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B TECH EU

Group Number :	1
Group Id :	708191174
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Break time :	0
Group Marks :	300
Is this Group for Examiner? :	No

Physics Section A

Section Id :	708191622
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 :	708191902
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 70819116234 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The workdone by a gas molecule in an isolated system is given by, $W = \alpha\beta^2 e^{-\frac{x^2}{\alpha kT}}$, where x is the displacement, k is the Boltzmann constant and T is the temperature. α and β are constants. Then the dimensions of β will be :

Options :

70819153851. $[M^2 L T^2]$

70819153852. $[M^0 L T^0]$

70819153853. $[M L T^{-2}]$

70819153854. $[M L^2 T^{-2}]$

Question Number : 1 Question Id : 70819116234 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک الگ تھلگ نظام میں رکھی گیس کے سالمات کے ذریعے کیا گیا کام کی مساوات $W = \alpha\beta^2 e^{-\frac{x^2}{\alpha kT}}$ جہاں x ہٹاؤ، k بولٹز مین کا مستقل، T تپش ہے۔ α اور β مستقل ہیں۔ بتائیے β کی ابعاد کیا ہوں گی ؟

Options :

70819153851. $[M^2 L T^2]$

70819153852. $[M^0 L T^0]$

70819153853. $[M L T^{-2}]$

70819153854. $[M L^2 T^{-2}]$

Question Number : 2 Question Id : 70819116235 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Two stars of masses m and $2m$ at a distance d rotate about their common centre of mass in free space. The period of revolution is :

Options :

70819153855. $\frac{1}{2\pi} \sqrt{\frac{3Gm}{d^3}}$

70819153856. $2\pi \sqrt{\frac{d^3}{3Gm}}$

70819153857. $2\pi \sqrt{\frac{3Gm}{d^3}}$

70819153858. $\frac{1}{2\pi} \sqrt{\frac{d^3}{3Gm}}$

Question Number : 2 Question Id : 70819116235 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

m اور 2m کمیت کے دو سیارے جن کے درمیان کا فاصلہ 'd' ہے وہ ایک آزاد ماحول میں مشترک مرکز کے اطراف میں گردش کر رہے ہیں۔ ان کا گردش کا دور ہوگا :

Options :

70819153855. $\frac{1}{2\pi} \sqrt{\frac{3Gm}{d^3}}$

70819153856. $2\pi \sqrt{\frac{d^3}{3Gm}}$

70819153857. $2\pi \sqrt{\frac{3Gm}{d^3}}$

70819153858. $\frac{1}{2\pi} \sqrt{\frac{d^3}{3Gm}}$

Question Number : 3 Question Id : 70819116236 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Four identical particles of equal masses 1 kg made to move along the circumference of a circle of radius 1 m under the action of their own mutual gravitational attraction. The speed of each particle will be :

Options :

70819153859. $\frac{\sqrt{(1+2\sqrt{2})G}}{2}$

70819153860. $\sqrt{\frac{G}{2}(1+2\sqrt{2})}$

70819153861. $\sqrt{G(1+2\sqrt{2})}$

70819153862. $\sqrt{\frac{G}{2}(2\sqrt{2}-1)}$

Question Number : 3 Question Id : 70819116236 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

1 kg کمیت کے چار ذرات 1 m نصف قطر کے دائرے کے محیط پر ایک دوسرے کی باہمی تہاؤبی قوت کے زیر اثر حرکت کر رہے ہیں۔ ہر ذرہ کی چال ہوگی :

Options :

70819153859. $\frac{\sqrt{(1+2\sqrt{2})G}}{2}$

70819153860. $\sqrt{\frac{G}{2}(1+2\sqrt{2})}$

70819153861. $\sqrt{G(1+2\sqrt{2})}$

70819153862. $\sqrt{\frac{G}{2}(2\sqrt{2}-1)}$

Question Number : 4 Question Id : 70819116237 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Moment of inertia (M.I.) of four bodies, having same mass and radius, are reported as ;

I_1 = M.I. of thin circular ring about its diameter,

I_2 = M.I. of circular disc about an axis perpendicular to disc and going through the centre,

I_3 = M.I. of solid cylinder about its axis and

I_4 = M.I. of solid sphere about its diameter.

Then :

Options :

70819153863. $I_1 + I_2 = I_3 + \frac{5}{2} I_4$

70819153864. $I_1 + I_3 < I_2 + I_4$

70819153865. $I_1 = I_2 = I_3 < I_4$

70819153866. $I_1 = I_2 = I_3 > I_4$

Question Number : 4 Question Id : 70819116237 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

مساوی کمیت اور مساوی نصف قطر کے چار مختلف اجسام کے جمود کے معیار اثر (M.I.) کی تفصیل درج ذیل ہے :

$I_1 =$ پتلے دائروی حلقہ کا اس کے قطر سے گزرنے والے محور کے اطراف جمود کا معیار اثر

$I_2 =$ پتلے دھاتی دائروی قرص کا اس کی سطح پر عمود اور کمیت کے مرکز سے گزرنے والے محور کے اطراف جمود کا معیار اثر

$I_3 =$ ٹھوس استوانے کا اس کے محور کے اطراف جمود کا معیار اثر

$I_4 =$ ٹھوس کرہ کا اس کے قطر کے اطراف جمود کا معیار اثر

تب :

Options :

70819153863. $I_1 + I_2 = I_3 + \frac{5}{2} I_4$

70819153864. $I_1 + I_3 < I_2 + I_4$

70819153865. $I_1 = I_2 = I_3 < I_4$

70819153866. $I_1 = I_2 = I_3 > I_4$

Question Number : 5 Question Id : 70819116238 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider two satellites S_1 and S_2 with periods of revolution 1 hr. and 8 hr. respectively revolving around a planet in circular orbits. The ratio of angular velocity of satellite S_1 to the angular velocity of satellite S_2 is :

Options :

70819153867. 8 : 1

70819153868. 1 : 8

70819153869. 2 : 1

70819153870. 1 : 4

Question Number : 5 Question Id : 70819116238 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

کسی سیارے کے اطراف دو سیارچوں S_1 اور S_2 کا گردش کا دورہ بالترتیب 1 hr اور 8 hr ہے۔ اس صورت میں سیارچہ S_1 اور سیارچہ S_2 کی زاویائی رفتار کی نسبت ہوگی :

Options :

70819153867. 8 : 1

70819153868. 1 : 8

70819153869. 2 : 1

70819153870. 1 : 4

Question Number : 6 Question Id : 70819116239 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Each side of a box made of metal sheet in cubic shape is 'a' at room temperature 'T', the coefficient of linear expansion of the metal sheet is ' α '. The metal sheet is heated uniformly, by a small temperature ΔT , so that its new temperature is $T + \Delta T$. Calculate the increase in the volume of the metal box.

Options :

70819153871. $4\pi a^3 \alpha \Delta T$

70819153872. $4a^3 \alpha \Delta T$

70819153873. $\frac{4}{3} \pi a^3 \alpha \Delta T$

70819153874. $3a^3 \alpha \Delta T$

Question Number : 6 Question Id : 70819116239 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک دھاتی شیٹ سے بنے مکعب کے ضلع کی لمبائی 'a' ہے۔ کمرہ کا درجہ حرارت T ہے۔ دھاتی شیٹ کے لیے طولی پھیلاؤ کا ضریب α ہے۔ اب اس دھاتی شیٹ کو یکساں حرارت دے کر اس کے درجہ حرارت ΔT کا اضافہ کریں تب اس کی تپش $T + \Delta T$ ہو جاتی ہو تب اس مکعب کے حجم میں ہونے والا اضافہ :

Options :

70819153871. $4\pi a^3 \alpha \Delta T$

70819153872. $4a^3 \alpha \Delta T$

70819153873. $\frac{4}{3} \pi a^3 \alpha \Delta T$

70819153874. $3a^3 \alpha \Delta T$

Question Number : 7 Question Id : 70819116240 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If Y, K and η are the values of Young's modulus, bulk modulus and modulus of rigidity of any material respectively. Choose the correct relation for these parameters.

Options :

70819153875.
$$Y = \frac{9K\eta}{2\eta + 3K} \text{ N/m}^2$$

70819153876.
$$Y = \frac{9K\eta}{3K - \eta} \text{ N/m}^2$$

70819153877.
$$K = \frac{Y\eta}{9\eta - 3Y} \text{ N/m}^2$$

70819153878.
$$\eta = \frac{3YK}{9K + Y} \text{ N/m}^2$$

Question Number : 7 Question Id : 70819116240 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

اگر Y یٹگ کا مقیاس، K تجبى مقیاس اور η استوارى مقیاس ہو کسی مادہ کے لیے تب ان کے درمیان صحیح تعلق ہوگا :

Options :

70819153875.
$$Y = \frac{9K\eta}{2\eta + 3K} \text{ N/m}^2$$

70819153876.
$$Y = \frac{9K\eta}{3K - \eta} \text{ N/m}^2$$

70819153877.

$$K = \frac{Y\eta}{9\eta - 3Y} \text{ N/m}^2$$

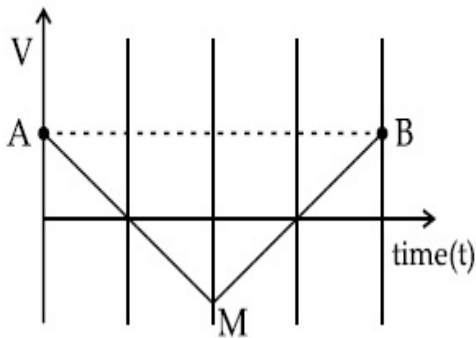
$$\eta = \frac{3YK}{9K + Y} \text{ N/m}^2$$

70819153878.

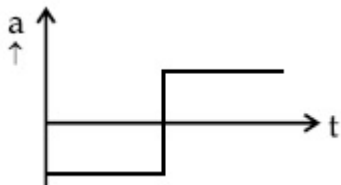
Question Number : 8 Question Id : 70819116241 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

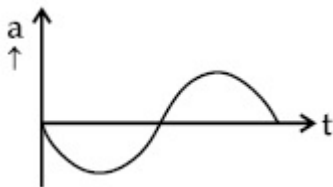
If the velocity-time graph has the shape AMB, what would be the shape of the corresponding acceleration-time graph ?



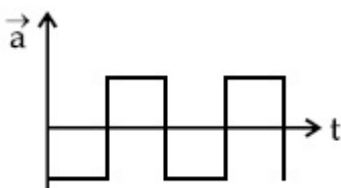
Options :



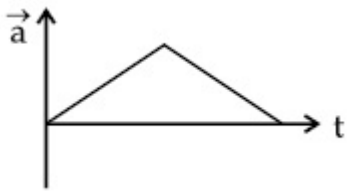
70819153879.



70819153880.



70819153881.



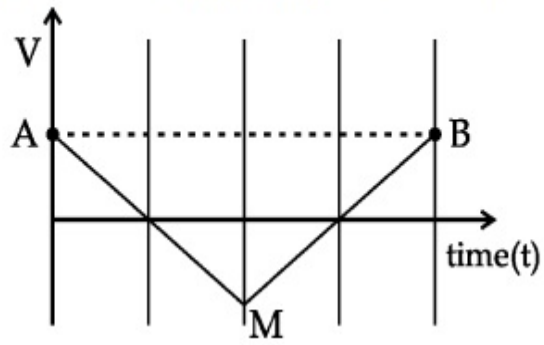
70819153882.

Question Number : 8 Question Id : 70819116241 Question Type : MCQ Option Shuffling : Yes Is

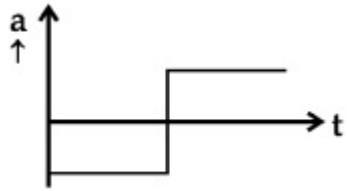
Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

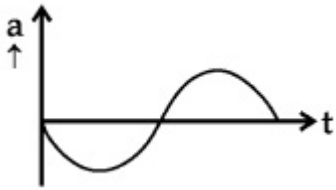
اگر رفتار - وقت کے درمیان ترمیم کی نوعیت AMB ہو تب اس حرکت کے لیے اسراع اور وقت کے درمیان ترمیم کی نوعیت ہوگی :



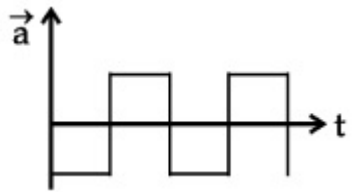
Options :



70819153879.

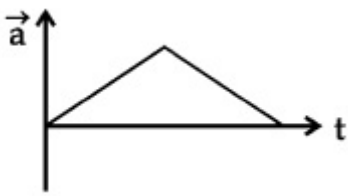


70819153880.



70819153881.

70819153882.



Question Number : 9 Question Id : 70819116242 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

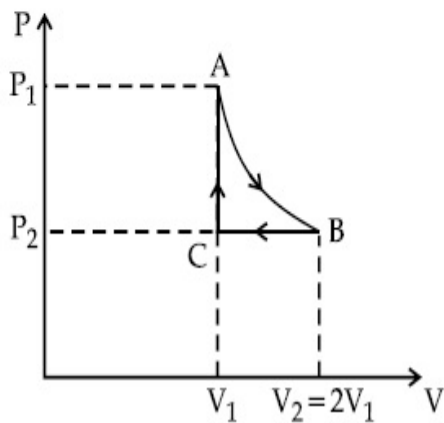
n mole of a perfect gas undergoes a cyclic process ABCA (see figure) consisting of the following processes.

A \rightarrow B : Isothermal expansion at temperature T so that the volume is doubled from V_1 to $V_2 = 2V_1$ and pressure changes from P_1 to P_2 .

B \rightarrow C : Isobaric compression at pressure P_2 to initial volume V_1 .

C \rightarrow A : Isochoric change leading to change of pressure from P_2 to P_1 .

Total workdone in the complete cycle ABCA is :



Options :

70819153883. 0

70819153884. $nRT \ln 2$

70819153885. $nRT \left(\ln 2 + \frac{1}{2} \right)$

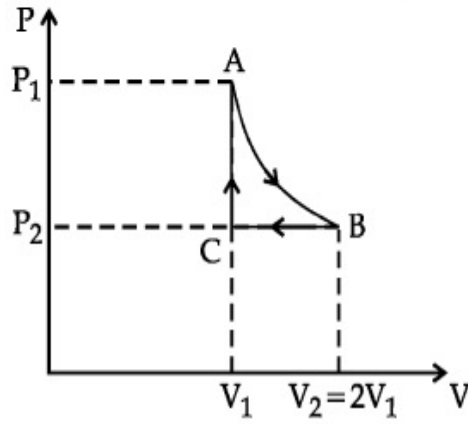
70819153886. $nRT \left(\ln 2 - \frac{1}{2} \right)$

Question Number : 9 Question Id : 70819116242 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

n سالمات کی ایک مثالی گیس ایک دوری عمل CA پھیلاؤ سے AB سے گزرتی ہے۔ جیسا کہ شکل میں دکھایا گیا ہے۔ اس دوری عمل میں :
عمل $A \rightarrow B$ کے دوران مستقل تپش T پر گیس کا حجم V_1 سے دگنا ہو کر $V_2 = 2V_1$ ہو جاتا ہے اور دباؤ P_1 سے P_2 ہو جاتا ہے۔
عمل $B \rightarrow C$ کے دوران ہم حجمی سکڑان کے دوران گیس کو دبانے پر دباؤ P_2 اور حجم ابتدائی حجم V_1 ہو جاتا ہے۔
عمل $C \rightarrow A$ کے دوران ہم حجمی دباؤ کے دوران گیس کا دباؤ P_2 سے P_1 ہو جاتا ہے۔
تب اس مکمل دور عمل کے ABCA کے دوران کیا گیا کام ہوگا :



Options :

70819153883. 0

70819153884. $nRT \ln 2$

70819153885. $nRT \left(\ln 2 + \frac{1}{2} \right)$

70819153886. $nRT \left(\ln 2 - \frac{1}{2} \right)$

Question Number : 10 Question Id : 70819116243 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) Isothermal	(i) Pressure constant
(b) Isochoric	(ii) Temperature constant
(c) Adiabatic	(iii) Volume constant
(d) Isobaric	(iv) Heat content is constant

Choose the correct answer from the options given below :

Options :

70819153887. (a) → (i), (b) → (iii), (c) → (ii), (d) → (iv)

70819153888. (a) → (iii), (b) → (ii), (c) → (i), (d) → (iv)

70819153889. (a) → (ii), (b) → (iv), (c) → (iii), (d) → (i)

70819153890. (a) → (ii), (b) → (iii), (c) → (iv), (d) → (i)

Question Number : 10 Question Id : 70819116243 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

فہرست I کو فہرست II سے مناسب طور پر جوڑیے :

فہرست II	فہرست I
(i) مستقل دباؤ پر	(a) ہم تپشی عمل (Isothermal)
(ii) مستقل درجہ حرارت پر	(b) ہم حجمی عمل (Isochoric)
(iii) مستقل حجم پر	(c) حرنا گزار عمل (Adiabatic)
(iv) مادہ تپش مستقل ہو	(d) ہم دباؤ عمل (Isobaric)

درجہ ذیل میں دیئے گئے متبادلات میں سے صحیح متبادل چینیے :

Options :

70819153887. (a) → (i), (b) → (iii), (c) → (ii), (d) → (iv)

70819153888. (a) → (iii), (b) → (ii), (c) → (i), (d) → (iv)

70819153889. (a) → (ii), (b) → (iv), (c) → (iii), (d) → (i)

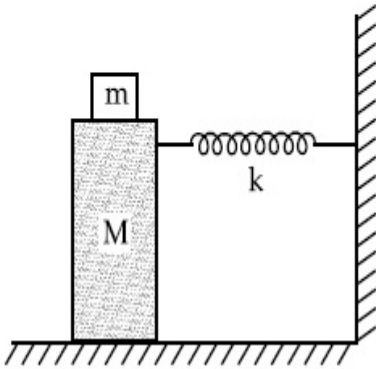
70819153890. (a) → (ii), (b) → (iii), (c) → (iv), (d) → (i)

Question Number : 11 Question Id : 70819116244 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In the given figure, a mass M is attached to a horizontal spring which is fixed on one side to a rigid support. The spring constant of the spring is k . The mass oscillates on a frictionless surface with time period T and amplitude A . When the mass is in equilibrium position, as shown in the figure, another mass m is gently fixed upon it. The new amplitude of oscillation will be :



Options :

70819153891. $A \sqrt{\frac{M+m}{M}}$

70819153892. $A \sqrt{\frac{M}{M+m}}$

70819153893. $A \sqrt{\frac{M-m}{M}}$

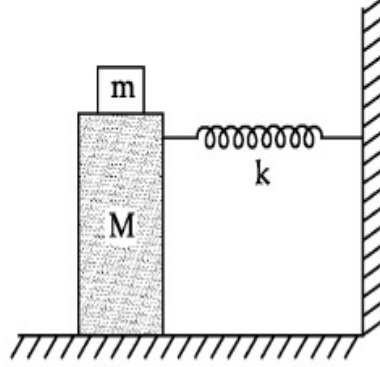
70819153894. $A \sqrt{\frac{M}{M-m}}$

Question Number : 11 Question Id : 70819116244 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

شکل میں M کمیت کی ایک شے کو اسپرنگ کا مستقلہ k رکھنے والی افقی اسپرنگ کے ایک سرے سے باندھا گیا۔ اسپرنگ کا دوسرا سر اٹھوس سہارے سے باندھا ہے۔ اگر وہ کمیت دور T اور حیط A کے ساتھ بے رگڑ مسطح سطح پر وسطی مقام کے اطراف اہتزاز کرتا ہے جب کمیت M وسطی مقام پر ہو تب اس پر کمیت m کو آہستہ سے نصب کیا جاتا ہے تب اس مکمل جوڑ کا اہتزاز کا نیا حیط ہوگا :



Options :

70819153891. $A \sqrt{\frac{M+m}{M}}$

70819153892. $A \sqrt{\frac{M}{M+m}}$

70819153893. $A \sqrt{\frac{M-m}{M}}$

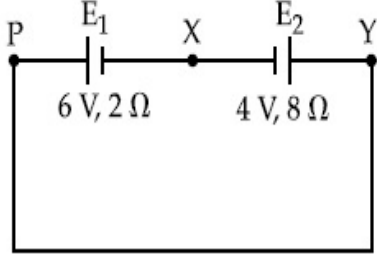
70819153894. $A \sqrt{\frac{M}{M-m}}$

Question Number : 12 Question Id : 70819116245 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A cell E_1 of emf 6 V and internal resistance 2Ω is connected with another cell E_2 of emf 4 V and internal resistance 8Ω (as shown in the figure). The potential difference across points X and Y is :



Options :

70819153895. 2.0 V

70819153896. 3.6 V

70819153897. 5.6 V

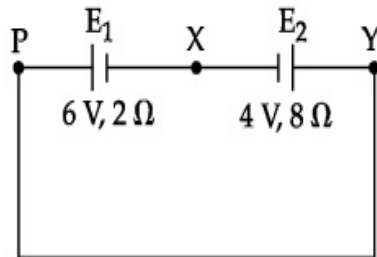
70819153898. 10.0 V

Question Number : 12 Question Id : 70819116245 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

برقی خانے E_1 کا قوت محرکہ برقی 6 V (emf) اور اندرونی مزاحمت 2Ω ہے۔ اس کے دوسرے برقی خانے E_2 جس کا قوت محرکہ برقی 4 V (emf) اور اندرونی مزاحمت 8Ω کے ساتھ شکل میں دکھائے گئے طریقے سے جوڑا گیا ہو تب نقاط X اور Y کے درمیان تفاوتِ قوتی کا فرق کیا ہوگا ؟



Options :

70819153895. 2.0 V

70819153896. 3.6 V

70819153897. 5.6 V

70819153898. 10.0 V

Question Number : 13 Question Id : 70819116246 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A current through a wire depends on time as

$$i = \alpha_0 t + \beta t^2$$

where $\alpha_0 = 20 \text{ A/s}$ and $\beta = 8 \text{ As}^{-2}$. Find the charge crossed through a section of the wire in 15 s.

Options :

70819153899. 260 C

70819153900. 2100 C

70819153901. 11250 C

70819153902. 2250 C

Question Number : 13 Question Id : 70819116246 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

کسی تار سے گزرنے والے برقی کرنٹ کی مساوات

$$i = \alpha_0 t + \beta t^2$$

جہاں $\alpha_0 = 20 \text{ A/s}$ اور $\beta = 8 \text{ As}^{-2}$ ہو تب اس تار سے 15 s کے وقفہ میں بہنے والے برقی بار کی قدر ہوگی :

Options :

70819153899. 260 C

70819153900. 2100 C

70819153901. 11250 C

70819153902. 2250 C

Question Number : 14 Question Id : 70819116247 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Two equal capacitors are first connected in series and then in parallel. The ratio of the equivalent capacities in the two cases will be :

Options :

70819153903. 1 : 2

70819153904. 2 : 1

70819153905. 4 : 1

70819153906. 1 : 4

Question Number : 14 Question Id : 70819116247 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

دو مساوی گنجائش والے ملٹیفوں کو ابتداء میں تسلسل میں اور پھر متوازی جوڑا گیا ہو تب ان دو صورتوں میں محاصل گنجائش کی نسبت ہوگی :

Options :

70819153903. 1 : 2

70819153904. 2 : 1

70819153905. 4 : 1

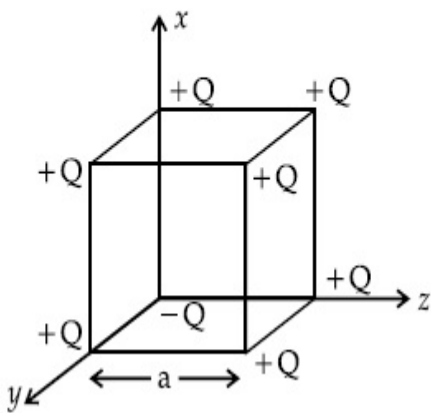
70819153906. 1 : 4

Question Number : 15 Question Id : 70819116248 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A cube of side 'a' has point charges +Q located at each of its vertices except at the origin where the charge is -Q. The electric field at the centre of cube is :



Options :

70819153907.
$$\frac{-Q}{3\sqrt{3} \pi \epsilon_0 a^2} (\hat{x} + \hat{y} + \hat{z})$$

70819153908.
$$\frac{Q}{3\sqrt{3} \pi \epsilon_0 a^2} (\hat{x} + \hat{y} + \hat{z})$$

70819153909.
$$\frac{-2Q}{3\sqrt{3} \pi \epsilon_0 a^2} (\hat{x} + \hat{y} + \hat{z})$$

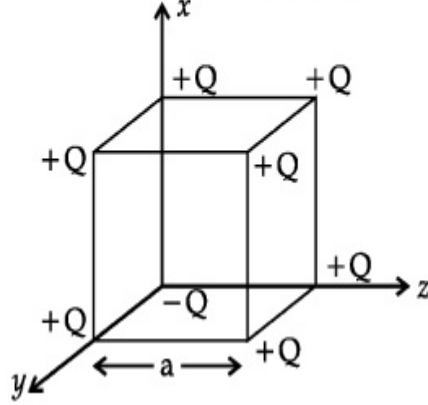
70819153910.
$$\frac{2Q}{3\sqrt{3} \pi \epsilon_0 a^2} (\hat{x} + \hat{y} + \hat{z})$$

Question Number : 15 Question Id : 70819116248 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک مکعب کے ضلع کی لمبائی a ہے۔ اور اس کے ہر وہ نقطہ اس پر $+Q$ برقی بار رکھا ہے صرف مکعب کا دوسرا جو محدودی نظام کے مبدے پر ہے، اس پر $-Q$ برقی بار رکھا گیا۔ تب اس مکعب کے مرکز پر عامل برقی میدان ہوگا :



Options :

70819153907. $\frac{-Q}{3\sqrt{3}\pi\epsilon_0 a^2} (\hat{x} + \hat{y} + \hat{z})$

70819153908. $\frac{Q}{3\sqrt{3}\pi\epsilon_0 a^2} (\hat{x} + \hat{y} + \hat{z})$

70819153909. $\frac{-2Q}{3\sqrt{3}\pi\epsilon_0 a^2} (\hat{x} + \hat{y} + \hat{z})$

70819153910. $\frac{2Q}{3\sqrt{3}\pi\epsilon_0 a^2} (\hat{x} + \hat{y} + \hat{z})$

Question Number : 16 Question Id : 70819116249 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If an emitter current is changed by 4 mA, the collector current changes by 3.5 mA. The value of β will be :

Options :

70819153911. 7

70819153912. 0.875

70819153913. 0.5

70819153914. 3.5

Question Number : 16 Question Id : 70819116249 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

اگر نخرجہ برقی کرنٹ (emitter current) کو 4 mA سے تبدیل کریں تب حصول برقی کرنٹ (collector current) میں
3.5 mA کی تبدیلی ہوتی ہو تب β کی قدر :

Options :

70819153911. 7

70819153912. 0.875

70819153913. 0.5

70819153914. 3.5

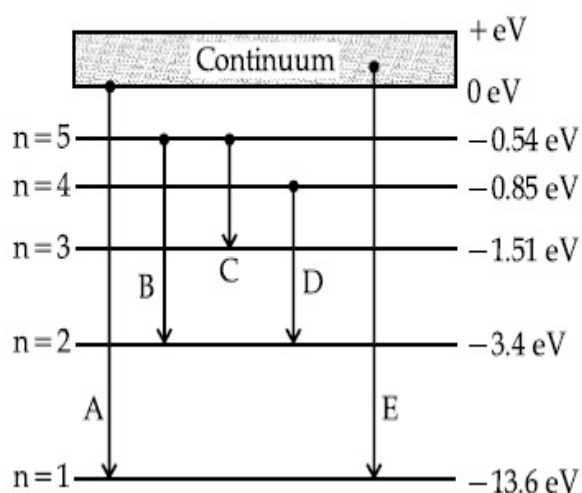
Question Number : 17 Question Id : 70819116250 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In the given figure, the energy levels of hydrogen atom have been shown along with some transitions marked A, B, C, D and E.

The transitions A, B and C respectively represent :



Options :

70819153915. The first member of the Lyman series, third member of Balmer series and second member of Paschen series.

70819153916. The ionization potential of hydrogen, second member of Balmer series and third member of Paschen series.

70819153917. The series limit of Lyman series, second member of Balmer series and second member of Paschen series.

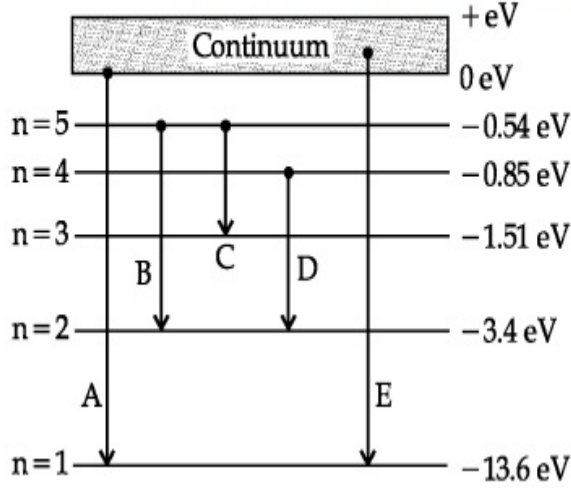
70819153918. The series limit of Lyman series, third member of Balmer series and second member of Paschen series.

Question Number : 17 Question Id : 70819116250 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

شکل میں ہائیڈروجن جوہر کے لیے توانائی سطحی خاکہ اور الیکٹرون کے ذریعے ہونے والے مداروں کی تبدیلیوں کو خط A، B، C، D اور E کے ذریعے دکھایا گیا ہے۔ شکل میں A، B اور C بالترتیب تبدیلی ظاہر کرتے ہیں۔



Options :

70819153915. لائن سلسلہ طیف کا پہلا خط، بامر سلسلہ طیف کا تیسرا خط اور پانچن سلسلہ طیف کا دوسرا خط کو ظاہر کرتا ہے

70819153916. ہائیڈروجن جوہر کے لیے درکار آئین شدگی کی طاقت، بامر سلسلہ طیف کا دوسرا خط، اور پانچن سلسلہ طیف کے تیسرے خط کو ظاہر کرتا ہے

70819153917. لائن سلسلہ طیف کی حد، بامر سلسلہ طیف کا دوسرا خط اور پانچن سلسلہ طیف کا دوسرا خط کو ظاہر کرتا ہے

70819153918. لائن سلسلہ طیف کی حد، بامر سلسلہ طیف کے تیسرے خط اور پانچن سلسلہ طیف کے دوسرے خط کو ظاہر کرتا ہے

Question Number : 18 Question Id : 70819116251 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : Two photons having equal linear momenta have equal wavelengths.

Statement II : If the wavelength of photon is decreased, then the momentum and energy of a photon will also decrease.

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

Options :

70819153919. Both Statement I and Statement II are true

70819153920. Both Statement I and Statement II are false

70819153921. Statement I is true but Statement II is false

70819153922. Statement I is false but Statement II is true

Question Number : 18 Question Id : 70819116251 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ذیل میں دو بیانات دیئے گئے ہیں :

بیان-I : مساوی معیار حرکت رکھنے والے دو فوٹان کی طول لہر بھی مساوی ہوتی ہے۔

بیان-II : اگر فوٹان کی طول لہر کم کریں تب فوٹان کی معیار حرکت اور توانائی دونوں کم ہوتے ہیں۔

اوپر دیئے گئے بیان-I اور بیان-II سے متعلق متبادلات نیچے دیئے گئے ہیں۔ ان میں صحیح متبادل چنیے :

Options :

70819153919. دونوں بیان-I اور بیان-II صحیح ہیں۔

70819153920. دونوں بیان-I اور بیان-II غلط ہیں۔

70819153921. بیان-I صحیح ہے اور بیان-II غلط ہے۔

70819153922. بیان-I غلط ہے اور بیان-II صحیح ہے۔

Question Number : 19 Question Id : 70819116252 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The focal length f is related to the radius of curvature r of the spherical convex mirror by :

Options :

70819153923. $f = r$

70819153924. $f = -r$

70819153925. $f = -\frac{1}{2}r$

70819153926. $f = +\frac{1}{2}r$

**Question Number : 19 Question Id : 70819116252 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

کروی محدب آئینہ کے لیے طول ماسکہ f اور انحنائے کا نصف قطر r کے درمیان تعلق :

Options :

70819153923. $f = r$

70819153924. $f = -r$

70819153925. $f = -\frac{1}{2}r$

70819153926. $f = +\frac{1}{2}r$

**Question Number : 20 Question Id : 70819116253 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

In a Young's double slit experiment, the width of the one of the slit is three times the other slit. The amplitude of the light coming from a slit is proportional to the slit-width. Find the ratio of the maximum to the minimum intensity in the interference pattern.

Options :

70819153927. 4 : 1

70819153928. 2 : 1

70819153929. 1 : 4

70819153930. 3 : 1

Question Number : 20 Question Id : 70819116253 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

یہ لگ کے دوہری جھری کے تجربے میں ایک جھری کی چوڑائی دوسری جھری کی چوڑائی کا تین گنا ہے۔ اگر جھری سے حاصل نور کی حدت اس کی چوڑائی کے راست تناسب میں ہو تب اس تجربہ میں حاصل تداخلی نمونے میں اعظم حدت اور اقل ترین حدت کی نسبت معلوم کریں۔

Options :

70819153927. 4 : 1

70819153928. 2 : 1

70819153929. 1 : 4

70819153930. 3 : 1

Physics Section B

Section Id :

708191623

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 :	708191903
Question Shuffling Allowed :	Yes

Question Number : 21 Question Id : 70819116254 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The coefficient of static friction between a wooden block of mass 0.5 kg and a vertical rough wall is 0.2. The magnitude of horizontal force that should be applied on the block to keep it adhere to the wall will be _____ N.

[$g = 10 \text{ ms}^{-2}$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 21 Question Id : 70819116254 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

0.5 kg کمیت کے ایک لکڑی کے کندے اور عمودی کھر درمی سطح کے درمیان رگڑ کا ضریب ساکن 0.2 ہے۔ بتائیے اس لکڑی کے کندے پر افقی سمت میں _____ N قوت لگانی ہوگی کہ وہ دیوار سے چپکا رہے۔

[$g = 10 \text{ ms}^{-2}$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 22 Question Id : 70819116255 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

An unpolarized light beam is incident on the polarizer of a polarization experiment and the intensity of light beam emerging from the analyzer is measured as 100 Lumens. Now, if the analyzer is rotated around the horizontal axis (direction of light) by 30° in clockwise direction, the intensity of emerging light will be _____ Lumens.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 22 Question Id : 70819116255 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ایک غیر مقطب شدہ نور کو مقطب کے تجربہ میں ایک مقطب پر وقوع کیا گیا ہے۔ اس تجربہ میں تجربہ کار مقطب (analyzer) سے خارج ہونے والی نور کی حدت 100 Lumens حاصل ہوتی ہے۔ اگر اب تجربہ مقطب کو افقی محور (نور کی سمت) کے ساتھ گھڑی کی سمت میں 30° کے زاویے سے گھمائیں تب حاصل نور کی حدت _____ Lumens ہوگی۔

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 23 Question Id : 70819116256 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A ball with a speed of 9 m/s collides with another identical ball at rest. After the collision, the direction of each ball makes an angle of 30° with the original direction. The ratio of velocities of the balls after collision is $x : y$, where x is _____ .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 23 Question Id : 70819116256 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ایک بال 9 m/s کی چال سے حرکت کرتے ہوئے دوسرے مکمل ویسے ہی حالت سکون میں پائے جانے والے بال سے ٹکراتا ہے۔ ٹکرانے کے بعد ہر ایک بال اپنی پہلی سمت کے ساتھ 30° کا زاویہ بناتے حرکت کرتا ہے۔ ٹکرانے کے بعد ان بالوں کی رفتار کی نسبت $x : y$ ہو تو x کی مقدار بال ترتیب _____ -

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 24 Question Id : 70819116257 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A hydraulic press can lift 100 kg when a mass 'm' is placed on the smaller piston. It can lift _____ kg when the diameter of the larger piston is increased by 4 times and that of the smaller piston is decreased by 4 times keeping the same mass 'm' on the smaller piston.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 24 **Question Id :** 70819116257 **Question Type :** SA

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

جب کسی آبی داب (hydraulic press) کے چھوٹے بازو (piston) پر m کمیت رکھیں تب وہ 100 kg کی کمیت اٹھا سکتا ہے۔ بتائیے بڑے بازو (larger piston) کے قطر کو چار گنا بڑھائیں اور چھوٹے بازو (smaller piston) کے قطر کو 4 گنا کم کریں تب چھوٹے بازو پر وہی کمیت m رکھیں تب وہ آبی داب (hydraulic press) _____ kg کی کمیت کو اٹھا سکتا ہے۔

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 25 **Question Id :** 70819116258 **Question Type :** SA

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

An inclined plane is bent in such a way that the vertical cross-section is given by $y = \frac{x^2}{4}$ where y is in vertical and x in horizontal direction. If the upper surface of this curved plane is rough with coefficient of friction $\mu = 0.5$, the maximum height in cm at which a stationary block will not slip downward is _____ cm.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 25 Question Id : 70819116258 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ایک انحرافی سطح کو اس طرح موڑا گیا کہ اس کے عمودی تراشے کے رقبہ کو مساوات $y = \frac{x^2}{4}$ سے دیا جاتا ہے۔ جہاں y عمودی سمت اور x افقی سمت میں ہے۔ اگر اس کرومی حصہ کا اوپری حصہ کھردرا ہو اور اس کا رگڑ کا ضریب $\mu = 0.5$ ہو تب وہ بلندی جس پر رکھا ہوا ایک ساکن کندہ نیچے کی جانب نہیں پھسلتا _____ cm ہوگی۔

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 26 Question Id : 70819116259 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A resonance circuit having inductance and resistance 2×10^{-4} H and 6.28Ω respectively oscillates at 10 MHz frequency. The value of quality factor of this resonator is _____.
[$\pi = 3.14$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 26 Question Id : 70819116259 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

اس کے ساتھ امپڈنس پذیر ہے۔ بتائیے اس
کی مزاحمت رکھنے والے برقی دور کی گمگ کی تعدد 10 MHz کے ساتھ امپڈنس پذیر ہے۔ بتائیے اس
گمگ کے دور کے لیے معیار کا: (quality factor) _____ ہوگا جبکہ $(\pi = 3.14)$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 27 Question Id : 70819116260 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

An audio signal $v_m = 20 \sin 2\pi(1500t)$ amplitude modulates a carrier
 $v_c = 80 \sin 2\pi(100,000t)$.
The value of percent modulation is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 27 Question Id : 70819116260 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ایک آواز کے سگنل کی مساوات $v_m = 20 \sin 2\pi(1500t)$ ہے۔ اس موج کو پیغام بردار (carrier) موج

$v_c = 80 \sin 2\pi(100,000t)$ کی مدد سے حیثہ موڈولیشن کیا گیا ہو تب اس کا فیصد موڈولیشن کا جزو % _____ ہوگا۔

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

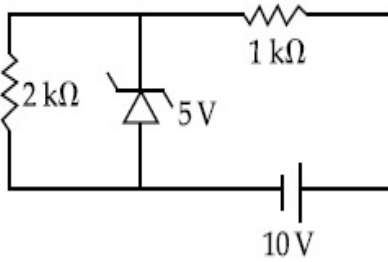
Possible Answers :

5 to 5.001

Question Number : 28 **Question Id :** 70819116261 **Question Type :** SA

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

In connection with the circuit drawn below, the value of current flowing through $2 \text{ k}\Omega$ resistor is _____ $\times 10^{-4} \text{ A}$.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

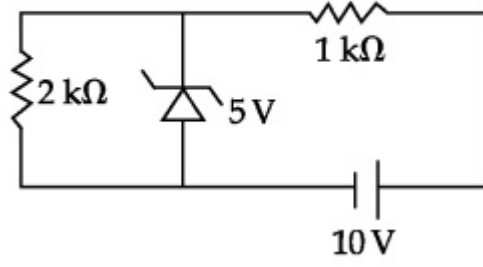
Possible Answers :

5 to 5.001

Question Number : 28 **Question Id :** 70819116261 **Question Type :** SA

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

مندرجہ ذیل برقی سرکٹ میں $2\text{ k}\Omega$ کی مزاحمت سے بہنے والی برقی کرنٹ $\times 10^{-4}\text{ A}$ ہوگی۔



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 29 **Question Id :** 70819116262 **Question Type :** SA

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

An electromagnetic wave of frequency 5 GHz, is travelling in a medium whose relative electric permittivity and relative magnetic permeability both are 2. Its velocity in this medium is $\times 10^7\text{ m/s}$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 29 **Question Id :** 70819116262 **Question Type :** SA

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

5 GHz کی توڑ والی ایک برقی مقناطیسی لہر کسی ایسے واسطے سے گذرتی ہے جس کے لیے نسبی برقی نفوذ پذیری اور مقناطیسی نفوذ پذیری دونوں کی قدر 2 ہے۔ تب اس لہر کی رفتار بالترتیب $\times 10^7\text{ m/s}$ ہے۔

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 30 Question Id : 70819116263 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A common transistor radio set requires 12 V (D.C.) for its operation. The D.C. source is constructed by using a transformer and a rectifier circuit, which are operated at 220 V (A.C.) on standard domestic A.C. supply. The number of turns of secondary coil are 24, then the number of turns of primary are _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 30 Question Id : 70819116263 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ایک عمومی ریڈیو سیٹ کو کام کرنے کے لیے 12 V (D.C.) بیٹری درکار ہوتی ہے۔ یہ DC برقی خانے کو بنانے کے لیے ایک ٹرانسفارمر اور ایک راست گر (rectifier) کا استعمال کیا جاتا ہے۔ جو گھریلو بجلی 220 V کی متبادلہ قوی AC پر کام کرتے ہیں۔ اگر اس ٹرانسفارمر کے ثانوی لچھے (secondary coil) میں لپیٹوں کی تعداد 24 ہو تب ابتدائی لچھے (primary coil) میں لپیٹوں کی تعداد _____ ہوگی۔

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Chemistry Section A

Section Id :	708191624
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 :	708191904
Question Shuffling Allowed :	Yes

Question Number : 31 Question Id : 70819116264 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following are isostructural pairs ?

- A. SO_4^{2-} and CrO_4^{2-}
- B. SiCl_4 and TiCl_4
- C. NH_3 and NO_3^-
- D. BCl_3 and BrCl_3

Options :

70819153941. A and B only

70819153942. A and C only

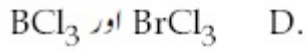
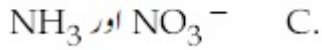
70819153943. B and C only

70819153944. C and D only

**Question Number : 31 Question Id : 70819116264 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

مندرجہ ذیل میں کون یکساں ساخت والی جوڑیاں ہیں ؟



Options :

70819153941. A اور B only

70819153942. A اور C only

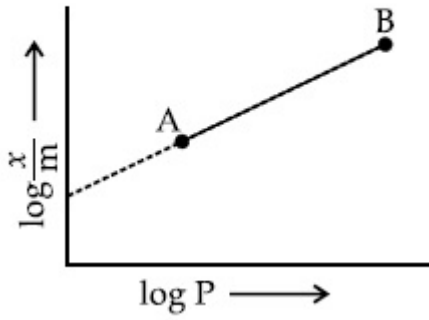
70819153943. B اور C only

70819153944. C اور D only

**Question Number : 32 Question Id : 70819116265 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

In Freundlich adsorption isotherm, slope of AB line is :



Options :

70819153945. n with (n , 0.1 to 0.5)

70819153946. $\log n$ with ($n > 1$)

70819153947. $\log \frac{1}{n}$ with ($n < 1$)

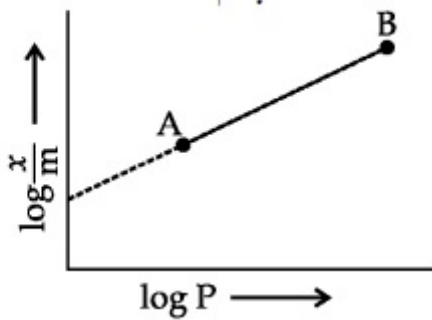
70819153948. $\frac{1}{n}$ with $\left(\frac{1}{n} = 0 \text{ to } 1\right)$

Question Number : 32 Question Id : 70819116265 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

فرینڈلچ کے احتسابی ہم تپش میں AB کا ڈھلان ہے :



Options :

70819153945. n with values (0.1 to 0.5)

70819153946. $\log n$ with $n > 1$

70819153947. $\log \frac{1}{n}$ with $n < 1$

70819153948. $\frac{1}{n}$ with $\frac{1}{n} = 0$ to 1

Question Number : 33 Question Id : 70819116266 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the elements Mg, Al, S, P and Si, the correct increasing order of their first ionization enthalpy is :

Options :

70819153949. Al < Mg < Si < S < P

70819153950. Mg < Al < Si < P < S

70819153951. Mg < Al < Si < S < P

70819153952. Al < Mg < S < Si < P

Question Number : 33 Question Id : 70819116266 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Mg, Al, S, P and Si ان کے بڑھتے ہوئے پہلے آئینی درجے کے انتھالپی میں ان عناصروں کو صحیح ترتیب میں رکھ کر
پر غور کیجئے :

Options :

70819153949. Al < Mg < Si < S < P

70819153950. Mg < Al < Si < P < S

70819153951. Mg < Al < Si < S < P

70819153952. Al < Mg < S < Si < P

Question Number : 34 Question Id : 70819116267 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following ore is concentrated using group 1 cyanide salt ?

Options :

70819153953. Calamine

70819153954. Malachite

70819153955. Siderite

70819153956. Sphalerite

Question Number : 34 Question Id : 70819116267 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

گروپ I کے سائنائڈ نمک (cyanide salt) کا استعمال کرتے ہوئے مندرجہ ذیل میں سے کون سے کچدھات (ore) کو مرتکز کرتے ہیں ؟

Options :

70819153953. Calamine

70819153954. Malachite

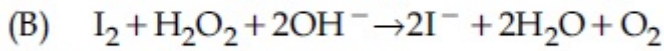
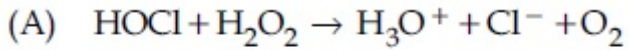
70819153955. Siderite

70819153956. Sphalerite

Question Number : 35 Question Id : 70819116268 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



Choose the correct option.

Options :

70819153957. H_2O_2 acts as oxidising agent in equations (A) and (B).

70819153958. H_2O_2 acts as reducing agent in equations (A) and (B).

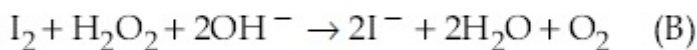
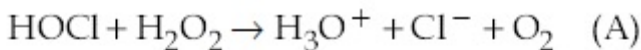
70819153959. H_2O_2 act as oxidizing and reducing agent respectively in equations (A) and (B).

70819153960. H_2O_2 acts as reducing and oxidising agent respectively in equations (A) and (B).

Question Number : 35 Question Id : 70819116268 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



مندرجہ ذیل میں سے صحیح متبادل چن کر لکھئے :

Options :

70819153957. H_2O_2 میں (A) اور (B) میں H_2O_2 تکسیدی متعامل کا عمل پیرا ہوتا ہے

70819153958. **تعمیل (A) اور (B) میں H_2O_2 تھویلی متعامل کا کام انجام دیتا ہے**

70819153959. **تعمیل (A) اور (B) میں H_2O_2 تکسیدی اور تھویلی متعامل کا کام انجام دیتا ہے**

70819153960. **تعمیل (A) اور (B) میں H_2O_2 تھویلی اور تکسیدی متعامل کا کام انجام دیتا ہے**

**Question Number : 36 Question Id : 70819116269 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

Al_2O_3 was leached with alkali to get X. The solution of X on passing of gas Y, forms Z.
X, Y and Z respectively are :

Options :

70819153961. $X = Na[Al(OH)_4]$, $Y = SO_2$, $Z = Al_2O_3$

70819153962. $X = Al(OH)_3$, $Y = SO_2$, $Z = Al_2O_3 \cdot xH_2O$

70819153963. $X = Al(OH)_3$, $Y = CO_2$, $Z = Al_2O_3$

70819153964. $X = Na[Al(OH)_4]$, $Y = CO_2$, $Z = Al_2O_3 \cdot xH_2O$

**Question Number : 36 Question Id : 70819116269 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

Al_2O_3 کو الکی کے ساتھ عمل (leached) کیا گیا تو ان سے X حاصل ہوا تھا۔ پھر X محلول کو Y گیس سے گزارا گیا تو ان سے Z حاصل ہوا
تو Z اور Y, X بالترتیب اس طرح ہیں :

Options :

70819153961. $X = Na[Al(OH)_4]$, $Y = SO_2$, $Z = Al_2O_3$

70819153962. $X = \text{Al}(\text{OH})_3$, $Y = \text{SO}_2$, $Z = \text{Al}_2\text{O}_3 \cdot x\text{H}_2\text{O}$

70819153963. $X = \text{Al}(\text{OH})_3$, $Y = \text{CO}_2$, $Z = \text{Al}_2\text{O}_3$

70819153964. $X = \text{Na}[\text{Al}(\text{OH})_4]$, $Y = \text{CO}_2$, $Z = \text{Al}_2\text{O}_3 \cdot x\text{H}_2\text{O}$

Question Number : 37 Question Id : 70819116270 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The electrode potential of M^{2+} / M of 3d-series elements shows positive value for :

Options :

70819153965. Fe

70819153966. Co

70819153967. Zn

70819153968. Cu

Question Number : 37 Question Id : 70819116270 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

3d-series کے عناصروں برقیے کا قومی M^{2+} / M کی قیمت مثبت ظاہر کرتا ہے۔

Options :

70819153965. Fe

70819153966. Co

70819153967. Zn

70819153968. Cu

Question Number : 38 Question Id : 70819116271 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The major components in "Gun Metal" are :

Options :

70819153969. Cu, Sn and Zn

70819153970. Cu, Zn and Ni

70819153971. Cu, Ni and Fe

70819153972. Al, Cu, Mg and Mn

Question Number : 38 Question Id : 70819116271 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

کے اہم اجزاء ہیں "Gun Metal" :

Options :

70819153969. Zn اور Cu, Sn

70819153970. Ni اور Cu, Zn

70819153971. Fe اور Cu, Ni

70819153972. Mn اور Al, Cu, Mg

Question Number : 39 Question Id : 70819116272 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The gas released during anaerobic degradation of vegetation may lead to :

Options :

70819153973. Acid rain

70819153974. Global warming and cancer

70819153975. Corrosion of metals

70819153976. Ozone hole

Question Number : 39 Question Id : 70819116272 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

نباتات کا ہوائی بنا پر چھوٹے چھوٹے ٹکڑے ہونے پر درمیان میں گیس خارج ہوتی۔

Options :

70819153973. تیزابی بارش

70819153974. کرہ ارض کی تہاڑت اور کینسر

70819153975. دھاتوں پر زنگ لگنا

70819153976. (Ozone hole) اوزون سوراخ

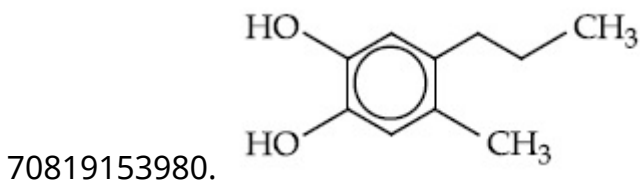
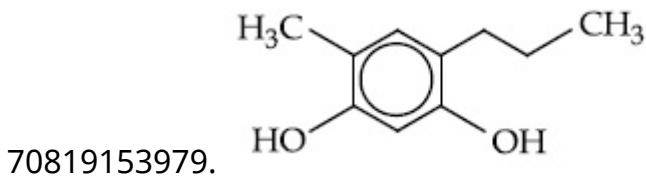
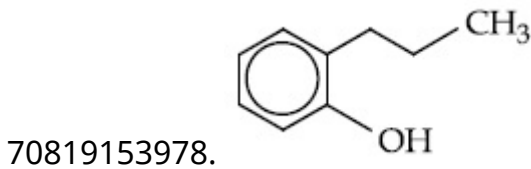
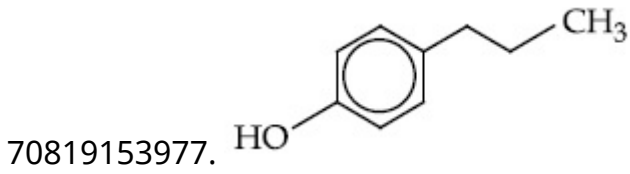
Question Number : 40 Question Id : 70819116273 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following compound gives pink colour on reaction with phthalic anhydride in conc. H_2SO_4 followed by treatment with NaOH ?

Options :



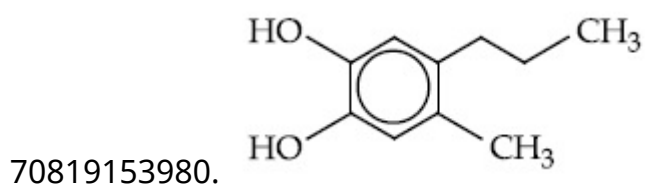
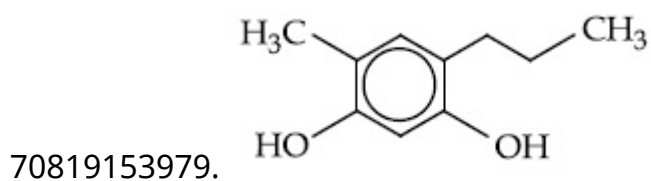
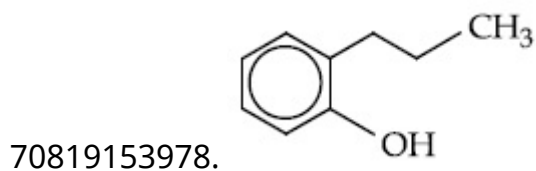
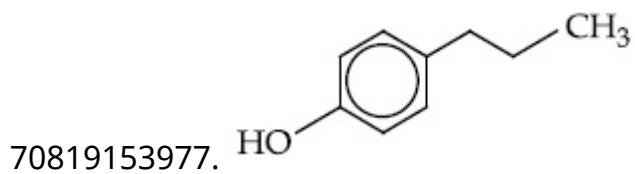
Question Number : 40 Question Id : 70819116273 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

مندرجہ ذیل میں سے کون سے مرکب میں گلابی رنگ حاصل ہوتا۔ جب phthalic anhydride کو NaOH کے ساتھ عمل مرتکز H_2SO_4 کی موجودگی میں) کیا جاتا ہے تو :

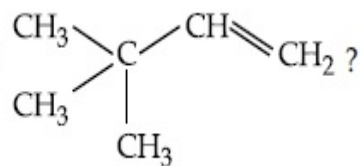
Options :



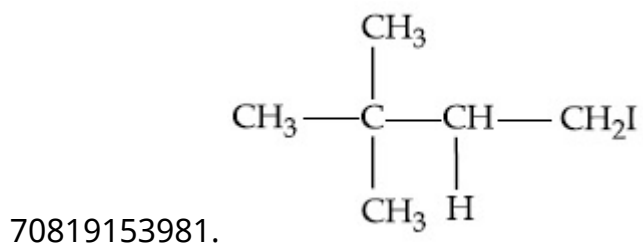
Question Number : 41 Question Id : 70819116274 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

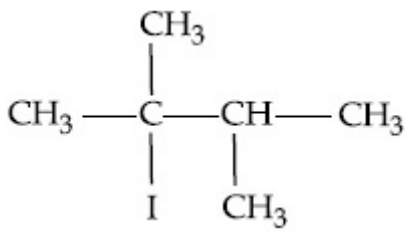
Correct Marks : 4 Wrong Marks : 1

What is the major product formed by HI on reaction with  ?

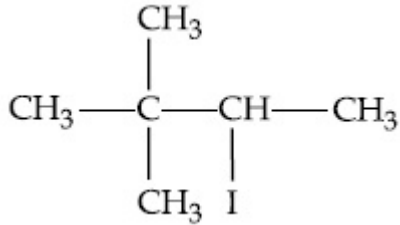
Options :



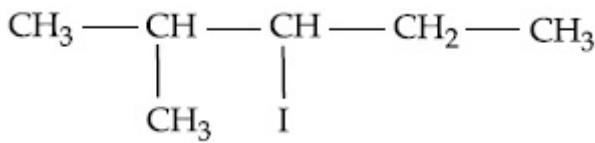
70819153982.



70819153983.

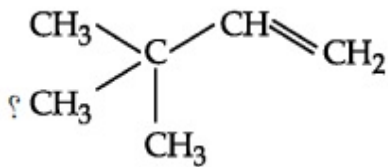


70819153984.



Question Number : 41 Question Id : 70819116274 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

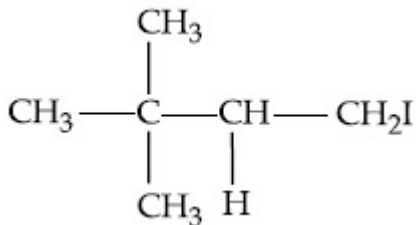
Correct Marks : 4 Wrong Marks : 1



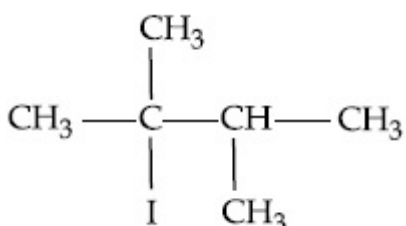
HI میں جب مندرجہ ذیل سے عمل کرتا ہے تو سب سے زیادہ حاصل شدہ شے کیا ہے ؟

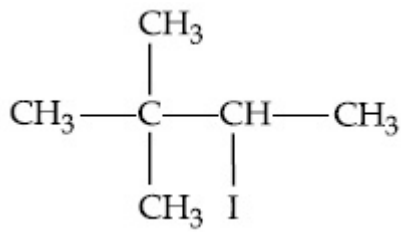
Options :

70819153981.

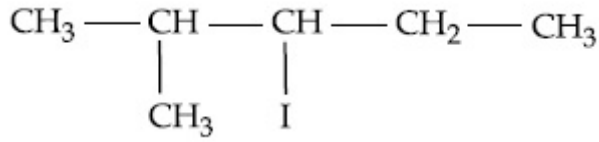


70819153982.





70819153983.

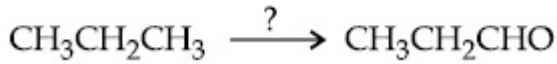


70819153984.

Question Number : 42 Question Id : 70819116275 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following reagent is used for the following reaction ?



Options :

70819153985. Copper at high temperature and pressure

70819153986. Molybdenum oxide

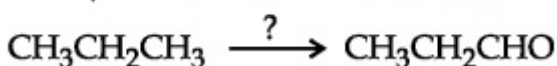
70819153987. Manganese acetate

70819153988. Potassium permanganate

Question Number : 42 Question Id : 70819116275 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

مندرجہ ذیل تعامل میں کونسا متعامل استعمال کرتے ہیں ؟



Options :

70819153985. کا پر زیادہ حرارت اور دباؤ پر

70819153986. Molybdenum oxide

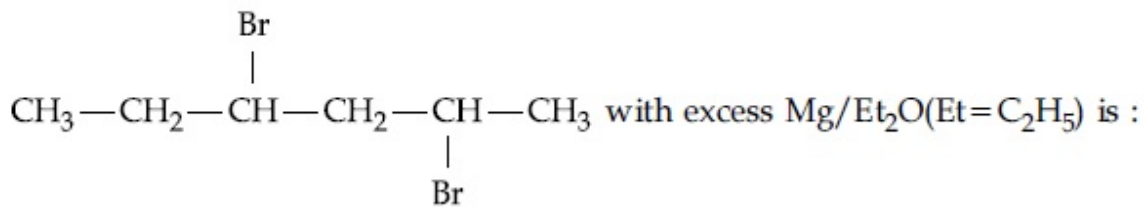
70819153987. Manganese acetate

70819153988. Potassium permanganate

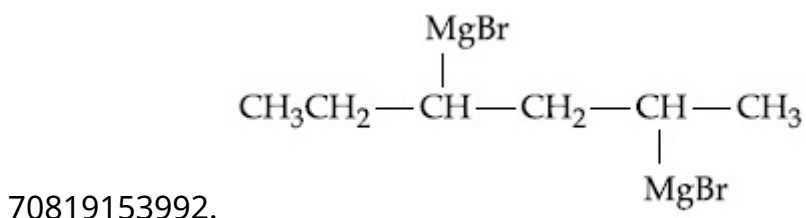
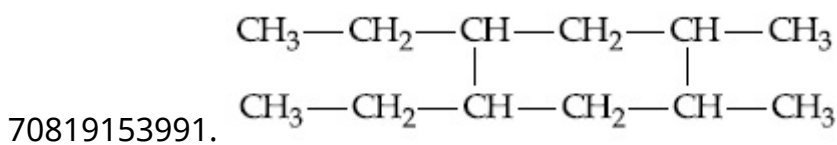
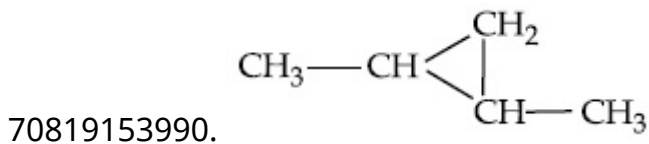
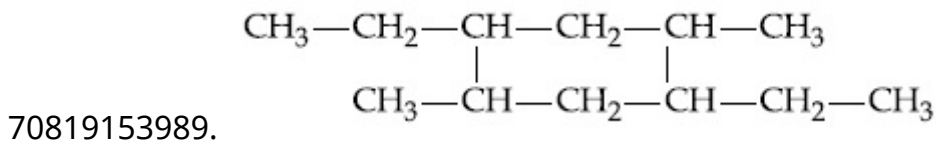
Question Number : 43 Question Id : 70819116276 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The product formed in the first step of the reaction of



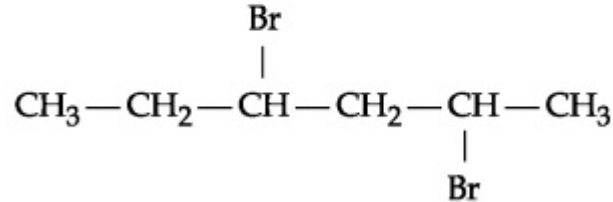
Options :



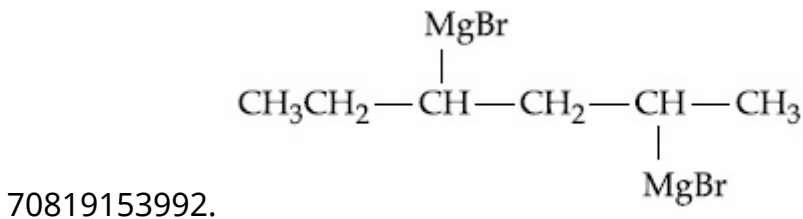
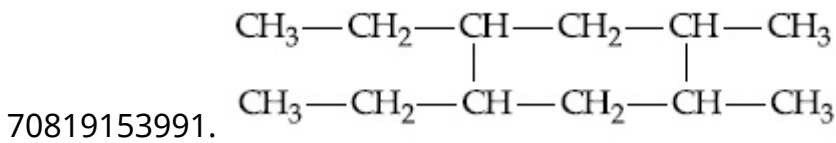
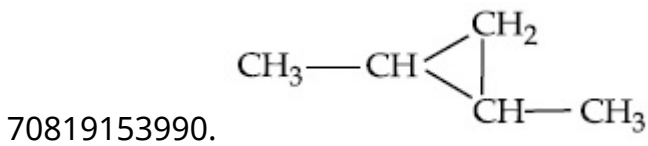
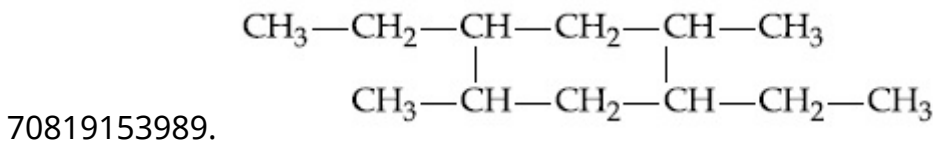
Question Number : 43 Question Id : 70819116276 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

پہلے مرحلے میں حاصل شدہ شے حاصل ہوتی ہے کے $\text{Mg/Et}_2\text{O}$ ($\text{Et} = \text{C}_2\text{H}_5$) کے ساتھ عمل کرنے سے :



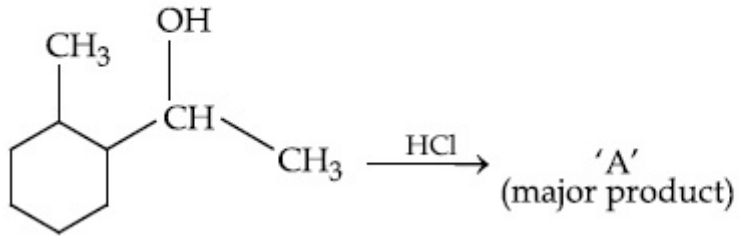
Options :



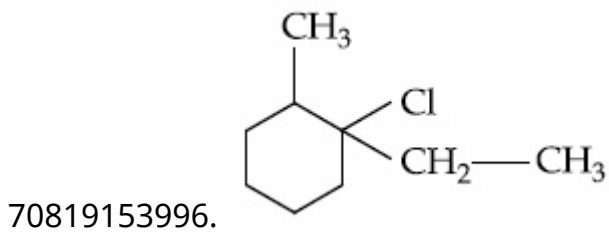
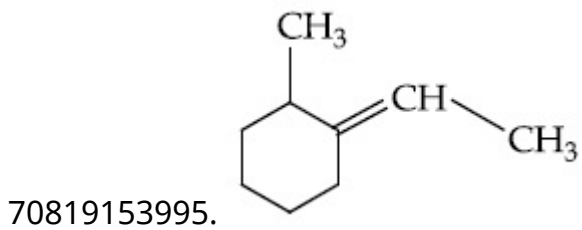
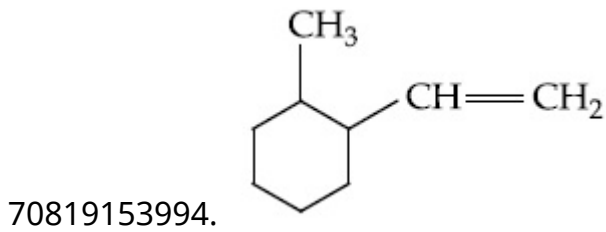
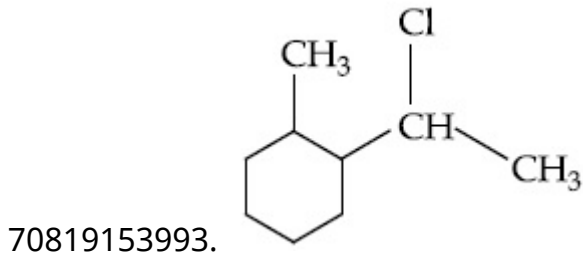
Question Number : 44 Question Id : 70819116277 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

What is the final product (major) 'A' in the given reaction ?



Options :

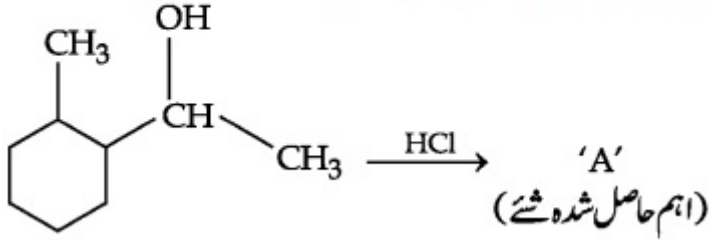


Question Number : 44 Question Id : 70819116277 Question Type : MCQ Option Shuffling : Yes

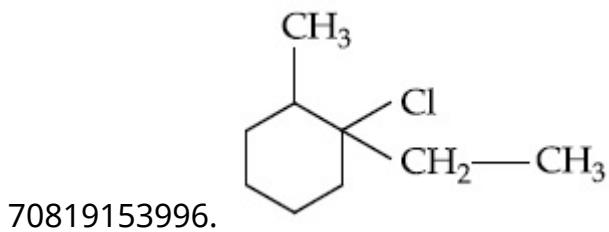
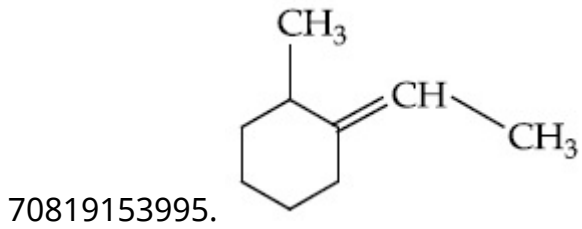
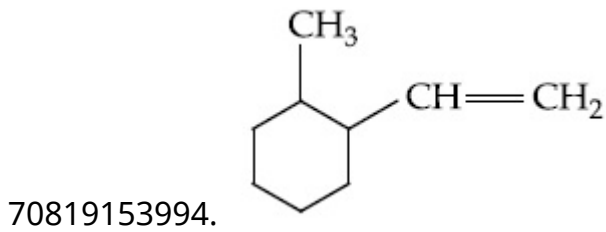
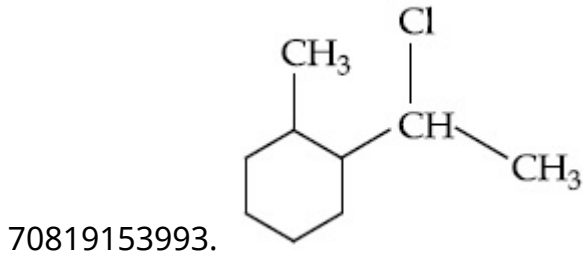
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

دی گئی ہوئی تعامل میں آخری (اہم) حاصل شدہ 'A' شے کیا ہے؟



Options :

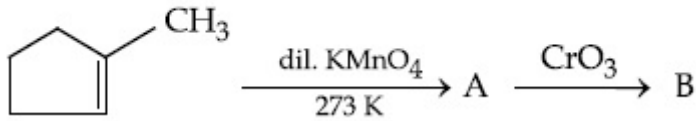


Question Number : 45 Question Id : 70819116278 Question Type : MCQ Option Shuffling : Yes

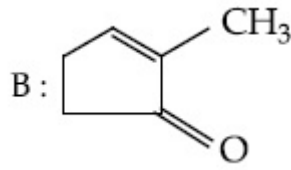
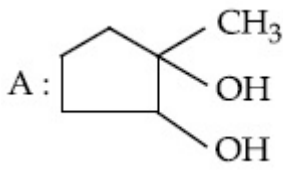
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

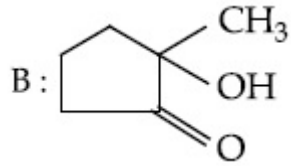
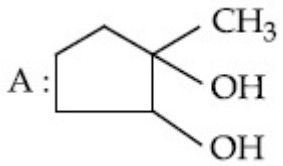
Identify products A and B.



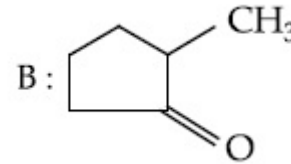
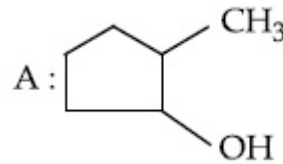
Options :



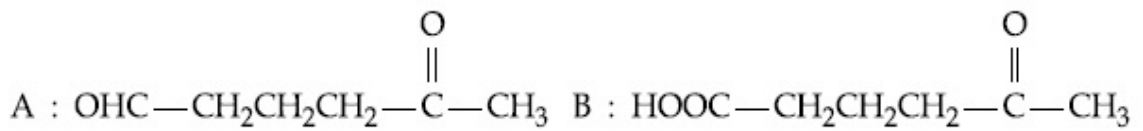
70819153997.



70819153998.



70819153999.



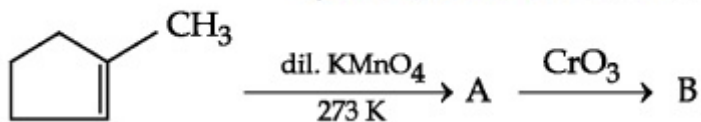
70819154000.

Question Number : 45 Question Id : 70819116278 Question Type : MCQ Option Shuffling : Yes

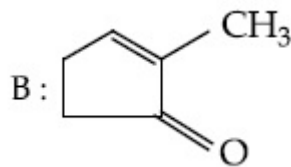
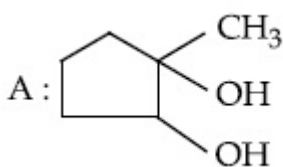
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A اور B سے حاصل شدہ کی شناخت کیجئے :

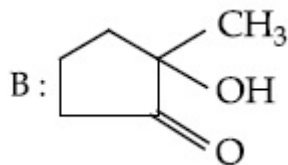
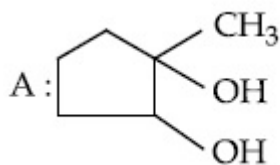


Options :

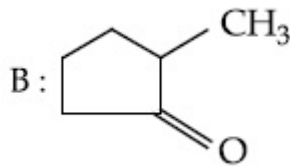
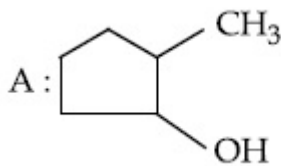


70819153997.

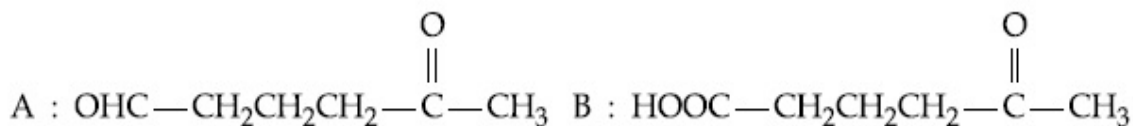
70819153998.



70819153999.



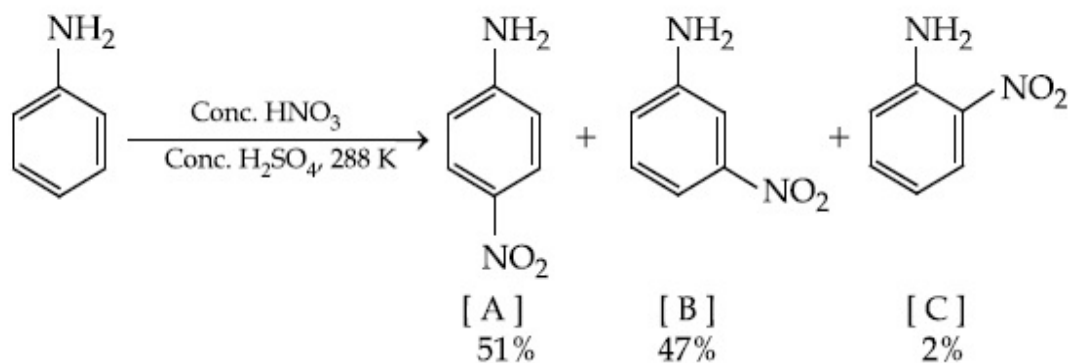
70819154000.



Question Number : 46 Question Id : 70819116279 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In the following reaction the reason why *meta*-nitro product also formed is :



Options :

70819154001. - NH_2 group is highly *meta*-directive

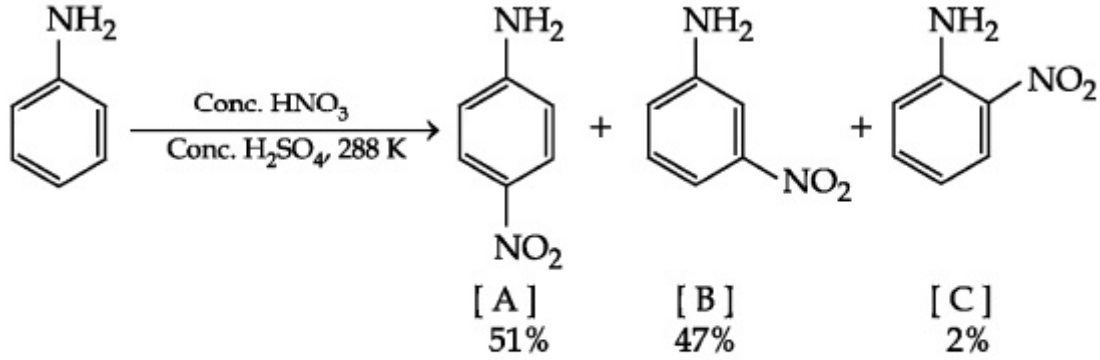
70819154002. - NO_2 substitution always takes place at *meta*-position

70819154003. Formation of anilinium ion

70819154004. low temperature

Question Number : 46 Question Id : 70819116279 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



مندرجہ بالا تعامل میں وجہ بتلائیے کہ *meta*-nitro حاصل شدہ شے تیار کیوں ہوتا؟

Options :

70819154001. $-\text{NH}_2$ گروپ بہت زیادہ *meta*-directive ہوتا ہے۔

70819154002. $-\text{NO}_2$ ہمیشہ *meta* مقام پر متبادل رکھتا

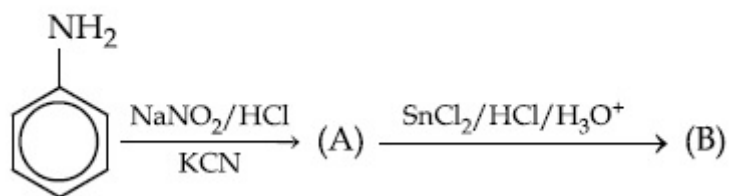
70819154003. anilinium ion کی تیاری ہوتی

70819154004. کم درجہ حرارت

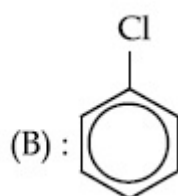
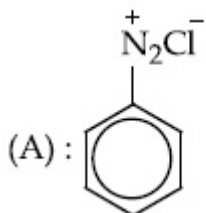
Question Number : 47 Question Id : 70819116280 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

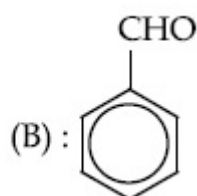
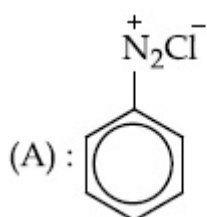
'A' and 'B' in the following reactions are :



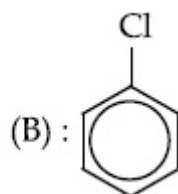
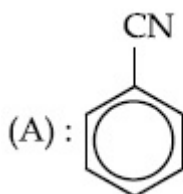
Options :



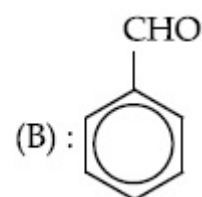
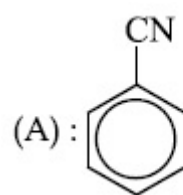
70819154005.



70819154006.



70819154007.



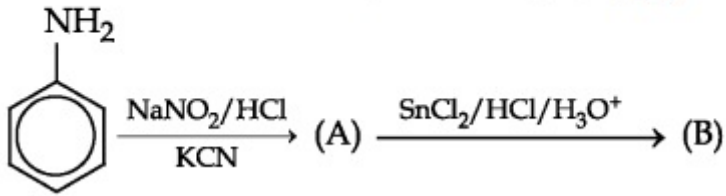
70819154008.

Question Number : 47 Question Id : 70819116280 Question Type : MCQ Option Shuffling : Yes

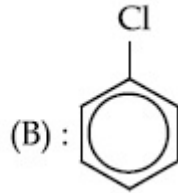
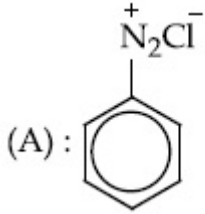
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

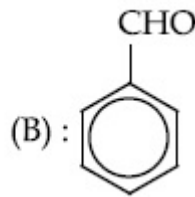
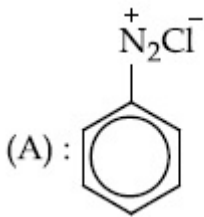
مندرجہ ذیل تعامل میں A اور B میں :



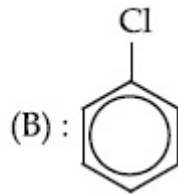
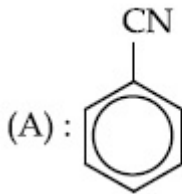
Options :



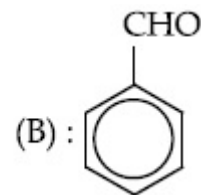
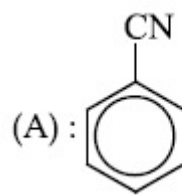
70819154005.



70819154006.



70819154007.



70819154008.

Question Number : 48 Question Id : 70819116281 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Match List I with List II.

List I (Monomer Unit)	List II (Polymer)
(a) Caprolactum	(i) Natural rubber
(b) 2-Chloro-1,3-butadiene	(ii) Buna-N
(c) Isoprene	(iii) Nylon 6
(d) Acrylonitrile	(iv) Neoprene

Choose the correct answer from the options given below :

Options :

70819154009. (a) → (i), (b) → (ii), (c) → (iii), (d) → (iv)

70819154010. (a) → (iv), (b) → (iii), (c) → (ii), (d) → (i)

70819154011. (a) → (ii), (b) → (i), (c) → (iv), (d) → (iii)

70819154012. (a) → (iii), (b) → (iv), (c) → (i), (d) → (ii)

Question Number : 48 Question Id : 70819116281 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

فہرست-I اور فہرست-II ملائیے :

فہرست-II (Polymer) پولیمر	فہرست-I (Monomer unit) مونومر اکائی
(i) قدرتی ربر	Caprolactum (a)
(ii) بونا-N (Buna-N)	2-Chloro-1,3-butadiene (b)
(iii) نائلان-6	Isoprene (c)
(iv) Neoprene	Acrylonitrile (d)

مندرجہ ذیل خیالات میں سے صحیح جواب چن کر لکھئے :

Options :

70819154009. (a) → (i), (b) → (ii), (c) → (iii), (d) → (iv)

70819154010. (a) → (iv), (b) → (iii), (c) → (ii), (d) → (i)

70819154011. (a) → (ii), (b) → (i), (c) → (iv), (d) → (iii)

70819154012. (a) → (iii), (b) → (iv), (c) → (i), (d) → (ii)

Question Number : 49 Question Id : 70819116282 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Out of the following, which type of interaction is responsible for the stabilisation of α -helix structure of proteins ?

Options :

70819154013. vander Waals forces

70819154014. Covalent bonding

70819154015. Ionic bonding

70819154016. Hydrogen bonding

Question Number : 49 Question Id : 70819116282 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

پروٹین α -helix ساخت قیام پذیر میں رکھنے کیلئے مندرجہ ذیل میں کون سے باہمی عمل کی قسم ذمہ دار ہے ؟

Options :

70819154013. قوت وان ڈروال (vander Waals forces)

70819154014. ہم گرفت بندش (Covalent bonding)

70819154015. (Ionic bonding) آئینی بندش

70819154016. (Hydrogen bonding) ہائیڈروجن بندش

Question Number : 50 Question Id : 70819116283 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : Colourless cupric metaborate is reduced to cuprous metaborate in a luminous flame.

Statement II : Cuprous metaborate is obtained by heating boric anhydride and copper sulphate in a non-luminous flame.

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

Options :

70819154017. Both Statement I and Statement II are true

70819154018. Both Statement I and Statement II are false

70819154019. Statement I is true but Statement II is false

70819154020. Statement I is false but Statement II is true

Question Number : 50 Question Id : 70819116283 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

مندرجہ ذیل میں دو بیانات دیئے گئے ہیں :

بیان-I : چمکدار شعلے میں (luminous flame) میں بے رنگ cupric metaborate کو cuprous metaborate میں تبدیل کرتے ہے

بیان-II : بورک ان ہائیڈریٹ (boric anhydride) کو گرم کرنے سے Cuprous metaborate حاصل ہوتا ہے۔ اور غیر چمکدار شعلے سے ملتا ہے۔

مندرجہ بالا بیانات کی روشنی میں مندرجہ ذیل میں سے کوئی ایک جواب چن کر لکھئے۔

Options :

70819154017. بیان-I اور بیان-II دونوں صحیح ہیں۔

70819154018. بیان-I اور بیان-II دونوں غلط ہیں۔

70819154019. بیان-I صحیح ہے لیکن بیان-II غلط ہے۔

70819154020. بیان-I غلط ہے۔ لیکن بیان-II صحیح ہے۔

Chemistry Section B

Section Id :	708191625
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 :	708191905

Question Shuffling Allowed :

Yes

Question Number : 51 Question Id : 70819116284 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

4.5 g of compound A (MW=90) was used to make 250 mL of its aqueous solution. The molarity of the solution in M is $x \times 10^{-1}$. The value of x is _____. (Rounded off to the nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 51 Question Id : 70819116284 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

مرکب A (مولر کمیت = 90) 4.5 گرام کو اس کا 250 mL آبی محلول بنانے کے لیے استعمال کیا گیا۔ محلول مولاریت (molarity) M میں $x \times 10^{-1}$ ہے۔ x کی قیمت _____ ہے۔
(قریب ترین مکمل عدد میں لکھئے)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 52 Question Id : 70819116285 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The coordination number of an atom in a body-centered cubic structure is _____.
[Assume that the lattice is made up of atoms.]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 52 **Question Id :** 70819116285 **Question Type :** SA

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

جسم مرکز مکعبی (body-centered cubic) میں ہم ربطی عدد _____ ہے۔
(فرض کریں کہ جالی (lattice) جوہروں سے بنی ہوئی ہے۔)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 53 **Question Id :** 70819116286 **Question Type :** SA

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

A proton and a Li^{3+} nucleus are accelerated by the same potential. If λ_{Li} and λ_{p} denote the de Broglie wavelengths of Li^{3+} and proton respectively, then the value of $\frac{\lambda_{\text{Li}}}{\lambda_{\text{p}}}$ is $x \times 10^{-1}$.

The value of x is _____. (Rounded off to the nearest integer)

[Mass of Li^{3+} = 8.3 mass of proton]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 53 **Question Id :** 70819116286 **Question Type :** SA

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

ایک پروٹان اور Li^{3+} مرکزہ کو یکساں قوت سے بڑھایا جاتا ہے۔ اگر λ_{Li} اور λ_{p} جو de Broglie کے طول موج کو ظاہر کرتے ہیں۔ جو Li^{3+} اور پروٹان با ترتیب میں۔ تب $\frac{\lambda_{\text{Li}}}{\lambda_{\text{p}}}$ کی قیمت $x \times 10^{-1}$ ہے۔ x کی قیمت _____ ہے۔ (قریب ترین مکمل عدد میں)

[Li^{3+} کی کمیت = 8.3 پروٹون کا وزن]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 54 **Question Id :** 70819116287 **Question Type :** SA

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

For the reaction $\text{A}_{(g)} \rightarrow \text{B}_{(g)}$, the value of the equilibrium constant at 300 K and 1 atm is equal to 100.0. The value of $\Delta_r G^\circ$ for the reaction at 300 K and 1 atm in J mol^{-1} is $-xR$, where x is _____ . (Rounded off to the nearest integer)

[$R = 8.31 \text{ J mol}^{-1}\text{K}^{-1}$ and $\ln 10 = 2.3$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

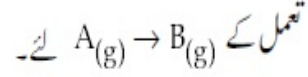
Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 54 Question Id : 70819116287 Question Type : SA

Correct Marks : 4 Wrong Marks : 0



300 K پر متوازن مستقلہ کی قیمت اور ایک فضائی دباؤ مساوی 100.0 ہے۔ 300 K کی تعویل کی $\Delta_r G$ قیمت اور 1 فضائی میں $J \text{ mol}^{-1}$

ہے۔ $-xR$ کی قیمت _____ ہے۔ (قریب ترین مکمل عدد میں لکھئے)

[$\ln 10 = 2.3$ اور $R = 8.31 \text{ J mol}^{-1} \text{ K}^{-1}$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 55 Question Id : 70819116288 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

When 9.45 g of ClCH_2COOH is added to 500 mL of water, its freezing point drops by 0.5°C . The dissociation constant of ClCH_2COOH is $x \times 10^{-3}$. The value of x is _____. (Rounded off to the nearest integer)

[$K_f(\text{H}_2\text{O}) = 1.86 \text{ K kg mol}^{-1}$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 55 Question Id : 70819116288 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

جب 9.45 گرام ClCH_2COOH کو 500 mL پانی میں ملا یا جاتا ہے تب نقطہ انجماد 0.5°C کم ہو جاتا ہے۔ ClCH_2COOH کا انتشاری مستقلہ $x \times 10^{-3}$ (dissociation constant) ہے۔ x کی قیمت _____ ہے۔ (قریب ترین مکمل عدد میں لکھئے)

$$[K_f(\text{H}_2\text{O}) = 1.86 \text{ K kg mol}^{-1}]$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 56 Question Id : 70819116289 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

At 1990 K and 1 atm pressure, there are equal number of Cl_2 molecules and Cl atoms in the reaction mixture. The value of K_p for the reaction $\text{Cl}_{2(g)} \rightleftharpoons 2\text{Cl}_{(g)}$ under the above conditions is $x \times 10^{-1}$. The value of x is _____. (Rounded off to the nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 56 Question Id : 70819116289 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

1990 K اور 1 فضائی دباؤ پر حاصل آمیزے میں دو مساوی تعداد کے Cl₂ کے سالمے اور Cl کے جوہر ہوتے ہیں۔ انہیں شرائط پر تعامل
Cl_{2(g)} ⇌ 2Cl_(g) کے لیے K_p کی قیمت x × 10⁻¹ ہے۔ x کی قیمت _____ ہے۔ (قریب ترین مکمل عدد میں لکھئے)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

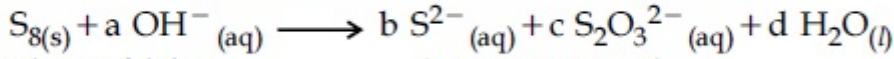
Possible Answers :

5 to 5.001

Question Number : 57 **Question Id :** 70819116290 **Question Type :** SA

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

The reaction of sulphur in alkaline medium is given below :



The values of 'a' is _____. (Integer answer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

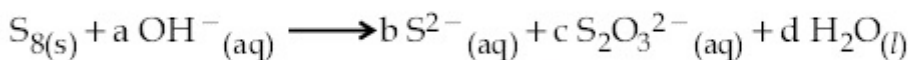
Possible Answers :

5 to 5.001

Question Number : 57 **Question Id :** 70819116290 **Question Type :** SA

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

سلفر کی تعامل الکلی حالت میں۔ نیچے دی گئی :



'a' کی قیمت _____ ہے۔ (مکمل عدد میں جواب)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 58 **Question Id :** 70819116291 **Question Type :** SA

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

Gaseous cyclobutene isomerizes to butadiene in a first order process which has a 'k' value of $3.3 \times 10^{-4} \text{ s}^{-1}$ at 153°C . The time in minutes it takes for the isomerization to proceed 40% to completion at this temperature is _____. (Rounded off to the nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 58 **Question Id :** 70819116291 **Question Type :** SA

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

گیسی cyclobutene جو butadiene میں ہم جا (isomerizes) ہوتا جس میں پہلا درجہ کا عمل ہوتا ہے۔ حیات پر 'k' کی قیمت $3.3 \times 10^{-4} \text{ s}^{-1}$ پر 153°C پر رہتی۔ اس ہم جا عمل (isomerization) کو 40% مکمل ہونے کے لیے درکار وقت منٹ میں اسی درجہ حرارت پر _____ ہے۔ (قریب ترین مکمل عدد میں)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 59 Question Id : 70819116292 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Number of amphoteric compounds among the following is _____.

(A) BeO (B) BaO (C) Be(OH)₂ (D) Sr(OH)₂

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 59 Question Id : 70819116292 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ذیل میں اسیٹھوٹرک (amphoteric) مرکبات کی تعداد _____ ہے۔

Sr(OH)₂ (D) Be(OH)₂ (C) BaO (B) BeO (A)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

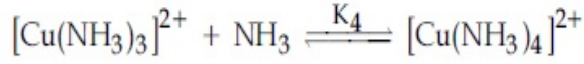
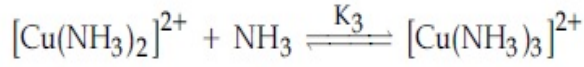
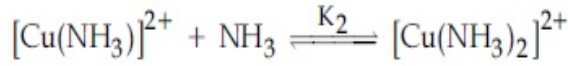
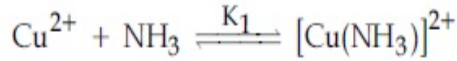
Possible Answers :

5 to 5.001

Question Number : 60 Question Id : 70819116293 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The stepwise formation of $[\text{Cu}(\text{NH}_3)_4]^{2+}$ is given below :



The value of stability constants K_1 , K_2 , K_3 and K_4 are 10^4 , 1.58×10^3 , 5×10^2 and 10^2 respectively. The overall equilibrium constants for dissociation of $[\text{Cu}(\text{NH}_3)_4]^{2+}$ is $x \times 10^{-12}$. The value of x is _____. (Rounded off to the nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

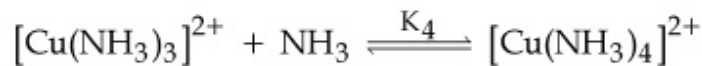
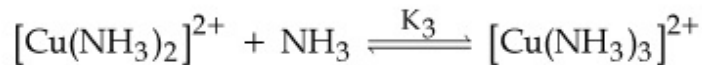
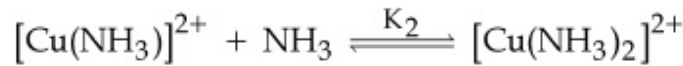
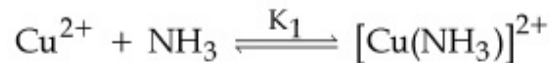
Possible Answers :

5 to 5.001

Question Number : 60 **Question Id :** 70819116293 **Question Type :** SA

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

: $[\text{Cu}(\text{NH}_3)_4]^{2+}$ کی مرحلہ وار تیاری مندرجہ ذیل میں دی گئی ہے :



قیام پذیری مستقلہ K_1 , K_2 , K_3 , اور K_4 کی قیمتیں بالترتیب 10^4 , 1.58×10^3 , 5×10^2 اور 10^2 ہیں۔

$[\text{Cu}(\text{NH}_3)_4]^{2+}$ کے متوازن انتشار کا مستقلہ $x \times 10^{-12}$ ہے۔ x کی قیمت _____ ہے۔

(قریب ترین مکمل عدد میں)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Mathematics Section A

Section Id :	708191626
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 :	708191906
Question Shuffling Allowed :	Yes

Question Number : 61 Question Id : 70819116294 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let $f : \mathbb{R} \rightarrow \mathbb{R}$ be defined as $f(x) = 2x - 1$ and $g : \mathbb{R} - \{1\} \rightarrow \mathbb{R}$ be defined as $g(x) = \frac{x - \frac{1}{2}}{x - 1}$.

Then the composition function $f(g(x))$ is :

Options :

70819154031. one-one but not onto

70819154032. onto but not one-one

70819154033. neither one-one nor onto

70819154034. both one-one and onto

Question Number : 61 Question Id : 70819116294 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

فرض کیجئے $f: \mathbb{R} \rightarrow \mathbb{R}$ اس طرح بیان کیا

$$g(x) = \frac{x-1}{x-1} \text{ اس طرح بیان کیا } g: \mathbb{R}-\{1\} \rightarrow \mathbb{R} \text{ اور } f(x) = 2x-1$$

تو $f(g(x))$ composite تفاعل ہے۔

Options :

70819154031. ایک-ایک (one-one) لیکن onto نہیں

70819154032. onto لیکن ایک-ایک نہیں

70819154033. نایک-ایک اور نہ ہی onto

70819154034. دونوں ایک-ایک اور onto

Question Number : 62 Question Id : 70819116295 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let p and q be two positive numbers such that $p+q=2$ and $p^4+q^4=272$. Then p and q are roots of the equation :

Options :

70819154035. $x^2 - 2x + 136 = 0$

70819154036. $x^2 - 2x + 16 = 0$

70819154037. $x^2 - 2x + 8 = 0$

70819154038. $x^2 - 2x + 2 = 0$

Question Number : 62 Question Id : 70819116295 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

فرض کیجئے p اور q دو مثبت نمبر اس طرح ہیں کہ $p + q = 2$ اور $p^4 + q^4 = 272$ تو p اور q _____ مساوات کے جذر ہیں۔

Options :

70819154035. $x^2 - 2x + 136 = 0$

70819154036. $x^2 - 2x + 16 = 0$

70819154037. $x^2 - 2x + 8 = 0$

70819154038. $x^2 - 2x + 2 = 0$

Question Number : 63 Question Id : 70819116296 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The system of linear equations

$$3x - 2y - kz = 10$$

$$2x - 4y - 2z = 6$$

$$x + 2y - z = 5m$$

is inconsistent if :

Options :

70819154039. $k \neq 3, m \neq \frac{4}{5}$

70819154040. $k = 3, m = \frac{4}{5}$

70819154041. $k = 3, m \neq \frac{4}{5}$

70819154042. $k \neq 3, m \in \mathbb{R}$

Question Number : 63 Question Id : 70819116296 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

یک درجی مساوات کے نظام

$$3x - 2y - kz = 10$$

$$2x - 4y - 2z = 6$$

$$x + 2y - z = 5m$$

_____ ہے اگر inconsistent

Options :

70819154039. $k \neq 3, m \neq \frac{4}{5}$

70819154040. $k = 3, m = \frac{4}{5}$

$$k = 3, m \neq \frac{4}{5}$$

70819154041.

$$k \neq 3, m \in \mathbf{R}$$

70819154042.

Question Number : 64 Question Id : 70819116297 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The value of

$$-{}^{15}C_1 + 2 \cdot {}^{15}C_2 - 3 \cdot {}^{15}C_3 + \dots - 15 \cdot {}^{15}C_{15} + {}^{14}C_1 + {}^{14}C_3 + {}^{14}C_5 + \dots + {}^{14}C_{11} \text{ is :}$$

Options :

70819154043. $2^{16} - 1$

70819154044. $2^{13} - 14$

70819154045. $2^{13} - 13$

70819154046. 2^{14}

Question Number : 64 Question Id : 70819116297 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$$-{}^{15}C_1 + 2 \cdot {}^{15}C_2 - 3 \cdot {}^{15}C_3 + \dots - 15 \cdot {}^{15}C_{15} + {}^{14}C_1 + {}^{14}C_3 + {}^{14}C_5 + \dots + {}^{14}C_{11}$$

کی قیمت _____ ہے۔

Options :

70819154043. $2^{16} - 1$

70819154044. $2^{13} - 14$

70819154045. $2^{13} - 13$

70819154046. 2^{14}

**Question Number : 65 Question Id : 70819116298 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

If $e^{(\cos^2 x + \cos^4 x + \cos^6 x + \dots) \log_e 2}$ satisfies the equation $t^2 - 9t + 8 = 0$, then the value of

$\frac{2 \sin x}{\sin x + \sqrt{3} \cos x} \left(0 < x < \frac{\pi}{2} \right)$ is:

Options :

70819154047. $\frac{1}{2}$

70819154048. $\sqrt{3}$

70819154049. $\frac{3}{2}$

70819154050. $2\sqrt{3}$

**Question Number : 65 Question Id : 70819116298 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

$$e^{(\cos^2 x + \cos^4 x + \cos^6 x + \dots \infty)} \log_e 2$$

مساوات $t^2 - 9t + 8 = 0$ کو مطمئن (satisfies) کرتا ہے تو

ہے۔ _____ کی قیمت $\frac{2 \sin x}{\sin x + \sqrt{3} \cos x} \left(0 < x < \frac{\pi}{2}\right)$

Options :

70819154047. $\frac{1}{2}$

70819154048. $\sqrt{3}$

70819154049. $\frac{3}{2}$

70819154050. $2\sqrt{3}$

Question Number : 66 Question Id : 70819116299 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$$\lim_{x \rightarrow 0} \frac{\int_0^{x^2} (\sin \sqrt{t}) dt}{x^3}$$
 is equal to :

Options :

70819154051. $\frac{2}{3}$

70819154052. $\frac{3}{2}$

70819154053. $\frac{1}{15}$

70819154054. 0

Question Number : 66 Question Id : 70819116299 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$$\lim_{x \rightarrow 0} \frac{\int_0^{x^2} (\sin \sqrt{t}) dt}{x^3}$$

_____ کے برابر ہے۔

Options :

$$\frac{2}{3}$$

70819154051.

$$\frac{3}{2}$$

70819154052.

$$\frac{1}{15}$$

70819154053.

70819154054. 0

Question Number : 67 Question Id : 70819116300 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The function $f(x) = \frac{4x^3 - 3x^2}{6} - 2 \sin x + (2x - 1) \cos x$:

Options :

70819154055. increases in $\left[\frac{1}{2}, \infty\right)$

70819154056. decreases in $\left[\frac{1}{2}, \infty\right)$

70819154057. increases in $\left(-\infty, \frac{1}{2}\right]$

70819154058. decreases in $\left(-\infty, \frac{1}{2}\right]$

Question Number : 67 Question Id : 70819116300 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$$f(x) = \frac{4x^3 - 3x^2}{6} - 2 \sin x + (2x - 1) \cos x \quad \text{تفاعل}$$

Options :

70819154055. (increases) میں اضافی $\left[\frac{1}{2}, \infty\right)$

70819154056. (decreases) میں گھٹتا ہوا $\left[\frac{1}{2}, \infty\right)$

70819154057. میں اضافی $\left(-\infty, \frac{1}{2}\right]$

70819154058. میں گھٹتا ہوا $\left(-\infty, \frac{1}{2}\right]$

Question Number : 68 Question Id : 70819116301 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A scientific committee is to be formed from 6 Indians and 8 foreigners, which includes at least 2 Indians and double the number of foreigners as Indians. Then the number of ways, the committee can be formed, is :

Options :

70819154059. 1050

70819154060. 1625

70819154061. 560

70819154062. 575

Question Number : 68 Question Id : 70819116301 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

6 انڈین (Indians) اور 8 غیر ملکی (Foreigners) میں سے ایک کمیٹی تیار کی گئی۔ جس میں کم سے کم 2 انڈین اور انڈین کے مقابلہ میں غیر ملکی دوگنا (double) ہو تو ایسی کمیٹی _____ مرتبہ تیار کی جاسکتی ہے۔

Options :

70819154059. 1050

70819154060. 1625

70819154061. 560

70819154062. 575

Question Number : 69 Question Id : 70819116302 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If $f: \mathbb{R} \rightarrow \mathbb{R}$ is a function defined by $f(x) = [x - 1] \cos\left(\frac{2x - 1}{2}\right)\pi$, where $[\cdot]$ denotes the greatest integer function, then f is :

Options :

70819154063. discontinuous only at $x = 1$

70819154064. discontinuous at all integral values of x except at $x = 1$

70819154065. continuous only at $x = 1$

70819154066. continuous for every real x

Question Number : 69 Question Id : 70819116302 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

اگر $f: \mathbb{R} \rightarrow \mathbb{R}$ یہ تفاعل اس طرح بیان کیا گیا کہ
 $f(x) = [x - 1] \cos\left(\frac{2x - 1}{2}\right)\pi$ جہاں پر

$[\cdot]$ یہ سب سے بڑا تفاعل کو ظاہر کرتا ہے تو ہے۔

Options :

70819154063. صرف $x = 1$ پر غیر مدام (discontinuous)

70819154064. $x = 1$ کے علاوہ، x کی تمام تکمیلی قیمت (integral values) پر غیر مدام ہے۔

70819154065. صرف $x = 1$ پر مدام ہے۔

70819154066. x کی تمام صحیح قیمت پر مدام ہے۔

Question Number : 70 Question Id : 70819116303 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If $\int \frac{\cos x - \sin x}{\sqrt{8 - \sin 2x}} dx = a \sin^{-1} \left(\frac{\sin x + \cos x}{b} \right) + c$, where c is a constant of integration, then

the ordered pair (a, b) is equal to :

Options :

70819154067. (3, 1)

70819154068. (1, 3)

70819154069. (-1, 3)

70819154070. (1, -3)

Question Number : 70 Question Id : 70819116303 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$\int \frac{\cos x - \sin x}{\sqrt{8 - \sin 2x}} dx = a \sin^{-1} \left(\frac{\sin x + \cos x}{b} \right) + c$ اگر

جہاں پر 'c' تکمیلی مستقل ہے تو ترتیب وار جوڑی (a, b) (ordered pair) کے برابر ہے۔

Options :

70819154067. (3, 1)

70819154068. (1, 3)

70819154069. (-1, 3)

70819154070. (1, -3)

Question Number : 71 Question Id : 70819116304 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The area (in sq. units) of the part of the circle $x^2 + y^2 = 36$, which is outside the parabola $y^2 = 9x$, is :

Options :

70819154071. $24\pi + 3\sqrt{3}$

70819154072. $24\pi - 3\sqrt{3}$

70819154073. $12\pi + 3\sqrt{3}$

70819154074. $12\pi - 3\sqrt{3}$

Question Number : 71 Question Id : 70819116304 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

دائرہ $x^2 + y^2 = 36$ کا کچھ حصہ کا رقبہ (مربع اکائی میں) _____ ہے جو $y^2 = 9x$ کے باہر (outside) ہے۔

Options :

70819154071.

$$24\pi + 3\sqrt{3}$$

70819154072. $24\pi - 3\sqrt{3}$

70819154073. $12\pi + 3\sqrt{3}$

70819154074. $12\pi - 3\sqrt{3}$

Question Number : 72 Question Id : 70819116305 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The population $P = P(t)$ at time ' t ' of a certain species follows the differential equation

$$\frac{dP}{dt} = 0.5P - 450. \text{ If } P(0) = 850, \text{ then the time at which population becomes zero is :}$$

Options :

70819154075. $\log_e 9$

70819154076. $\frac{1}{2} \log_e 18$

70819154077. $\log_e 18$

70819154078. $2 \log_e 18$

Question Number : 72 Question Id : 70819116305 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

آبادی $P = P(t)$ (population) وقت 't' پر کچھ خاص قسم (certain species) ، تفریقی مساوات (differential equation) $\frac{dP}{dt} = 0.5P - 450$ پر عمل (follows) کرتا ہے۔ اگر $P(0) = 850$ تو وہ وقت _____ ہوگا جب آبادی صفر ہو جاتی ہے۔

Options :

70819154075. $\log_e 9$

70819154076. $\frac{1}{2} \log_e 18$

70819154077. $\log_e 18$

70819154078. $2 \log_e 18$

Question Number : 73 Question Id : 70819116306 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A man is walking on a straight line. The arithmetic mean of the reciprocals of the intercepts of this line on the coordinate axes is $\frac{1}{4}$. Three stones A, B and C are placed at the points (1, 1), (2, 2) and (4, 4) respectively. Then which of these stones is/are on the path of the man ?

Options :

70819154079. A only

70819154080. B only

70819154081. C only

70819154082. All the three

Question Number : 73 Question Id : 70819116306 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک آدمی سیدھے خط میں چل رہا ہے۔ اس خط کے ذریعے محدودی محوروں (co-ordinate axes) پر کے قطع (intercepts) کا معکوس (reciprocals) کا حسابی اوسط (Arithmetic mean) $\frac{1}{4}$ ہے۔ تین پتھر A، B اور C با ترتیب نقاط (1, 1)، (2, 2) اور (4, 4) پر رکھے گئے۔ تو ان میں سے کون سے پتھر آدمی کے راستے میں آتے ہیں / ہیں ؟

Options :

70819154079. A صرف

70819154080. B صرف

70819154081. C صرف

70819154082. تمام تینوں

Question Number : 74 Question Id : 70819116307 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The locus of the mid-point of the line segment joining the focus of the parabola $y^2 = 4ax$ to a moving point of the parabola, is another parabola whose directrix is :

Options :

70819154083. $x = a$

70819154084. $x = -\frac{a}{2}$

70819154085. $x = 0$

70819154086. $x = \frac{a}{2}$

**Question Number : 74 Question Id : 70819116307 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

شائبجی $y^2 = 4ax$ کے ماسکہ (focus) اور شائبجی پر حرکت (moving) کرنے والے نقطہ کے ملنے والے قطعہ خط کے وسطی نقطہ کے locus کے (mid-point) کی مساوات شائبجی ہے جس کا directrix ہے۔

Options :

70819154083. $x = a$

70819154084. $x = -\frac{a}{2}$

70819154085. $x = 0$

70819154086. $x = \frac{a}{2}$

**Question Number : 75 Question Id : 70819116308 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

If the tangent to the curve $y = x^3$ at the point $P(t, t^3)$ meets the curve again at Q, then the ordinate of the point which divides PQ internally in the ratio 1 : 2 is :

Options :

70819154087. 0

70819154088. $2t^3$

70819154089. $-t^3$

70819154090. $-2t^3$

Question Number : 75 Question Id : 70819116308 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

اگر منحنی $y = x^3$ (curve) پر نقطہ $P(t, t^3)$ پر کا مماس دوبارہ منحنی کو نقطہ Q پر ملتا ہے تو نقطہ کے y محدد (ordinate) _____ ہے۔ جو 'PQ' کو اندرونی طور پر 1 : 2 میں تقسیم کرتا ہے۔

Options :

70819154087. 0

70819154088. $2t^3$

70819154089. $-t^3$

70819154090. $-2t^3$

Question Number : 76 Question Id : 70819116309 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The equation of the plane passing through the point $(1, 2, -3)$ and perpendicular to the planes $3x + y - 2z = 5$ and $2x - 5y - z = 7$, is :

Options :

70819154091. $6x - 5y + 2z + 10 = 0$

70819154092. $11x + y + 17z + 38 = 0$

70819154093. $6x - 5y - 2z - 2 = 0$

70819154094. $3x - 10y - 2z + 11 = 0$

Question Number : 76 Question Id : 70819116309 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

مستوی کی مساوات _____ ہے جو نقطہ $(1, 2, -3)$ میں سے گذرتی ہے۔ اور مستویوں (planes) $2x - 5y - z = 7$ اور $3x + y - 2z = 5$ پر عمود ہے۔

Options :

70819154091. $6x - 5y + 2z + 10 = 0$

70819154092. $11x + y + 17z + 38 = 0$

70819154093. $6x - 5y - 2z - 2 = 0$

70819154094. $3x - 10y - 2z + 11 = 0$

Question Number : 77 Question Id : 70819116310 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The distance of the point (1, 1, 9) from the point of intersection of the line

$$\frac{x-3}{1} = \frac{y-4}{2} = \frac{z-5}{2} \text{ and the plane } x+y+z=17 \text{ is :}$$

Options :

70819154095. $2\sqrt{19}$

70819154096. $19\sqrt{2}$

70819154097. $\sqrt{38}$

70819154098. 38

Question Number : 77 Question Id : 70819116310 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

(point of $x+y+z=17$ کے انقطاعی نقطہ اور $\frac{x-3}{1} = \frac{y-4}{2} = \frac{z-5}{2}$ سے خط (1, 1, 9) نقطہ

intersection) تک کا فاصلہ (distance) ہے۔

Options :

70819154095. $2\sqrt{19}$

70819154096. $19\sqrt{2}$

70819154097. $\sqrt{38}$

70819154098. 38

Question Number : 78 Question Id : 70819116311 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

An ordinary dice is rolled for a certain number of times. If the probability of getting an odd number 2 times is equal to the probability of getting an even number 3 times, then the probability of getting an odd number for odd number of times is :

Options :

70819154099. $\frac{1}{32}$

70819154100. $\frac{3}{16}$

70819154101. $\frac{5}{16}$

70819154102. $\frac{1}{2}$

Question Number : 78 Question Id : 70819116311 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

کچھ خاص مرتبہ ایک معمولی پانسہ پھینکا گیا۔ اگر طاق عدد حاصل کرنے کے احتمال کا دو گنا، جفت عدد حاصل کرنے کے احتمال کے تین گنا کے برابر ہے تو طاق نمبر کے مرتبہ میں سے طاق نمبر حاصل کرنے کی احتمال (probability) _____ ہے۔

Options :

70819154099. $\frac{1}{32}$

70819154100. $\frac{3}{16}$

70819154101.

70819154102. $\frac{1}{2}$

Question Number : 79 Question Id : 70819116312 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Two vertical poles are 150 m apart and the height of one is three times that of the other. If from the middle point of the line joining their feet, an observer finds the angles of elevation of their tops to be complementary, then the height of the shorter pole (in meters) is :

Options :

70819154103. 25

70819154104. 30

70819154105. $20\sqrt{3}$

70819154106. $25\sqrt{3}$

Question Number : 79 Question Id : 70819116312 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

دو عمودی کھجے (poles) ایک دوسرے سے 150 m کی دوری پر ہیں۔ اور ایک کھجے کی اونچائی دوسرے کھجے کی اونچائی سے تین گنا ہے۔ اگر ان کے پائے کو ملانے والے خط کے وسطی نقطہ (mid point) سے ایک مشاہدہ کرنے والے نے معلوم کیا کہ اس کے اوپری سروں (tops) سے بننے والے صعودی زاویے (elevation angles) متمم (complementary) ہیں تو چھوٹے کھجے کی اونچائی (میٹر میں) _____ ہے۔

Options :

70819154103. 25

70819154104. 30

70819154105. $20\sqrt{3}$

70819154106. $25\sqrt{3}$

Question Number : 80 Question Id : 70819116313 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The statement among the following that is a tautology is :

Options :

70819154107. $A \wedge (A \vee B)$

70819154108. $A \vee (A \wedge B)$

70819154109. $[A \wedge (A \rightarrow B)] \rightarrow B$

70819154110. $B \rightarrow [A \wedge (A \rightarrow B)]$

Question Number : 80 Question Id : 70819116313 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

مندرجہ ذیل میں _____ بیان با معنی (tautology) ہے۔

Options :

70819154107. $A \wedge (A \vee B)$

70819154108. $A \vee (A \wedge B)$

70819154109. $[A \wedge (A \rightarrow B)] \rightarrow B$

70819154110. $B \rightarrow [A \wedge (A \rightarrow B)]$

Mathematics Section B

Section Id :	708191627
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 :	708191907
Question Shuffling Allowed :	Yes

Question Number : 81 Question Id : 70819116314 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If the least and the largest real values of α , for which the equation $z + \alpha|z - 1| + 2i = 0$ ($z \in \mathbb{C}$ and $i = \sqrt{-1}$) has a solution, are p and q respectively; then $4(p^2 + q^2)$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 81 **Question Id :** 70819116314 **Question Type :** SA

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

اگر α کی کم سے کم (least) اور زیادہ سے زیادہ (largest) صحیح قیمتیں بالترتیب p اور q ہیں جس کے لئے مساوات
 $z + \alpha|z - 1| + 2i = 0$ ($z \in \mathbb{C}$ اور $i = \sqrt{-1}$) کا حل ہے تو $4(p^2 + q^2)$ کے برابر ہے۔

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 82 **Question Id :** 70819116315 **Question Type :** SA

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

Let B_i ($i=1, 2, 3$) be three independent events in a sample space. The probability that only B_1 occur is α , only B_2 occurs is β and only B_3 occurs is γ . Let p be the probability that none of the events B_i occurs and these 4 probabilities satisfy the equations $(\alpha - 2\beta) p = \alpha\beta$ and $(\beta - 3\gamma) p = 2\beta\gamma$ (All the probabilities are assumed to lie in the interval $(0, 1)$). Then $\frac{P(B_1)}{P(B_3)}$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 82 Question Id : 70819116315 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

فرض کیجئے ایک Sample Space میں سے B_i ($i = 1, 2, 3$) یہ تین آزاد واقعات (events) ہیں۔ صرف B_1 حاصل کرنے کی احتمال (probability) α ہے۔ صرف B_2 حاصل کرنے کی β ، اور صرف B_3 حاصل کرنے کی γ ہے۔ فرض کیجئے واقعات B_i میں سے کوئی بھی واقعہ حاصل نہیں ہونے کی احتمال p ہے۔ اور یہ 4 احتمال مساوات $p = \alpha\beta$ اور $(\alpha - 2\beta)p = 2\beta\gamma$ کو مطمئن کرتے ہیں۔ (تمام احتمال وقفہ $(0, 1)$ میں شامل ہیں) تو $\frac{P(B_1)}{P(B_3)}$ کے برابر ہے۔

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 83 Question Id : 70819116316 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Let $P = \begin{bmatrix} 3 & -1 & -2 \\ 2 & 0 & \alpha \\ 3 & -5 & 0 \end{bmatrix}$, where $\alpha \in \mathbb{R}$. Suppose $Q = [q_{ij}]$ is a matrix satisfying $PQ = kI_3$ for

some non-zero $k \in \mathbb{R}$. If $q_{23} = -\frac{k}{8}$ and $|Q| = \frac{k^2}{2}$, then $\alpha^2 + k^2$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 83 Question Id : 70819116316 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$$\alpha \in \mathbb{R} \text{ جہاں } P = \begin{bmatrix} 3 & -1 & -2 \\ 2 & 0 & \alpha \\ 3 & -5 & 0 \end{bmatrix} \text{ فرض کیجئے}$$

فرض کیجئے (suppose) $Q = [q_{ij}]$ یہ میٹرکس $PQ = kI_3$ کو کچھ غیر صفر $k \in \mathbb{R}$ کے لئے مطمئن کرتا ہے۔ اگر

$$|Q| = \frac{k^2}{2} \text{ اور } q_{23} = -\frac{k}{8} \text{ تو } \alpha^2 + k^2 \text{ کے برابر ہے۔}$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 84 Question Id : 70819116317 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Let M be any 3×3 matrix with entries from the set $\{0, 1, 2\}$. The maximum number of such matrices, for which the sum of diagonal elements of $M^T M$ is seven, is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 84 Question Id : 70819116317 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

فرض کیجئے M یہ 3×3 میٹرکس ہے جس کے ارکان (entries) سیٹ $\{0, 1, 2\}$ میں سے ہیں۔ ایسے زیادہ سے زیادہ (maximum) میٹرکس کی تعداد _____ ہے جس کے لئے $M^T M$ کے وتر کے ارکان (diagonal elements) کا مجموعہ 7 ہے۔

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 85 Question Id : 70819116318 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Let $A = \{n \in \mathbb{N} : n \text{ is a 3-digit number}\}$

$B = \{9k + 2 : k \in \mathbb{N}\}$

and $C = \{9k + l : k \in \mathbb{N}\}$ for some l ($0 < l < 9$)

If the sum of all the elements of the set $A \cap (B \cup C)$ is 274×400 , then l is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 85 Question Id : 70819116318 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

فرض کیجئے $A = \{ n \in \mathbb{N} : \text{'n' یہ تین ہندسی عدد ہے} \}$

$B = \{ 9k + 2 : k \in \mathbb{N} \}$

اور $C = \{ 9k + 1 ; k \in \mathbb{N} \}$

کچھ l ($0 < l < 9$) کے لئے۔ اگر سیٹ $A \cap (B \cup C)$ کے تمام ارکان (elements) کا مجموعہ 274×400 ہے تو l کے برابر ہے۔ _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 86 Question Id : 70819116319 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The minimum value of α for which the equation $\frac{4}{\sin x} + \frac{1}{1 - \sin x} = \alpha$ has at least one

solution in $\left(0, \frac{\pi}{2}\right)$ is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 86 Question Id : 70819116319 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$$\frac{4}{\sin x} + \frac{1}{1 - \sin x} = \alpha$$

ہے جس کے لئے مساوات _____ (minimum value) کی اقل قیمت α کا وقفہ $\left(0, \frac{\pi}{2}\right)$ میں کم سے کم (minimum) ایک حل ہے۔

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 87 Question Id : 70819116320 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If $\int_{-a}^a (|x| + |x - 2|) dx = 22$, ($a > 2$) and $[x]$ denotes the greatest integer $\leq x$,

then $\int_a^{-a} (x + [x]) dx$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 87 Question Id : 70819116320 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

اگر $\int_{-a}^a (|x| + |x - 2|) dx = 22$ ، $(a > 2)$ اور $[x]$ سب سے بڑا صحیح عدد $x \leq$ کو ظاہر کرتا ہے تو

_____ کے برابر ہے۔ $\int_a^{-a} (x + [x]) dx$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 88 **Question Id :** 70819116321 **Question Type :** SA

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

If one of the diameters of the circle $x^2 + y^2 - 2x - 6y + 6 = 0$ is a chord of another circle 'C', whose center is at (2, 1), then its radius is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 88 **Question Id :** 70819116321 **Question Type :** SA

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

اگر ایک دائرہ $x^2 + y^2 - 2x - 6y + 6 = 0$ کا کوئی بھی ایک قطر (diameter) دوسرے دائرہ 'C' کا وتر (chord) ہے جس کا مرکز (centre) (2, 1) ہے تو اس کا نصف قطر _____ ہے۔

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 89 Question Id : 70819116322 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Let three vectors \vec{a} , \vec{b} and \vec{c} be such that \vec{c} is coplanar with \vec{a} and \vec{b} , $\vec{a} \cdot \vec{c} = 7$ and \vec{b} is perpendicular to \vec{c} , where $\vec{a} = -\hat{i} + \hat{j} + \hat{k}$ and $\vec{b} = 2\hat{i} + \hat{k}$, then the value of $2|\vec{a} + \vec{b} + \vec{c}|^2$ is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 89 Question Id : 70819116322 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

فرض کیجئے \vec{a} , \vec{b} اور \vec{c} تین سمتیں اس طرح ہیں کہ \vec{c} اور \vec{a} ، \vec{b} کے ساتھ ہم مستوی ہے، $\vec{a} \cdot \vec{c} = 7$ اور \vec{b} پر عمود ہے۔ جہاں پر $\vec{a} = -\hat{i} + \hat{j} + \hat{k}$ اور $\vec{b} = 2\hat{i} + \hat{k}$ تو $2|\vec{a} + \vec{b} + \vec{c}|^2$ کی قیمت _____ ہے۔

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 90 Question Id : 70819116323 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$$\lim_{n \rightarrow \infty} \tan \left\{ \sum_{r=1}^n \tan^{-1} \left(\frac{1}{1+r+r^2} \right) \right\} \text{ is equal to } \underline{\hspace{2cm}}.$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

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Correct Marks : 4 Wrong Marks : 0

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