National Testing Agency

Question Paper Name :	B TECH EU 18th March 2021 Shift 2
Subject Name :	B TECH EU
Creation Date :	2021-03-18 19:51:26
Duration :	180
Number of Questions :	90
Total Marks :	300
Display Marks:	Yes

B TECH EU

Group Number :	1
Group Id :	86435178
Group Maximum Duration :	0
Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	300
Is this Group for Examiner? :	No

Physics Section A

Section Id :	864351463
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	864351463
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 8643516931 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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Consider a sample of oxygen behaving like an ideal gas. At 300 K, the ratio of root mean square (rms) velocity to the average velocity of gas molecule would be :
(Molecular weight of oxygen is 32 g/mol; $R = 8.3\ J\ K^{-1}\ mol^{-1}$)

Options :

86435120791. $\sqrt{\frac{3\pi}{8}}$

86435120792. $\sqrt{\frac{8\pi}{3}}$

86435120793. $\sqrt{\frac{8}{3}}$

86435120794. $\sqrt{\frac{3}{3}}$

Question Number : 1 Question Id : 8643516931 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

آکسیجن کے ایک نمونہ کا تصور کیجئے جو کہ ایک مثالی گیس کی طرح برتاؤ کرتی ہے۔ 300 K پر گیس کے سالموں کی جذر اوسط مربع (rms) رفتار اور اوسط رفتار کی نسبت ہوگی : (آکسیجن کا سالماتی وزن 32 g/mol ہے، $R = 8.3\ J\ K^{-1}\ mol^{-1}$)

Options :

86435120791. $\sqrt{\frac{3\pi}{8}}$

86435120792. $\sqrt{\frac{8\pi}{3}}$

86435120793. $\sqrt{\frac{8}{3}}$

86435120794. $\sqrt{\frac{3}{3}}$

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Question Number : 2 Question Id : 8643516932 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

An object of mass m_1 collides with another object of mass m_2, which is at rest. After the collision the objects move with equal speeds in opposite direction. The ratio of the masses $m_2 : m_1$ is :

Options :

86435120795. $1 : 1$

86435120796. $1 : 2$

86435120797. $2 : 1$

86435120798. $3 : 1$

Question Number : 2 Question Id : 8643516932 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

کمیت m_1 کا ایک جسم کمیت m_2 کے دوسرے جسم سے جبکہ m_2 حالت سکون میں ہے تصادم کرتا ہے،تصادم کے بعد اجسام مساوی رفتار کے ساتھ مخالف سمت میں حرکت کرتے ہیں۔کمیتوں کی نسبت $m_2 : m_1$ ہوگی:

Options :

86435120795. $1 : 1$

86435120796. $1 : 2$

86435120797. $2 : 1$

86435120798. $3 : 1$

Question Number : 3 Question Id : 8643516933 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

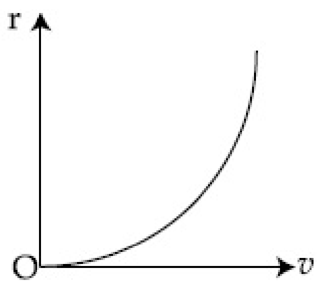
Correct Marks : 4 Wrong Marks : 1

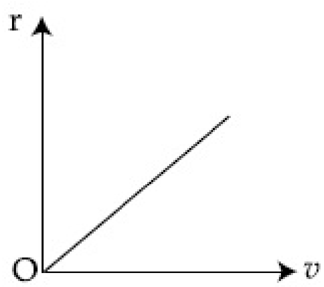
A particle of mass m moves in a circular orbit under the central potential field, $U(r) = -\frac{C}{r}$,

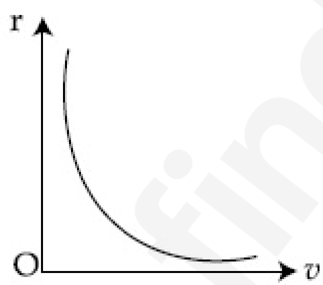
where C is a positive constant.

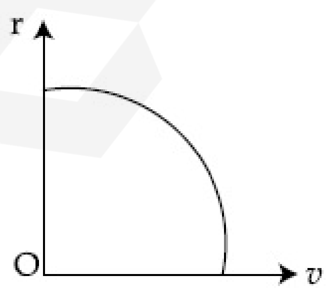
The correct radius – velocity graph of the particle's motion is :

Options :

86435120799. 

86435120800. 

86435120801. 

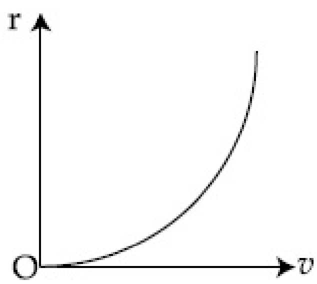
86435120802. 

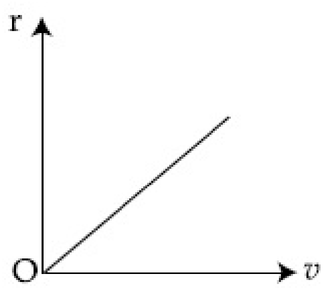
Question Number : 3 Question Id : 8643516933 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

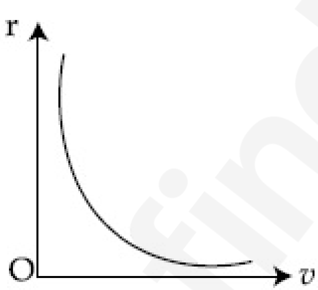
Correct Marks : 4 Wrong Marks : 1

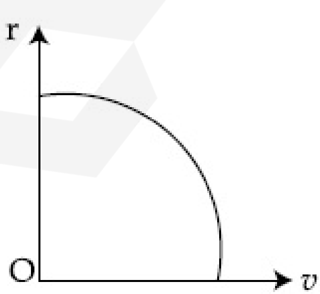
m کمیت کا ایک جسم دائروی مدار میں مرکزی مضمر میدان $U(r) = -\frac{C}{r}$ میں حرکت کرتا ہے۔ جہاں C مثبت مستقلہ ہے۔
جسم کی حرکت کے لئے مناسب نصف قطر – رفتار ترسیم کیا ہوگی؟

Options :

86435120799. 

86435120800. 

86435120801. 

86435120802. 

Question Number : 4 Question Id : 8643516934 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

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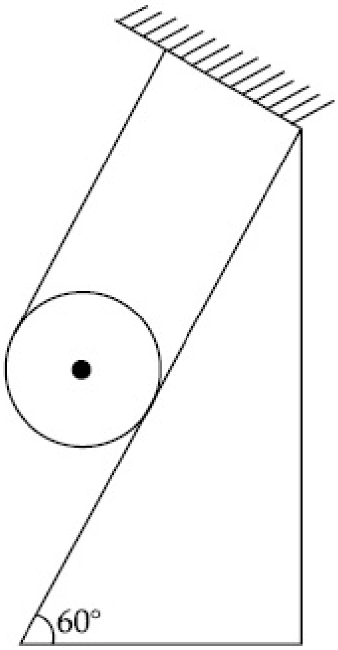
Correct Marks : 4 Wrong Marks : 1

A solid cylinder of mass m is wrapped with an inextensible light string and, is placed on a rough inclined plane as shown in the figure. The frictional force acting between the cylinder and the inclined plane is :



[The coefficient of static friction, μ_s, is 0.4]

Options :

86435120803. $\frac{mg}{5}$

86435120804. 5 mg

86435120805. $\frac{7}{2}$ mg

86435120806. 0

Question Number : 4 Question Id : 8643516934 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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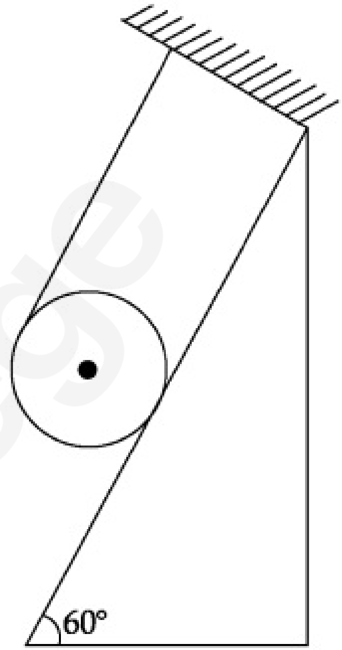
کمیت m کاایک ٹھوس اسطوانہ ایک بنا کھنچاؤ والی ہلکی ڈوری سے لپٹا ہوا ہے۔اور ایک کھردرے مائل مستوی پر شکل میں دکھائے گئے طرز پر رکھا گیا ہے۔استوانہ اور مائل مستوی کے بیچ میں لگنے والی رگڑ کی قوت کیا ہوگی؟(ساکن رگڑ کا ضریب μ_s 0.4, ہے)



Options :

86435120803. $\frac{mg}{5}$

86435120804. 5 mg

86435120805. $\frac{7}{2}$ mg

86435120806. 0

Question Number : 5 Question Id : 8643516935 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If the angular velocity of earth's spin is increased such that the bodies at the equator start floating, the duration of the day would be approximately :

[Take $g = 10\ ms^{-2}$, the radius of earth, $R = 6400 \times 10^3$ m, Take $\pi = 3.14$]

Options :

86435120807. does not change

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86435120808. 1200 minutes

86435120809. 60 minutes

86435120810. 84 minutes

Question Number : 5 Question Id : 8643516935 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

اگر زمین کی زاویاتی رفتار کو اس طرح بڑھا دیا جائے کہ خطِ استوا پر رکھے اجسام ہوا میں تیرنے لگیں، تب ایک دن کی تقریباً مدت :

($g = 10\ ms^{-2}$ ‘ زمین کی نصف قطر $R = 6400 \times 10^3$ m ، $\pi = 3.14$ لیجیے)

Options :

86435120807. نہیں بدلیگی

86435120808. 1200 منٹ ہوگی

86435120809. 60 منٹ ہوگی

86435120810. 84 منٹ ہوگی

Question Number : 6 Question Id : 8643516936 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider a uniform wire of mass M and length L. It is bent into a semicircle. Its moment of inertia about a line perpendicular to the plane of the wire passing through the centre is :

Options :

86435120811. $\frac{ML^2}{\pi^2}$

86435120812. $\frac{1}{2}\ \frac{ML^2}{\pi^2}$

86435120813. $\frac{1}{4}\ \frac{ML^2}{\pi^2}$

86435120814. $\frac{2}{5}\ \frac{ML^2}{\pi^2}$

Question Number : 6 Question Id : 8643516936 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

M کمیت اور L لمبائی کے یکساں تار کا تصور کیجیے۔اس کو ایک نصف دائرہ میں موڑا گیا ہے۔تار کے مرکز سے جانے والے اور اس کے مستوی پر عمود خط کے اطراف تار کے جمود کا گوشہ کیا ہوگا؟

Options :

86435120811. $\frac{ML^2}{\pi^2}$

86435120812. $\frac{1}{2}\ \frac{ML^2}{\pi^2}$

86435120813. $\frac{1}{4}\ \frac{ML^2}{\pi^2}$

86435120814. $\frac{2}{5}\ \frac{ML^2}{\pi^2}$

Question Number : 7 Question Id : 8643516937 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The speed of electrons in a scanning electron microscope is $1\times10^7\ ms^{-1}$. If the protons having the same speed are used instead of electrons, then the resolving power of scanning proton microscope will be changed by a factor of :

Options :

86435120815. 1837

86435120816. $\frac{1}{1837}$

86435120817. $\frac{1}{\sqrt{1837}}$

86435120818. $\sqrt{1837}$

Question Number : 7 Question Id : 8643516937 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک اسکیننگ الکٹران خوردبین میں الیکٹرانوں کی چال 1×10^7 ms $^{-1}$ ہے۔ اگر الیکٹرانوں کی جگہ مساوی چال کے پروٹانوں کو استعمال کیا جائے

تو خوردبین کی تحلیلی طاقت کس جذضربی سے بدلیگی؟

Options :

86435120815. 1837

86435120816. $\frac{1}{1837}$

86435120817. $\frac{1}{\sqrt{1837}}$

86435120818. $\sqrt{1837}$

Question Number : 8 Question Id : 8643516938 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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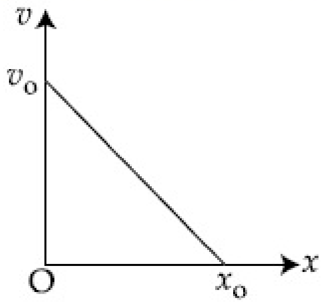
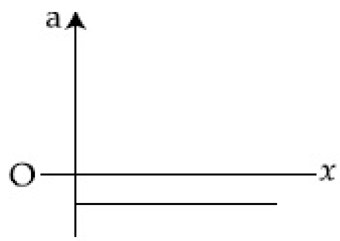
The velocity - displacement graph of a particle is shown in the figure.

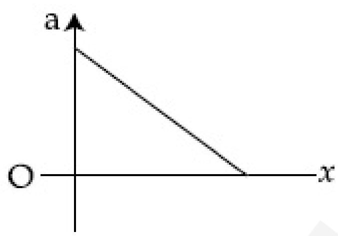


The acceleration - displacement graph of the same particle is represented by :

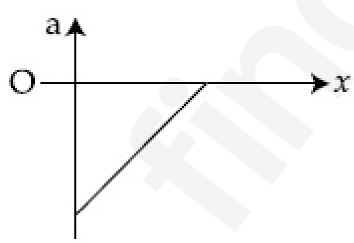
Options :



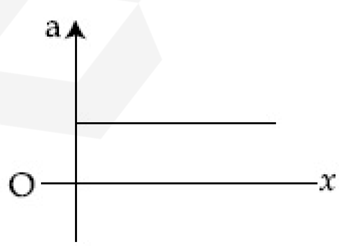
86435120819.



86435120820.



86435120821.

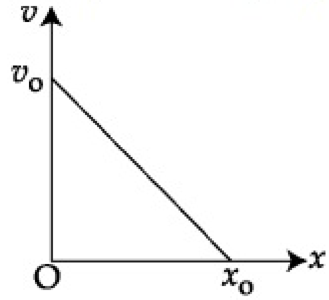


86435120822.

Question Number : 8 Question Id : 8643516938 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

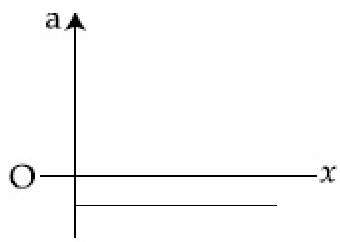
Correct Marks : 4 Wrong Marks : 1

ایک جسم کا رفتار۔ہٹاؤ ترسیم شکل میں دکھایا گیا ہے۔

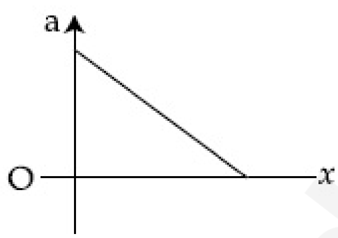


تب اس جسم کا اسراع۔ہٹاؤ ترسیم کیا ہوگا؟

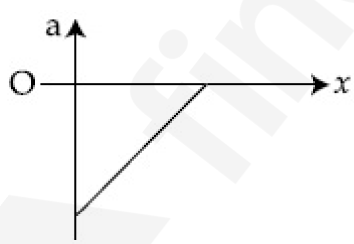
Options :



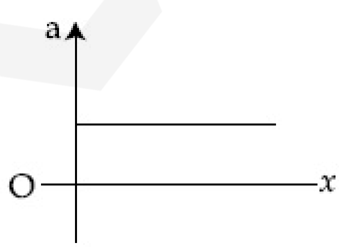
86435120819.



86435120820.



86435120821.



86435120822.

Question Number : 9 Question Id : 8643516939 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

For an adiabatic expansion of an ideal gas, the fractional change in its pressure is equal to (where γ is the ratio of specific heats) :

Options :

86435120823. $-\gamma \frac{dV}{V}$

86435120824. $-\gamma \frac{V}{dV}$

86435120825. $-\frac{1}{\gamma} \frac{dV}{V}$

86435120826. $\frac{dV}{V}$

Question Number : 9 Question Id : 8643516939 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

ایک مثالی گیس کے حرنا گزیر پھیلاؤ کے لئے، دباؤ میں جزوی تبدیلی ہوگی:
(جہاں γ نوعی حرارت کی نسبت ہے)

Options :

86435120823. $-\gamma \frac{dV}{V}$

86435120824. $-\gamma \frac{V}{dV}$

86435120825. $-\frac{1}{\gamma} \frac{dV}{V}$

86435120826. $\frac{dV}{V}$

Question Number : 10 Question Id : 8643516940 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The angular momentum of a planet of mass M moving around the sun in an elliptical orbit is $\vec{L}$. The magnitude of the areal velocity of the planet is :

Options :

86435120827. $\frac{L}{M}$

86435120828. $\frac{L}{2M}$

86435120829. $\frac{2L}{M}$

86435120830. $\frac{4L}{M}$

Question Number : 10 Question Id : 8643516940 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

سورج کے اطراف بیضوی مدار میں گھومتے ہوئے M کمیت کے ایک سیارے کا زاویائی معیار اثر $\vec{L}$ ہے۔اس سیارے کی رقبی رفتار کی عددی قدر کیا ہوگی؟

Options :

86435120827. $\frac{L}{M}$

86435120828. $\frac{L}{2M}$

86435120829. $\frac{2L}{M}$

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86435120830. $\frac{4L}{M}$

Question Number : 11 Question Id : 8643516941 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

An ideal gas in a cylinder is separated by a piston in such a way that the entropy of one part is S_1 and that of the other part is S_2. Given that $S_1 > S_2$. If the piston is removed then the total entropy of the system will be :

Options :

86435120831. $S_1 \times S_2$

86435120832. $S_1 - S_2$

86435120833. $S_1 + S_2$

86435120834. $\frac{S_1}{S_2}$

Question Number : 11 Question Id : 8643516941 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک اسطوانہ میں ایک گیس ایک پسٹن سے اس طرح علیحدہ کی گئیں ہیں کہ ایک حصہّ کی ناکارگی، S_1 اور دوسرے حصہّ کی ناکارگی S_2 ہے۔دیا گیا ہے

کہ $S_1 > S_2$ اگر پسٹن کو ہٹادیا جائے تب نظام کی کل ناکارگی کیا ہوگی؟

Options :

86435120831. $S_1 \times S_2$

86435120832. $S_1 - S_2$

86435120833. $S_1 + S_2$

86435120834. $\frac{S_1}{S_2}$

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Question Number : 12 Question Id : 8643516942 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The function of time representing a simple harmonic motion with a period of $\frac{\pi}{\omega}$ is :

Options :

86435120835. $\sin(\omega t) + \cos(\omega t)$

86435120836. $\sin^2(\omega t)$

86435120837. $3\cos\left(\frac{\pi}{4} - 2\omega t\right)$

86435120838. $\cos(\omega t) + \cos(2\omega t) + \cos(3\omega t)$

Question Number : 12 Question Id : 8643516942 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک $\frac{\pi}{\omega}$ دور کے سادہ ہارمونی حرکت کے لئے وقت کا تفاعل کیا ہوگا؟

Options :

86435120835. $\sin(\omega t) + \cos(\omega t)$

86435120836. $\sin^2(\omega t)$

86435120837. $3\cos\left(\frac{\pi}{4} - 2\omega t\right)$

86435120838. $\cos(\omega t) + \cos(2\omega t) + \cos(3\omega t)$

Question Number : 13 Question Id : 8643516943 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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In a series LCR circuit, the inductive reactance (X_L) is 10 Ω and the capacitive reactance (X_C) is 4 Ω. The resistance (R) in the circuit is 6 Ω.

The power factor of the circuit is :

Options :

86435120839. $\frac{1}{\sqrt{2}}$

86435120840. $\frac{\sqrt{3}}{2}$

86435120841. $\frac{1}{2}$

86435120842. $\frac{1}{2\sqrt{2}}$

Question Number : 13 Question Id : 8643516943 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

ایک سلسلہ وار LCR سرکٹ میں، امالیاتی نااہلیت (X_L) 10 Ω اور صلاحیتی نااہلیت (X_C) 4 Ω ہے۔ سرکٹ میں مزاحمت (R) 6 Ω ہے۔ سرکٹ کا طاقت جز ضربی (power factor) کیا ہوگا؟

Options :

86435120839. $\frac{1}{\sqrt{2}}$

86435120840. $\frac{\sqrt{3}}{2}$

86435120841. $\frac{1}{2}$

86435120842. $\frac{1}{2\sqrt{2}}$

Question Number : 14 Question Id : 8643516944 Question Type : MCQ Option Shuffling : Yes Is

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Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Which of the following statements are correct ?

(A) Electric monopoles do not exist whereas magnetic monopoles exist.

(B) Magnetic field lines due to a solenoid at its ends and outside cannot be completely straight and confined.

(C) Magnetic field lines are completely confined within a toroid.

(D) Magnetic field lines inside a bar magnet are not parallel.

(E) $\chi = -1$ is the condition for a perfect diamagnetic material, where χ is its magnetic susceptibility.

Choose the correct answer from the options given below :

Options :

86435120843. (B) and (D) only

86435120844. (B) and (C) only

86435120845. (A) and (B) only

86435120846. (C) and (E) only

Question Number : 14 Question Id : 8643516944 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

مندرجہ ذیل بیانات میں سے کون سا بیان صحیح ہے؟

(A) برقی یک قطبی موجود نہیں ہوتے جبکہ مقناطیسی یک قطبی موجود ہوتے ہیں۔

(B) ایک سولی نائد کی وجہ سے اس کے کناروں پر اور اس کے باہر مقناطیسی میدان کے خطوط کبھی بھی پوری طرح سیدھے اور محدود نہیں ہوتے ہیں۔

(C) ایک ٹورائیڈ کے اندر مقناطیسی میدان کے خطوط پوری طرح محدود ہوتے ہیں۔

(D) ایک چھڑ مقناطیس کے اندر مقناطیسی میدان کے خطوط متوازی نہیں ہوتے ہیں۔

(E) ایک کامل ڈایا مقناطیسی مادہ کے لئے شرط $\chi = -1$ ہے۔ جہاں χ مقناطیسی سرایت پزیری ہے۔

نیچے دیئے گئے متبادلات میں سے صحیح متبادل چنئے۔

Options :

86435120843. (D) اور (B) صرف

86435120844. صرف (B) اور (C)

86435120845. صرف (A) اور (B)

86435120846. صرف (C) اور (E)

Question Number : 15 Question Id : 8643516945 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The correct relation between α (ratio of collector current to emitter current) and β (ratio of collector current to base current) of a transistor is :

Options :

86435120847. $\beta = \frac{\alpha}{1 + \alpha}$

86435120848. $\alpha = \frac{\beta}{1 - \alpha}$

86435120849. $\beta = \frac{1}{1 - \alpha}$

86435120850. $\alpha = \frac{\beta}{1 + \beta}$

Question Number : 15 Question Id : 8643516945 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

α (جمع کار برقی رو سے مخرج برقی رو کی نسبت) اور، β (جمع کار برقی رو سے اساس برقی رو کی نسبت) کا صحیح رشتہ کیا ہوگا؟

Options :

86435120847. $\beta = \frac{\alpha}{1 + \alpha}$

86435120848. $\alpha = \frac{\beta}{1 - \alpha}$

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86435120849. $\beta = \frac{1}{1 - \alpha}$

86435120850. $\alpha = \frac{\beta}{1 + \beta}$

Question Number : 16 Question Id : 8643516946 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A proton and an α-particle, having kinetic energies K_p and K_α respectively, enter into a magnetic field at right angles.

The ratio of the radii of trajectory of proton to that of α-particle is 2 : 1. The ratio of $K_p : K_\alpha$ is :

Options :

86435120851. 1 : 4

86435120852. 4 : 1

86435120853. 8 : 1

86435120854. 1 : 8

Question Number : 16 Question Id : 8643516946 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک پروٹان اور ایک α-ذرہ جن کی حرکیاتی توانائیاں بالترتیب K_p اور K_α ہیں، ایک مقناطیسی میدان میں قائمہ زاویہ بناتے ہوئے داخل ہوتے ہیں۔ پروٹان کی خط حرکت کی نصف قطر کی نسبت α-ذرہ کی خط حرکت کی نصف قطر سے 2 : 1 ہے۔ تب نسبت $K_p : K_\alpha$ ہوگی:

Options :

86435120851. 1 : 4

86435120852. 4 : 1

86435120853. 8 : 1

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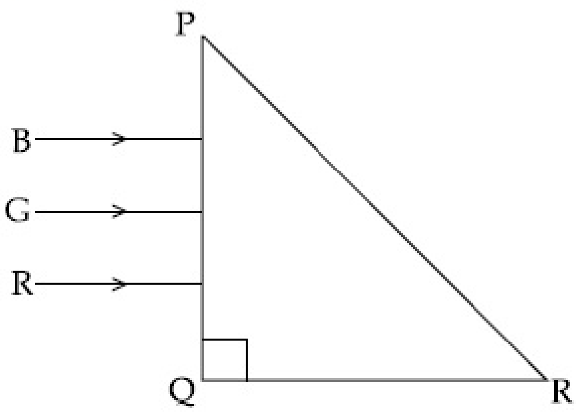
86435120854. 1 : 8

Question Number : 17 Question Id : 8643516947 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Three rays of light, namely red (R), green (G) and blue (B) are incident on the face PQ of a right angled prism PQR as shown in the figure.



The refractive indices of the material of the prism for red, green and blue wavelength are 1.27, 1.42 and 1.49 respectively. The colour of the ray(s) emerging out of the face PR is :

Options :

86435120855. blue and green

86435120856. blue

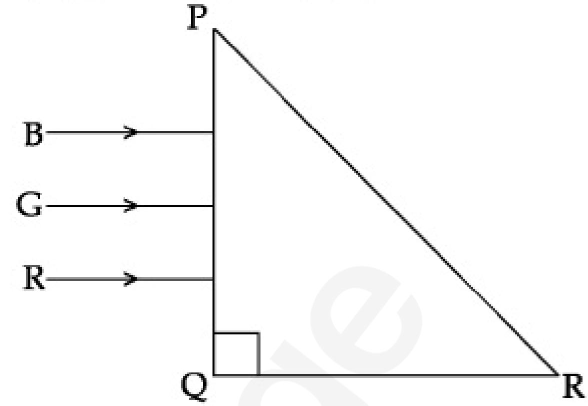
86435120857. green

86435120858. red

Question Number : 17 Question Id : 8643516947 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

نور کی تین شعاعیں جو کہ سرخ (R) ہری (G) اور نیلی (B) ہیں ایک قائم زاویہ کے منشور P, Q, R پر وقوع پزیر ہوتی ہیں۔



منشور کے مادہ کے انعطاف نما سرخ، ہری اور نیلی طول لہر کے لئے بالترتیب 1.27، 1.42 اور 1.49 ہیں تب رخ PR سے نکلنے والی شعاع یا شعاعوں کا رنگ کیا ہوگا؟

Options :

86435120855. blue and green

86435120856. blue

86435120857. green

86435120858. red

Question Number : 18 Question Id : 8643516948 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The time taken for the magnetic energy to reach 25% of its maximum value, when a solenoid of resistance R, inductance L is connected to a battery, is :

Options :

86435120859. $\frac{L}{R} \ln 2$

86435120860. $\frac{L}{R} \ln 5$

86435120861. $\frac{L}{R} \ln 10$

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86435120862. infinite

Question Number : 18 Question Id : 8643516948 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

R نصف قطر اور L لمبائی کے جب سولی نائیڈ کو ایک برقی خانہ سے جوڑا جاتا ہے تو اس کی مقناطیسی توانائی کو اس کی اعظم قدر کے 25% تک پہنچنے میں کتنا وقت درکار ہے:

Options :

86435120859. $\frac{L}{R} \ln 2$

86435120860. $\frac{L}{R} \ln 5$

86435120861. $\frac{L}{R} \ln 10$

86435120862. infinite

Question Number : 19 Question Id : 8643516949 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

A plane electromagnetic wave propagating along *y*-direction can have the following pair of electric field $(\vec{E})$ and magnetic field $(\vec{B})$ components.

Options :

86435120863. E_y, B_y or E_z, B_z

86435120864. E_x, B_y or E_y, B_x

86435120865. E_x, B_z or E_z, B_x

86435120866. E_y, B_x or E_x, B_y

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Question Number : 19 Question Id : 8643516949 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

y-سمت میں آگے بڑھتے ہوئے ایک برقی مقناطیسی میدان کے لئے برقی میدان $(\vec{E})$ اور مقناطیسی میدان $(\vec{B})$ کے جز کے جوڑے کیا ہونگے؟

Options :

86435120863. E_y , B_y یا E_z , B_z

86435120864. E_x , B_y یا E_y , B_x

86435120865. E_x , B_z یا E_z , B_x

86435120866. E_y , B_x یا E_x , B_y

Question Number : 20 Question Id : 8643516950 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The decay of a proton to neutron is :

Options :

86435120867. not possible as proton mass is less than the neutron mass

86435120868. possible only inside the nucleus

86435120869. always possible as it is associated only with β^+ decay

86435120870. not possible but neutron to proton conversion is possible

Question Number : 20 Question Id : 8643516950 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

نیوٹران کا پروٹان میں زوال:

Options :

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86435120867. ممکن نہیں ہے کیونکہ پروٹان کی کمیت نیوٹران کی کمیت سے کم ہوتی ہے۔

86435120868. صرف مرکزے کے اندر ممکن ہے۔

86435120869. ہمیشہ ممکن ہے کیونکہ وہ صرف زوال β^+ سے متعلق ہے۔

86435120870. ممکن نہیں ہے جبکہ پروٹان کی نیوٹران میں تبدیلی ممکن ہے۔

Physics Section B

Section Id :	864351464
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	864351464
Question Shuffling Allowed :	Yes

Question Number : 21 Question Id : 8643516951 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The projectile motion of a particle of mass 5 g is shown in the figure.

The initial velocity of the particle is $5\sqrt{2}$ ms^{-1} and the air resistance is assumed to be negligible. The magnitude of the change in momentum between the points A and B is $x \times 10^{-2}$ kgms^{-1}. The value of x, to the nearest integer, is ________.

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

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Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 21 Question Id : 8643516951 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

5 g کمیت کے ایک جسم کی داغیانی حرکت (Projectile motion) شکل میں دیئے گئے طرز پر ہے۔

جسم کی ابتدائی رفتار $5\sqrt{2}$ ms^{-1} ہے اور ہوا کی مزاحمت قابل نظر انداز ہے۔ نقاط A اور B کے بیچ اسراع میں $x \times 10^{-2}$ kgms^{-1} تبدیلی x ہے۔ جہاں x کی قدر قریب ترین مکمل عدد میں __________ ہے۔

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 22 Question Id : 8643516952 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

An infinite number of point charges, each carrying 1 μC charge, are placed along the y-axis at $y = 1$ m, 2 m, 4 m, 8 m ....

The total force on a 1 C point charge, placed at the origin, is $x \times 10^3$ N.

The value of x, to the nearest integer, is __________.

[Take $\frac{1}{4\pi\epsilon_0} = 9 \times 10^9$ Nm^2/C^2]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 22 Question Id : 8643516952 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

لامحدود تعداد کے برقی نقاط جن میں ہر ایک پر برقی بار $1\ \mu C$ ہے محور-y کے ہمراہ .... $y = 1$ m, 2 m, 4 m, 8 m پر رکھے ہیں۔

مبدہ پر رکھے $1\ C$ کے برقی بار پر کل قوت $x \times 10^3\ N$ تب ہوگی قریب ترین مکمل عدد میں x کی قدر ________ ہوگی۔

($\frac{1}{4\pi\epsilon_0} = 9 \times 10^9 Nm^2/C^2$ لیں)

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 23 Question Id : 8643516953 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

Two wires of same length and thickness having specific resistances 6 Ω cm and 3 Ω cm respectively are connected in parallel. The effective resistivity is ρ Ω cm. The value of ρ, to the nearest integer, is ________.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 23 Question Id : 8643516953 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

مساوی لمبائی اور موٹائی کے دو تاروں کا نوعی مزاحمت بالترتیب 3 Ω cm, 6 Ω cm ہیں۔ وہ متوازی طور پر جڑے ہیں تب اثر انداز مزاحمت 3 Ωcm ہوتی ہے۔ جہاں قریب ترین مکمل عدد میں ρ کی قدر ________ ہے۔

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

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Question Number : 24 Question Id : 8643516954 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

A ball of mass 4 kg, moving with a velocity of 10 ms^{-1}, collides with a spring of length 8 m and force constant 100 Nm^{-1}. The length of the compressed spring is x m. The value of x, to the nearest integer, is ________.

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

100

Question Number : 24 Question Id : 8643516954 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

4 kg کمیت کی ایک بال جو $10\ ms^{-1}$ کی رفتار سے حرکت پذیر ہے ایک 8 m لمبائی اور $100\ Nm^{-1}$ قوت مستقلہ کے اسپرنگ سے تصادم کرتی ہے۔ سکڑے ہوئے اسپرنگ کی لمبائی x m ہے۔ قریب ترین مکمل عدد میں x کی قدر ________ ہے۔

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

100

Question Number : 25 Question Id : 8643516955 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

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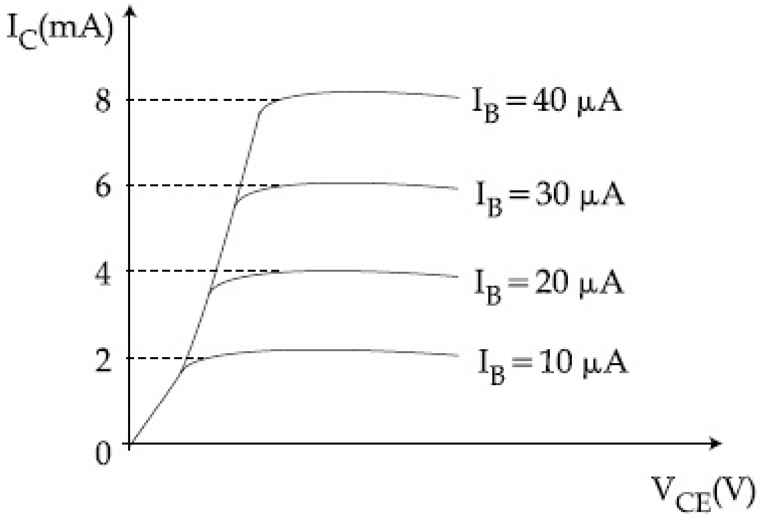
The typical output characteristics curve for a transistor working in the common-emitter configuration is shown in the figure.

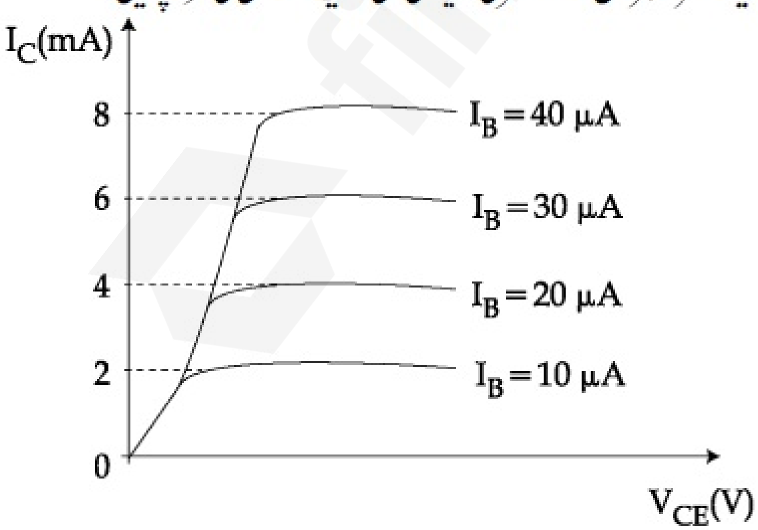


The estimated current gain from the figure is ________.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 25 Question Id : 8643516955 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

ایک مشترک مخروج ٹرانسسٹر کی امتیازی منحنی دیے گئے شکل کی طرز پر ہیں۔



شکل کے حساب سے برقی رو میں اضافہ ہوگا ________

Response Type : Numeric

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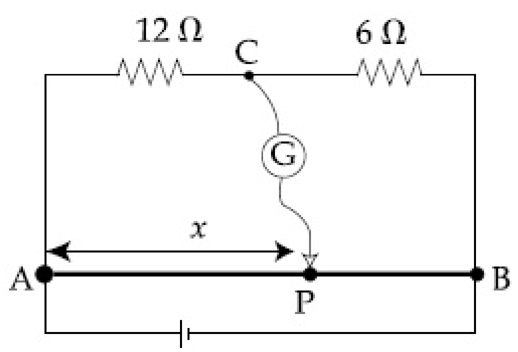
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 26 Question Id : 8643516956 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

Consider a 72 cm long wire AB as shown in the figure. The galvanometer jockey is placed at P on AB at a distance x cm from A. The galvanometer shows zero deflection.



The value of x, to the nearest integer, is ________.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 26 Question Id : 8643516956 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

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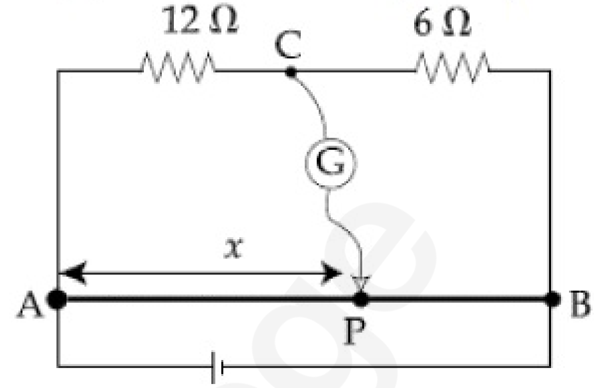
72 cm لمبائی کے ایک تار AB کا تصور کیجئے جیسا کی شکل میں دکھایا گیا ہے۔ گیلوینومیٹر جا کی تار AB کے نقطہ P پر A سے x cm کے فاصلہ پر رکھی گئی ہے اور گیلوینومیٹر صفر انصراف دے رہا ہے۔



تب قریب ترین مکمل عدد میں x کی قدر ________ ہے۔

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 27 Question Id : 8643516957 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

A galaxy is moving away from the earth at a speed of 286 kms^{-1}. The shift in the wavelength of a redline at 630 nm is $x \times 10^{-10}$ m.

The value of x, to the nearest integer, is ________.

[Take the value of speed of light c, as 3×10^{8} ms^{-1}]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 27 Question Id : 8643516957 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

ایک کہکشاں $286\ kms^{-1}$ کی رفتار سے زمین سے دور جارہی ہے 630 nm کے سرخ خط کے طول لہر میں فرق $x \times 10^{-10}$ m ہے۔

تب قریب ترین مکمل عدد میں x کی قدر ________ ہے۔ (نور کی چال c کو $3 \times 10^{8}\ ms^{-1}$ لیجیے)

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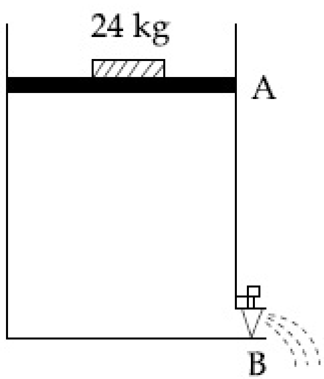
Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 28 Question Id : 8643516958 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

Consider a water tank as shown in the figure. It's cross-sectional area is 0.4 m^2. The tank has an opening B near the bottom whose cross-section area is 1 cm^2. A load of 24 kg is applied on the water at the top when the height of the water level is 40 cm above the bottom, the velocity of water coming out the opening B is v ms^{-1}.

The value of v, to the nearest integer, is ________.

[Take value of g to be 10 ms^{-2}]



Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 28 Question Id : 8643516958 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

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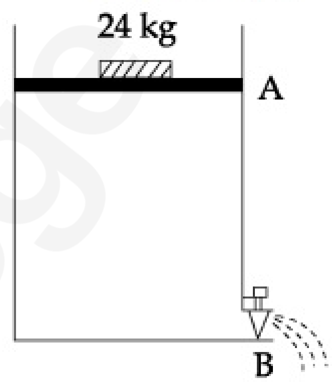
دیے گئے شکل کی طرز پر ایک پانی کی ٹنکی کا تصور کیجیے۔ اس کا عمودی تراش کا رقبہ $0.4\ cm^2$ ہے۔ ٹنکی کے پینڈے کے قریب ایک سوراخ ہے جس کا عمودی تراش کا رقبہ $1\ cm^2$ ہے۔ $24\ kg$ کمیت کا ایک وزن پانی کے اوپری سطح پر لگایا گیا ہے۔ جب پانی کے سطح کی اونچائی پینڈی سے $40\ cm$ اوپر ہے، تب سوراخ B سے نکلنے والے پانی کی رفتار $v\ ms^{-1}$ ہے۔ قریب ترین مکمل عدد میں v کی قدر __________ ہوگی۔

[لیجیے : 'g' کی قدر = $10\ ms^{-2}$]



Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 29 Question Id : 8643516959 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

A TV transmission tower antenna is at a height of 20 m. Suppose that the receiving antenna is at.

(i) ground level

(ii) a height of 5 m.

The increase in antenna range in case (ii) relative to case (i) is n%.

The value of n, to the nearest integer, is __________.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 29 Question Id : 8643516959 Question Type : SA

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Correct Marks : 4 Wrong Marks : 0

ایک TV ترسیلی اینٹینا کی مینار کی اونچائی 20 m ہے۔مان لیجیے کہ وصول کرنے والا اینٹینا

(i) زمین پر ہے۔

(ii) ایک اونچائی 5 m پر ہے۔

تب صورت (ii) کے مقابلہ صورت (i) میں ہونے والی اینٹینا کے حلقہ میں بڑھوتری n% ہے۔

تب قریب ترین مکمل عدد میں n کی قدر ________ ہے۔

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 30 Question Id : 8643516960 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The radius of a sphere is measured to be (7.50 ± 0.85) cm. Suppose the percentage error in its volume is x.

The value of x, to the nearest x, is ________.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 30 Question Id : 8643516960 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

ایک کرہ کی نصف قطر (7.50 ± 0.85) cm ناپی جاتی ہے۔ مان لیجیے کہ حجم میں فی صد سہو x ہے۔تب قریب ترین مکمل عدد میں x کی قدر ________ ہوگی۔

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

Chemistry Section A

Section Id :	864351465
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	864351465
Question Shuffling Allowed :	Yes

Question Number : 31 Question Id : 8643516961 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A hard substance melts at high temperature and is an insulator in both solid and in molten state. This solid is most likely to be a/an :

Options :

86435120881. Ionic solid

86435120882. Covalent solid

86435120883. Metallic solid

86435120884. Molecular solid

Question Number : 31 Question Id : 8643516961 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک سخت مادّہ اونچے درجہ حرارت پر پگھلتا ہے۔اور یہ دونوں ٹھوس اور پگھلی ہوئی حالت میں غیر موصل ہے،یہ ٹھوس حتی الامکان طور پر

Options :

86435120881. آیونی ٹھوس (Ionic Solid) ہے۔

86435120882. شریک گرفتی ٹھوس ہے

86435120883. دھاتی ٹھوس ہے

86435120884. سالماتی ٹھوس ہے

Question Number : 32 Question Id : 8643516962 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : Bohr's theory accounts for the stability and line spectrum of Li^+ ion.

Statement II : Bohr's theory was unable to explain the splitting of spectral lines in the presence of a magnetic field.

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

Options :

86435120885. Both statement I and statement II are true.

86435120886. Both statement I and statement II are false.

86435120887. Statement I is true but statement II is false.

86435120888. Statement I is false but statement II is true.

Question Number : 32 Question Id : 8643516962 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

نیچے دو بیانات دیئے گئے ہیں:

بیان I : بوھر (Bohr's) کا نظریہ Li^+ آئن (Ion) کے خط طیف اور پائیداری کو خاطر میں لاتا ہے۔

بیان II : بوھر (Bohr's) کا نظریہ مقناطیسی میدان کی موجودگی میں طیفی خطوط کے ٹوٹنے کی وضاحت کرنے میں ناقابل ہے۔

اوپر دیئے گئے بیانات کے مدِنظر مناسب جواب کو ذیل میں دیئے گئے انتخابات میں سے چنیئے۔

Options :

86435120885. بیان۔ I اور بیان۔ II دونوں صحیح ہیں۔

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86435120886. بیان۔I اور بیان۔II دونوں غلط ہیں۔

86435120887. بیان۔I صحیح ہے لیکن بیان۔II غلط ہے۔

86435120888. بیان۔I غلط ہے لیکن بیان۔II صحیح ہے۔

Question Number : 33 Question Id : 8643516963 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The charges on the colloidal CdS sol and TiO_2 sol are, respectively :

Options :

86435120889. positive and positive

86435120890. negative and positive

86435120891. positive and negative

86435120892. negative and negative

Question Number : 33 Question Id : 8643516963 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

CdS sol اور TiO_2 sol میں بستہ (Colloids) پر بار (Charge) ہونگے۔

Options :

86435120889. مثبت اور مثبت

86435120890. منفی اور مثبت

86435120891. مثبت اور منفی

86435120892. منفی اور منفی

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Question Number : 34 Question Id : 8643516964 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

The first ionization energy of magnesium is smaller as compared to that of elements X and Y, but higher than that of Z. The elements X, Y and Z, respectively, are :

Options :

86435120893. argon, chlorine and sodium

86435120894. chlorine, lithium and sodium

86435120895. argon, lithium and sodium

86435120896. neon, sodium and chlorine

Question Number : 34 Question Id : 8643516964 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

میگنیشیم کی پہلی آئنی توانائی عناصر X اور Y کی توانائی سے چھوٹی لیکن Z سے بڑی ہے۔تب عناصر X, Y اور Z بالترتیب ہیں۔

Options :

86435120893. آرگن،کلورین اورسوڈیم

86435120894. کلورین، لیتھیم اورسوڈیم

86435120895. آرگن، لیتھیم اورسوڈیم

86435120896. نیون،سوڈیم اورکلورین

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Question Number : 35 Question Id : 8643516965 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

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Match List - I with List - II :

	List - I		List - II
(a)	Mercury	(i)	Vapour phase refining
(b)	Copper	(ii)	Distillation Refining
(c)	Silicon	(iii)	Electrolytic Refining
(d)	Nickel	(iv)	Zone Refining

Choose the most appropriate answer from the option given below :

Options :

86435120897. (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

86435120898. (a)-(i), (b)-(iv), (c)-(ii), (d)-(iii)

86435120899. (a)-(ii), (b)-(iii), (c)-(i), (d)-(iv)

86435120900. (a)-(ii), (b)-(iv), (c)-(iii), (d)-(i)

Question Number : 35 Question Id : 8643516965 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

لسٹ - I کو لسٹ - II سے ملایئے۔

	لسٹ-I		لسٹ-II
(a)	مرکیوری	(i)	بخاراتی مرحلہ صفائی
(b)	کوپر	(ii)	کشید صفائی
(c)	سلی کون	(iii)	برق پاشیدی صفائی
(d)	نکل	(iv)	خطہ صفائی

اور دیئے گئے انتخابات میں سے مناسب ترین جواب کا انتخاب کیجیے۔

Options :

86435120897. (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

86435120898. (a)-(i), (b)-(iv), (c)-(ii), (d)-(iii)

86435120899. (a)-(ii), (b)-(iii), (c)-(i), (d)-(iv)

86435120900. (a)-(ii), (b)-(iv), (c)-(iii), (d)-(i)

Question Number : 36 Question Id : 8643516966 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In basic medium, H_2O_2 exhibits which of the following reactions ?

(A) $Mn^{2+} \rightarrow Mn^{4+}$

(B) $I_2 \rightarrow I^-$

(C) $PbS \rightarrow PbSO_4$

Choose the most appropriate answer from the options given below :

Options :

86435120901. (A) only

86435120902. (B) only

86435120903. (A), (B) only

86435120904. (A), (C) only

Question Number : 36 Question Id : 8643516966 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

اساسی واسطہ میں H_2O_2 یہ متعاملات ظاہر کرتا ہے۔

$Mn^{2+} \rightarrow Mn^{4+}$ (A)

$I_2 \rightarrow I^-$ (B)

$PbS \rightarrow PbSO_4$ (C)

مندرجہ ذیل انتخابات میں سے مناسب ترین جواب چنئے۔

Options :

86435120901. (A) صرف

86435120902. (B) صرف

86435120903. (B), (A) صرف

86435120904. (C) , (A) صرف

Question Number : 37 Question Id : 8643516967 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Match List - I with List - II :

	List - I		List - II
(a)	Be	(i)	treatment of cancer
(b)	Mg	(ii)	extraction of metals
(c)	Ca	(iii)	incendiary bombs and signals
(d)	Ra	(iv)	windows of X-ray tubes
		(v)	bearings for motor engines.

Choose the most appropriate answer from the option given below :

Options :

86435120905. (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

86435120906. (a)-(iii), (b)-(iv), (c)-(ii), (d)-(v)

86435120907. (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)

86435120908. (a)-(iii), (b)-(iv), (c)-(v), (d)-(ii)

Question Number : 37 Question Id : 8643516967 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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لسٹ - I کو لسٹ - II سے ملایئے۔

	لسٹ - I		لسٹ - II
(a)	Be	(i)	کینسر کا علاج
(b)	Mg	(ii)	دھاتوں کا اقتباس
(c)	Ca	(iii)	اشتعال انگیز بم اور سگنل
(d)	Ra	(iv)	X-ٹیوب کی کھڑکیاں
		(v)	موٹر انجن کے بیئرنگ

نیچے دیے گئے انتخابات میں سے مناسب ترین جواب کا انتخاب کیجیے۔

Options :

86435120905. (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

86435120906. (a)-(iii), (b)-(iv), (c)-(ii), (d)-(v)

86435120907. (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)

86435120908. (a)-(iii), (b)-(iv), (c)-(v), (d)-(ii)

Question Number : 38 Question Id : 8643516968 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The oxidation states of nitrogen in NO, NO_2, N_2O and NO_3^- are in the order of :

Options :

86435120909. $NO > NO_2 > N_2O > NO_3^-$

86435120910. $N_2O > NO_2 > NO > NO_3^-$

86435120911. $NO_2 > NO_3^- > NO > N_2O$

86435120912. $NO_3^- > NO_2 > NO > N_2O$

Question Number : 38 Question Id : 8643516968 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

N_2O, NO_2, NO اور NO_3^- میں نائٹروجن کی تکسیدی حالت مندرجہ ذیل میں کس ترتیب میں ہے۔

Options :

86435120909. $NO > NO_2 > N_2O > NO_3^-$

86435120910. $N_2O > NO_2 > NO > NO_3^-$

86435120911. $NO_2 > NO_3^- > NO > N_2O$

86435120912. $NO_3^- > NO_2 > NO > N_2O$

Question Number : 39 Question Id : 8643516969 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The oxide that shows magnetic property is :

Options :

86435120913. SiO_2

86435120914. Mn_3O_4

86435120915. MgO

86435120916. Na_2O

Question Number : 39 Question Id : 8643516969 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

کونسا آکسائیڈ مقناطیسی صفت ظاہر کرتا ہے۔

Options :

86435120913. SiO_2

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86435120914. Mn_3O_4

86435120915. MgO

86435120916. Na_2O

Question Number : 40 Question Id : 8643516970 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The secondary valency and the number of hydrogen bonded water molecule(s) in $CuSO_4 \cdot 5H_2O$, respectively, are :

Options :

86435120917. 4 and 1

86435120918. 6 and 4

86435120919. 5 and 1

86435120920. 6 and 5

Question Number : 40 Question Id : 8643516970 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$CuSO_4 \cdot 5H_2O$ میں ثانوی گرفت اور ہائیڈرجن (Hydrogen) سے پابند (Bonded) پانی کے سالمہ / سالموں کی تعداد بالترتیب

ہے۔

Options :

86435120917. 4 اور 1

86435120918. 6 اور 4

86435120919. 5 اور 1

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86435120920. 5 اور 6

Question Number : 41 Question Id : 8643516971 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : Non-biodegradable wastes are generated by the thermal power plants.

Statement II : Bio-degradable detergents leads to eutrophication.

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

Options :

86435120921. Both statement **I** and statement **II** are true.

86435120922. Both statement **I** and statement **II** are false.

86435120923. Statement **I** is true but statement **II** is false.

86435120924. Statement **I** is false but statement **II** is true.

Question Number : 41 Question Id : 8643516971 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

نیچے دو بیانات دیے گئے ہیں۔

بیان I : غیر حیاتیاتی تنزل پذیر کچرا تھرمل پاور پلانٹوں سے نکلتا ہے۔

بیان II : حیاتیاتی تنزل پذیر ڈٹرجینٹ سے یوٹروفکیشن (Eutrophication) ہوتا ہے۔

اوپر دیے گئے بیانات کے مدِ نظر مناسب جواب کو ذیل میں دیے گئے انتخابات میں سے چنیے۔

Options :

86435120921. بیان I اور بیان II دونوں صحیح ہیں۔

86435120922. بیان I اور بیان II دونوں غلط ہیں۔

86435120923. بیان I صحیح ہے، لیکن بیان II غلط ہے۔

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86435120924. بیان I غلط ہے، لیکن بیان II صحیح ہے۔

Question Number : 42 Question Id : 8643516972 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : C_2H_5OH and AgCN both can generate nucleophile.

Statement II : KCN and AgCN both will generate nitrile nucleophile with all reaction conditions.

Choose the most appropriate option :

Options :

86435120925. Both statement I and statement II are true.

86435120926. Both statement I and statement II are false.

86435120927. Statement I is true but statement II is false.

86435120928. Statement I is false but statement II is true.

Question Number : 42 Question Id : 8643516972 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

نیچے دو بیانات دیے گئے ہیں۔

بیان I : C_2H_5OH اور AgCN دونوں نیوکلیوفائل (Nucleophile) بنا سکتے ہیں۔

بیان II : KCN اور AgCN دونوں نائٹرائل نیوکلیوفائل (Nitrile Nucleophile) بناتے ہیں، ساری متعالی شرائط کے لئے۔

مناسب ترین جواب کو چنئے۔

Options :

86435120925. بیان I اور بیان II دونوں صحیح ہیں۔

86435120926. بیان I اور بیان II دونوں غلط ہیں۔

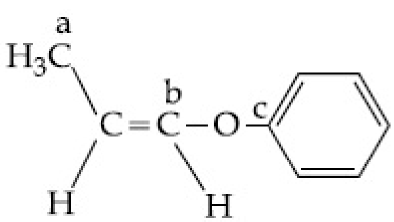
86435120927. بیان I صحیح ہے، لیکن بیان II غلط ہے۔

86435120928. بیان I غلط ہے، لیکن بیان II صحیح ہے۔

Question Number : 43 Question Id : 8643516973 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In the following molecule,



Hybridisation of Carbon a, b and c respectively are :

Options :

86435120929. sp^3, sp^2, sp^2

86435120930. sp^3, sp^2, sp

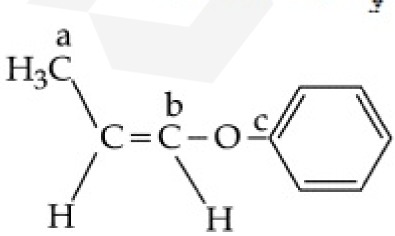
86435120931. sp^3, sp, sp

86435120932. sp^3, sp, sp^2

Question Number : 43 Question Id : 8643516973 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

نیچے دیئے گئے سالمہ میں،



کاربن a, b اور c کی مخلوطیت بالترتیب ہوگی۔

Options :

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86435120929. sp^3, sp^2, sp^2

86435120930. sp^3, sp^2, sp

86435120931. sp^3, sp, sp

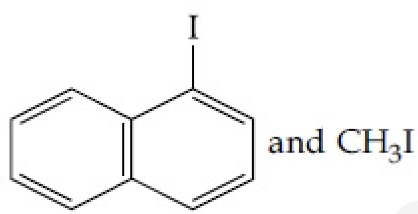
86435120932. sp^3, sp, sp^2

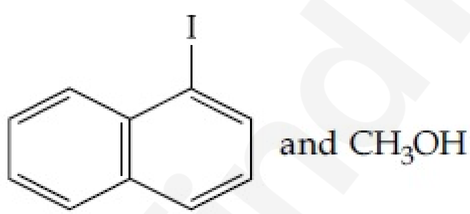
Question Number : 44 Question Id : 8643516974 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

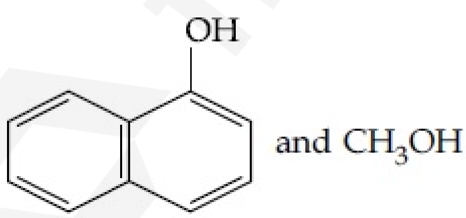
Correct Marks : 4 Wrong Marks : 1

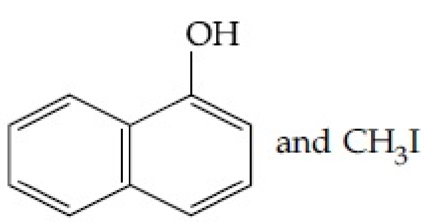
Main Products formed during a reaction of 1-methoxy naphthalene with hydroiodic acid are :

Options :

86435120933. 

86435120934. 

86435120935. 

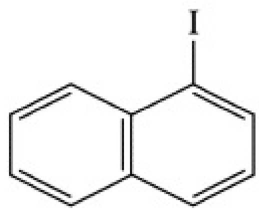
86435120936. 

Question Number : 44 Question Id : 8643516974 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

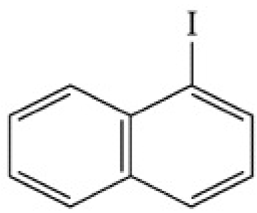
Correct Marks : 4 Wrong Marks : 1

1-میتھاکسی نیپھتالین (1-Methoxy naphthalene) کو ہائیڈروآیوڈک (Hydroiodic) تیزاب کے ساتھ متعامل کرنے پر ماحصل ہونگے۔

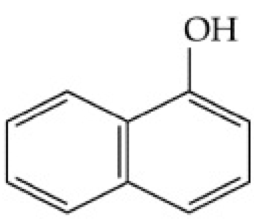
Options :

86435120933. 

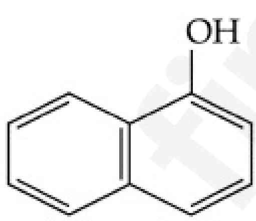
اور CH_3I

86435120934. 

اور CH_3OH

86435120935. 

اور CH_3OH

86435120936. 

اور CH_3I

Question Number : 45 Question Id : 8643516975 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In the reaction of hypobromite with amide, the carbonyl carbon is lost as :

Options :

86435120937. CO

86435120938. CO_2

86435120939. CO_3^{2-}

86435120940. HCO_3^-

Question Number : 45 Question Id : 8643516975 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ہائپو برومائٹ (Hypobromite) کو امائڈ (Amide) کے ساتھ تعامل کرانے پر کربونل کاربن (Carbonyl Carbon) اس طرح ضائع ہوجاتا ہے۔

Options :

86435120937. CO

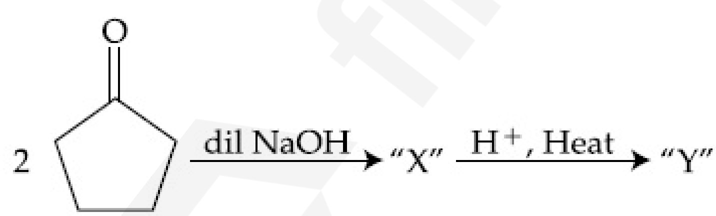
86435120938. CO_2

86435120939. CO_3^{2-}

86435120940. HCO_3^-

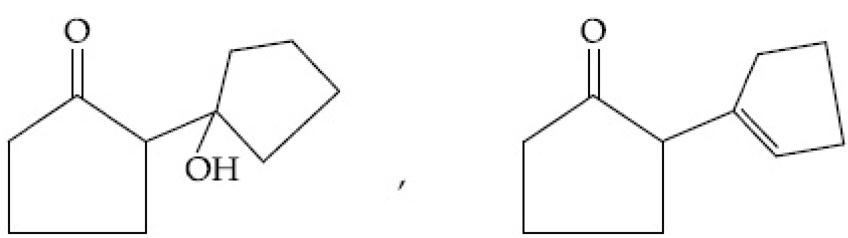
Question Number : 46 Question Id : 8643516976 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



Consider the above reaction, the product 'X' and 'Y' respectively are :

Options :

86435120941. 

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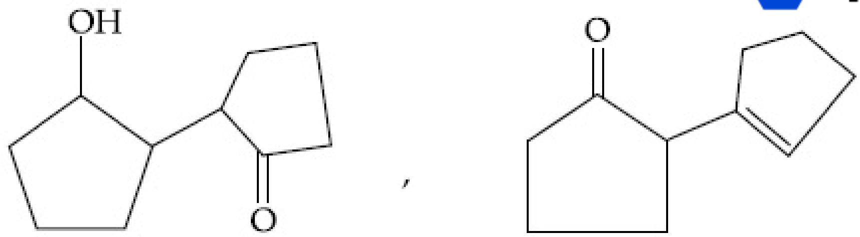
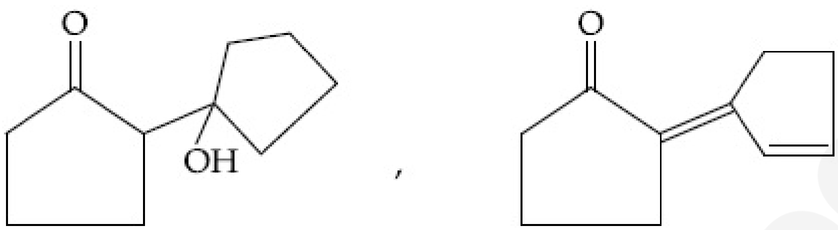
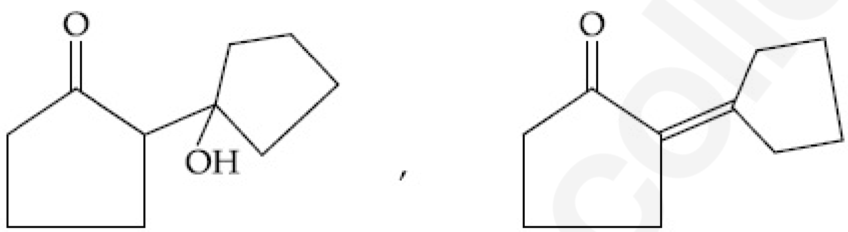
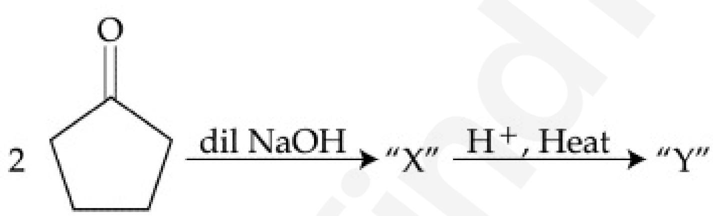
86435120942. 

86435120943. 

86435120944. 

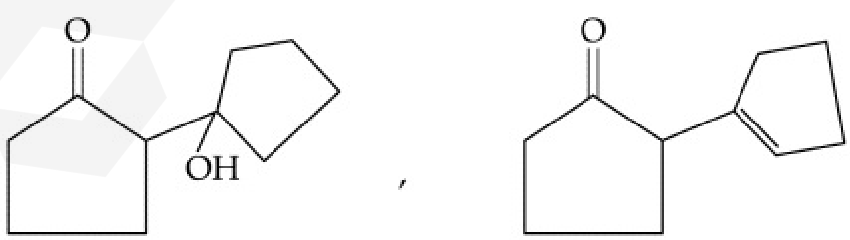
Question Number : 46 Question Id : 8643516976 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



اوپر دی ہوئی متعامل پر غور کریں، ماحصل 'X' اور 'Y' بالترتیب ہونگے۔

Options :

86435120941. 

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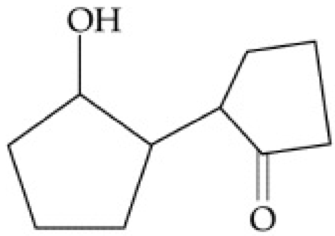
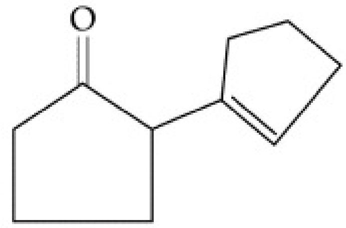
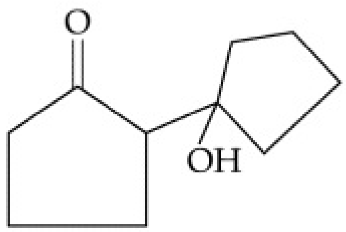
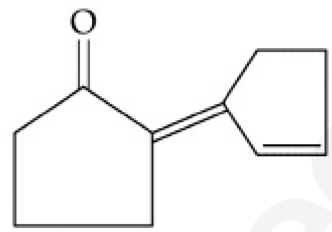
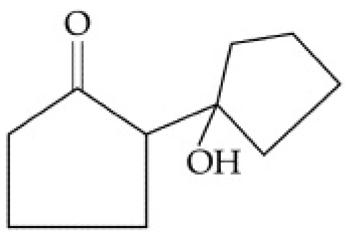
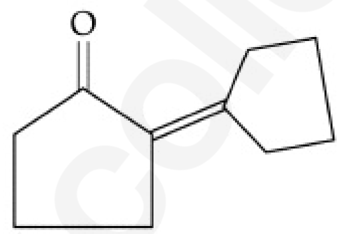
86435120942.  , 

86435120943.  , 

86435120944.  , 

Question Number : 47 Question Id : 8643516977 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

An organic compound "A" on treatment with benzene sulphonyl chloride gives compound B. B is soluble in dil. NaOH solution. Compound A is :

Options :

86435120945. $C_6H_5-CH_2\,NH\,CH_3$

86435120946. $C_6H_5-N-(CH_3)_2$

86435120947. $C_6H_5-NHCH_2CH_3$

86435120948. $\underset{\displaystyle CH_3}{C_6H_5-\underset{|}{CH}-NH_2}$

Question Number : 47 Question Id : 8643516977 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک نامیاتی مرکب (Compound) "A" کو بینزین سلپھونل کلورائیڈ (Benzene Sulphonyl Chloride) سے عمل کرانے پر
مرکب B ملتا ہے۔ مرکب B، NaOH محلول میں حل پزیر ہے۔ محلول A ہوگا:

Options :

86435120945. $C_6H_5-CH_2\ NH\ CH_3$

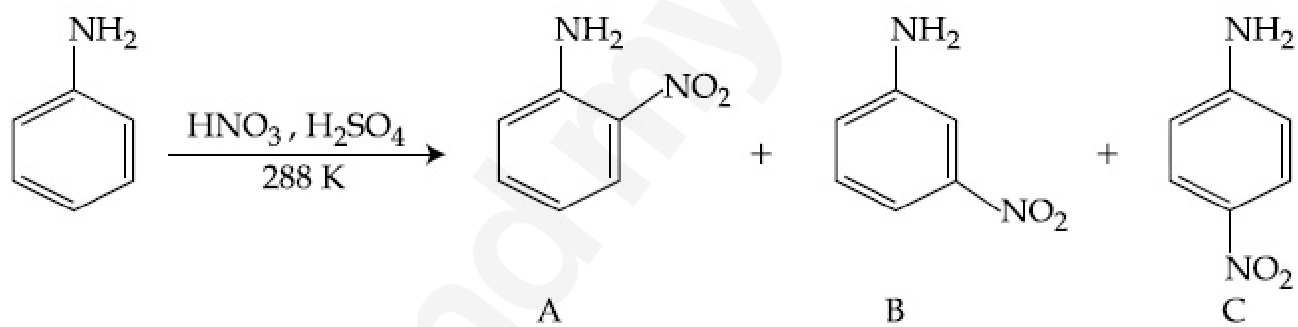
86435120946. $C_6H_5-N-(CH_3)_2$

86435120947. $C_6H_5-NHCH_2CH_3$

86435120948. $C_6H_5-\underset{\displaystyle CH_3}{\underset{|}{CH}}-NH_2$

Question Number : 48 Question Id : 8643516978 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



Consider the given reaction, percentage yield of :

Options :

86435120949. A > C > B

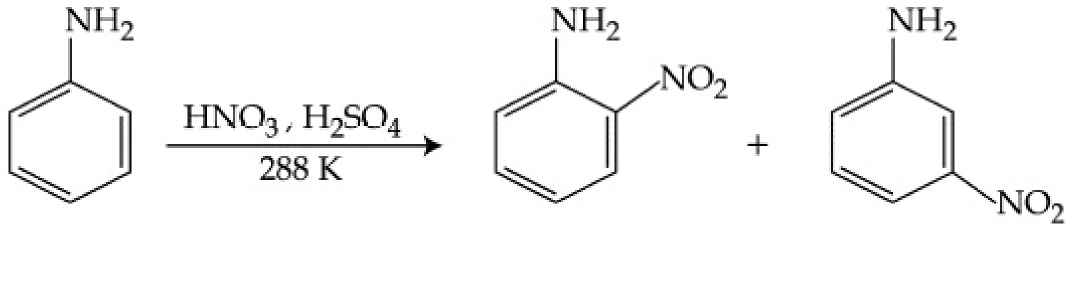
86435120950. C > A > B

86435120951. B > C > A

86435120952. C > B > A

Question Number : 48 Question Id : 8643516978 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



A B C

دی ہوئی تعامل پرغور کریں،اس میں فیصد حصول (Yield) اس ترتیب میں ہوگا۔

Options :

86435120949. A > C > B

86435120950. C > A > B

86435120951. B > C > A

86435120952. C > B > A

Question Number : 49 Question Id : 8643516979 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Match List - I with List - II :

	List - I (Class of Chemicals)		List - II (Example)
(a)	Antifertility drug	(i)	Meprobamate
(b)	Antibiotic	(ii)	Alitame
(c)	Tranquilizer	(iii)	Norethindrone
(d)	Artificial Sweetener	(iv)	Salvarsan

Choose the most appropriate match :

Options :

86435120953. (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

86435120954. (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

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86435120955. (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)

86435120956. (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)

Question Number : 49 Question Id : 8643516979 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

لسٹ - I کو لسٹ - II سے ملایئے:

	لسٹ - I		لسٹ - II
	(Class of Chemicals)		**(Example)**
(a)	مانع بارودی ڈرگس	(i)	میپروبمیٹ (Meprobamate)
(b)	اینٹی بایوٹکس	(ii)	ایلیٹیم (Alitame)
(c)	مسکن	(iii)	نورتھنڈرون (Norethindrone)
(d)	مصنوعی مٹھاس لانے والے	(iv)	سالورسان (Salvarsan)

مناسب ترین جواب کا انتخاب کیجیے۔

Options :

86435120953. (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

86435120954. (a)-(ii), (b)-(iii), (c)-(iv), (d)-(i)

86435120955. (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)

86435120956. (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)

Question Number : 50 Question Id : 8643516980 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Deficiency of vitamin K causes :

Options :

86435120957. Increase in blood clotting time

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86435120958. Decrease in blood clotting time

86435120959. Cheilosis

86435120960. Increase in fragility of RBC's

Question Number : 50 Question Id : 8643516980 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

وٹامن K کی کمی سبب ہوتی ہے۔

Options :

86435120957. خون کے منجمد ہونے کے وقت میں اضافہ کا

86435120958. خون کے منجمد ہونے کے وقت میں کمی کا

86435120959. (Cheilosis) کیلوسس

86435120960. RBC's کا زیادہ نازک ہونے کا

Chemistry Section B

Section Id :	864351466
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	864351466
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 8643516981 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

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10.0 mL of Na_2CO_3 solution is titrated against 0.2 M HCl solution. The following titre values were obtained in 5 readings :

4.8 mL, 4.9 mL, 5.0 mL, 5.0 mL and 5.0 mL.

Based on these readings, and convention of titrimetric estimation the concentration of Na_2CO_3 solution is _________ mM.

(Round off to the Nearest Integer).

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 51 Question Id : 8643516981 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

Na_2CO_3 کے 10.0 mL محلول کو 0.2 M HCl محلول کے تقابل میں معایرت کرتے ہیں۔ 5 ریڈنگس (Readings) میں مندرجہ ذیل معایراتی قیمتیں (Titre values) حاصل ہوتی ہیں۔

4.8 mL، 4.9 mL، 5.0 mL، 5.0 mL اور 5.0 mL

اوپر دی ہوئی ریڈنگس (Readings) اور معایراتی اندازہ کی مشاق کے مدِنظر Na_2CO_3 محلول کا ارتکاز (Concentration) _________ mM ہوگا۔

(قریب ترین صحیح عدد (Integer) میں)

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 52 Question Id : 8643516982 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The number of species below that have two lone pairs of electrons in their central atom is _________. (Round off to the Nearest Integer).

SF_4, BF_4^- , ClF_3, AsF_3, PCl_5, BrF_5, XeF_4, SF_6

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Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 52 Question Id : 8643516982 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

مندرجہ ذیل سالموں میں ایسے سالموں کی تعداد بتائیں، جن کے مرکزی ایٹم میں الکٹران (Electron) کے دو تنہا جوڑے (Lone pairs) ہیں۔

SF_4, BF_4^- , ClF_3, AsF_3, PCl_5, BrF_5, XeF_4, SF_6

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 53 Question Id : 8643516983 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The gas phase reaction

$$2A(g) \rightleftharpoons A_2(g)$$

at 400 K has $\Delta G^\circ = +25.2$ kJ mol^{-1}.

The equilibrium constant K_C for this reaction is ________ $\times 10^{-2}$. (Round off to the Nearest Integer).

[Use : $R = 8.3$ J mol^{-1} K^{-1}, ln $10 = 2.3$

$\log_{10} 2 = 0.30$, 1 atm = 1 bar]

[antilog $(-0.3) = 0.501$]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

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Question Number : 53 Question Id : 8643516983 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

گیس فیس (Gas phase) تعامل

$$2A(g) \rightleftharpoons A_2(g)$$

میں 400 K پر $\Delta G^\circ = +25.2 \text{ kJ mol}^{-1}$

اس تعامل کے لئے توازنی مستقلہ (Equilibrium constant) K_C ________ $\times 10^{-2}$ ہے۔

(قریب ترین صحیح عدد بتائیں)

$[R = 8.3 \text{ J mol}^{-1} \text{K}^{-1}, \ln 10 = 2.3$

$\log_{10} 2 = 0.30, 1 \text{ atm} = 1 \text{ bar}]$

$[\text{antilog}(-0.3) = 0.501]$ کا استعمال کریں۔

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 54 Question Id : 8643516984 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

A solute A dimerizes in water. The boiling point of a 2 molal solution of A is 100.52°C. The percentage association of A is ________. (Round off to the Nearest Integer).

[Use : K_b for water = 0.52 K kg mol^{-1}

Boiling point of water = 100°C]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 54 Question Id : 8643516984 Question Type : SA

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Correct Marks : 4 Wrong Marks : 0

ایک محلل A(Solute) پانی میں دور کن (Dimerize) ہوجاتا ہے۔ A کے دو مولل محلول کا نقطہ جوش 100.52°C ہے۔ A کا فیصدی ربط

(Percentage Association) ________ ہے۔

(قریب ترین صحیح عدد میں جواب دیجئے)

[استعمال کریں۔ پانی کے لئے $K_b = 0.52 \text{ K kg mol}^{-1}$

پانی کا نقطہ جوش = 100°C]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 55 Question Id : 8643516985 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The solubility of $CdSO_4$ in water is 8.0×10^{-4} mol L^{-1}. Its solubility in 0.01 M H_2SO_4 solution is ________ $\times 10^{-6}$ mol L^{-1}. (Round off to the Nearest Integer).

(Assume that solubility is much less than 0.01 M)

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 55 Question Id : 8643516985 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

$CdSO_4$ کی پانی میں محلولیت 8.0×10^{-4} mol L^{-1} ہے۔ اس کی H_2SO_4 0.01 M میں محلولیت ہوگی۔

________ $\times 10^{-6}$ mol L^{-1}

(فرض کیجئے کہ محلولیت 0.01 M سے بہت کم ہے)

Response Type : Numeric
Evaluation Required For SA : Yes

Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 56 Question Id : 8643516986 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The molar conductivities at infinite dilution of barium chloride, sulphuric acid and hydrochloric acid are 280, 860 and 426 S cm^2 mol^{-1} respectively. The molar conductivity at infinite dilution of barium sulphate is ________ S cm^2 mol^{-1}. (Round off to the Nearest Integer).

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 56 Question Id : 8643516986 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

بیریم کلورائڈ (Barium Chloride)، سلفیورک تیزاب (Sulphuric Acid) اور ہائیڈروکلورائیڈ (Hydrochloric) تیزاب
کے (Conductivity)، لاانتہائی ہلکے پن (Dilution) پر مولر موصولیت (Molar conductivity) بالترتیب 280, 860 اور
m 426 S cm^2 mol^{-1} ہیں۔ بیریم سلفیٹ کے لا انتہائی ہلکے پن پر مولر موصولیت S cm^2 mol^{-1} ________ ہوگی۔
(قریب ترین صحیح عدد میں جواب)

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 57 Question Id : 8643516987 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

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A reaction has a half life of 1 min. The time required for 99.9% completion of the reaction is _________ min. (Round off to the Nearest Integer).

[Use : ln 2 = 0.69; ln 10 = 2.3]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 57 Question Id : 8643516987 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

ایک تعامل کی نصف حیات (Half life) ایک منٹ ہے۔ تعامل کے 99.9% فیصد مکمل ہونے کے لئے وقت درکار ہوگا

_________ min

(جواب قریب ترین صحیح عدد میں دیں)

استعمال کریں۔ [ln 2 = 0.69; ln 10 = 2.3]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 58 Question Id : 8643516988 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

A xenon compound 'A' upon partial hydrolysis gives XeO_2F_2. The number of lone pair of electrons present in compound A is _________. (Round off to the Nearest Integer)

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

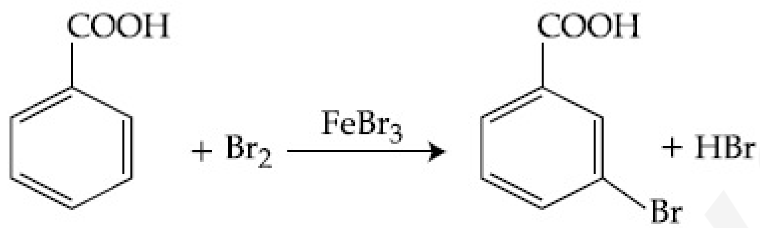
Question Number : 58 Question Id : 8643516988 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ایک زینون (Xenon) مرکب A جزوی ہائیڈرولیسس (Partial hydrolysis) کرنے پر XeO_2F_2 دیتا ہے۔ الیکٹران کے تنہا جوڑوں کی تعداد مرکب A میں ہوگی ________ ۔ (قریب ترین صحیح عدد بتائیں)

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 59 Question Id : 8643516989 Question Type : SA
Correct Marks : 4 Wrong Marks : 0



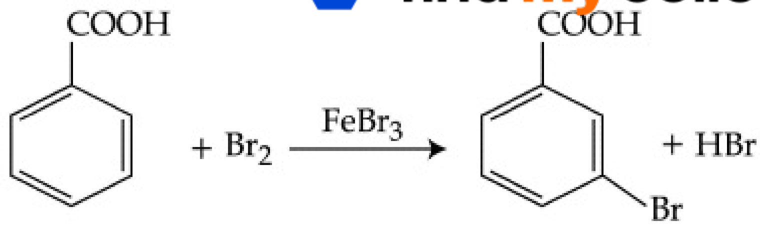
Consider the above reaction where 6.1 g of Benzoic acid is used to get 7.8 g of m-bromo benzoic acid. The percentage yield of the product is ________.

(Round off to the Nearest Integer).

[Given : Atomic masses : C : 12.0 u, H : 1.0 u, O : 16.0 u, Br : 80.0 u]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 59 Question Id : 8643516989 Question Type : SA
Correct Marks : 4 Wrong Marks : 0



اوپر دی ہوئی تعامل پر غور فرمائیں، جہاں پر 6.1 g بینزوئک تیزاب کو 7.8 g m برومو بینزوئک تیزاب (m-bromo benzoic acid) حاصل کرنے کے لئے کیا جاتا ہے۔ ماحصل کا فیصدی حاصل ہوگا. ________

(قریب ترین صحیح عدد بتائیں)

[C : 12.0 u, H : 1.0 u, O : 16.0 u, Br : 80.0 u]

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 60 Question Id : 8643516990 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

In Tollen's test for aldehyde, the overall number of electron(s) transferred to the Tollen's reagent formula $[Ag(NH_3)_2]^+$ per aldehyde group to form silver mirror is ________. (Round off to the Nearest Integer).

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 60 Question Id : 8643516990 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

ٹولن کے ٹیسٹ (Tollen's test) میں جو کہ ایلڈِہائیڈ کے لئے ہے، چاندی کا آئینہ بنانے کے لئے، ٹولن کے متعامل (کیمیائی ضابطہ: $[Ag(NH_3)_2]^+$ میں فی ایلڈِہائیڈ گروپ کل کتنے الیکٹرون کا تبادلہ ہوگا ________ ؟ (قریب ترین صحیح عدد میں جواب دیں)

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

Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Mathematics Section A

Section Id :	864351467
Section Number :	5
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	864351467
Question Shuffling Allowed :	Yes

Question Number : 61 Question Id : 8643516991 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

If $15\sin^4\alpha + 10\cos^4\alpha = 6$, for some $\alpha \epsilon R$, then the value of $27\sec^6\alpha + 8\text{cosec}^6\alpha$ is equal to :

Options :

86435120971. 500

86435120972. 400

86435120973. 350

86435120974. 250

Question Number : 61 Question Id : 8643516991 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

اگر $15\sin^4\alpha + 10\cos^4\alpha = 6$ کچھ $\alpha \epsilon R$ کے لئے ہے۔ تب $27\sec^6\alpha + 8\text{cosec}^6\alpha$ کس کے برابر ہے؟

Options :

86435120971. 500

86435120972. 400

86435120973. 350

86435120974. 250

Question Number : 62 Question Id : 8643516992 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If P and Q are two statements, then which of the following compound statement is a tautology ?

Options :

86435120975. $((P \Rightarrow Q) \wedge \sim Q) \Rightarrow P$

86435120976. $((P \Rightarrow Q) \wedge \sim Q) \Rightarrow Q$

86435120977. $((P \Rightarrow Q) \wedge \sim Q) \Rightarrow \sim P$

86435120978. $((P \Rightarrow Q) \wedge \sim Q) \Rightarrow (P \wedge Q)$

Question Number : 62 Question Id : 8643516992 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

اگر P اور Q دو بیانات ہیں، تب کون سا مرکب بیان تکرارِ لفظی (tautology) ہے ؟

Options :

86435120975. $((P \Rightarrow Q) \wedge \sim Q) \Rightarrow P$

86435120976. $((P \Rightarrow Q) \wedge \sim Q) \Rightarrow Q$

86435120977. $((P \Rightarrow Q) \wedge \sim Q) \Rightarrow \sim P$

86435120978. $((P \Rightarrow Q) \wedge \sim Q) \Rightarrow (P \wedge Q)$

Question Number : 63 Question Id : 8643516993 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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A pole stands vertically inside a triangular park ABC. Let the angle of elevation of the top of the pole from each corner of the park be $\frac{\pi}{3}$. If the radius of the circumcircle of ΔABC is 2, then the height of the pole is equal to :

Options :

86435120979. $\frac{2\sqrt{3}}{3}$

86435120980. $2\sqrt{3}$

86435120981. $\frac{1}{\sqrt{3}}$

86435120982. $\sqrt{3}$

Question Number : 63 Question Id : 8643516993 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک کھمبا ایک مثلث نما پارک ABC میں عمودی طور پر کھڑا ہے۔اگر پارک کے ہر کونے سے کھمبے کے اوپری حصے کا چڑھاؤ زاویہ

(angle of elevation) $\frac{\pi}{3}$ ہے۔اگر ΔABC کے خطی دائرہ کی نصف قطر 2 ہے۔تب کھمبے کی اونچائی ہوگی۔

Options :

86435120979. $\frac{2\sqrt{3}}{3}$

86435120980. $2\sqrt{3}$

86435120981. $\frac{1}{\sqrt{3}}$

86435120982. $\sqrt{3}$

Question Number : 64 Question Id : 8643516994 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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Let in a series of 2n observations, half of them are equal to a and remaining half are equal to $-a$. Also by adding a constant b in each of these observations, the mean and standard deviation of new set become 5 and 20, respectively. Then the value of a^2+b^2 is equal to :

Options :

86435120983. 925

86435120984. 425

86435120985. 650

86435120986. 250

Question Number : 64 Question Id : 8643516994 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

فرض کیجئے 2n مشاہدوں کی ایک سلسلئی میں آدھے a کے برابر ہیں اور آدھے a – کے برابر ہیں۔ اگر ہر ایک مشاہدہ میں ایک مستقلہ b جوڑا جاتا ہے، تب نئے سیٹ کا درمیانہ اور معیاری انحراف بالترتیب 5 اور 20 ہو جاتے ہیں۔ تب a^2+b^2 کی قیمت ہوگی۔

Options :

86435120983. 925

86435120984. 425

86435120985. 650

86435120986. 250

Question Number : 65 Question Id : 8643516995 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let in a Binomial distribution, consisting of 5 independent trials, probabilities of exactly 1 and 2 successes be 0.4096 and 0.2048 respectively. Then the probability of getting exactly 3 successes is equal to :

Options :

86435120987. $\frac{40}{243}$

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86435120988. $\frac{80}{243}$

86435120989. $\frac{128}{625}$

86435120990. $\frac{32}{625}$

Question Number : 65 Question Id : 8643516995 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

فرض کیجئے ایک دورکنی تقسیم (Binomial distribution) میں ،جس میں 5 غیر پابند تجربات (trials) ہیں۔ بالخصوص 1 اور 2 کامیابیوں کی احتمال بالترتیب 0.4096 اور 0.2048 ہے۔تب صرف 3 کامیابیوں کے حصول کی احتمال ہوگی:

Options :

86435120987. $\frac{40}{243}$

86435120988. $\frac{80}{243}$

86435120989. $\frac{128}{625}$

86435120990. $\frac{32}{625}$

Question Number : 66 Question Id : 8643516996 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In a triangle ABC, if $|\overrightarrow{BC}| = 8$, $|\overrightarrow{CA}| = 7$, $|\overrightarrow{AB}| = 10$, then the projection of the vector $\overrightarrow{AB}$ on $\overrightarrow{AC}$ is equal to :

Options :

86435120991. $\frac{115}{16}$

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86435120992. $\frac{85}{14}$

86435120993. $\frac{127}{20}$

86435120994. $\frac{25}{4}$

Question Number : 66 Question Id : 8643516996 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک مثلث ABC میں اگر $|\overrightarrow{BC}| = 8$، $|\overrightarrow{CA}| = 7$، $|\overrightarrow{AB}| = 10$، تب سمتیہ $\overrightarrow{AB}$ کا $\overrightarrow{AC}$ پر خاکہ (Projection) ہوگا۔

Options :

86435120991. $\frac{115}{16}$

86435120992. $\frac{85}{14}$

86435120993. $\frac{127}{20}$

86435120994. $\frac{25}{4}$

Question Number : 67 Question Id : 8643516997 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let the centroid of an equilateral triangle ABC be at the origin. Let one of the sides of the equilateral triangle be along the straight line $x+y=3$. If R and r be the radius of circumcircle and incircle respectively of ΔABC, then $(R+r)$ is equal to :

Options :

86435120995. $2\sqrt{2}$

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86435120996. $\frac{9}{\sqrt{2}}$

86435120997. $7\sqrt{2}$

86435120998. $3\sqrt{2}$

Question Number : 67 Question Id : 8643516997 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

فرض کیجئے ایک مساوی الاضلاع مثلث ABC کا مرکز (Centroid) مبداء پر ہے۔فرض کیجئے کہ مساوی الاضلاع مثلث کا ایک ضلع سیدھی خط $x + y = 3$ کی رفاقت میں ہے۔اگر R اور r بالترتیب ΔABC کی حلقوی دائرہ اور اندرونی دائرہ کی نصف قطر ہیں۔تب $(R + r)$ ہوگا :

Options :

86435120995. $2\sqrt{2}$

86435120996. $\frac{9}{\sqrt{2}}$

86435120997. $7\sqrt{2}$

86435120998. $3\sqrt{2}$

Question Number : 68 Question Id : 8643516998 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let a tangent be drawn to the ellipse $\frac{x^2}{27} + y^2 = 1$ at $(3\sqrt{3}\cos\theta, \sin\theta)$ where $\theta \in \left(0, \frac{\pi}{2}\right)$.

Then the value of θ such that the sum of intercepts on axes made by this tangent is minimum is equal to :

Options :

86435120999. $\frac{\pi}{3}$

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86435121000. $\frac{\pi}{6}$

86435121001. $\frac{\pi}{8}$

86435121002. $\frac{\pi}{4}$

Question Number : 68 Question Id : 8643516998 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

فرض کیجئے کہ ناقص (ellipse) $\frac{x^2}{27} + y^2 = 1$ at $(3\sqrt{3}\cos\theta, \sin\theta)$ ، جہاں $\theta \in \left(0, \frac{\pi}{2}\right)$ ، پر ایک مماس کھینچی جاتی ہے تب

θ کی قیمت کیا ہوگی۔ جبکہ اس مماس کے ذریعے محور (axes) پر بنائے گئے مقطوعات کی جمع کم سے کم ہو۔

Options :

86435120999. $\frac{\pi}{3}$

86435121000. $\frac{\pi}{6}$

86435121001. $\frac{\pi}{8}$

86435121002. $\frac{\pi}{4}$

Question Number : 69 Question Id : 8643516999 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let $y = y(x)$ be the solution of the differential equation $\frac{dy}{dx} = (y+1)\left((y+1)e^{x^2/2} - x\right)$,

$0 < x < 2.1$, with $y(2) = 0$. Then the value of $\frac{dy}{dx}$ at $x = 1$ is equal to :

Options :

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86435121003. $\frac{e^{5/2}}{(1+e^2)^2}$

86435121004. $-\frac{2e^2}{(1+e^2)^2}$

86435121005. $\frac{5e^{1/2}}{(e^2+1)^2}$

86435121006. $\frac{-e^{3/2}}{(e^2+1)^2}$

Question Number : 69 Question Id : 8643516999 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

اگر $y = y(x)$ ایک تفرقی مساوات کا حل ہے۔ جس کی مساوات

$\frac{dy}{dx} = (y+1)\left((y+1)e^{x^2/2} - x\right)$ $0 < x < 2.1$, with $y(2) = 0$ ہے۔

تب $\frac{dy}{dx}$ کی $x = 1$ پر قیمت ہوگی :

Options :

86435121003. $\frac{e^{5/2}}{(1+e^2)^2}$

86435121004. $-\frac{2e^2}{(1+e^2)^2}$

86435121005. $\frac{5e^{1/2}}{(e^2+1)^2}$

86435121006. $\frac{-e^{3/2}}{(e^2+1)^2}$

Question Number : 70 Question Id : 8643517000 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The area bounded by the curve $4y^2 = x^2(4-x)(x-2)$ is equal to :

Options :

86435121007. $\frac{3\pi}{8}$

86435121008. $\frac{\pi}{16}$

86435121009. $\frac{\pi}{8}$

86435121010. $\frac{3\pi}{2}$

Question Number : 70 Question Id : 8643517000 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

منحنی $4y^2 = x^2(4-x)(x-2)$ کے ذریعہ گھرا ہوا رقبہ ہوگا :

Options :

86435121007. $\frac{3\pi}{8}$

86435121008. $\frac{\pi}{16}$

86435121009. $\frac{\pi}{8}$

86435121010. $\frac{3\pi}{2}$

Question Number : 71 Question Id : 8643517001 Question Type : MCQ Option Shuffling : Yes Is

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Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let $g(x) = \int_0^x f(t)dt$, where f is continuous function in [0, 3] such that $\frac{1}{3} \leq f(t) \leq 1$ for all $t \in [0, 1]$ and $0 \leq f(t) \leq \frac{1}{2}$ for all $t \in (1, 3]$. The largest possible interval in which $g(3)$ lies is :

Options :

86435121011. $\left[\frac{1}{3}, 2\right]$

86435121012. $\left[-1, -\frac{1}{2}\right]$

86435121013. $[1, 3]$

86435121014. $\left[-\frac{3}{2}, -1\right]$

Question Number : 71 Question Id : 8643517001 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

اگر $g(x) = \int_0^x f(t)dt$، جہاں f ایک مسلسل تفاعل $[0, 3]$ میں اس طرح ہے کہ $\frac{1}{3} \leq f(t) \leq 1$ سارے $t \in [0, 1]$ کے لئے

اور $0 \leq f(t) \leq \frac{1}{2}$ سارے $t \in (1, 3]$ کے لئے۔ تب سب سے بڑا ممکنہ وقفہ جس میں $g(3)$ موجود ہے، ہوگا :

Options :

86435121011. $\left[\frac{1}{3}, 2\right]$

86435121012. $\left[-1, -\frac{1}{2}\right]$

86435121013. $[1, 3]$

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86435121014. $\left[-\frac{3}{2},-1\right]$

Question Number : 72 Question Id : 8643517002 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

$$f(x)=\begin{cases}\dfrac{\sin(a+1)x+\sin 2x}{2x}, & \text{if } x<0\\ b, & \text{if } x=0\\ \dfrac{\sqrt{x+bx^3}-\sqrt{x}}{b\,x^{5/2}}, & \text{if } x>0\end{cases}$$

If f is continuous at $x=0$, then the value of $a+b$ is equal to :

Options :

86435121015. $-\frac{5}{2}$

86435121016. -3

86435121017. -2

86435121018. $-\frac{3}{2}$

Question Number : 72 Question Id : 8643517002 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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فرض کیجئے ایک تفاعل $f: \mathbf{R} \to \mathbf{R}$ اس طرح معرف (defined) ہے۔

$$f(x) = \begin{cases} \dfrac{\sin(a+1)x + \sin 2x}{2x}, & \text{if } x < 0 \\ b, & \text{if } x = 0 \\ \dfrac{\sqrt{x + bx^3} - \sqrt{x}}{b\, x^{5/2}}, & \text{if } x > 0 \end{cases}$$

اگر f, $x = 0$ پر مسلسل ہے، تب $a + b$ کی قیمت ہوگی۔

Options :

86435121015. $-\frac{5}{2}$

86435121016. -3

86435121017. -2

86435121018. $-\frac{3}{2}$

Question Number : 73 Question Id : 8643517003 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let S_1 be the sum of first 2n terms of an arithmetic progression. Let S_2 be the sum of first 4n terms of the same arithmetic progression. If $(S_2 - S_1)$ is 1000, then the sum of the first 6n terms of the arithmetic progression is equal to :

Options :

86435121019. 7000

86435121020. 5000

86435121021. 3000

86435121022. 1000

Question Number : 73 Question Id : 8643517003 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

اگر S_1 حسابی تصاعد کے ابتدائی 2n ارکان کا جوڑ ہے۔اور S_2 اس حسابی تصاعد کے ابتدائی 4n ارکان کا جوڑ ہے۔اگر $1000(S_2 - S_1)$ ہے۔تب ابتدائی 6n ارکان کا جوڑ اس حسابی تصاعد میں کیا ہوگا۔

Options :

86435121019. 7000

86435121020. 5000

86435121021. 3000

86435121022. 1000

Question Number : 74 Question Id : 8643517004 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let $S_1 : x^2+y^2=9$ and $S_2 : (x-2)^2+y^2=1$. Then the locus of center of a variable circle S which touches S_1 internally and S_2 externally always passes through the points :

Options :

86435121023. $\left(2, \pm \frac{3}{2}\right)$

86435121024. $(0, \pm \sqrt{3})$

86435121025. $(1, \pm 2)$

86435121026. $\left(\frac{1}{2}, \pm \frac{\sqrt{5}}{2}\right)$

Question Number : 74 Question Id : 8643517004 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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فرض کیجئے $S_1 : x^2+y^2=9$ اور $S_2 : (x-2)^2+y^2=1$ ۔ تب اس تبدیل پذیر دائرہ S کا قوس کیا ہوگا جو S_1 کو اندرونی طور پر اور S_2 کو باہری طور پر مس کرتا ہے۔

Options :

86435121023. $\left(2, \pm \frac{3}{2}\right)$

86435121024. $\left(0, \pm \sqrt{3}\right)$

86435121025. $(1, \pm 2)$

86435121026. $\left(\frac{1}{2}, \pm \frac{\sqrt{5}}{2}\right)$

Question Number : 75 Question Id : 8643517005 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Let the system of linear equations

$4x + \lambda y + 2z = 0$

$2x - y + z = 0$

$\mu x + 2y + 3z = 0,\ \lambda,\ \mu \epsilon R.$

has a non-trivial solution. Then which of the following is true ?

Options :

86435121027. $\lambda = 3,\ \ \mu \epsilon R$

86435121028. $\mu = -6,\ \ \lambda \epsilon R$

86435121029. $\lambda = 2,\ \ \mu \epsilon R$

86435121030. $\mu = 6,\ \ \lambda \epsilon R$

Question Number : 75 Question Id : 8643517005 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

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خطوطی مساواتوں کے ایک نظام کو فرض کریں۔

$$4x + \lambda y + 2z = 0$$

$$2x - y + z = 0$$

$$\mu x + 2y + 3z = 0, \ \lambda, \ \mu \epsilon \mathbf{R}$$

اس نظام کے غیرادنیٰ حل ہیں۔تب مندرجہ ذیل میں سے کون سا صحیح ہے۔

Options :

86435121027. $\lambda = 3, \quad \mu \epsilon \mathbf{R}$

86435121028. $\mu = -6, \quad \lambda \epsilon \mathbf{R}$

86435121029. $\lambda = 2, \quad \mu \epsilon \mathbf{R}$

86435121030. $\mu = 6, \quad \lambda \epsilon \mathbf{R}$

Question Number : 76 Question Id : 8643517006 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let $f : \mathbf{R} - \{3\} \rightarrow \mathbf{R} - \{1\}$ be defined by $f(x) = \dfrac{x-2}{x-3}$.

Let $g : \mathbf{R} \rightarrow \mathbf{R}$ be given as $g(x) = 2x - 3$. Then, the sum of all the values of x for which $f^{-1}(x) + g^{-1}(x) = \dfrac{13}{2}$ is equal to.

Options :

86435121031. 2

86435121032. 5

86435121033. 3

86435121034. 7

Question Number : 76 Question Id : 8643517006 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

فرض کیجیے $f : \mathbf{R} - \{3\} \rightarrow \mathbf{R} - \{1\}$ اس طرح معرف (defined) ہے، $f(x) = \frac{x-2}{x-3}$

مان لیجیے $g : \mathbf{R} \rightarrow \mathbf{R}$ اس طرح دیا ہوا ہے کہ۔

$g(x) = 2x - 3$ تب x کی ان سبھی قیمتوں کا جوڑ کیا ہوگا جن کے لئے $f^{-1}(x) + g^{-1}(x) = \frac{13}{2}$ ہے؟

Options :

86435121031. 2

86435121032. 5

86435121033. 3

86435121034. 7

Question Number : 77 Question Id : 8643517007 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let a complex number be $w = 1 - \sqrt{3}\, i$. Let another complex number z be such that $|zw| = 1$ and $\arg(z) - \arg(w) = \frac{\pi}{2}$. Then the area of the triangle with vertices origin, z and w is equal to :

Options :

86435121035. $\frac{1}{2}$

86435121036. 2

86435121037. $\frac{1}{4}$

86435121038. 4

Question Number : 77 Question Id : 8643517007 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

مان لیجئے $w = 1 - \sqrt{3}\,i$ ایک پیچیدہ عدد (complex number) ہے۔ مانئے ایک اور پیچیدہ عدد z اس طرح ہے کہ $|zw| = 1$

اور $\arg(z) - \arg(w) = \frac{\pi}{2}$ ہے۔ تب اس مثلث کا رقبہ بتائیں جس کی راسیں مبدء، z اور w ہیں۔

Options :

86435121035. $\frac{1}{2}$

86435121036. 2

86435121037. $\frac{1}{4}$

86435121038. 4

Question Number : 78 Question Id : 8643517008 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Define a relation R over a class of $n \times n$ real matrices A and B as

"ARB iff there exists a non-singular matrix P such that $PAP^{-1} = B$".

Then which of the following is true ?

Options :

86435121039. R is reflexive, symmetric but not transitive

86435121040. R is reflexive, transitive but not symmetric

86435121041. R is symmetric, transitive but not reflexive,

86435121042. R is an equivalence relation

Question Number : 78 Question Id : 8643517008 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

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ایک رشتہ R کو $n \times n$ حقیقی ماترسوں A اور B کے طبقہ (class) پر define کیجئے۔اس طرح کہ

"ARB iff there exists a non-singular matrix P such that $PAP^{-1} = B$".

تب مندرجہ ذیل میں سے کون سا سچ ہے۔

Options :

86435121039. R راجع (Reflexive)، متشاکل (symmetric) ہے۔
لیکن متعدی (transitive) نہیں ہے۔

86435121040. R راجع (Reflexive)، متعدی (transitive) ہے۔لیکن متشاکل (symmetric) نہیں ہے۔

86435121041. R متشاکل (symmetric)، متعدی (transitive) ہے لیکن راجع (reflexive) نہیں ہے۔

86435121042. R ایک مساوی (equivalence) رشتہ ہے۔

Question Number : 79 Question Id : 8643517009 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No
Correct Marks : 4 Wrong Marks : 1

Consider a hyperbola $H : x^2 - 2y^2 = 4$. Let the tangent at a point $P\ (4, \sqrt{6})$ meet the x-axis at Q and latus rectum at $R\ (x_1, y_1)$, $x_1 > 0$. If F is a focus of H which is nearer to the point P, then the area of ΔQFR is equal to .

Options :

86435121043. $\sqrt{6} - 1$

86435121044. $\frac{7}{\sqrt{6}} - 2$

86435121045. $4\sqrt{6} - 1$

86435121046. $4\sqrt{6}$

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Question Number : 79 Question Id : 8643517009 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک زائد (hyperbola) $H : x^2 - 2y^2 = 4$ پر غور کریں۔ مان لیں کہ نقطہ $P(4, \sqrt{6})$ پر مماس x محور (x-axis) کو Q پر اور لیٹس ریکٹم (Latus Rectum) کو $R(x_1, y_1), x_1 > 0$ پر ملتی ہے۔ اگر F، H کا ماسکہ (Focus) ہے، جو کہ نقطہ P کے قریب ہے، تب ΔQFR کا رقبہ ہوگا:

Options :

86435121043. $\sqrt{6} - 1$

86435121044. $\frac{7}{\sqrt{6}} - 2$

86435121045. $4\sqrt{6} - 1$

86435121046. $4\sqrt{6}$

Question Number : 80 Question Id : 8643517010 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let $\vec{a}$ and $\vec{b}$ be two non-zero vectors perpendicular to each other and $|\vec{a}| = |\vec{b}|$. If $|\vec{a} \times \vec{b}| = |\vec{a}|$, then the angle between the vectors $(\vec{a} + \vec{b} + (\vec{a} \times \vec{b}))$ and $\vec{a}$ is equal to :

Options :

86435121047. $\cos^{-1}\left(\frac{1}{\sqrt{3}}\right)$

86435121048. $\cos^{-1}\left(\frac{1}{\sqrt{2}}\right)$

86435121049. $\sin^{-1}\left(\frac{1}{\sqrt{3}}\right)$

$$\sin^{-1}\left(\frac{1}{\sqrt{6}}\right)$$
86435121050.

Question Number : 80 Question Id : 8643517010 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

مان لیجئے $\vec{a}$ اور $\vec{b}$ دو غیرصفری (non-zero) سمتیے ہیں جوایک دوسرے پرعمود ہیں اور $|\vec{a}| = |\vec{b}|$ اگر $|\vec{a} \times \vec{b}| = |\vec{a}|$ تب
سمتیوں $\left(\vec{a} + \vec{b} + \left(\vec{a} \times \vec{b}\right)\right)$ اور $\vec{a}$ کے بیچ زاویہ ہوگا۔

Options :

86435121047. $\cos^{-1}\left(\frac{1}{\sqrt{3}}\right)$

86435121048. $\cos^{-1}\left(\frac{1}{\sqrt{2}}\right)$

86435121049. $\sin^{-1}\left(\frac{1}{\sqrt{3}}\right)$

86435121050. $\sin^{-1}\left(\frac{1}{\sqrt{6}}\right)$

Mathematics Section B

Section Id :	864351468
Section Number :	6
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	864351468
Question Shuffling Allowed :	Yes

Question Number : 81 Question Id : 8643517011 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

If $f(x)$ and $g(x)$ are two polynomials such that the polynomial $P(x) = f(x^3) + x\,g(x^3)$ is divisible by x^2+x+1, then $P(1)$ is equal to ________.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 81 Question Id : 8643517011 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

اگر $f(x)$ اور $g(x)$ دو کثیر رکنی (Polynomials) اس طرح ہیں کہ $P(x) = f(x^3) + x\,g(x^3)$, x^2+x+1 سے تقسیم پذیر (divisible) ہے، تب $P(1)$ ________ کے برابر ہوگا۔

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 82 Question Id : 8643517012 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

Let I be an identity matrix of order 2×2 and $P = \begin{bmatrix} 2 & -1 \\ 5 & -3 \end{bmatrix}$. Then the value of $n\in N$ for which $P^n = 5I - 8P$ is equal to ________.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 82 Question Id : 8643517012 Question Type : SA

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Correct Marks : 4 Wrong Marks : 0

فرض کیجئے I ایک اکائی ماترس ہے جس کا رتبہ 2×2 ہے اور $P = \begin{bmatrix} 2 & -1 \\ 5 & -3 \end{bmatrix}$ ۔ تب $n \in N$ کی وہ قیمت کیا ہوگی جس کے لئے $P^n = 5I - 8P$ ہے _________ ۔

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 83 Question Id : 8643517013 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The term independent of x in the expansion of $\left[\frac{x+1}{x^{2/3} - x^{1/3} + 1} - \frac{x-1}{x - x^{1/2}}\right]^{10}$, $x \neq 1$, is equal to _________.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 83 Question Id : 8643517013 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

پھیلاؤ $x \neq 1$, $\left[\frac{x+1}{x^{2/3} - x^{1/3} + 1} - \frac{x-1}{x - x^{1/2}}\right]^{10}$ میں x سے آزاد رکن کا ضریب (coefficent) ہوگا _________ ۔

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 84 Question Id : 8643517014 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If $\sum_{r=1}^{10} r!\left(r^3 + 6r^2 + 2r + 5\right) = \alpha\,(11!)$,

then the value of α is equal to ________.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 84 Question Id : 8643517014 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

اگر ایک سلسلی کے لئے

$$\sum_{r=1}^{10} r!\left(r^3 + 6r^2 + 2r + 5\right) = \alpha\,(11!),$$

تب α کی قیمت ________ کے برابر ہوگی۔

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 85 Question Id : 8643517015 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

Let $P(x)$ be a real polynomial of degree 3 which vanishes at $x = -3$. Let $P(x)$ have local minima at $x = 1$, local maxima at $x = -1$ and $\int_{-1}^{1} P(x)dx = 18$, then the sum of all the coefficients of the polynomial $P(x)$ is equal to ________.

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

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Text Areas : PlainText
Possible Answers :
100

Question Number : 85 Question Id : 8643517015 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

فرض کیجئے $P(x)$ 3 درجے (degree) کی ایک کثیر رکنی ہے، جو $x = -3$ پر غائب ہوجاتی ہے۔ مان لیجئے $P(x)$، $x = 1$ پر مقامی خفیف قیمت (Local Minima) اور $x = -1$ پر مقامی کثیر قیمت (Local maxima) ظاہر کرتا ہے اور $\int_{-1}^{1} P(x)dx = 18$ ہے،

تب کثیر رکنی (Polynomial) $P(x)$ کے سارے ضریبوں (coefficients) کا جوڑ ________ کے برابر ہوگا۔

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 86 Question Id : 8643517016 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

Let $y = y(x)$ be the solution of the differential equation $x dy - y dx = \sqrt{(x^2 - y^2)}\, dx$, $x \geq 1$, with $y(1) = 0$. If the area bounded by the line $x = 1$, $x = e^{\pi}$, $y = 0$ and $y = y(x)$ is $\alpha e^{2\pi} + \beta$, then the value of $10(\alpha + \beta)$ is equal to ________.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 86 Question Id : 8643517016 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

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فرض کیجئے ایک تفرقی مساوات ہے جو اس طرح ہے $x \geq 1$, $xdy - ydx = \sqrt{(x^2 - y^2)}\, dx$ ، جس کے ساتھ $y(1) = 0$ ہے اس تفرقی تفاعل کا حل $y = y(x)$ ہے۔

اگر خطوط $x = 1$, $x = e^{\pi}$, $y = 0$ اور $y = y(x)$ کے ذریعے گھیرا ہوا رقبہ $\alpha e^{2\pi} + \beta$ ہے، تب $10(\alpha + \beta)$ کی قیمت ______ ہوگی۔

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 87 Question Id : 8643517017 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

Let P be a plane containing the line $\frac{x-1}{3} = \frac{y+6}{4} = \frac{z+5}{2}$ and parallel to the line $\frac{x-3}{4} = \frac{y-2}{-3} = \frac{z+5}{7}$. If the point $(1, -1, \alpha)$ lies on the plane P, then the value of $|5\alpha|$ is equal to ______.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 87 Question Id : 8643517017 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

مان لیجئے P ایک مستوی ہے جس کے اندر خط $\frac{x-1}{3} = \frac{y+6}{4} = \frac{z+5}{2}$ ہے، اور یہ خط $\frac{x-3}{4} = \frac{y-2}{-3} = \frac{z+5}{7}$ کے متوازی ہے۔ اگر نقطہ $(1, -1, \alpha)$ مستوی P پر واقع ہے۔ تب $|5\alpha|$ کی قیمت ہوگی۔

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

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Text Areas : PlainText
Possible Answers :
100

Question Number : 88 Question Id : 8643517018 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

Let the mirror image of the point (1, 3, a) with respect to the plane $\vec{r}\cdot(2\hat{i}-\hat{j}+\hat{k})-b=0$ be $(-3, 5, 2)$. Then, the value of $|a+b|$ is equal to ________.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 88 Question Id : 8643517018 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

مان لیجیے مستوی $\vec{r}\cdot(2\hat{i}-\hat{j}+\hat{k})-b=0$ کی نسبت میں نقطہ (1, 3, a) کی عکسی شکل (mirror image)

$(-3, 5, 2)$ ہے۔تب $|a+b|$ کی قیمت ہوگی ________۔

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 89 Question Id : 8643517019 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

Let ${}^{n}C_{r}$ denote the binomial coefficient of x^{r} in the expansion of $(1+x)^{n}$.

If $\sum_{k=0}^{10}(2^2+3k)\,{}^{n}C_{k}=\alpha.3^{10}+\beta.2^{10}$, $\alpha, \beta \in R$, then $\alpha+\beta$ is equal to ________.

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

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Text Areas : PlainText
Possible Answers :
100

Question Number : 89 Question Id : 8643517019 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

مان لیجئے $(1+x)^n$ پھیلاؤ میں، x^r کا دورکنی (binomial) ضریب (coefficient) ${}^nC_r$ ہے۔

اگر $\sum_{k=0}^{10}(2^2+3k)\ {}^nC_k = \alpha.3^{10}+\beta.2^{10}$, α, $\beta \in \mathbf{R}$, ہے تب $\alpha+\beta$ ______ کے برابر ہوگا۔

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 90 Question Id : 8643517020 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

Let $f : \mathbf{R} \to \mathbf{R}$ satisfy the equation $f(x+y) = f(x).f(y)$ for all $x, y \in \mathbf{R}$ and $f(x) \neq 0$ for any $x \in \mathbf{R}$.

If the function f is differentiable at $x=0$ and $f'(0)=3$, then $\lim_{h\to 0} \frac{1}{h}(f(h)-1)$ is equal to ______.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

Question Number : 90 Question Id : 8643517020 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

فرض کیجئے $f : \mathbf{R} \to \mathbf{R}$ مساوات $f(x+y) = f(x).f(y)$ سارے $x, y \in \mathbf{R}$ کے لئے اور $f(x) \neq 0$ کسی بھی $x \in \mathbf{R}$ کے لئے کو مطمئن کرتا ہے۔ اگر تفاعل f، $x=0$ اور $f'(0)=3$ پر تفرق پذیر (differentiable) ہے۔ تب $\lim_{h\to 0} \frac{1}{h}(f(h)-1)$

______ کے برابر ہوگا۔

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Equal
Text Areas : PlainText
Possible Answers :
100

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