed in g
during the process is : (Molar mass of
 $\text{PbSO}_4 = 303 \text{ g mol}^{-1}$)

Options :

41652939870. 15.2

41652939871. 7.6

41652939872. 22.8

41652939873. 11.4

Question Number : 58 Question Id : 41652910103 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक लेड-अम्ल बैटरी के एनोडी अर्द्ध-सेल को
0.05 फैराडे विद्युत का उपयोग करके पुनः आवेशित
किया जाता है। इस प्रक्रम में विद्युत अपघटित PbSO_4
की मात्रा (g में) है : (PbSO_4 का मोलर
द्रव्यमान = 303 g mol^{-1})

Options :

41652939870. 15.2

41652939871. 7.6

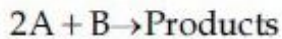
41652939872. 22.8

41652939873. 11.4

Question Number : 59 Question Id : 41652910104 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The following results were obtained during kinetic studies of the reaction ;



Experiment	[A] (in mol L ⁻¹)	[B] (in mol L ⁻¹)	Initial Rate of reaction (in mol L ⁻¹ min ⁻¹)
I	0.10	0.20	6.93×10^{-3}
II	0.10	0.25	6.93×10^{-3}
III	0.20	0.30	1.386×10^{-2}

The time (in minutes) required to consume half of A is :

Options :

41652939874. 1

41652939875. 5

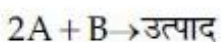
41652939876. 100

41652939877. 10

Question Number : 59 Question Id : 41652910104 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया के गतिक अध्ययनों के दौरान निम्नलिखित परिणाम प्राप्त हुए :



प्रयोग	[A] (mol L ⁻¹ में)	[B] (mol L ⁻¹ में)	आरंभिक अभिक्रिया दर (mol L ⁻¹ min ⁻¹ में)
I	0.10	0.20	6.93×10^{-3}
II	0.10	0.25	6.93×10^{-3}
III	0.20	0.30	1.386×10^{-2}

A के आधे भाग को समाप्त करने के लिए आवश्यक समय (मिनट में) होगा :

Options :

41652939874. 1

41652939875. 5

41652939876. 100

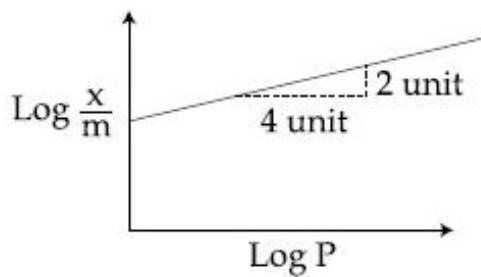
41652939877. 10

Question Number : 60 Question Id : 41652910105 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Adsorption of a gas follows Freundlich adsorption isotherm. In the given plot, x is the mass of the gas adsorbed on mass m of

the adsorbent at pressure p . $\frac{x}{m}$ is proportional to :



Options :

41652939878. $p^{1/2}$

41652939879. p^2

41652939880. p

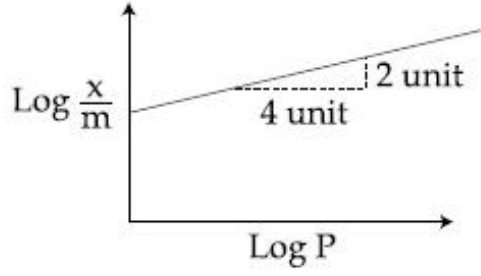
41652939881. $p^{1/4}$

Question Number : 60 Question Id : 41652910105 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक गैस का अधिशोषण फ्रॉयन्डलिक अधिशोषण समताप वक्र का अनुसरण करता है। दिये गये प्लॉट में, p दाब पर अधिशोषण के m द्रव्यमान पर अवशोषित

गैस का द्रव्यमान m है। $\frac{x}{m}$ समानुपातिक है :



Options :

41652939878. $p^{1/2}$ के

41652939879. p^2 के

41652939880. p के

41652939881. $p^{1/4}$ के

Mathematics

Section Id :	416529159
Section Number :	3
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	30
Number of Questions to be attempted:	30
Section Marks:	120
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	416529168
Question Shuffling Allowed :	Yes

Question Number : 61 Question Id : 41652910106 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

For $x \in \mathbb{R} - \{0, 1\}$, let $f_1(x) = \frac{1}{x}$, $f_2(x) = 1 - x$

and $f_3(x) = \frac{1}{1-x}$ be three given

functions. If a function, $J(x)$ satisfies $(f_2 \circ J \circ f_1)(x) = f_3(x)$ then $J(x)$ is equal to :

Options :

41652939882. $f_1(x)$

41652939883. $f_2(x)$

41652939884. $f_3(x)$

41652939885. $\frac{1}{x} f_3(x)$

Question Number : 61 Question Id : 41652910106 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$x \in \mathbb{R} - \{0, 1\}$ के लिए, तीन फलन $f_1(x) = \frac{1}{x}$,

$f_2(x) = 1 - x$ तथा $f_3(x) = \frac{1}{1-x}$ दिये गये हैं।

यदि एक फलन $J(x)$, $(f_2 \circ J \circ f_1)(x) = f_3(x)$ को सन्तुष्ट करता है, तो $J(x)$ बराबर है :

Options :

41652939882. $f_1(x)$

41652939883. $f_2(x)$

41652939884. $f_3(x)$

41652939885. $\frac{1}{x} f_3(x)$

Question Number : 62 Question Id : 41652910107 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $A = \left\{ \theta \in \left(-\frac{\pi}{2}, \pi \right) : \frac{3 + 2i \sin \theta}{1 - 2i \sin \theta} \right.$ is

purely imaginary $\left. \right\}$. Then the sum of the elements in A is :

Options :

41652939886. π

41652939887. $\frac{2\pi}{3}$

41652939888. $\frac{3\pi}{4}$

41652939889. $\frac{5\pi}{6}$

Question Number : 62 Question Id : 41652910107 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना $A = \left\{ \theta \in \left(-\frac{\pi}{2}, \pi \right) : \frac{3 + 2i \sin \theta}{1 - 2i \sin \theta} \right.$ मात्र

काल्पनिक है $\left. \right\}$, तो A के अवयवों का योग है :

Options :

41652939886. π

41652939887. $\frac{2\pi}{3}$

41652939888. $\frac{3\pi}{4}$

41652939889. $\frac{5\pi}{6}$

Question Number : 63 Question Id : 41652910108 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let α and β be two roots of the equation $x^2 + 2x + 2 = 0$, then $\alpha^{15} + \beta^{15}$ is equal to :

Options :

41652939890. 256

41652939891. -256

41652939892. 512

41652939893. -512

Question Number : 63 Question Id : 41652910108 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि α तथा β समीकरण $x^2 + 2x + 2 = 0$ के दो मूल हैं, तो $\alpha^{15} + \beta^{15}$ बराबर है :

Options :

41652939890. 256

41652939891. -256

41652939892. 512

41652939893. -512

Question Number : 64 Question Id : 41652910109 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If $A = \begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$, then the matrix

A^{-50} when $\theta = \frac{\pi}{12}$, is equal to :

Options :

41652939894. $\begin{bmatrix} \frac{\sqrt{3}}{2} & \frac{1}{2} \\ -\frac{1}{2} & \frac{\sqrt{3}}{2} \end{bmatrix}$

41652939895. $\begin{bmatrix} \frac{\sqrt{3}}{2} & -\frac{1}{2} \\ \frac{1}{2} & \frac{\sqrt{3}}{2} \end{bmatrix}$

41652939896.
$$\begin{bmatrix} \frac{1}{2} & \frac{\sqrt{3}}{2} \\ -\frac{\sqrt{3}}{2} & \frac{1}{2} \end{bmatrix}$$

41652939897.
$$\begin{bmatrix} \frac{1}{2} & -\frac{\sqrt{3}}{2} \\ \frac{\sqrt{3}}{2} & \frac{1}{2} \end{bmatrix}$$

Question Number : 64 Question Id : 41652910109 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

यदि $A = \begin{bmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{bmatrix}$, तो आव्यूह A^{-50} जब

$\theta = \frac{\pi}{12}$, बराबर है :

Options :

41652939894.
$$\begin{bmatrix} \frac{\sqrt{3}}{2} & \frac{1}{2} \\ -\frac{1}{2} & \frac{\sqrt{3}}{2} \end{bmatrix}$$

41652939895.
$$\begin{bmatrix} \frac{\sqrt{3}}{2} & -\frac{1}{2} \\ \frac{1}{2} & \frac{\sqrt{3}}{2} \end{bmatrix}$$

41652939896.
$$\begin{bmatrix} \frac{1}{2} & \frac{\sqrt{3}}{2} \\ -\frac{\sqrt{3}}{2} & \frac{1}{2} \end{bmatrix}$$

41652939897.
$$\begin{bmatrix} \frac{1}{2} & -\frac{\sqrt{3}}{2} \\ \frac{\sqrt{3}}{2} & \frac{1}{2} \end{bmatrix}$$

Question Number : 65 Question Id : 41652910110 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

The system of linear equations

$$x + y + z = 2$$

$$2x + 3y + 2z = 5$$

$$2x + 3y + (a^2 - 1)z = a + 1$$

Options :

41652939898. is inconsistent when $|a| = \sqrt{3}$

41652939899. has infinitely many solutions for $a = 4$

41652939900. is inconsistent when $a = 4$

41652939901. has a unique solution for $|a| = \sqrt{3}$

Question Number : 65 Question Id : 41652910110 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

रैखिक समीकरण निकाय

$$x + y + z = 2$$

$$2x + 3y + 2z = 5$$

$$2x + 3y + (a^2 - 1)z = a + 1$$

Options :

41652939898. असंगत है जब $|a| = \sqrt{3}$

41652939899. के $a = 4$ के लिए अनन्त हल हैं।

41652939900. असंगत है जब $a = 4$

41652939901. का $|a| = \sqrt{3}$ के लिए मात्र एक हल है।

Question Number : 66 Question Id : 41652910111 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Consider a class of 5 girls and 7 boys. The number of different teams consisting of 2 girls and 3 boys that can be formed from this class, if there are two specific boys A and B, who refuse to be the members of the same team, is :

Options :

41652939902. 200

41652939903. 300

41652939904. 350

41652939905. 500

Question Number : 66 Question Id : 41652910111 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

5 लड़कियों तथा 7 लड़कों की एक कक्षा का विचार कीजिए। इस कक्षा की 2 लड़कियों तथा 3 लड़कों को लेकर बन सकने वाली भिन्न टीमों (teams), यदि दो विशेष लड़के A तथा B एक ही टीम के सदस्य बनने से मना करते हैं, की संख्या है :

Options :

41652939902. 200

41652939903. 300

41652939904. 350

41652939905. 500

Question Number : 67 Question Id : 41652910112 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If the fractional part of the number $\frac{2^{403}}{15}$ is

$\frac{k}{15}$, then k is equal to :

Options :

41652939906. 4

41652939907. 8

41652939908. 14

41652939909. 6

Question Number : 67 Question Id : 41652910112 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि संख्या $\frac{2^{403}}{15}$ का भिन्नात्मक भाग (fractional

part) $\frac{k}{15}$ है, तो k बराबर है :

Options :

41652939906. 4

41652939907. 8

41652939908. 14

41652939909. 6

Question Number : 68 Question Id : 41652910113 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let a_1, a_2, \dots, a_{30} be an A.P., $S = \sum_{i=1}^{30} a_i$ and

$T = \sum_{i=1}^{15} a_{(2i-1)}$. If $a_5 = 27$ and $S - 2T = 75$,

then a_{10} is equal to :

Options :

41652939910. 42

41652939911. 47

41652939912. 57

41652939913. 52

Question Number : 68 Question Id : 41652910113 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना a_1, a_2, \dots, a_{30} एक समान्तर श्रेणी है,

$S = \sum_{i=1}^{30} a_i$ तथा $T = \sum_{i=1}^{15} a_{(2i-1)}$ यदि $a_5 = 27$

तथा $S - 2T = 75$, तो a_{10} बराबर है :

Options :

41652939910. 42

41652939911. 47

41652939912. 57

41652939913. 52

Question Number : 69 Question Id : 41652910114 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If a, b and c be three distinct real numbers
in G.P. and $a + b + c = xb$, then x cannot be :

Options :

41652939914. -2

41652939915. -3

41652939916. 2

41652939917. 4

Question Number : 69 Question Id : 41652910114 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि तीन भिन्न वास्तविक संख्यायें a, b तथा c एक
गुणोत्तर श्रेणी में हैं तथा $a + b + c = xb$, तो x निम्न में
से कौन-सा नहीं हो सकता ?

Options :

41652939914. -2

41652939915. -3

41652939916. 2

41652939917. 4

Question Number : 70 Question Id : 41652910115 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$$\lim_{y \rightarrow 0} \frac{\sqrt{1 + \sqrt{1 + y^4}} - \sqrt{2}}{y^4}$$

Options :

41652939918. does not exist

41652939919. exists and equals $\frac{1}{2\sqrt{2}}$

41652939920. exists and equals $\frac{1}{4\sqrt{2}}$

41652939921. exists and equals $\frac{1}{2\sqrt{2}(\sqrt{2} + 1)}$

Question Number : 70 Question Id : 41652910115 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

$\lim_{y \rightarrow 0} \frac{\sqrt{1 + \sqrt{1 + y^4}} - \sqrt{2}}{y^4}$ का

Options :

41652939918. अस्तित्व नहीं है।

41652939919. अस्तित्व है तथा $\frac{1}{2\sqrt{2}}$ के बराबर है।

41652939920. अस्तित्व है तथा $\frac{1}{4\sqrt{2}}$ के बराबर है।

41652939921. अस्तित्व है तथा $\frac{1}{2\sqrt{2}(\sqrt{2} + 1)}$ के बराबर है।

Question Number : 71 Question Id : 41652910116 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Let $f : \mathbf{R} \rightarrow \mathbf{R}$ be a function defined as

$$f(x) = \begin{cases} 5, & \text{if } x \leq 1 \\ a + bx, & \text{if } 1 < x < 3 \\ b + 5x, & \text{if } 3 \leq x < 5 \\ 30, & \text{if } x \geq 5 \end{cases}$$

Then, f is :

Options :

41652939922. continuous if $a = -5$ and $b = 10$

41652939923. continuous if $a = 5$ and $b = 5$

41652939924. continuous if $a = 0$ and $b = 5$

41652939925. not continuous for any values of a and b

Question Number : 71 Question Id : 41652910116 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना फलन $f: \mathbb{R} \rightarrow \mathbb{R}$

$$f(x) = \begin{cases} 5, & \text{यदि } x \leq 1 \\ a + bx, & \text{यदि } 1 < x < 3 \\ b + 5x, & \text{यदि } 3 \leq x < 5 \\ 30, & \text{यदि } x \geq 5 \end{cases}$$

द्वारा परिभाषित है, तो f :

Options :

41652939922. संतत है यदि $a = -5$ तथा $b = 10$.

41652939923. संतत है यदि $a = 5$ तथा $b = 5$.

41652939924. संतत है यदि $a = 0$ तथा $b = 5$.

41652939925. a तथा b के किसी भी मान के लिए संतत नहीं है।

Question Number : 72 Question Id : 41652910117 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If θ denotes the acute angle between the curves, $y = 10 - x^2$ and $y = 2 + x^2$ at a point of their intersection, then $|\tan \theta|$ is equal to:

Options :

41652939926. $\frac{8}{17}$

41652939927. $\frac{8}{15}$

41652939928. $\frac{4}{9}$

41652939929. $\frac{7}{17}$

Question Number : 72 Question Id : 41652910117 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि वक्रों $y = 10 - x^2$ तथा $y = 2 + x^2$ के बीच एक प्रतिच्छेद बिन्दु पर न्यून कोण θ है, तो $|\tan \theta|$ बराबर है :

Options :

41652939926. $\frac{8}{17}$

41652939927. $\frac{8}{15}$

41652939928. $\frac{4}{9}$

41652939929. $\frac{7}{17}$

Question Number : 73 Question Id : 41652910118 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The maximum volume (in cu.m) of the right circular cone having slant height 3 m is :

Options :

41652939930. 6π

41652939931. $3\sqrt{3} \pi$

41652939932. $2\sqrt{3} \pi$

41652939933. $\frac{4}{3} \pi$

Question Number : 73 Question Id : 41652910118 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

3 मी. तिर्यक (slant) ऊँचाई वाले लंबवृत्तीय शंकु का अधिकतम आयतन (घन मी. में) है :

Options :

41652939930. 6π

41652939931. $3\sqrt{3}\pi$

41652939932. $2\sqrt{3}\pi$

41652939933. $\frac{4}{3}\pi$

Question Number : 74 Question Id : 41652910119 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

For $x^2 \neq n\pi + 1$, $n \in \mathbb{N}$ (the set of natural numbers), the integral

$$\int x \sqrt{\frac{2 \sin(x^2 - 1) - \sin 2(x^2 - 1)}{2 \sin(x^2 - 1) + \sin 2(x^2 - 1)}} dx$$
 is

equal to :

(where c is a constant of integration)

Options :

41652939934. $\frac{1}{2} \log_e |\sec(x^2 - 1)| + c$

41652939935. $\log_e \left| \sec \left(\frac{x^2 - 1}{2} \right) \right| + c$

41652939936. $\log_e \left| \frac{1}{2} \sec^2(x^2 - 1) \right| + c$

41652939937. $\frac{1}{2} \log_e \left| \sec^2 \left(\frac{x^2 - 1}{2} \right) \right| + c$

Question Number : 74 Question Id : 41652910119 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$x^2 \neq n\pi + 1, n \in \mathbb{N}$ (प्राकृत संख्याओं का समुच्चय),
के लिए, समाकल

$$\int x \sqrt{\frac{2 \sin(x^2 - 1) - \sin 2(x^2 - 1)}{2 \sin(x^2 - 1) + \sin 2(x^2 - 1)}} dx$$

बराबर है :

(जहाँ c एक समाकलन अचर है)

Options :

41652939934. $\frac{1}{2} \log_e |\sec(x^2 - 1)| + c$

41652939935. $\log_e \left| \sec \left(\frac{x^2 - 1}{2} \right) \right| + c$

41652939936. $\log_e \left| \frac{1}{2} \sec^2(x^2 - 1) \right| + c$

41652939937. $\frac{1}{2} \log_e \left| \sec^2 \left(\frac{x^2 - 1}{2} \right) \right| + c$

Question Number : 75 Question Id : 41652910120 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The value of $\int_0^{\pi} |\cos x|^3 dx$ is :

Options :

41652939938. 0

41652939939. $\frac{2}{3}$

41652939940. $\frac{4}{3}$

41652939941. $-\frac{4}{3}$

Question Number : 75 Question Id : 41652910120 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$\int_0^{\pi} |\cos x|^3 dx$ का मान है :

Options :

41652939938. 0

41652939939. $\frac{2}{3}$

41652939940. $\frac{4}{3}$

41652939941. $-\frac{4}{3}$

Question Number : 76 Question Id : 41652910121 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The area (in sq. units) bounded by the parabola $y = x^2 - 1$, the tangent at the point (2, 3) to it and the y -axis is :

Options :

41652939942. $\frac{8}{3}$

41652939943. $\frac{14}{3}$

41652939944. $\frac{56}{3}$

41652939945. $\frac{32}{3}$

Question Number : 76 Question Id : 41652910121 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

परवलय $y = x^2 - 1$, इस परवलय पर स्थित एक बिंदु (2, 3) पर खींची गई स्पर्श रेखा तथा y -अक्ष से घिरे क्षेत्र का क्षेत्रफल (वर्ग इकाइयों में) है :

Options :

41652939942. $\frac{8}{3}$

$$\frac{14}{3}$$

41652939943.

$$\frac{56}{3}$$

41652939944.

$$\frac{32}{3}$$

41652939945.

Question Number : 77 Question Id : 41652910122 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If $y = y(x)$ is the solution of the differential

equation, $x \frac{dy}{dx} + 2y = x^2$ satisfying

$y(1) = 1$, then $y\left(\frac{1}{2}\right)$ is equal to :

Options :

$$\frac{1}{4}$$

41652939946.

$$\frac{7}{64}$$

41652939947.

$$\frac{13}{16}$$

41652939948.

$$\frac{49}{16}$$

41652939949.

Question Number : 77 Question Id : 41652910122 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि $y = y(x)$, अवकल समीकरण $x \frac{dy}{dx} + 2y = x^2$

का हल है जो $y(1) = 1$ को संतुष्ट करता है, तो $y\left(\frac{1}{2}\right)$

बराबर है :

Options :

$$\frac{1}{4}$$

41652939946.

41652939947. $\frac{7}{64}$

41652939948. $\frac{13}{16}$

41652939949. $\frac{49}{16}$

Question Number : 78 Question Id : 41652910123 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Consider the set of all lines $px + qy + r = 0$ such that $3p + 2q + 4r = 0$. Which one of the following statements is true ?

Options :

41652939950. The lines are all parallel.

The lines are concurrent at the point

41652939951. $\left(\frac{3}{4}, \frac{1}{2}\right)$.

41652939952. The lines are not concurrent.

41652939953. Each line passes through the origin.

Question Number : 78 Question Id : 41652910123 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

ऐसी सभी रेखाओं $px + qy + r = 0$ के समुच्चय पर विचार कीजिए जिनके लिए $3p + 2q + 4r = 0$ है, तो निम्न में से कौन-सा एक कथन सत्य है ?

Options :

41652939950. सभी रेखाएँ समांतर हैं।

41652939951. रेखाएँ बिंदु $\left(\frac{3}{4}, \frac{1}{2}\right)$ पर संगामी हैं।

41652939952. रेखाएँ संगामी नहीं हैं।

41652939953. प्रत्येक रेखा मूल बिंदु से हो कर जाती है।

Question Number : 79 Question Id : 41652910124 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Equation of a common tangent to the circle,
 $x^2 + y^2 - 6x = 0$ and the parabola, $y^2 = 4x$,
is :

Options :

41652939954. $2\sqrt{3}y = -x - 12$

41652939955. $2\sqrt{3}y = 12x + 1$

41652939956. $\sqrt{3}y = 3x + 1$

41652939957. $\sqrt{3}y = x + 3$

Question Number : 79 Question Id : 41652910124 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

वृत्त $x^2 + y^2 - 6x = 0$ तथा परवलय $y^2 = 4x$, की एक
उभयनिष्ठ स्पर्श रेखा का समीकरण है :

Options :

41652939954. $2\sqrt{3}y = -x - 12$

41652939955. $2\sqrt{3}y = 12x + 1$

41652939956. $\sqrt{3}y = 3x + 1$

41652939957. $\sqrt{3}y = x + 3$

Question Number : 80 Question Id : 41652910125 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Three circles of radii a, b, c ($a < b < c$) touch
each other externally. If they have x -axis
as a common tangent, then :

Options :

41652939958. a, b, c are in A.P.

41652939959. $\sqrt{a}, \sqrt{b}, \sqrt{c}$ are in A.P.

41652939960. $\frac{1}{\sqrt{a}} = \frac{1}{\sqrt{b}} + \frac{1}{\sqrt{c}}$

41652939961. $\frac{1}{\sqrt{b}} = \frac{1}{\sqrt{a}} + \frac{1}{\sqrt{c}}$

Question Number : 80 Question Id : 41652910125 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

a, b, c ($a < b < c$) त्रिज्याओं वाले तीन वृत्त परस्पर बाह्य स्पर्श करते हैं। यदि x -अक्ष उनकी एक उभयनिष्ठ स्पर्श रेखा है, तो :

Options :

41652939958. a, b, c एक समांतर श्रेणी में हैं।

41652939959. \sqrt{a} , \sqrt{b} , \sqrt{c} एक समांतर श्रेणी में हैं।

41652939960. $\frac{1}{\sqrt{a}} = \frac{1}{\sqrt{b}} + \frac{1}{\sqrt{c}}$

41652939961. $\frac{1}{\sqrt{b}} = \frac{1}{\sqrt{a}} + \frac{1}{\sqrt{c}}$

Question Number : 81 Question Id : 41652910126 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Axis of a parabola lies along x -axis. If its vertex and focus are at distances 2 and 4 respectively from the origin, on the positive x -axis then which of the following points does not lie on it?

Options :

41652939962. (4, -4)

41652939963. (6, $4\sqrt{2}$)

41652939964. (5, $2\sqrt{6}$)

41652939965. (8, 6)

Question Number : 81 Question Id : 41652910126 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक परवलय का अक्ष, x -अक्ष के अनुदिश है। यदि इसके शीर्ष तथा नाभि, x -अक्ष की धनात्मक दिशा में मूलबिंदु से क्रमशः 2 तथा 4 की दूरी पर हैं, तो इनमें से कौन-सा बिंदु इस परवलय पर स्थित नहीं है?

Options :

41652939962. (4, -4)

41652939963. (6, $4\sqrt{2}$)

41652939964. (5, $2\sqrt{6}$)

41652939965. (8, 6)

Question Number : 82 Question Id : 41652910127 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $0 < \theta < \frac{\pi}{2}$. If the eccentricity of the

hyperbola $\frac{x^2}{\cos^2\theta} - \frac{y^2}{\sin^2\theta} = 1$ is greater

than 2, then the length of its latus rectum lies in the interval :

Options :

41652939966. (1, $3/2$]

41652939967. ($3/2, 2$]

41652939968. (2, 3]

41652939969. (3, ∞)

Question Number : 82 Question Id : 41652910127 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना $0 < \theta < \frac{\pi}{2}$ है। यदि अतिपरवलय

$\frac{x^2}{\cos^2\theta} - \frac{y^2}{\sin^2\theta} = 1$ की उत्केन्द्रता 2 से अधिक है,

तो इसके नाभिलंब की लंबाई जिस अन्तराल में है, वह है :

Options :

41652939966. $(1, 3/2]$

41652939967. $(3/2, 2]$

41652939968. $(2, 3]$

41652939969. $(3, \infty)$

Question Number : 83 Question Id : 41652910128 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The plane through the intersection of the planes $x + y + z = 1$ and $2x + 3y - z + 4 = 0$ and parallel to y -axis also passes through the point :

Options :

41652939970. $(-3, 0, -1)$

41652939971. $(-3, 1, 1)$

41652939972. $(3, 2, 1)$

41652939973. $(3, 3, -1)$

Question Number : 83 Question Id : 41652910128 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

y -अक्ष के समांतर तथा समतलों $x + y + z = 1$ और $2x + 3y - z + 4 = 0$ के प्रतिच्छेदन से होकर जाने वाला समतल निम्न में से किस बिंदु से भी हो कर जाता है?

Options :

41652939970. $(-3, 0, -1)$

41652939971. $(-3, 1, 1)$

41652939972. $(3, 2, 1)$

41652939973. $(3, 3, -1)$

Question Number : 84 Question Id : 41652910129 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The equation of the line passing through $(-4, 3, 1)$, parallel to the plane $x + 2y - z - 5 = 0$ and intersecting the line

$$\frac{x+1}{-3} = \frac{y-3}{2} = \frac{z-2}{-1} \text{ is:}$$

Options :

41652939974. $\frac{x+4}{-1} = \frac{y-3}{1} = \frac{z-1}{1}$

41652939975. $\frac{x+4}{1} = \frac{y-3}{1} = \frac{z-1}{3}$

41652939976. $\frac{x+4}{3} = \frac{y-3}{-1} = \frac{z-1}{1}$

41652939977. $\frac{x-4}{2} = \frac{y+3}{1} = \frac{z+1}{4}$

Question Number : 84 Question Id : 41652910129 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

बिंदु $(-4, 3, 1)$ से हो कर जाने वाली रेखा, जो समतल $x + 2y - z - 5 = 0$ के समांतर है तथा रेखा

$$\frac{x+1}{-3} = \frac{y-3}{2} = \frac{z-2}{-1} \text{ को काटती है, का}$$

समीकरण है :

Options :

41652939974. $\frac{x+4}{-1} = \frac{y-3}{1} = \frac{z-1}{1}$

41652939975. $\frac{x+4}{1} = \frac{y-3}{1} = \frac{z-1}{3}$

41652939976. $\frac{x+4}{3} = \frac{y-3}{-1} = \frac{z-1}{1}$

41652939977. $\frac{x-4}{2} = \frac{y+3}{1} = \frac{z+1}{4}$

Question Number : 85 Question Id : 41652910130 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $\vec{a} = \hat{i} - \hat{j}$, $\vec{b} = \hat{i} + \hat{j} + \hat{k}$ and \vec{c}

be a vector such that $\vec{a} \times \vec{c} + \vec{b} = \vec{0}$

and $\vec{a} \cdot \vec{c} = 4$, then $|\vec{c}|^2$ is equal to :

Options :

41652939978. $\frac{19}{2}$

41652939979. $\frac{17}{2}$

41652939980. 9

41652939981. 8

Question Number : 85 Question Id : 41652910130 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना $\vec{a} = \hat{i} - \hat{j}$, $\vec{b} = \hat{i} + \hat{j} + \hat{k}$ तथा \vec{c}

ऐसे सदिश हैं कि $\vec{a} \times \vec{c} + \vec{b} = \vec{0}$ तथा

$\vec{a} \cdot \vec{c} = 4$ है, तो $|\vec{c}|^2$ बराबर है :

Options :

41652939978. $\frac{19}{2}$

41652939979. $\frac{17}{2}$

41652939980. 9

41652939981. 8

Question Number : 86 Question Id : 41652910131 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

5 students of a class have an average height 150 cm and variance 18 cm^2 . A new student, whose height is 156 cm, joined them. The variance (in cm^2) of the height of these six students is :

Options :

41652939982. 20

41652939983. 16

41652939984. 18

41652939985. 22

Question Number : 86 Question Id : 41652910131 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक कक्षा के 5 विद्यार्थियों की ऊँचाइयों का माध्य 150 से.मी. तथा प्रसरण 18 वर्ग से.मी. है। 156 से.मी. ऊँचाई वाला एक नए विद्यार्थी उनसे आ मिला। इन छः विद्यार्थियों की ऊँचाइयों का प्रसरण (वर्ग से.मी. में) है :

Options :

41652939982. 20

41652939983. 16

41652939984. 18

41652939985. 22

Question Number : 87 Question Id : 41652910132 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Two cards are drawn successively with replacement from a well-shuffled deck of 52 cards. Let X denote the random variable of number of aces obtained in the two drawn cards. Then $P(X=1) + P(X=2)$ equals :

Options :

41652939986. $24/169$

41652939987. $25/169$

41652939988. 49/169

41652939989. 52/169

Question Number : 87 Question Id : 41652910132 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

52 पत्तों की एक अच्छी प्रकार से फेंटी गई ताश की गड्डी में से, एक के बाद एक, दो पत्ते प्रतिस्थापना सहित निकाले गए। माना X , दोनों बार में प्राप्त इक्कों की संख्या को दर्शाने वाला यादृच्छिक चर है, तो $P(X=1) + P(X=2)$ बराबर है :

Options :

41652939986. 24/169

41652939987. 25/169

41652939988. 49/169

41652939989. 52/169

Question Number : 88 Question Id : 41652910133 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

For any $\theta \in \left(\frac{\pi}{4}, \frac{\pi}{2}\right)$, the expression

$3(\sin\theta - \cos\theta)^4 + 6(\sin\theta + \cos\theta)^2 + 4\sin^6\theta$
equals :

Options :

41652939990. $13 - 4 \cos^2\theta + 6\sin^2\theta\cos^2\theta$

41652939991. $13 - 4 \cos^2\theta + 6 \cos^4\theta$

41652939992. $13 - 4 \cos^4\theta + 2\sin^2\theta\cos^2\theta$

41652939993. $13 - 4 \cos^6\theta$

Question Number : 88 Question Id : 41652910133 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

किसी $\theta \in \left(\frac{\pi}{4}, \frac{\pi}{2}\right)$ के लिए व्यंजक

$3(\sin\theta - \cos\theta)^4 + 6(\sin\theta + \cos\theta)^2 + 4\sin^6\theta$
बराबर है :

Options :

41652939990. $13 - 4 \cos^2\theta + 6\sin^2\theta\cos^2\theta$

41652939991. $13 - 4 \cos^2\theta + 6 \cos^4\theta$

41652939992. $13 - 4 \cos^4\theta + 2\sin^2\theta\cos^2\theta$

41652939993. $13 - 4 \cos^6\theta$

Question Number : 89 Question Id : 41652910134 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If $\cos^{-1}\left(\frac{2}{3x}\right) + \cos^{-1}\left(\frac{3}{4x}\right) = \frac{\pi}{2} \left(x > \frac{3}{4}\right)$,

then x is equal to :

Options :

41652939994. $\frac{\sqrt{145}}{12}$

41652939995. $\frac{\sqrt{146}}{12}$

41652939996. $\frac{\sqrt{145}}{11}$

41652939997. $\frac{\sqrt{145}}{10}$

Question Number : 89 Question Id : 41652910134 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि

$\cos^{-1}\left(\frac{2}{3x}\right) + \cos^{-1}\left(\frac{3}{4x}\right) = \frac{\pi}{2} \left(x > \frac{3}{4}\right)$, तो

x बराबर है :

Options :

41652939994. $\frac{\sqrt{145}}{12}$

41652939995. $\frac{\sqrt{146}}{12}$

41652939996. $\frac{\sqrt{145}}{11}$

41652939997. $\frac{\sqrt{145}}{10}$

Question Number : 90 Question Id : 41652910135 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If the Boolean expression

$(p \oplus q) \wedge (\sim p \odot q)$ is equivalent to $p \wedge q$, where $\oplus, \odot \in \{ \wedge, \vee \}$, then the ordered pair (\oplus, \odot) is :

Options :

41652939998. (\wedge, \wedge)

41652939999. (\wedge, \vee)

41652940000. (\vee, \vee)

41652940001. (\vee, \wedge)

Question Number : 90 Question Id : 41652910135 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि बूलीय व्यंजक $(p \oplus q) \wedge (\sim p \odot q)$, $p \wedge q$ के तुल्य है, जहाँ $\oplus, \odot \in \{ \wedge, \vee \}$ है, तो क्रमित युग्म (\oplus, \odot) है :

Options :

41652939998. (\wedge, \wedge)

41652939999. (\wedge, \vee)

41652940000. (\vee, \vee)

41652940001. (v, ^)