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Question Paper Name :	B TECH EO 24th Feb 2021 Shift 1
Subject Name :	B TECH EO
Creation Date :	2021-02-23 19:54:37
Duration :	180
Number of Questions :	90
Total Marks :	300
Display Marks:	Yes

B TECH EO

Group Number :	1
Group Id :	708191170
Group Maximum Duration :	0
Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	300
Is this Group for Examiner? :	No

Physics Section A

Section Id :	708191598
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 :	708191878
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 70819115874 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 :

70819152771. $[M^2\ L\ T^2]$

70819152772. $[M^0\ L\ T^0]$

70819152773. $[M\ L\ T^{-2}]$

70819152774. $[M\ L^2\ T^{-2}]$

Question Number : 1 Question Id : 70819115874 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଗୋଟିଏ ପୃଥକୀକୃତ ବ୍ୟବସ୍ଥାରେ ଏକ ଗ୍ୟାସ୍ ଅଣୁ ଦ୍ୱାରା ହେଉଥିବା କାର୍ଯ୍ୟ $W = \alpha\beta^2 e^{-\frac{x^2}{\alpha kT}}$ ଦ୍ୱାରା ଦର୍ଶାଯାଏ, ଯେଉଁଠାରେ x ହେଉଛି ବିସ୍ଥାପନ, k ବୋଲ୍‌ଜମାନ ସ୍ଥିରାଙ୍କ ଏବଂ T ତାପମାତ୍ରା ଅଟେ । α ଏବଂ β ଦୁଇଟି ଧ୍ରୁବାଙ୍କ । ତେବେ β ର ବିମିତି ଗୁଡ଼ିକ ହେବ :

Options :

70819152771. $[M^2\ L\ T^2]$

70819152772. $[M^0\ L\ T^0]$

70819152773. $[M\ L\ T^{-2}]$

70819152774. $[M\ L^2\ T^{-2}]$

Question Number : 2 Question Id : 70819115875 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 :

70819152775. $\frac{1}{2\pi}\sqrt{\frac{3Gm}{d^3}}$

70819152776. $2\pi\sqrt{\frac{d^3}{3Gm}}$

70819152777. $2\pi\sqrt{\frac{3Gm}{d^3}}$

70819152778. $\frac{1}{2\pi}\sqrt{\frac{d^3}{3Gm}}$

Question Number : 2 Question Id : 70819115875 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ମୁକ୍ତ ସ୍ଥାନରେ 'd' ଦୂରତାରେ ଥିବା m ଏବଂ 2m ବସ୍ତୁତ୍ୱ ବିଶିଷ୍ଟ ଦୁଇଟି ତାରକା, ସେମାନଙ୍କର ସାଧାରଣ ବସ୍ତୁତ୍ୱ କେନ୍ଦ୍ର ଚାରିପଟେ ଘୂରୁଛନ୍ତି । ଏହାର ପରିକ୍ରମଣ ସମୟ ହେଉଛି :

Options :

70819152775. $\frac{1}{2\pi}\sqrt{\frac{3Gm}{d^3}}$

70819152776. $2\pi\sqrt{\frac{d^3}{3Gm}}$

70819152777. $2\pi\sqrt{\frac{3Gm}{d^3}}$

70819152778. $\frac{1}{2\pi}\sqrt{\frac{d^3}{3Gm}}$

Question Number : 3 Question Id : 70819115876 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 :

70819152779. $\frac{\sqrt{(1+2\sqrt{2})G}}{2}$

70819152780. $\sqrt{\frac{G}{2}(1+2\sqrt{2})}$

70819152781. $\sqrt{G(1+2\sqrt{2})}$

70819152782. $\sqrt{\frac{G}{2}(2\sqrt{2}-1)}$

Question Number : 3 Question Id : 70819115876 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଏକ ମୁକ୍ତ ସ୍ଥାନରେ ପ୍ରତ୍ୟେକ 1 kg ବସ୍ତୁତ୍ୱ ବିଶିଷ୍ଟ 4 ଟି ଏକାପ୍ରକାର କଣିକାକୁ ସେମାନଙ୍କର ନିଜର ପାରସ୍ପରିକ ମହାକର୍ଷଣୀ ଆକର୍ଷଣ ପ୍ରଭାବରେ 1 m ବ୍ୟାସାର୍ଦ୍ଧ ବିଶିଷ୍ଟ ଗୋଟିଏ ବୃତ୍ତର ପରିଧି ଦେଇ ଗତି କରାଯାଉଛି । ପ୍ରତ୍ୟେକ କଣିକାର ବେଗ ହେବ _____ ।

Options :

70819152779. $\frac{\sqrt{(1+2\sqrt{2})G}}{2}$

70819152780. $\sqrt{\frac{G}{2}(1+2\sqrt{2})}$

70819152781. $\sqrt{G(1+2\sqrt{2})}$

70819152782. $\sqrt{\frac{G}{2}(2\sqrt{2}-1)}$

Question Number : 4 Question Id : 70819115877 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 re[illegible]ted 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 :

70819152783. $I_1 + I_2 = I_3 + \frac{5}{2} I_4$

70819152784. $I_1 + I_3 < I_2 + I_4$

70819152785. $I_1 = I_2 = I_3 < I_4$

70819152786. $I_1 = I_2 = I_3 > I_4$

Question Number : 4 Question Id : 70819115877 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ସମାନ ବସ୍ତୁତ୍ୱ ଓ ବ୍ୟାସାର୍ଦ୍ଧ ରହିଥିବା ଚାରୋଟି ବସ୍ତୁର ଆଘୂର୍ଣ୍ଣ ଜଡ଼ତ୍ୱକୁ ବର୍ଣ୍ଣନା କରାଯାଇଛି । ଯେପରି

I_1 = ଗୋଟିଏ ଗୋଲାକାର ବଳୟ (ରିଙ୍ଗ୍) ର ବ୍ୟାସ ଚାରିପଟରେ ଆଘୂର୍ଣ୍ଣ ଜଡ଼ତ୍ୱ ।

I_2 = ଗୋଟିଏ ଗୋଲାକାର ଡିସ୍କ୍‌ର ଡିସ୍କ୍‌କୁ ଲମ୍ବ ଭାବରେ ଥାଇ ଏହାର କେନ୍ଦ୍ର ଦେଇ ଯାଇଥିବା ଏକ ଅକ୍ଷ ଚାରିପଟରେ ଆଘୂର୍ଣ୍ଣ ଜଡ଼ତ୍ୱ ।

I_3 = ଗୋଟିଏ ନିଦା ବତ୍ତୁଳ (ସିଲିଣ୍ଡର) ର ଅକ୍ଷ ଚାରିପଟରେ ଆଘୂର୍ଣ୍ଣ ଜଡ଼ତ୍ୱ ।

I_4 = ଗୋଟିଏ ନିଦା ଗୋଲକର ବ୍ୟାସ ଚାରିପଟରେ ଆଘୂର୍ଣ୍ଣ ଜଡ଼ତ୍ୱ ।

ତେବେ :

Options :

70819152783. $I_1 + I_2 = I_3 + \frac{5}{2} I_4$

70819152784. $I_1 + I_3 < I_2 + I_4$

70819152785. $I_1 = I_2 = I_3 < I_4$

70819152786. $I_1 = I_2 = I_3 > I_4$

Question Number : 5 Question Id : 70819115878 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 :

70819152787. $8 : 1$

70819152788. $1 : 8$

70819152789. $2 : 1$

70819152790. $1 : 4$

Question Number : 5 Question Id : 70819115878 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ବିଚାର କର S_1 ଓ S_2 ଦୁଇଟି ଉପଗ୍ରହ ଯଥାକ୍ରମେ 1 h. ଏବଂ 8 h. ପରିକ୍ରମଣ କାଳ ସହିତ ଗୋଟିଏ ଗ୍ରହ ଚାରିପଟେ ବୃତ୍ତାକାର କକ୍ଷରେ ପରିକ୍ରମଣ କରୁଛନ୍ତି । S_1 ଉପଗ୍ରହର ପରିବେଗ ସହ S_2 ଉପଗ୍ରହର ପରିବେଗର ଅନୁପାତ ହେଉଛି :

Options :

70819152787. $8 : 1$

70819152788. $1 : 8$

70819152789. $2 : 1$

70819152790. $1:4$

Question Number : 6 Question Id : 70819115879 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 :

70819152791. $4\pi a^3\alpha\Delta T$

70819152792. $4a^3\alpha\Delta T$

70819152793. $\frac{4}{3}\pi a^3\alpha\Delta T$

70819152794. $3a^3\alpha\Delta T$

Question Number : 6 Question Id : 70819115879 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ରୁମ୍ ତାପମାତ୍ରା 'T' ରେ, ପ୍ରତ୍ୟେକ ପାର୍ଶ୍ୱ ଧାତବ ଚାଦରରେ ତିଆରି ଏକ ଘନାକୃତି ବାକ୍ସର ଦୈର୍ଘ୍ୟ 'a' ଅଟେ । ଧାତୁଟିର ରେଖୀୟ ପ୍ରସାରଣ ଧ୍ରୁବାଙ୍କ 'α' ଅଟେ । ଏକ ଅଳ୍ପ ତାପମାତ୍ରା ΔT ରେ ଧାତବ ଚାଦରକୁ ସମଭାବରେ ଗରମ କରାଗଲା, ଏଥିପାଇଁ ଏହାର ନୂତନ ତାପମାତ୍ରା $T+\Delta T$ ହୁଏ । ଧାତବ ବାକ୍ସର ଆୟତନ ବୃଦ୍ଧି ନିର୍ଣ୍ଣୟ କର ।

Options :

70819152791. $4\pi a^3\alpha\Delta T$

70819152792. $4a^3\alpha\Delta T$

70819152793.

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

70819152794. $3a^3\alpha\Delta T$

Question Number : 7 Question Id : 70819115880 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 :

70819152795. $Y=\frac{9K\eta}{2\eta+3K}\ N/m^2$

70819152796. $Y=\frac{9K\eta}{3K-\eta}\ N/m^2$

70819152797. $K=\frac{Y\eta}{9\eta-3Y}\ N/m^2$

70819152798. $\eta=\frac{3YK}{9K+Y}\ N/m^2$

Question Number : 7 Question Id : 70819115880 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଗୋଟିଏ ପଦାର୍ଥର ୟଙ୍ଗ୍‌ଙ୍କ ଗୁଣାଙ୍କ, ସମଷ୍ଟୀୟ ମାପାଙ୍କ (ବଲ୍କ ମଡୁଲସ୍) ଏବଂ ଦୃଢତା ଗୁଣାଙ୍କ (ମଡୁଲସ୍ ଅଫ୍ ରିଜିଡିଟି) ର ମୂଲ୍ୟ ଯଥାକ୍ରମେ Y, K ଏବଂ η ଅଟନ୍ତି । ଏହି ପ୍ରାଚଳ(ପାରାମିଟର)ଗୁଡ଼ିକ ମଧ୍ୟରେ ସଠିକ୍ ସମ୍ପର୍କଟିକୁ ଚୟନ କର ।

Options :

70819152795. $Y=\frac{9K\eta}{2\eta+3K}\ N/m^2$

70819152796. $Y = \frac{9K\eta}{3K-\eta}\ N/m^2$

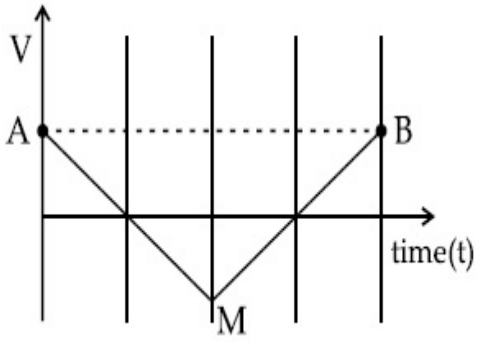
70819152797. $K = \frac{Y\eta}{9\eta - 3Y}\ N/m^2$

70819152798. $\eta = \frac{3YK}{9K+Y}\ N/m^2$

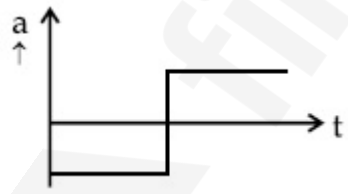
Question Number : 8 Question Id : 70819115881 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

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 ?

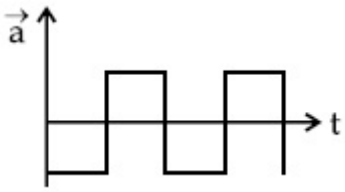


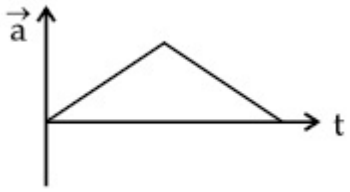
Options :

70819152799. 

70819152800. 

70819152801.



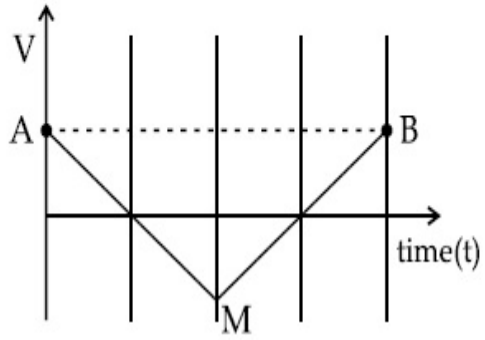


70819152802.

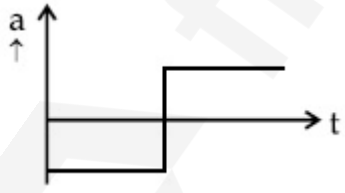
Question Number : 8 Question Id : 70819115881 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

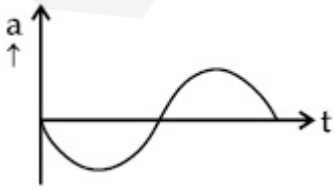
ଯଦି ପରିବେଗ-ସମୟର ଲେଖଚିତ୍ର (ଗ୍ରାଫ୍) ର ଆକାର AMB ରହିଛି, ତେବେ ସମ୍ପର୍କିତ ତ୍ୱରଣ - ସମୟର ଲେଖଚିତ୍ର (ଗ୍ରାଫ୍) ର ଆକାର କେମିତି ହେବ ?



Options :

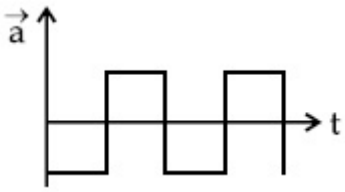


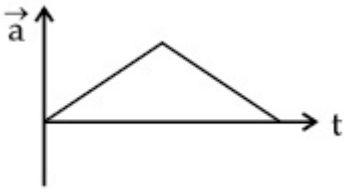
70819152799.



70819152800.

70819152801.



70819152802. 

Question Number : 9 Question Id : 70819115882 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

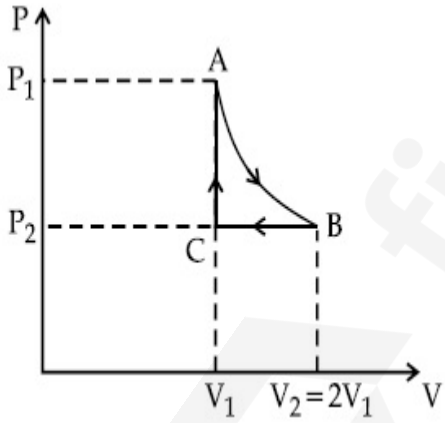
n mole of a perfect gas undergoes a cyclic process ABCA (see figure) consisting of the following processes.

$A \rightarrow B$: 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 :

70819152803. 0

70819152804. $nRT\ln 2$

70819152805. $nRT\left(\ln 2 + \frac{1}{2}\right)$

70819152806. $nRT\left(\ln 2-\frac{1}{2}\right)$

Question Number : 9 Question Id : 70819115882 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

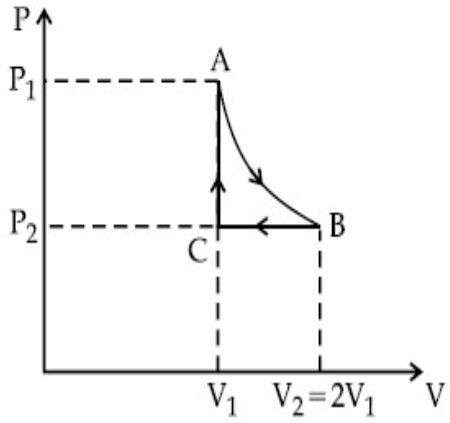
n ମୋଲ୍ ବିଶିଷ୍ଟ ଏକ ଆଦର୍ଶ ଗ୍ୟାସ୍ ନିମ୍ନଲିଖିତ ପ୍ରଣାଳୀ ଗୁଡ଼ିକ ଦ୍ୱାରା ଗଠିତ ଏକ ଚକ୍ରୀୟ ପ୍ରକ୍ରିୟା ABCA ରେ ଚାଲୁଅଛି ।

$A \rightarrow B$: T ତାପମାତ୍ରାରେ ସମତାପୀୟ ପ୍ରସାରଣ ଯେମିତିକି ଆୟତନଟି V_1 ରୁ $V_2=2V_1$ ପର୍ଯ୍ୟନ୍ତ ଦୁଇଗୁଣ ହେଉଛି ଏବଂ ଚାପଟି P_1 ରୁ P_2 କୁ ପରିବର୍ତ୍ତନ ହେଉଛି ।

$B \rightarrow C$: ପ୍ରାରମ୍ଭିକ ଆୟତନ V_1 କୁ ଯିବା ପାଇଁ P_2 ରେ ସମଚାପୀୟ ସଂକୋଚନ ।

$C \rightarrow A$: ସମଆୟତନିକ ପରିବର୍ତ୍ତନ ଯାହା ଚାପର ପରିବର୍ତ୍ତନ P_2 ରୁ P_1 କୁ ଆଗେଇ ନିଏ ।

ସମ୍ପୂର୍ଣ୍ଣ ଚକ୍ର ABCA ରେ ହେଉଥିବା ସମୁଦାୟ କାର୍ଯ୍ୟ ହେଉଛି,



Options :

70819152803. 0

70819152804. $nRT\ln 2$

70819152805. $nRT\left(\ln 2+\frac{1}{2}\right)$

70819152806. $nRT\left(\ln 2-\frac{1}{2}\right)$

Question Number : 10 Question Id : 70819115883 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 :

70819152807. (a) → (i), (b) → (iii), (c) → (ii), (d) → (iv)

70819152808. (a) → (iii), (b) → (ii), (c) → (i), (d) → (iv)

70819152809. (a) → (ii), (b) → (iv), (c) → (iii), (d) → (i)

70819152810. (a) → (ii), (b) → (iii), (c) → (iv), (d) → (i)

Question Number : 10 Question Id : 70819115883 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ତାଲିକା I ସହ ତାଲିକା II କୁ ମିଳାଅ ।

	ତାଲିକା I		ତାଲିକା II
(a)	ସମତାପୀୟ	(i)	ତାପ ଅପରିବର୍ତ୍ତନୀୟ
(b)	ସମ ଆୟତନିକ	(ii)	ତାପମାତ୍ରା ଅପରିବର୍ତ୍ତନୀୟ
(c)	ରୁଦ୍ଧତାପ	(iii)	ଆୟତନ ଅପରିବର୍ତ୍ତନୀୟ
(d)	ସମତାପୀୟ	(iv)	ତାପଧାରଣ ଅପରିବର୍ତ୍ତନୀୟ

ନିମ୍ନରେ ଦତ୍ତ ବିକଳ୍ପ ଗୁଡ଼ିକ ମଧ୍ୟରୁ ଠିକ୍ ଉତ୍ତର ଚୟନ କର :

Options :

70819152807. (a) → (i), (b) → (iii), (c) → (ii), (d) → (iv)

70819152808. (a) → (iii), (b) → (ii), (c) → (i), (d) → (iv)

70819152809. (a) → (ii), (b) → (iv), (c) → (iii), (d) → (i)

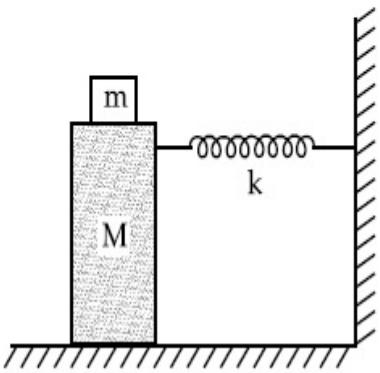
70819152810. (a) → (ii), (b) → (iii), (c) → (iv), (d) → (i)

Question Number : 11 Question Id : 70819115884 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 :

70819152811. $A\sqrt{\frac{M+m}{M}}$

70819152812. $A\sqrt{\frac{M}{M+m}}$

70819152813. $A\sqrt{\frac{M-m}{M}}$

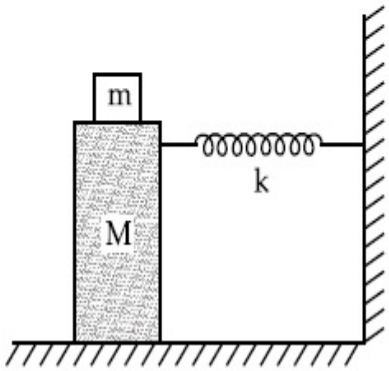
70819152814. $A\sqrt{\frac{M}{M-m}}$

Question Number : 11 Question Id : 70819115884 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଦତ୍ତ ଚିତ୍ରରେ, M ବସ୍ତୁତ୍ୱ ବିଶିଷ୍ଟ ଏକ ବସ୍ତୁ ଗୋଟିଏ ଭୂସମାନ୍ତର ସ୍ପ୍ରିଙ୍ଗ୍ ସହ ସଂଯୁକ୍ତ ହୋଇଅଛି ଯାହାର ଗୋଟିଏ ମୁଣ୍ଡ ଗୋଟିଏ ଦୃଢ ଧାରକକୁ ସଂଯୋଗ କରାଯାଇଛି । ସ୍ପ୍ରିଙ୍ଗ୍‌ଟିର ସ୍ପ୍ରିଙ୍ଗ୍ ଧ୍ରୁବାଙ୍କ k ଅଟେ । ବସ୍ତୁଟି ଗୋଟିଏ ଘର୍ଷଣବିହୀନ ପୃଷ୍ଠରେ T ଆବର୍ତ୍ତକାଳ ଏବଂ A ଆୟାମ ସହ ଦୋଳନ କରେ । ଚିତ୍ରରେ ଦେଖାଯାଇଥିବା ଅନୁସାରେ, ଯେତେବେଳେ ବସ୍ତୁଟି ସନ୍ତୁଳନ ସ୍ଥାନରେ ଥାଏ ଅନ୍ୟ ଏକ ବସ୍ତୁ m କୁ ଧିରେ ଧିରେ ଉପରେ ଲଗାଇ ଦିଆଯାଏ । ଦୋଳନଟିର ନୂତନ ଆୟାମ ହେବ _____ ।



Options :

70819152811. $A\sqrt{\frac{M+m}{M}}$

70819152812. $A\sqrt{\frac{M}{M+m}}$

70819152813. $A\sqrt{\frac{M-m}{M}}$

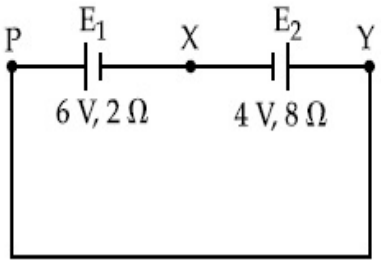
70819152814. $A\sqrt{\frac{M}{M-m}}$

Question Number : 12 Question Id : 70819115885 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 2 Ω is connected with another cell of emf 4 V and internal resistance 8 Ω (as shown in the figure). The potential difference across points X and Y is :



Options :

70819152815. 2.0 V

70819152816. 3.6 V

70819152817. 5.6 V

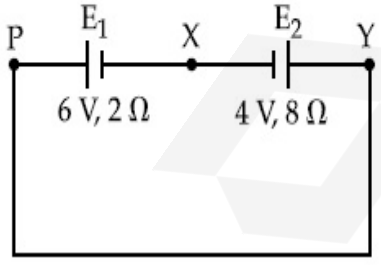
70819152818. 10.0 V

Question Number : 12 Question Id : 70819115885 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ବିଦ୍ୟୁତ୍ ବାହକ ବଳ (ଇ.ଏମ୍.ଏଫ୍) 6 V ଏବଂ ଆଭ୍ୟନ୍ତରିକ ପ୍ରତିରୋଧ 2 Ω ବିଶିଷ୍ଟ ଏକ ସେଲ୍ E_1 କୁ ବିଦ୍ୟୁତ୍ ବାହକ ବଳ (ଇ.ଏମ୍.ଏଫ୍) 4 V ଏବଂ ଆଭ୍ୟନ୍ତରିକ ପ୍ରତିରୋଧ 8 Ω ବିଶିଷ୍ଟ ଅନ୍ୟ ଏକ ସେଲ୍ E_2 ସହ ସଂଯୁକ୍ତ କରାଯାଇଛି (ଚିତ୍ରରେ ଦେଖାଯାଇଥିବା ଅନୁସାରେ) । X ଓ Y ବିନ୍ଦୁ ଦୁଇଟି ମଧ୍ୟରେ ବିଦ୍ୟୁତ୍ ବିଭବ ପାର୍ଥକ୍ୟ ହେଉଛି _____ ।



Options :

70819152815. 2.0 V

70819152816. 3.6 V

70819152817. 5.6 V

70819152818. 10.0 V

Question Number : 13 Question Id : 70819115886 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 $\alpha_0 = 20$ A/s and $\beta = 8$ As^{-2}. Find the charge crossed through a section of the wire in 15 s.

Options :

70819152819. 260 C

70819152820. 2100 C

70819152821. 11250 C

70819152822. 2250 C

Question Number : 13 Question Id : 70819115886 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$i = \alpha_0 t + \beta t^2$, ଆକାରରେ ଗୋଟିଏ ତାରରେ ବିଦ୍ୟୁତ୍ ସ୍ରୋତ ସମୟ ଉପରେ ନିର୍ଭର କରିଥାଏ, ଯେଉଁଠାରେ $\alpha_0 = 20$ A/s ଏବଂ $\beta = 8$ As^{-2}. 15 ସେକେଣ୍ଡରେ ଗୋଟିଏ ପ୍ରସ୍ଥଚ୍ଛେଦରେ ଅତିକ୍ରମ କରୁଥିବା ଚାର୍ଜର ପରିମାଣ ବାହାର କର ।

Options :

70819152819. 260 C

70819152820. 2100 C

70819152821. 11250 C

70819152822. 2250 C

Question Number : 14 Question Id : 70819115887 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 :

70819152823. 1 : 2

70819152824. 2 : 1

70819152825. 4 : 1

70819152826. 1 : 4

Question Number : 14 Question Id : 70819115887 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଦୁଇଟି ସମାନ ଧାରିତ୍ରକୁ ପ୍ରଥମେ ଶ୍ରେଣୀରେ ସଂଯୁକ୍ତ କରାଗଲା ଏବଂ ତାପରେ ସମାନ୍ତରରେ ସଂଯୁକ୍ତ କରାଗଲା । ଦୁଇଟି କ୍ଷେତ୍ରରେ ହେଉଥିବା ସମତୁଲ୍ୟ ଧାରିତାର ଅନୁପାତ ହେବ _____ ।

Options :

70819152823. 1 : 2

70819152824. 2 : 1

70819152825. 4 : 1

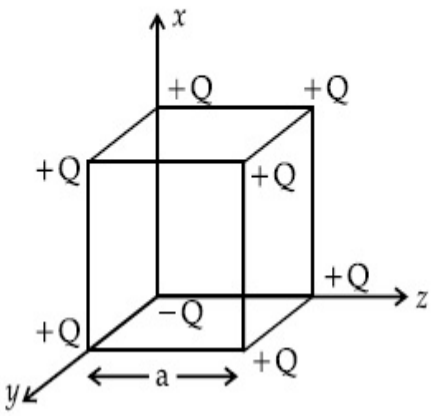
70819152826. $1:4$

Question Number : 15 Question Id : 70819115888 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 :

70819152827. $\frac{-Q}{3\sqrt{3}\pi\varepsilon_0 a^2}\left(\hat{x}+\hat{y}+\hat{z}\right)$

70819152828. $\frac{Q}{3\sqrt{3}\pi\varepsilon_0 a^2}\left(\hat{x}+\hat{y}+\hat{z}\right)$

70819152829. $\frac{-2Q}{3\sqrt{3}\pi\varepsilon_0 a^2}\left(\hat{x}+\hat{y}+\hat{z}\right)$

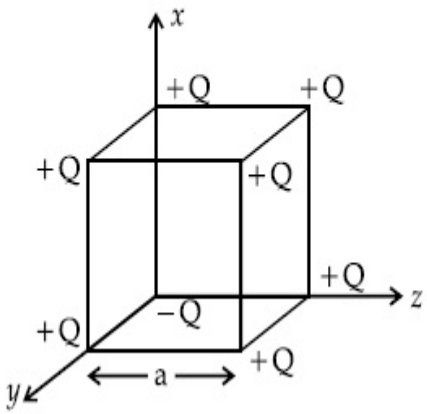
70819152830. $\frac{2Q}{3\sqrt{3}\pi\varepsilon_0 a^2}\left(\hat{x}+\hat{y}+\hat{z}\right)$

Question Number : 15 Question Id : 70819115888 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

'a' ଧାର ଥିବା ଗୋଟିଏ ସମଘନର ମୂଳବିନ୍ଦୁ ବ୍ୟତୀତ, ଯେଉଁଠାରେ ଏକ $-Q$ ଚାର୍ଜ ରହିଛି, ପ୍ରତ୍ୟେକ ଶୀର୍ଷବିନ୍ଦୁରେ $+Q$ ପରିମାଣର ବିନ୍ଦୁ ଚାର୍ଜ ରହିଛି । ସମଘନଟିର କେନ୍ଦ୍ରରେ ବୈଦ୍ୟୁତିକ କ୍ଷେତ୍ର ହେଉଛି _____ ।



Options :

70819152827. $\frac{-Q}{3\sqrt{3}\pi\varepsilon_0 a^2}\left(\hat{x}+\hat{y}+\hat{z}\right)$

70819152828. $\frac{Q}{3\sqrt{3}\pi\varepsilon_0 a^2}\left(\hat{x}+\hat{y}+\hat{z}\right)$

70819152829. $\frac{-2Q}{3\sqrt{3}\pi\varepsilon_0 a^2}\left(\hat{x}+\hat{y}+\hat{z}\right)$

70819152830. $\frac{2Q}{3\sqrt{3}\pi\varepsilon_0 a^2}\left(\hat{x}+\hat{y}+\hat{z}\right)$

Question Number : 16 Question Id : 70819115889 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 :

70819152831. 7

70819152832. 0.875

70819152833. 0.5

70819152834. 3.5

Question Number : 16 Question Id : 70819115889 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଯଦି ଏମିଟର ବିଦ୍ୟୁତ୍ ସ୍ରୋତ 4 mA ର ପରିବର୍ତ୍ତନ ହୁଏ, ସଂଗ୍ରାହୀ ବିଦ୍ୟୁତ୍ ସ୍ରୋତ 3.5 mA ପରିବର୍ତ୍ତନ ହୋଇଥାଏ । β ର ମୂଲ୍ୟ ହେବ _____ ।

Options :

70819152831. 7

70819152832. 0.875

70819152833. 0.5

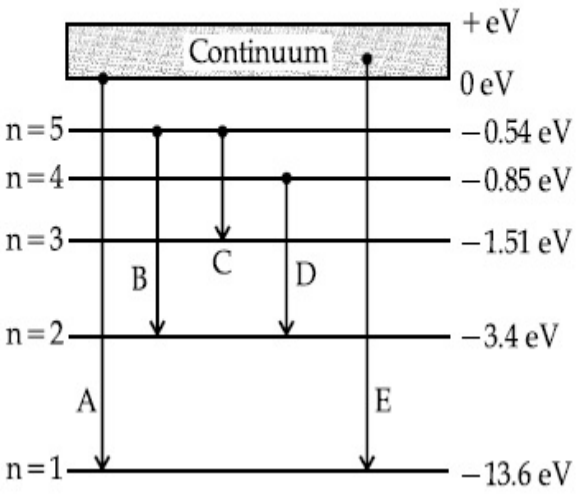
70819152834. 3.5

Question Number : 17 Question Id : 70819115890 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 :

70819152835. The first member of the Lyman series, third member of Balmer series and second member of Paschen series.

70819152836. The ionization potential of hydrogen, second member of Balmer series and third member of Paschen series.

70819152837. The series limit of Lyman series, second member of Balmer series and second member of Paschen series.

70819152838. The series limit of Lyman series, third member of Balmer series and second member of Paschen series.

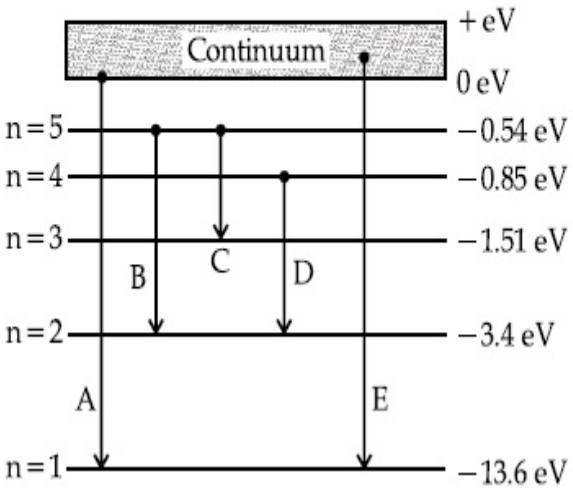
Question Number : 17 Question Id : 70819115890 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଦତ୍ତ ଚିତ୍ରରେ, A, B, C, D ଏବଂ E ଚିହ୍ନିତ କିଛି ଅବସ୍ଥାନ୍ତର (ଟ୍ରାଞ୍ଜିସନ୍) ସହ ହାଇଡ୍ରୋଜେନ୍ ପରମାଣୁର କିଛି ସ୍ତର ଗୁଡ଼ିକୁ ଦର୍ଶାଯାଇଛି ।

A, B ଏବଂ C ଅବସ୍ଥାନ୍ତର ଗୁଡ଼ିକ ଯଥାକ୍ରମେ :



Options :

70819152835. ଲାଇମାନ ଶ୍ରେଣୀର ପ୍ରଥମ ମେମ୍ବର, ବାଲ୍‌ମର ଶ୍ରେଣୀର ତୃତୀୟ ମେମ୍ବର ଓ ପାଶ୍ଚେନ୍ ଶ୍ରେଣୀର ଦ୍ୱିତୀୟ ମେମ୍ବରକୁ ଦର୍ଶାଉଅଛି ।

70819152836. ହାଇଡ୍ରୋଜେନ୍‌ର ଆୟନାଇଜେସନ୍ ବିଭବ, ବାଲ୍‌ମର ଶ୍ରେଣୀର ଦ୍ୱିତୀୟ ମେମ୍ବର ଏବଂ ପାଶ୍ଚେନ୍ ଶ୍ରେଣୀର ତୃତୀୟ ମେମ୍ବରକୁ ଦର୍ଶାଉଅଛି ।

70819152837. ଲାଇମାନ୍ ଶ୍ରେଣୀର ଶ୍ରେଣୀ ସୀମା, ବାଲ୍‌ମର ଶ୍ରେଣୀର ଦ୍ୱିତୀୟ ମେମ୍ବର ଏବଂ ପାଶ୍ଚେନ୍ ଶ୍ରେଣୀର ଦ୍ୱିତୀୟ ମେମ୍ବରକୁ ଦର୍ଶାଉ ଅଛି ।

70819152838. ଲାଇମାନ୍ ଶ୍ରେଣୀର ଶ୍ରେଣୀସୀମା, ବାଲ୍‌ମର ଶ୍ରେଣୀର ତୃତୀୟ ମେମ୍ବର ଏବଂ ପାଶ୍ଚେନ୍ ଶ୍ରେଣୀର ଦ୍ୱିତୀୟ ମେମ୍ବରକୁ ଦର୍ଶାଉ ଅଛି ।

Question Number : 18 Question Id : 70819115891 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 :

70819152839. Both Statement I and Statement II are true

70819152840. Both Statement I and Statement II are false

70819152841. Statement I is true but Statement II is false

70819152842. Statement I is false but Statement II is true

Question Number : 18 Question Id : 70819115891 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ନିମ୍ନରେ ଦୁଇଟି ଉକ୍ତି ଦିଆଯାଇଛି :

ଉକ୍ତି I : ସମାନ ରୈଖିକ ସଂବେଗ ଥିବା ଦୁଇଟି ଫୋଟନ୍‌ର ସମାନ ତରଙ୍ଗ ଦୈର୍ଘ୍ୟ ଥାଏ ।

ଉକ୍ତି II : ଯଦି ଫୋଟନ୍‌ଟିର ତରଙ୍ଗ ଦୈର୍ଘ୍ୟ କମିଯିବ, ତେବେ ଫୋଟନ୍‌ର ସଂବେଗ ଏବଂ ଶକ୍ତି ମଧ୍ୟ କମିଯିବ ।

ଉପରୋକ୍ତ ଉକ୍ତିଗୁଡ଼ିକ ଅନୁସାରେ, ନିମ୍ନରେ ଦତ୍ତ ବିକଳ୍ପଗୁଡ଼ିକ ମଧ୍ୟରୁ ଠିକ୍ ଉତ୍ତରଟି ଚୟନ କର :

Options :

70819152839. ଉଭୟ **ଉକ୍ତି I** ଏବଂ **ଉକ୍ତି II** ସତ୍ୟ ଅଟେ ।

70819152840. ଉଭୟ **ଉକ୍ତି I** ଏବଂ **ଉକ୍ତି II** ମିଥ୍ୟା ଅଟେ ।

70819152841. **ଉକ୍ତି I** ଟି ଠିକ୍ ଅଟେ କିନ୍ତୁ **ଉକ୍ତି II** ଟି ମିଥ୍ୟା ଅଟେ ।

70819152842. **ଉକ୍ତି I** ଟି ଭୁଲ୍ କିନ୍ତୁ **ଉକ୍ତି II** ଟି ସତ୍ୟ ଅଟେ ।

Question Number : 19 Question Id : 70819115892 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 :

70819152843. $f = r$

70819152844. $f = -r$

70819152845. $f = -\frac{1}{2}r$

70819152846. $f = +\frac{1}{2}r$

Question Number : 19 Question Id : 70819115892 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଗୋଟିଏ ବର୍ତ୍ତୁଳାକାର ଦର୍ପଣର ଫୋକାଲ୍ ଦୈର୍ଘ୍ୟ f ର ବକ୍ରତା ବ୍ୟାସାର୍ଦ୍ଧ r ସହ ସମ୍ପର୍କ ଅଟେ :

Options :

70819152843. $f = r$

70819152844. $f = -r$

70819152845. $f = -\frac{1}{2}r$

70819152846. $f = +\frac{1}{2}r$

Question Number : 20 Question Id : 70819115893 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 :

70819152847. $4:1$

70819152848. $2:1$

70819152849. $1:4$

70819152850. $3:1$

Question Number : 20 Question Id : 70819115893 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଗୋଟିଏ ୟଙ୍ଗ୍‌ଙ୍କ ଦ୍ୱିଛିଦ୍ର ପରୀକ୍ଷାରେ, ଗୋଟିଏ ଛିଦ୍ରର ଓସାର ଅନ୍ୟ ଛିଦ୍ରର ତିନିଗୁଣ ଅଟେ । ଛିଦ୍ର (ସ୍ଲିଟ୍) ରୁ ଆସୁଥିବା ଆଲୋକର ଆୟାମ ଛିଦ୍ର-ପ୍ରସ୍ଥ ସହ ସମାନୁପାତୀ ଅଟେ । ବ୍ୟତିକରଣ ବିନ୍ୟାସରେ ସର୍ବାଧିକ ସହ ସର୍ବନିମ୍ନ ତୀବ୍ରତାର ଅନୁପାତ ହେଉଛି :

Options :

70819152847. $4:1$

70819152848. $2:1$

70819152849. $1:4$

70819152850. $3:1$

Physics Section B

Section Id :	708191599
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 :	708191879
Question Shuffling Allowed :	Yes

Question Number : 21 Question Id : 70819115894 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.

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

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 : 70819115894 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

0.5 kg ବସ୍ତୁତ୍ୱ ବିଶିଷ୍ଟ ଗୋଟିଏ କାଠଖଣ୍ଡ (ବ୍ଲକ୍) ଏବଂ ଏକ ଭୂଲମ୍ବୀୟ ବନ୍ଧୁର କାନ୍ଥ ମଧ୍ୟରେ ସ୍ଥୈତିକ ଘର୍ଷଣ ଧ୍ରୁବାଙ୍କ 0.2 ଅଟେ । ବ୍ଲକ୍‌ଟିକୁ କାନ୍ଥ ସହ ଲଗାଇ ରଖିବା ପାଇଁ ଏହା ଉପରେ ପକାଯାଉଥିବା ଭୂସମାନ୍ତର ବଳର ପରିମାଣ ଅଟେ _____ N ।

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

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 : 70819115895 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 : 70819115895 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ଏକ ପାର୍ଶ୍ୱୀକରଣ ପରୀକ୍ଷାରେ ଗୋଟିଏ ଧ୍ରୁବକ (ପୋଲାରାଇଜର୍) ଉପରେ ଧ୍ରୁବିତ ହୋଇ ନଥିବା ଏକ ଆଲୋକ ରଶ୍ମି ଆପତିତ ହେଉଅଛି ଏବଂ ଆନାଲାଇଜରରୁ ବାହାରୁଥିବା ଆଲୋକ ରଶ୍ମି ତୀବ୍ରତା 100 ଲୁମେନ୍ ବୋଲି ମପାଯାଏ । ବର୍ତ୍ତମାନ, ଆନାଲାଇଜରଟିକୁ ଭୂସମାନ୍ତର ଅକ୍ଷ (ଆଲୋକ ଦିଗରେ) ଚାରିପଟେ ଦକ୍ଷିଣାବର୍ତ୍ତୀ ଦିଗରେ 30° ଘୁରାଗଲା । ଏଥିରୁ ବାହାରୁଥିବା ଆଲୋକ ରଶ୍ମିର ତୀବ୍ରତା ହେବ _____ ଲୁମେନ୍ ।

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 : 70819115896 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 : 70819115896 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

9 m/s ବେଗ ସହ ଗୋଟିଏ ବଲ୍ ସ୍ଥିର ଅବସ୍ଥାରେ ଥିବା ଅନ୍ୟ ଏକ ବଲ୍ ସହ ଧକ୍କା ହେଉଛି । ଧକ୍କା ପରେ ପ୍ରତ୍ୟେକ ବଲ୍‌ର ଦିଗ ମୂଳ ଦିଗ ସହ 30° କୋଣ କରୁଛନ୍ତି । ଧକ୍କା ପରେ ବଲ୍ ଦୁଇଟିର ପରିବେଗର ଅନୁପାତ ହେଉଛି $x : y$, ଯେଉଁଠି x _____ ଅଟେ ।

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 : 70819115897 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 : 70819115897 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ଗୋଟିଏ ହାଇଡ୍ରୋଲିକ୍ ପ୍ରେସ୍ 100 kg ଓଜନକୁ ଉଠାଇପାରେ ଯେତେବେଳେ 'm' ବସ୍ତୁତ୍ୱ ବିଶିଷ୍ଟ ଏକ ବସ୍ତୁକୁ ଏହାର ଛୋଟ ପିଷ୍ଟନ୍ ଉପରେ ରଖାଯାଏ । ଯେତେବେଳେ ଏହାର ବଡ ପିଷ୍ଟନ୍‌ର ବ୍ୟାସକୁ 4 ଗୁଣ ବୃଦ୍ଧି କରାଯାଏ ଏବଂ ସାନ ପିଷ୍ଟନ୍ ଉପରେ ସେହି ଏକା ବସ୍ତୁ 'm' ରଖି ସାନ ପିଷ୍ଟନ୍‌ର ବ୍ୟାସକୁ 4 ଗୁଣ କମାଇ ଦିଆଯାଏ, ଏହା _____ kg ଓଜନ ଉଠାଇପାରିବ ।

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 : 70819115898 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 : 70819115898 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ଗୋଟିଏ ଆନତ ପୃଷ୍ଠତଳକୁ ଏମିତି ଭାବରେ ବଙ୍କା କରାଗଲା ଯେ ଯେମିତି ଏହାର ଭୂଲମ୍ବୀୟ ପ୍ରସ୍ଥଚ୍ଛେଦ $y = \frac{x^2}{4}$ ଦ୍ୱାରା ପ୍ରକାଶିତ ହୁଏ ଯେଉଁଠାରେ y ଭୂଲମ୍ବୀୟ ଓ x ଭୂସମାନ୍ତର ଦିଗରେ ରହନ୍ତି । ଯଦି ଏହି ବକ୍ରତଳଟି ଘର୍ଷଣ ଧ୍ରୁବାଙ୍କ $\mu = 0.5$ ସହ ବନ୍ଧୁର ହୋଇଥାଏ, ସର୍ବାଧିକ ଉଚ୍ଚତା _____ ସେ.ମି.ରେ ବ୍ଲକ୍‌ଟି ତଳକୁ ନ ଖସି ସ୍ଥିର ରହିବ ।

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 : 70819115899 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A resonance circuit having inductance and resistance 2×10^{-4} H and 6.28 Ω 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 : 70819115899 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ପ୍ରଣୋଦକତା ଓ ପ୍ରତିରୋଧ ଯଥାକ୍ରମେ 2×10^{-4} H ଏବଂ 6.28 Ω ଥିବା ଗୋଟିଏ ଅନୁନାଦ ପରିପଥ 10 MHz ଆବୃତ୍ତିରେ ଦୋଳନ କରୁଛି । ଏହି ଅନୁନାଦୀ (ରିଜୋନେଟର) ର କ୍ୱାଲିଟି ଫାକ୍ଟର ଅଟେ _____ ।

$[\pi = 3.14]$

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 : 70819115900 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 : 70819115900 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ଗୋଟିଏ ଶବ୍ଦ ସଂକେତ $v_m = 20 \sin 2\pi(1500t)$ ଗୋଟିଏ ବାହକ ତରଙ୍ଗ (କ୍ୟାରିଅର) $v_c = 80 \sin 2\pi(100{,}000t)$ ସହ ଆୟାମ ମଡୁଲେସନ୍ ହେଉଛି ।

ଶତକଡ଼ା ମଡୁଲେସନ୍‌ର ମୂଲ୍ୟ ହେବ _____ ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

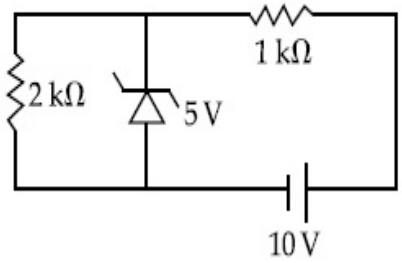
Possible Answers :

5 to 5.001

Question Number : 28 Question Id : 70819115901 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

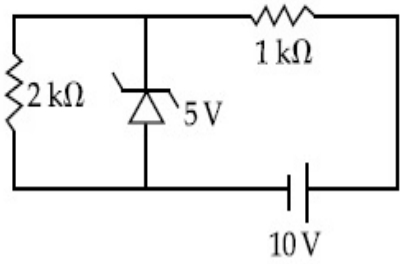
Possible Answers :

5 to 5.001

Question Number : 28 Question Id : 70819115901 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ତଳେ ଦିଆଯାଇଥିବା ପରିପଥ ଅନୁସାରେ, 2 kΩ ପ୍ରତିରୋଧ ମଧ୍ୟରେ ପ୍ରବାହିତ ବିଦ୍ୟୁତ୍ ପ୍ରବାହ ହେବ _____ $\times 10^{-4}$ 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 : 29 Question Id : 70819115902 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 _____ $\times 10^7$ 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 : 70819115902 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

5 GHz ଆବୃତ୍ତି ଥିବା ଏକ ବିଦ୍ୟୁତ୍-ଚୁମ୍ବକୀୟ ତରଙ୍ଗ ଏକ ମାଧ୍ୟମରେ ଗତି କରୁଛି ଯାହାର ଉଭୟ ଆପେ[illegible] ବିଦ୍ୟୁତ୍[illegible] ଏବଂ ଆପେକ୍ଷିକ ଚୁମ୍ବକୀୟ ପରଗମ୍ୟତା 2 ଅଟେ ।

ଏହି ମାଧ୍ୟମରେ ତରଙ୍ଗଟିର ବେଗ ଅଟେ _____ $\times 10^7$ 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 : 30 Question Id : 70819115903 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 : 70819115903 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ଗୋଟିଏ ସାଧାରଣ ରେଡ଼ିଓ ଟ୍ରାଞ୍ଜିଷ୍ଟର ସେଟ୍ ଚାଲିବା ପାଇଁ 12 V ଡି.ସି. ଆବଶ୍ୟକ କରେ । ଗୋଟିଏ 220 V (A.C.) ର ସାଧାରଣ (ଷ୍ଟାଣ୍ଡାର୍ଡ) ଘରୋଇ ଏ.ସି. ସପ୍ଲାଇରେ ଚାଲିପାରୁଥିବା ଗୋଟିଏ ଟ୍ରାନ୍ସଫରମର ଏବଂ ଗୋଟିଏ ଏ.ସି. ରେକ୍ଟିଫାୟାର ପରିପଥ ବ୍ୟବହାର କରି ଗୋଟିଏ ଡି.ସି. ଉତ୍ସ ତିଆରି କରାଗଲା । ଯଦି ସେକେଣ୍ଡାରୀ କଏଲ୍‌ର କୁଣ୍ଡଳୀ ସଂଖ୍ୟା 24 ହୁଏ, ତେବେ ପ୍ରାଇମେରୀ କଏଲ୍‌ର କୁଣ୍ଡଳୀର ସଂଖ୍ୟା ଅଟେ _____ ।

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 :	708191600
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 :	708191880
Question Shuffling Allowed :	Yes

Question Number : 31 Question Id : 70819115904 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 :

70819152861. A and B only

70819152862. A and C only

70819152863. B and C only

70819152864. C and D only

Question Number : 31 Question Id : 70819115904 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ନିମ୍ନଲିଖିତ ମଧ୍ୟରୁ କେଉଁ ଟି/ଗୁଡ଼ିକ ସମଗଠନୀୟ ଯୋଡ଼ା ?

A. SO_4^{2-} ଏବଂ CrO_4^{2-}

B. $SiCl_4$ ଏବଂ $TiCl_4$

C. NH_3 ଏବଂ NO_3^-

D. BCl_3 ଏବଂ $BrCl_3$

Options :

70819152861. A ଏବଂ B କେବଳ

70819152862. A ଏବଂ C କେବଳ

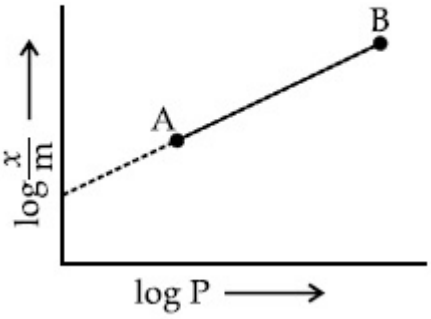
70819152863. B ଏବଂ C କେବଳ

70819152864. C ଏବଂ D କେବଳ

Question Number : 32 Question Id : 70819115905 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 :

70819152865. n with (n, 0.1 to 0.5)

70819152866. log n with (n > 1)

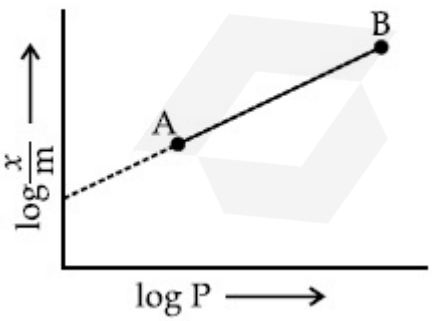
70819152867. $\log \frac{1}{n}$ with (n < 1)

70819152868. $\frac{1}{n}$ with $\left(\frac{1}{n} = 0 \text{ to } 1\right)$

Question Number : 32 Question Id : 70819115905 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଫ୍ରେଣ୍ଡଲିଚ୍‌ଙ୍କ ଅଧିଶୋଷଣ ସମୋଷ୍ଣ ରେଖାରେ AB ରେଖାର ଢ଼ୋପ୍ ହେଉଛି :



Options :

70819152865. n with values (0.1 to 0.5)

70819152866. $\log n$ with $n > 1$

70819152867. $\log\frac{1}{n}$ with $n < 1$

70819152868. $\frac{1}{n}$ with $\frac{1}{n} = 0$ to 1

Question Number : 33 Question Id : 70819115906 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 :

70819152869. $Al < Mg < Si < S < P$

70819152870. $Mg < Al < Si < P < S$

70819152871. $Mg < Al < Si < S < P$

70819152872. $Al < Mg < S < Si < P$

Question Number : 33 Question Id : 70819115906 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Mg, Al, S, P ଏବଂ Si ମୌଳିକ ଗୁଡ଼ିକୁ ବିଚାର କରି ସେମାନଙ୍କର ପ୍ରଥମ ଆୟନୀକରଣ ପୂର୍ଣ୍ଣତାପ ର ସଠିକ୍ ବର୍ଦ୍ଧିତ ହାର ହେଉଛି :

Options :

70819152869. $Al < Mg < Si < S < P$

70819152870. $Mg < Al < Si < P < S$

70819152871. $Mg < Al < Si < S < P$

70819152872. $Al < Mg < S < Si < P$

Question Number : 34 Question Id : 70819115907 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 :

70819152873. Calamine

70819152874. Malachite

70819152875. Siderite

70819152876. Sphalerite

Question Number : 34 Question Id : 70819115907 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଗ୍ରୁପ୍ 1 ର ସ୍ୟାନାଇଡ୍ ଲବଣ ବ୍ୟବହାର କରି ନିମ୍ନଲିଖିତ କେଉଁ ଧାତୁପିଣ୍ଡଟିକୁ ସାନ୍ଦ୍ରିତ କରାଯାଏ ?

Options :

70819152873. କାଲାମାଇନ୍

70819152874. ମାଲାକାଇଟ୍

70819152875. ସାଇଡେରାଇଟ୍

70819152876. ସ୍ପାଲେରାଇଟ୍

Question Number : 35 Question Id : 70819115908 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

(A) $HOCl + H_2O_2 \rightarrow H_3O^+ + Cl^- + O_2$

(B) $I_2 + H_2O_2 + 2OH^- \rightarrow 2I^- + 2H_2O + O_2$

Choose the correct option.

Options :

70819152877. H_2O_2 acts as oxidising agent in equations (A) and (B).

70819152878. H_2O_2 acts as reducing agent in equations (A) and (B).

70819152879. H_2O_2 act as oxidizing and reducing agent respectively in equations (A) and (B).

70819152880. H_2O_2 acts as reducing and oxidising agent respectively in equations (A) and (B).

Question Number : 35 Question Id : 70819115908 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

(A) $HOCl + H_2O_2 \rightarrow H_3O^+ + Cl^- + O_2$

(B) $I_2 + H_2O_2 + 2OH^- \rightarrow 2I^- + 2H_2O + O_2$

H_2O_2 ଏମିତି କାମ କରେ

ସଠିକ୍ ବିକଳ୍ପଟିକୁ ବାଛ :

Options :

70819152877. H_2O_2 ଜାରକ ପରି ସମୀକରଣ (A) ଏବଂ (B) ରେ କାମ କରିଥାଏ ।

70819152878. H_2O_2 ବିଜାରକ ପରି ସମୀକରଣ (A) ଏବଂ (B) ରେ କାମ କରିଥାଏ ।

70819152879. H_2O_2 ଜାରକ ଏବଂ ବିଜାରକ ଭାବେ ଯଥାକ୍ରମେ ସମୀକରଣ (A) ଏବଂ (B) ରେ କାମ କରିଥାଏ ।

70819152880. H_2O_2 ବିଜାରକ ଏବଂ ଜାରକ ଭାବେ ଯଥାକ୍ରମେ ସମୀକରଣ (A) ଏବଂ (B) ରେ କାମ କରିଥାଏ ।

Question Number : 36 Question Id : 70819115909 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 :

70819152881. $X = Na[Al(OH)_4],\ Y = SO_2,\ Z = Al_2O_3$

70819152882. $X = Al(OH)_3,\ Y = SO_2,\ Z = Al_2O_3.xH_2O$

70819152883. $X = Al(OH)_3,\ Y = CO_2,\ Z = Al_2O_3$

70819152884. $X = Na[Al(OH)_4],\ Y = CO_2,\ Z = Al_2O_3.xH_2O$

Question Number : 36 Question Id : 70819115909 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Al_2O_3 କୁ କ୍ଷାରରେ ସଫା କଲେ X ମିଳେ । Y ଗ୍ୟାସ୍‌କୁ X ଦ୍ରବଣରେ ପ୍ରବାହିତ କଲେ Z ଗଠନ ହୁଏ । X, Y ଏବଂ Z ଯଥାକ୍ରମେ ହେଉଛନ୍ତି :

Options :

70819152881. $X = Na[Al(OH)_4],\ Y = SO_2,\ Z = Al_2O_3$

70819152882. $X = Al(OH)_3,\ Y = SO_2,\ Z = Al_2O_3.xH_2O$

70819152883. $X = Al(OH)_3,\ Y = CO_2,\ Z = Al_2O_3$

70819152884. $X = Na[Al(OH)_4],\ Y = CO_2,\ Z = Al_2O_3.xH_2O$

Question Number : 37 Question Id : 70819115910 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 :

70819152885. Fe

70819152886. Co

70819152887. Zn

70819152888. Cu

Question Number : 37 Question Id : 70819115910 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

3d ସିରିଜ୍ ମୌଳିକ ମାନଙ୍କର ଇଲେକ୍ଟ୍ରୋଡ୍ ବିଭବ M^{2+}/M ଯୁକ୍ତାତ୍ମକ ମୂଲ୍ୟ ଦେଖାଏ କାହା ପାଇଁ ?

Options :

70819152885. Fe

70819152886. Co

70819152887. Zn

70819152888. Cu

Question Number : 38 Question Id : 70819115911 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The major components in "Gun Metal" are :

Options :

70819152889. Cu, Sn and Zn

70819152890. Cu, Zn and Ni

70819152891. Cu, Ni and Fe

70819152892. Al, Cu, Mg and Mn

Question Number : 38 Question Id : 70819115911 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

'ଗନ୍ ମେଟାଲ୍' ର ମୁଖ୍ୟ ଉପାଦାନ ଗୁଡ଼ିକ ହେଉଛି :

Options :

70819152889. Cu, Sn ଏବଂ Zn

70819152890. Cu, Zn ଏବଂ Ni

70819152891. Cu, Ni ଏବଂ Fe

70819152892. Al, Cu, Mg ଏବଂ Mn

Question Number : 39 Question Id : 70819115912 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 :

70819152893. Acid rain

70819152894. Global warming and cancer

70819152895. Corrosion of metals

70819152896. Ozone hole

Question Number : 39 Question Id : 70819115912 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଅମ୍ଳଜାନ ଅନୁପସ୍ଥିତିରେ ଭେଜିଟେସନ୍‌ର ଅବକ୍ରମଣ ବେଳେ ନିର୍ଗତ ଗ୍ୟାସ୍ ସୂଚନା ଦେଇଥାଏ :

Options :

70819152893. ଅମ୍ଳ ବର୍ଷା

70819152894. ଗ୍ଲୋବାଲ୍ ୱାର୍ମିଙ୍ଗ୍ ଏବଂ କ୍ୟାନ୍‌ସର

70819152895. ଧାତୁ ଅବକ୍ଷୟ

70819152896. ଓଜନ କଣା

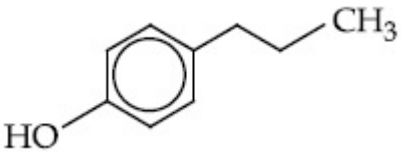
Question Number : 40 Question Id : 70819115913 Question Type : MCQ Option Shuffling : Yes

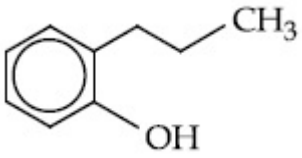
Is Question Mandatory : No

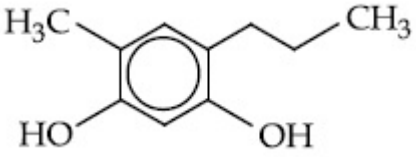
Correct Marks : 4 Wrong Marks : 1

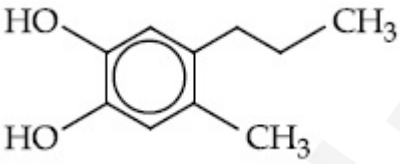
Which of the following compound gives pink colour on reaction with phthalic anhydride in conc. H_2SO_4 followed by treatment with NaOH ?

Options :

70819152897. 

70819152898. 

70819152899. 

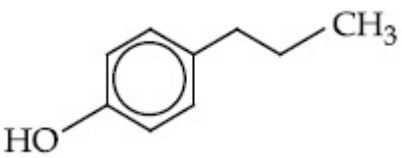
70819152900. 

Question Number : 40 Question Id : 70819115913 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

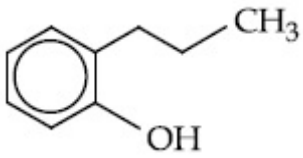
Correct Marks : 4 Wrong Marks : 1

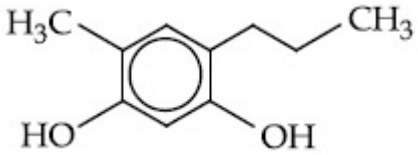
ନିମ୍ନଲିଖିତ କେଉଁ ଯୌଗିକ ଗାଢ H_2SO_4ରେ ଥାଲିକ୍ ଏନ୍‌ହାଇଡ୍ରାଇଡ୍ ସହ ପ୍ରତିକ୍ରିୟା କରିବା ପରେ NaOH ସହ ଯୋଗ କଲେ ଗୋଲାପି ରଙ୍ଗ ଦେଇଥାଏ ?

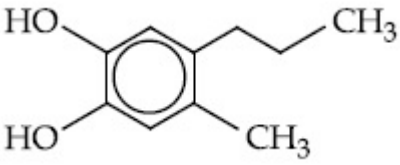
Options :

70819152897. 

70819152898.

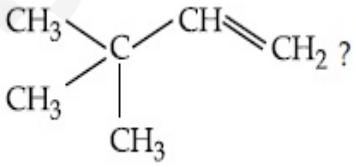


70819152899. 

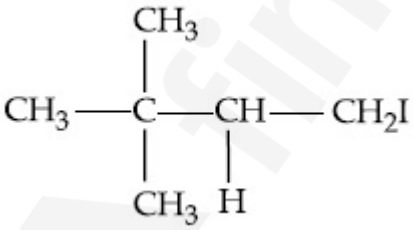
70819152900. 

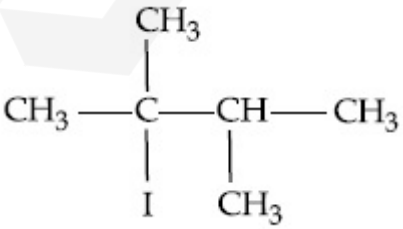
Question Number : 41 Question Id : 70819115914 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

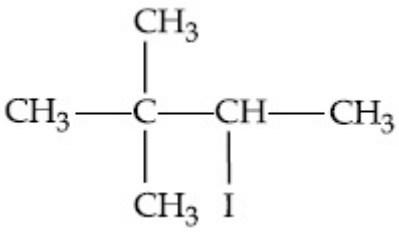
What is the major product formed by HI on reaction with  ?

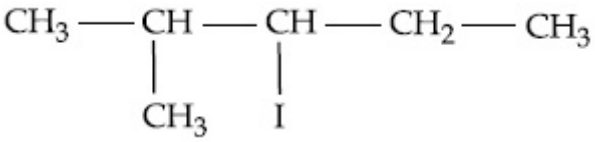
Options :

70819152901. 

70819152902. 

70819152903.

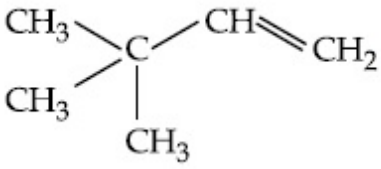




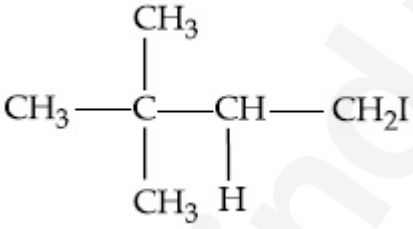
70819152904.

Question Number : 41 Question Id : 70819115914 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

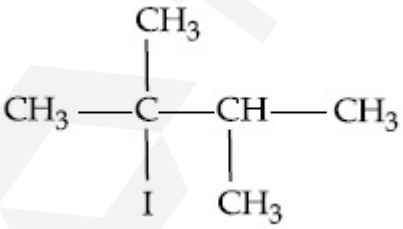
Correct Marks : 4 Wrong Marks : 1

 ସହ HI ପ୍ରତିକ୍ରିୟା କରି କେଉଁ ମୁଖ୍ୟ ଉତ୍ପାଦ ତିଆରି କରିଥାଏ ?

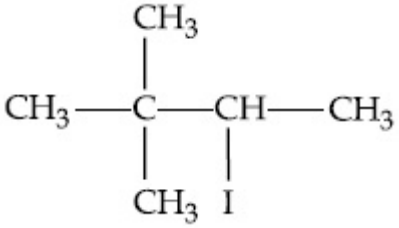
Options :



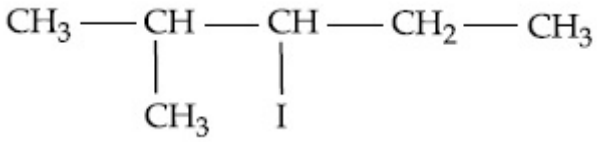
70819152901.



70819152902.



70819152903.

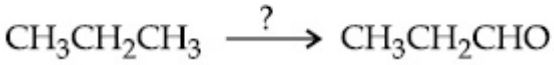


70819152904.

Question Number : 42 Question Id : 70819115915 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 :

70819152905. Copper at high temperature and pressure

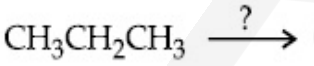
70819152906. Molybdenum oxide

70819152907. Manganese acetate

70819152908. Potassium permanganate

Question Number : 42 Question Id : 70819115915 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

 ପାଇଁ ନିମ୍ନଲିଖିତ କେଉଁ ଅଭିକର୍ମକ ବ୍ୟବହାର କରାଯାଏ ?

Options :

70819152905. ଉଚ୍ଚ ତାପମାତ୍ରା ଏବଂ ଚାପରେ ଥିବା କପର

70819152906. ମୋଲିବେଡନମ୍ ଅକ୍ସାଇଡ୍

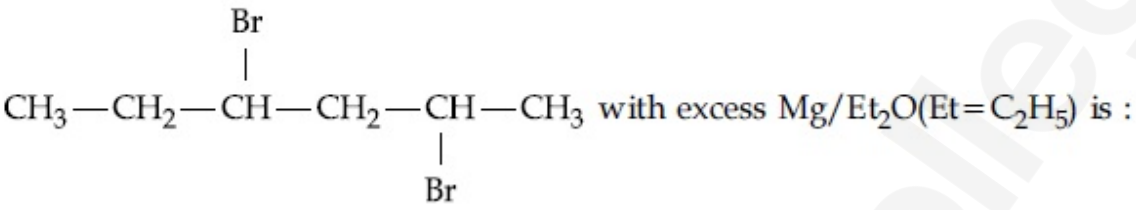
70819152907. ମାଙ୍ଗାନିଜ୍ ଏସିଟେଟ୍

70819152908. ପଟାସିୟମ୍ ପରମାଙ୍ଗାନେଟ୍

Question Number : 43 Question Id : 70819115916 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

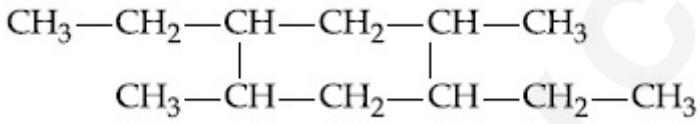
Correct Marks : 4 Wrong Marks : 1

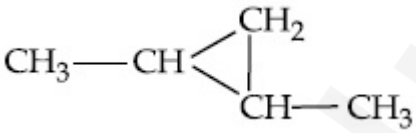
The product formed in the first step of the reaction of

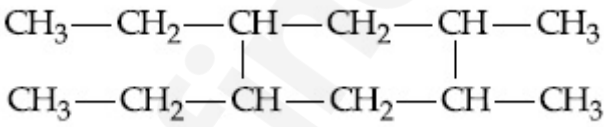


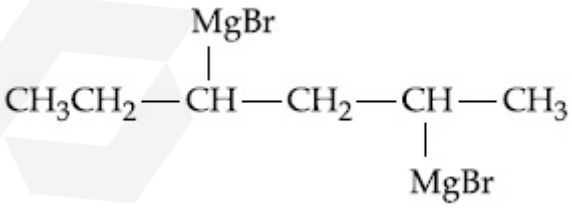
with excess $Mg/Et_2O(Et=C_2H_5)$ is :

Options :

70819152909. 

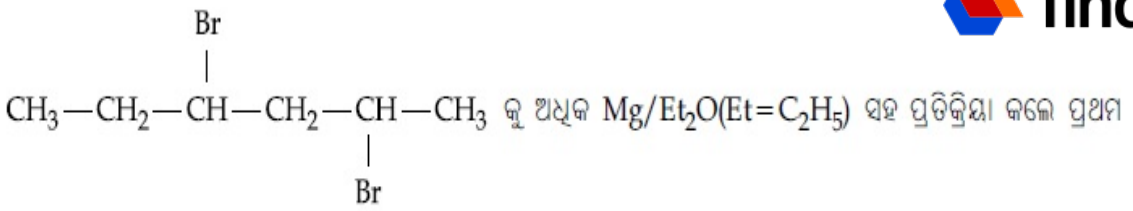
70819152910. 

70819152911. 

70819152912. 

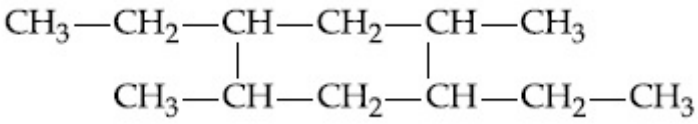
Question Number : 43 Question Id : 70819115916 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

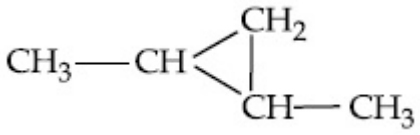
Correct Marks : 4 Wrong Marks : 1

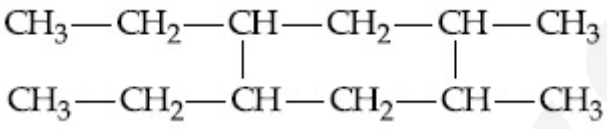


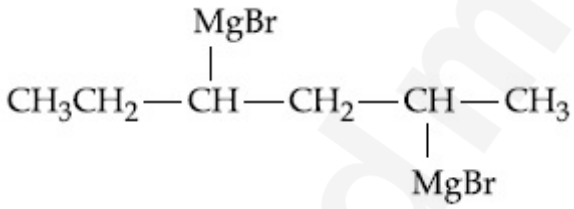
$CH_3—CH_2—CH(Br)—CH_2—CH(Br)—CH_3$ କୁ ଅଧିକ $Mg/Et_2O(Et=C_2H_5)$ ସହ ପ୍ରତିକ୍ରିୟା କଲେ ପ୍ରଥମ ସୋପାନରେ ମିଳୁଥିବା ଉତ୍ପାଦଟି ହେଉଛି :

Options :

70819152909. 

70819152910. 

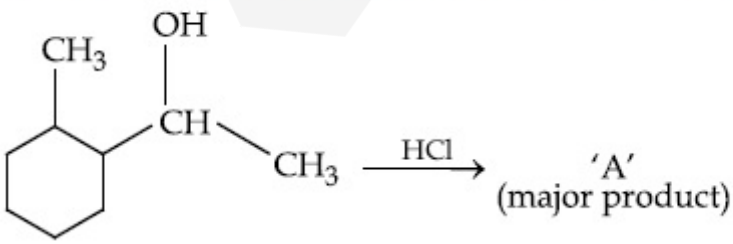
70819152911. 

70819152912. 

Question Number : 44 Question Id : 70819115917 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

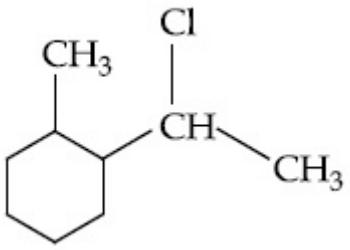
Correct Marks : 4 Wrong Marks : 1

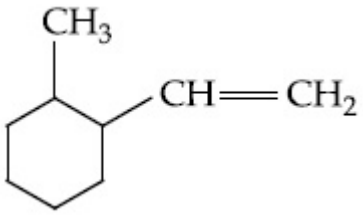
What is the final product (major) 'A' in the given reaction ?

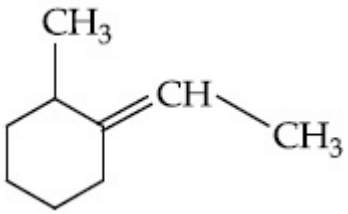


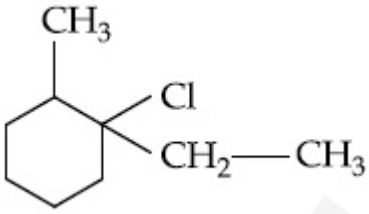
Options :

70819152913.



70819152914. 

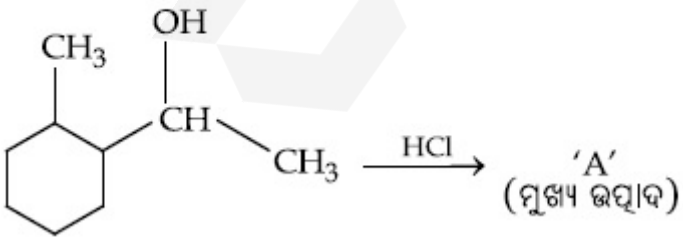
70819152915. 

70819152916. 

Question Number : 44 Question Id : 70819115917 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

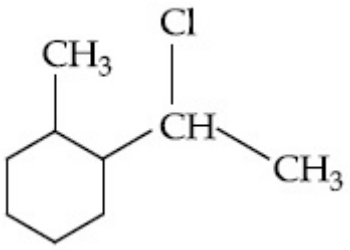
Correct Marks : 4 Wrong Marks : 1

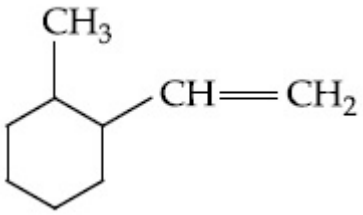
ଦତ୍ତ ପ୍ରତିକ୍ରିୟାରେ ଅନ୍ତିମ ମୁଖ୍ୟ ଉତ୍ପାଦଟି 'A' ଟି କଣ ?

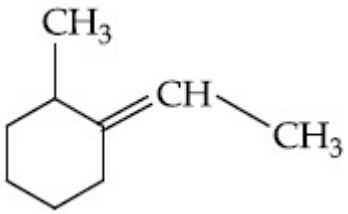


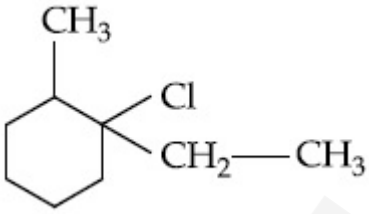
Options :

70819152913.



70819152914. 

70819152915. 

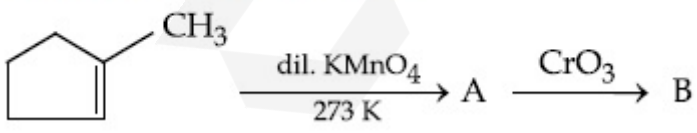
70819152916. 

Question Number : 45 Question Id : 70819115918 Question Type : MCQ Option Shuffling : Yes

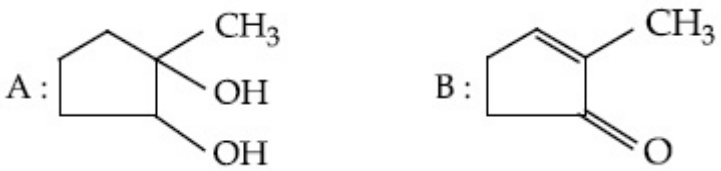
Is Question Mandatory : No

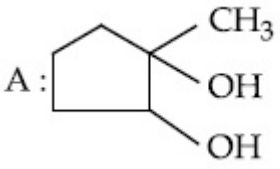
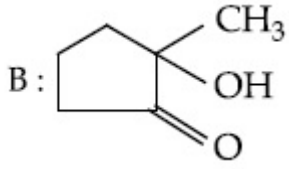
Correct Marks : 4 Wrong Marks : 1

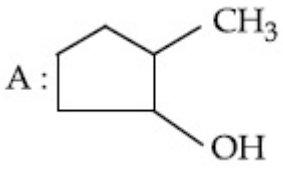
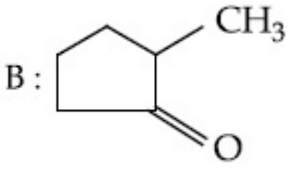
Identify products A and B.

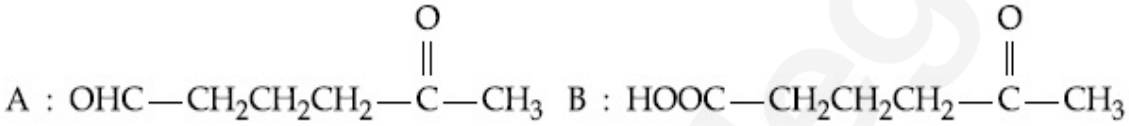


Options :

70819152917. 

70819152918.  

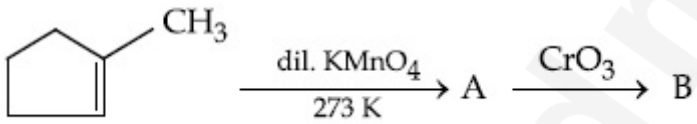
70819152919.  

70819152920. 

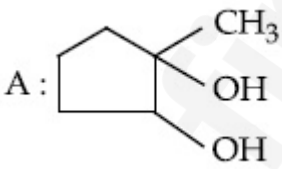
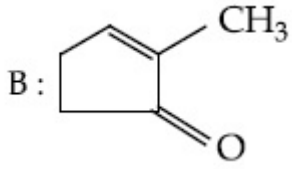
Question Number : 45 Question Id : 70819115918 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

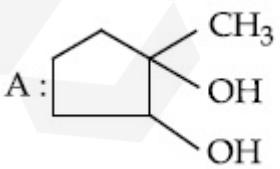
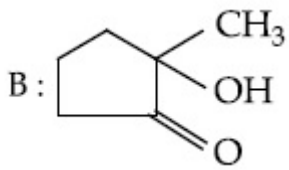
Correct Marks : 4 Wrong Marks : 1

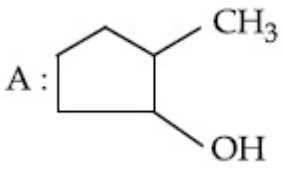
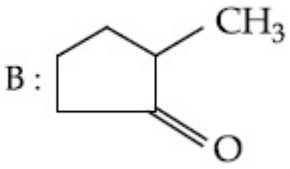
ଉତ୍ପାଦ A ଏବଂ B କୁ ଚିହ୍ନାଅ :



Options :

70819152917.  

70819152918.  

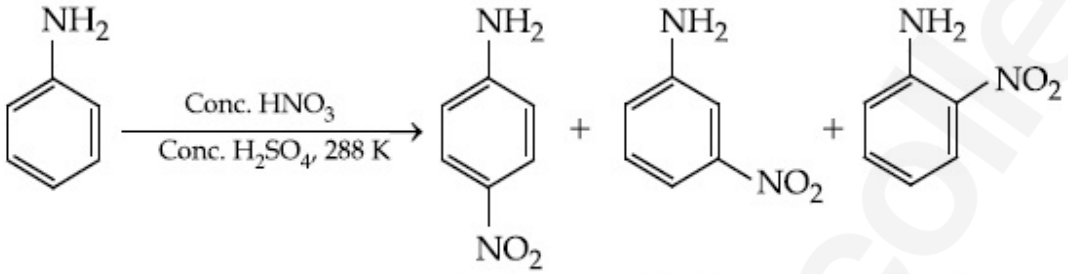
70819152919.  

70819152920. A : $OHC-CH_2CH_2CH_2-\overset{\overset{O}{\|}}{C}-CH_3$ B : $HOOC-CH_2CH_2CH_2-\overset{\overset{O}{\|}}{C}-CH_3$

Question Number : 46 Question Id : 70819115919 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 :



[A] 51% [B] 47% [C] 2%

Options :

70819152921. $-NH_2$ group is highly *meta*-directive

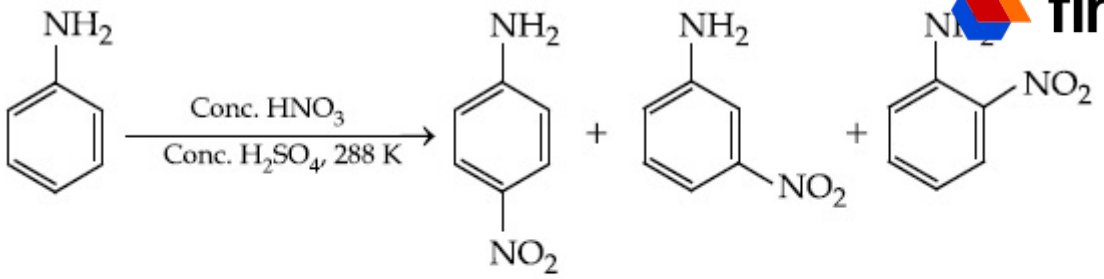
70819152922. $-NO_2$ substitution always takes place at *meta*-position

70819152923. Formation of anilinium ion

70819152924. low temperature

Question Number : 46 Question Id : 70819115919 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



ଉପର ଲିଖିତ ପ୍ରତିକ୍ରିୟାରେ କାହିଁକି ମେଟା ନାଇଟ୍ରୋ ଉତ୍ପାଦ ମଧ୍ୟ ତିଆରି ହୁଏ, କାରଣ ହେଉଛି :

Options :

70819152921. $-NH_2$ ଅଧିକ ମେଟା ସଂଚାଳକ

70819152922. $-NO_2$ ମେଟା ସ୍ଥାନରେ ସର୍ବଦା ପ୍ରତିସ୍ଥାପନ ହୁଏ

70819152923. ଆନିଲିନିୟମ୍ ଆୟନ ଗଠନ

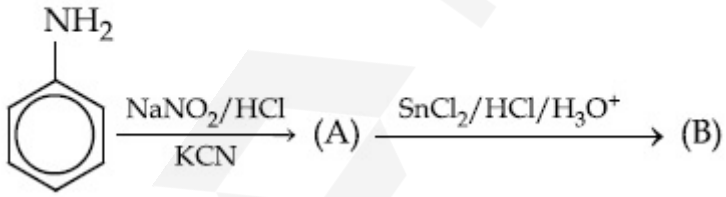
70819152924. କମ୍ ତାପମାତ୍ରା

Question Number : 47 Question Id : 70819115920 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

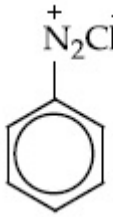
Correct Marks : 4 Wrong Marks : 1

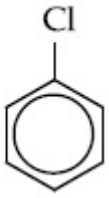
'A' and 'B' in the following reactions are :

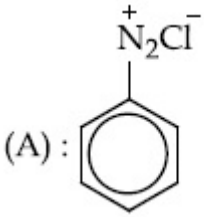


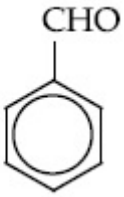
Options :

70819152925.

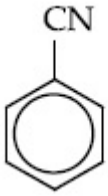
(A) : 

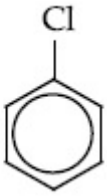
(B) : 

(A) : 

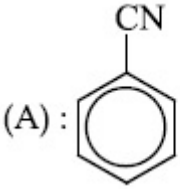
(B) : 

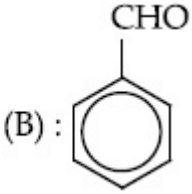
70819152926.

(A) : 

(B) : 

70819152927.

(A) : 

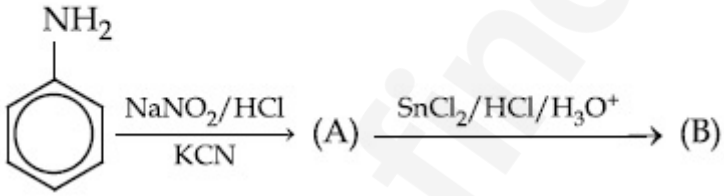
(B) : 

70819152928.

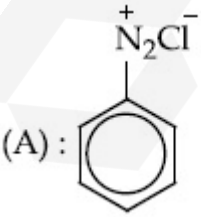
Question Number : 47 Question Id : 70819115920 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

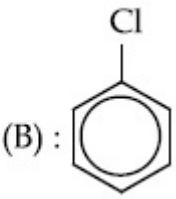
Correct Marks : 4 Wrong Marks : 1

ନିମ୍ନ ପ୍ରତିକ୍ରିୟାରେ 'A' ଏବଂ 'B' ହେଉଛନ୍ତି :



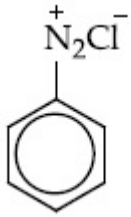
Options :

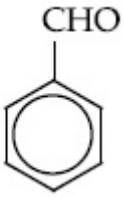
(A) : 

(B) : 

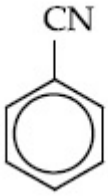
70819152925.

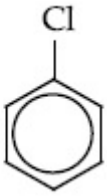
70819152926.

(A) : 

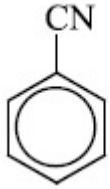
(B) : 

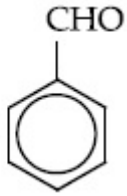
70819152927.

(A) : 

(B) : 

70819152928.

(A) : 

(B) : 

Question Number : 48 Question Id : 70819115921 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 :

70819152929. (a) → (i), (b) → (ii), (c) → (iii), (d) → (iv)

70819152930. (a) → (iv), (b) → (iii), (c) → (ii), (d) → (i)

70819152931. (a) → (ii), (b) → (i), (c) → (iv), (d) → (iii)

70819152932. (a) → (iii), (b) → (iv), (c) → (i), (d) → (ii)

Question Number : 48 Question Id : 70819115921 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ତାଲିକା I କୁ ତାଲିକା II ସହିତ ମିଳାଅ :

	ତାଲିକା I (ମନୋମର)		ତାଲିକା II (ପଲିମର୍)
(a)	କାପ୍ରୋଲାକ୍ଟମ୍	(i)	ପ୍ରାକୃତିକ ରବର
(b)	2-କ୍ଲୋରୋ-1,3-ବ୍ୟୁଟାଡାଇନ୍	(ii)	ବୁନା-N
(c)	ଆଇସୋପ୍ରିନ୍	(iii)	ନାଇଲନ୍ 6
(d)	ଆକ୍ରିଲୋନାଇଟ୍ରାଇଲ୍	(iv)	ନିଓପ୍ରିନ୍

ନିମ୍ନଲିଖିତ ବିକଳ୍ପରୁ ସଠିକ୍ ଉତ୍ତରଟି ବାଛ :

Options :

70819152929. (a) → (i), (b) → (ii), (c) → (iii), (d) → (iv)

70819152930. (a) → (iv), (b) → (iii), (c) → (ii), (d) → (i)

70819152931. (a) → (ii), (b) → (i), (c) → (iv), (d) → (iii)

70819152932. (a) → (iii), (b) → (iv), (c) → (i), (d) → (ii)

Question Number : 49 Question Id : 70819115922 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 :

70819152933. vander Waals forces

70819152934. Covalent bonding

70819152935. Ionic bonding

70819152936. Hydrogen bonding

Question Number : 49 Question Id : 70819115922 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ନିମ୍ନଲିଖିତ ମଧ୍ୟରୁ କେଉଁ ପାରସ୍ପରିକ କ୍ରିୟାଟି ପ୍ରୋଟିନ୍‌ର ଆଲଫା ହେଲିକ୍ସ ଆକୃତିର ସ୍ଥିରତା ପାଇଁ ଦାୟୀ ?

Options :

70819152933. ଭେଣ୍ଡରୱାଲ୍‌ଙ୍କ ବଳ

70819152934. ସହଯୋଜୀ ବନ୍ଧ

70819152935. ଆୟନିକ୍ ବନ୍ଧ

70819152936. ହାଇଡ୍ରୋଜେନ୍ ବନ୍ଧ

Question Number : 50 Question Id : 70819115923 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 :

70819152937. Both Statement I and Statement II are true

70819152938. Both Statement I and Statement II are false

70819152939. Statement I is true but Statement II is false

70819152940. Statement I is false but Statement II is true

Question Number : 50 Question Id : 70819115923 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ନିମ୍ନରେ ଦୁଇଟି ବିବୃତି ଦିଆଯାଇଛି :

ବିବୃତି I : ଲୁମିନସ୍ ଅଗ୍ନିଶିଖାରେ ରଙ୍ଗହିନ କ୍ୟୁପ୍ରିକ୍ ମେଟାବୋରେଟ୍ ବିଜାରିତ ହୋଇ କ୍ୟୁପ୍ରସ୍‌ମେଟାବୋରେଟ୍ ହୁଏ ।

ବିବୃତି II : ବୋରିକ୍ ଆନ୍‌ହାଇଡ୍ରାଇଡ୍ ଏବଂ କପର ସଲ୍‌ଫେଟକୁ ଏକ ନନ୍ ଲୁମିନସ୍ ଅଗ୍ନିଶିଖାରେ ଉତ୍ତପ୍ତ କଲେ କ୍ୟୁପ୍ରସ୍ ମେଟାବୋରେଟ୍ ମିଳେ ।

ଉପରୋକ୍ତ ବିବୃତି ଅନୁସାରେ ନିମ୍ନଲିଖିତ ବିକଳ୍ପ ମଧ୍ୟରୁ ସଠିକ୍ ଉତ୍ତରଟି ବାଛ :

Options :

70819152937. ବିବୃତି I ଏବଂ ବିବୃତି II ଉଭୟ ସତ୍ୟ

70819152938. ବିବୃତି I ଏବଂ ବିବୃତି II ଉଭୟ ଅସତ୍ୟ

70819152939. ବିବୃତି I ସତ୍ୟ କିନ୍ତୁ ବିବୃତି II ଅସତ୍ୟ

70819152940. ବିବୃତି I ଅସତ୍ୟ କିନ୍ତୁ ବିବୃତି II ସତ୍ୟ

Chemistry Section B

Section Id : 708191601

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 :	708191881
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 70819115924 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 : 70819115924 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

250 ମିଲିଲିଟରର ଏକ ଜଳୀୟ ଦ୍ରବଣ ପାଇଁ 4.5 ଗ୍ରାମ୍ ଯୌଗିକ A ବ୍ୟବହୃତ ହୁଏ । ଉକ୍ତ ଦ୍ରବଣର ମୋଲାରିଟି M ରେ ହେଉଛି $x \times 10^{-1}$ । x ର ମୂଲ୍ୟ ହେଉଛି _____ । (ପୂର୍ଣ୍ଣ ସଂଖ୍ୟାରେ ଉତ୍ତର)

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 : 70819115925 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 : 70819115925 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ବଡ଼ି ସେଣ୍ଟରଡ୍ କ୍ୟୁବିକ୍‌ରେ ଏକ ପରମାଣୁର ଉପ ସହସଂଯୋଜକ ସଂଖ୍ୟା ହେଉଛି _____ ।
(ଲାଟିସ୍‌ଟି ପରମାଣୁରେ ଗଠନ ହୋଇଛି ବୋଲି ଗ୍ରହଣ କର)

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 : 70819115926 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 $\frac{\lambda_{Li}}{\lambda_p}$ 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 : 70819115926 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ଏକ ପ୍ରୋଟନ୍ ଏବଂ Li^{3+} ନ୍ୟୁକ୍ଲିୟସ୍‌କୁ ସମାନ ବିଭବ ଦ୍ୱାରା ତ୍ୱରାନ୍ୱିତ କରାଗଲା । ଯଦି Li^{3+} ଏବଂ ପ୍ରୋଟନ୍‌ର ଡିବ୍ରୋଗ୍ଲାଇ ତରଙ୍ଗ ଦୈର୍ଘ୍ୟ ଯଥାକ୍ରମେ λ_{Li} ଏବଂ λ_p ହୁଅନ୍ତି ତାହେଲେ $\frac{\lambda_{Li}}{\lambda_p}$ ର ମୂଲ୍ୟ ହେଉଛି $x \times 10^{-1}$ । x ର ମୂଲ୍ୟ ହେଉଛି _____ । (ନିକଟତମ ପୂର୍ଣ୍ଣସଂଖ୍ୟାରେ ଉତ୍ତର)
(Li^{3+}ର ବସ୍ତୁତ୍ୱ = 8.3 ପ୍ରୋଟନ୍‌ର ବସ୍ତୁତ୍ୱ)

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 : 70819115927 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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

[$R = 8.31$ J $mol^{-1}K^{-1}$ 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 : 70819115927 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

300 K ଏବଂ 1 ଏଟମସ୍‌ଫିଅରରେ ଏକ ପ୍ରତିକ୍ରିୟା $A_{(g)} \rightarrow B_{(g)}$ ର ସାମ୍ୟାବସ୍ଥା ସ୍ଥିରାଙ୍କର ମୂଲ୍ୟ 100.0 ସହ ସମାନ । 300 K ଏବଂ 1 ଏଟମସ୍‌ଫିଅରରେ ଉକ୍ତ ପ୍ରତିକ୍ରିୟାର $\Delta_r G$ ର ମୂଲ୍ୟ J mol^{-1}ରେ ହେଉଛି $-xR$ । ଯେଉଁଠି x ହେଉଛି _____ । (ପୂର୍ଣ୍ଣସଂଖ୍ୟା ଉତ୍ତର)

($R = 8.31$ J $mol^{-1}K^{-1}$ 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 : 55 Question Id : 70819115928 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)

[$K_{f(H_2O)} = 1.86$ 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 : 70819115928 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ଯେତେବେଳେ 9.45 ଗ୍ରାମ୍ କ୍ଲୋରୋଏସିଟିକ୍ ଅମ୍ଳ 500 ମିଲିଲିଟର ଜଳରେ ମିଶାଯାଏ ଏହାର ହିମାଙ୍କ 0.5° ସେଣ୍ଟିଗ୍ରେଡ୍ କମିଯାଏ । କ୍ଲୋରୋଏସିଟିକ୍ ଅମ୍ଳର ଅଣୁ ପୃଥକୀକରଣ ସ୍ଥିରାଙ୍କ ହେଉଛି $x \times 10^{-3}$ । x ର ମୂଲ୍ୟ ହେଉଛି _____ ।
(ନିକଟତମ ପୂର୍ଣ୍ଣ ସଂଖ୍ୟା)
$(K_{f(H_2O)} = 1.86 \text{ K kg mol}^{-1})$

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 : 70819115929 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 $Cl_{2(g)} \rightleftharpoons 2Cl_{(g)}$ 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 : 70819115929 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

1990 K ଏବଂ 1 atm ଚାପରେ ଥିବା ପ୍ରତିକ୍ରିୟାଶୀଳ ମିଶ୍ରଣରେ ସମାନ ସଂଖ୍ୟକ Cl_2 ଅଣୁ ଏବଂ Cl ପରମାଣୁ ଅଛନ୍ତି । ପ୍ରତିକ୍ରିୟା $Cl_{2(g)} \rightleftharpoons 2Cl_{(g)}$ ର ଉପରୋକ୍ତ ଅବସ୍ଥାରେ K_p ର ମୂଲ୍ୟ ହେଉଛି $x \times 10^{-1}$ । x ର ମୂଲ୍ୟ ହେଉଛି _____ । (ପୂର୍ଣ୍ଣସଂଖ୍ୟା ଉତ୍ତର)

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 : 70819115930 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The reaction of sulphur in alkaline medium is given below :

$$S_{8(s)} + a\ OH^-_{(aq)} \longrightarrow b\ S^{2-}_{(aq)} + c\ S_2O_3^{2-}{}_{(aq)} + d\ H_2O_{(l)}$$

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 : 70819115930 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ସଲ୍‌ଫରର କ୍ଷାରୀୟ ମାଧ୍ୟମରେ ପ୍ରତିକ୍ରିୟା ନିମ୍ନରେ ଦିଆଯାଇଛି :

$$S_{8(s)} + a\ OH^-_{(aq)} \longrightarrow b\ S^{2-}_{(aq)} + c\ S_2O_3^{2-}_{(aq)} + d\ H_2O_{(l)}$$

'a' ର ମୂଲ୍ୟ ହେଉଛି _____ । (ପୂର୍ଣ୍ଣସଂଖ୍ୟାରେ ଉତ୍ତର)

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 : 70819115931 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 $3.3 \times 10^{-4}\ s^{-1}$ 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 : 70819115931 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ଏକ ପ୍ରଥମ କ୍ରମ ପ୍ରକ୍ରିୟାରେ ସାଇକ୍ଲୋବ୍ୟୁଟେନ୍ ଗ୍ୟାସ୍ ସମାବୟବୀକରଣ ହୋଇ ବ୍ୟୁଟାଡାଇନ୍ ହୋଇଯାଏ । ପ୍ରକ୍ରିୟାର 'k' ର ମୂଲ୍ୟ 153°C ରେ $3.3 \times 10^{-4}\ s^{-1}$ । ଉପରୋକ୍ତ ତାପମାତ୍ରାରେ ସମାବୟବୀକରଣ 40% ସମ୍ପୂର୍ଣ୍ଣ କରିବା ପାଇଁ ଆବଶ୍ୟକୀୟ ସମୟ ମିନିଟ୍‌ରେ ହେଉଛି _____ । (ନିକଟତମ ପୂର୍ଣ୍ଣସଂଖ୍ୟାରେ ପରିଣତ କର)

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 : 70819115932 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 : 70819115932 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ନିମ୍ନଲିଖିତ ମଧ୍ୟରୁ ଉଭୟଧର୍ମୀ ଯୌଗିକଗୁଡ଼ିକର ସଂଖ୍ୟା ହେଉଛି _____ ।

(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 : 60 Question Id : 70819115933 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The stepwise formation of $[Cu(NH_3)_4]^{2+}$ is given below :

$$Cu^{2+} + NH_3 \overset{K_1}{\rightleftharpoons} [Cu(NH_3)]^{2+}$$

$$[Cu(NH_3)]^{2+} + NH_3 \overset{K_2}{\rightleftharpoons} [Cu(NH_3)_2]^{2+}$$

$$[Cu(NH_3)_2]^{2+} + NH_3 \overset{K_3}{\rightleftharpoons} [Cu(NH_3)_3]^{2+}$$

$$[Cu(NH_3)_3]^{2+} + NH_3 \overset{K_4}{\rightleftharpoons} [Cu(NH_3)_4]^{2+}$$

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 $[Cu(NH_3)_4]^{2+}$ 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 : 70819115933 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$[Cu(NH_3)_4]^{2+}$ ଗଠନର ସୋପାନକ୍ରମ ନିମ୍ନରେ ଦିଆଯାଇଛି :

$$Cu^{2+} + NH_3 \overset{K_1}{\rightleftharpoons} [Cu(NH_3)]^{2+}$$

$$[Cu(NH_3)]^{2+} + NH_3 \overset{K_2}{\rightleftharpoons} [Cu(NH_3)_2]^{2+}$$

$$[Cu(NH_3)_2]^{2+} + NH_3 \overset{K_3}{\rightleftharpoons} [Cu(NH_3)_3]^{2+}$$

$$[Cu(NH_3)_3]^{2+} + NH_3 \overset{K_4}{\rightleftharpoons} [Cu(NH_3)_4]^{2+}$$

ସ୍ଥିରତା ସ୍ଥିରାଙ୍କ K_1, K_2, K_3 ଏବଂ K_4 ଯଥାକ୍ରମେ 10^4, 1.58×10^3, 5×10^2 ଏବଂ 10^2 । $[Cu(NH_3)_4]^{2+}$ ର ଅଣୁ ପୃଥକୀକରଣର ତମାମ ସାମ୍ୟ ସ୍ଥିରାଙ୍କ $x \times 10^{-12}$ । x ର ମୂଲ୍ୟ ହେଉଛି _____ ।
(ନିକଟତମ ପୂର୍ଣ୍ଣସଂଖ୍ୟାରେ ଉତ୍ତର)

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 :	708191602
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 :	708191882

Question Shuffling Allowed : Yes

Question Number : 61 Question Id : 70819115934 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

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

Options :

70819152951. one-one but not onto

70819152952. onto but not one-one

70819152953. neither one-one nor onto

70819152954. both one-one and onto

Question Number : 61 Question Id : 70819115934 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ମନେକର $f : \mathrm{R} \to \mathrm{R}$ କୁ $f(x) = 2x - 1$ ଏବଂ $g : \mathrm{R} - \{1\} \to \mathrm{R}$ କୁ $g(x) = \dfrac{x - \frac{1}{2}}{x - 1}$ ଭାବେ ବର୍ଣ୍ଣନା କରାଯାଏ,

ତେବେ ଯୌଗିକ ଫଳନ $f(g(x))$ ଅଟେ :

Options :

70819152951. ଏକ-ଏକ କିନ୍ତୁ ଅନ୍ଟୁ ନୁହେଁ

70819152952. ଅନ୍ଟୁ ଅଟେ କିନ୍ତୁ ଏକ-ଏକ ନୁହେଁ

70819152953. ଏକ-ଏକ ନୁହେଁ ବା ଅନ୍ଟୁ ନୁହେଁ

70819152954. ଉଭୟ ଏକ-ଏକ ଓ ଅନ୍ଟୁ

Question Number : 62 Question Id : 70819115935 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 :

70819152955. $x^2-2x+136=0$

70819152956. $x^2-2x+16=0$

70819152957. $x^2-2x+8=0$

70819152958. $x^2-2x+2=0$

Question Number : 62 Question Id : 70819115935 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ମନେକର p ଓ q ଦୁଇଟି ଯୁକ୍ତ ସଂଖ୍ୟା ଯେପରିକି $p+q=2$ ଏବଂ $p^4+q^4=272$ । ତେବେ p ଓ q ମୂଳ (ବୀଜ) ଥିବା ସମୀକରଣଟି :

Options :

70819152955. $x^2-2x+136=0$

70819152956. $x^2-2x+16=0$

70819152957. $x^2-2x+8=0$

70819152958. $x^2-2x+2=0$

Question Number : 63 Question Id : 70819115936 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 :

70819152959. $k\neq 3, m\neq\frac{4}{5}$

70819152960. $k=3, m=\frac{4}{5}$

70819152961. $k=3, m\neq\frac{4}{5}$

70819152962. $k\neq 3, m\in R$

Question Number : 63 Question Id : 70819115936 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଉକ୍ତ ଏକଘାତ ସମୀକରଣ ସମୂହ

$3x-2y-kz=10$

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

$x+2y-z=5m$

ଅସଙ୍ଗତ ଅଟେ ଯଦି :

Options :

70819152959. $k \neq 3, m \neq \frac{4}{5}$

70819152960. $k = 3, m = \frac{4}{5}$

70819152961. $k = 3, m \neq \frac{4}{5}$

70819152962. $k \neq 3, m \in R$

Question Number : 64 Question Id : 70819115937 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The value of

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

Options :

70819152963. $2^{16}-1$

70819152964. $2^{13}-14$

70819152965. $2^{13}-13$

70819152966. 2^{14}

Question Number : 64 Question Id : 70819115937 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$-{}^{15}C_1 + 2\cdot{}^{15}C_2 - 3\cdot{}^{15}C_3 + \cdots - 15\cdot{}^{15}C_{15} + {}^{14}C_1 + {}^{14}C_3 + {}^{14}C_5 + \cdots + {}^{14}C_{11}$
ର ମୂଲ୍ୟ ଅଟେ :

Options :

70819152963. $2^{16}-1$

70819152964. $2^{13}-14$

70819152965. $2^{13}-13$

70819152966. 2^{14}

Question Number : 65 Question Id : 70819115938 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If $e^{\left(\cos^2 x+\cos^4 x+\cos^6 x+\ldots\infty\right)\log_e 2}$ 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 :

70819152967. $\frac{1}{2}$

70819152968. $\sqrt{3}$

70819152969. $\frac{3}{2}$

70819152970. $2\sqrt{3}$

Question Number : 65 Question Id : 70819115938 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଯଦି $e^{\left(\cos^2 x+\cos^4 x+\cos^6 x+\ldots\infty\right)\log_e 2}$, ସମୀକରଣ $t^2-9t+8=0$, କୁ ସିଦ୍ଧ କରେ, ତେବେ $\frac{2\sin x}{\sin x+\sqrt{3}\cos x}\left(0<x<\frac{\pi}{2}\right)$ ର ମୂଲ୍ୟ ଅଟେ :

Options :

70819152967. $\frac{1}{2}$

70819152968. $\sqrt{3}$

70819152969. $\frac{3}{2}$

70819152970. $2\sqrt{3}$

Question Number : 66 Question Id : 70819115939 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$\lim\limits_{x\to 0}\frac{\int_0^{x^2}\left(\sin\sqrt{t}\right)dt}{x^3}$ is equal to :

Options :

70819152971. $\frac{2}{3}$

70819152972.

$\frac{3}{2}$

70819152973. $\frac{1}{15}$

70819152974. 0

Question Number : 66 Question Id : 70819115939 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$\lim_{x\to 0} \frac{\int_0^{x^2} \left(\sin\sqrt{t}\right) dt}{x^3}$ ର ମୂଲ୍ୟ ସମାନ :

Options :

70819152971. $\frac{2}{3}$

70819152972. $\frac{3}{2}$

70819152973. $\frac{1}{15}$

70819152974. 0

Question Number : 67 Question Id : 70819115940 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 :

70819152975. increases in $\left[\frac{1}{2}, \infty\right)$

70819152976. decreases in $\left[\frac{1}{2}, \infty\right)$

70819152977. increases in $\left(-\infty, \frac{1}{2}\right]$

70819152978. decreases in $\left(-\infty, \frac{1}{2}\right]$

Question Number : 67 Question Id : 70819115940 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819152975. $\left[\frac{1}{2}, \infty\right)$ ଅନ୍ତରାଳରେ ବର୍ଦ୍ଧିଷ୍ଣୁ

70819152976. $\left[\frac{1}{2}, \infty\right)$ ଅନ୍ତରାଳରେ କ୍ଷୟୀଷ୍ଣୁ

70819152977. $\left(-\infty, \frac{1}{2}\right]$ ଅନ୍ତରାଳରେ ବର୍ଦ୍ଧିଷ୍ଣୁ

70819152978. $\left(-\infty, \frac{1}{2}\right]$ ଅନ୍ତରାଳରେ କ୍ଷୟୀଷ୍ଣୁ

Question Number : 68 Question Id : 70819115941 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 :

70819152979. 1050

70819152980. 1625

70819152981. 560

70819152982. 575

Question Number : 68 Question Id : 70819115941 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

6 ଜଣ ଭାରତୀୟ ଓ 8 ଜଣ ବିଦେଶୀଙ୍କ ମଧ୍ୟରୁ ଏକ ବୈଜ୍ଞାନିକ କମିଟି ଗଠନ କରାଯିବ, ଯାହା ମଧ୍ୟରେ ଅତିକମ୍‌ରେ 2 ଜଣ ଭାରତୀୟ ଓ ଭାରତୀୟଙ୍କ ସଂଖ୍ୟାର ଦୁଇଗୁଣ ବିଦେଶୀ ଅନ୍ତର୍ଭୁକ୍ତ । ତେବେ କମିଟି ଗଢାଯାଇପାରିବାର ପ୍ରକାର ସଂଖ୍ୟା ଅଟେ :

Options :

70819152979. 1050

70819152980. 1625

70819152981. 560

70819152982. 575

Question Number : 69 Question Id : 70819115942 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If $f: \mathrm{R} \to \mathrm{R}$ 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 :

70819152983. discontinuous only at $x = 1$

70819152984. discontinuous at all integral values of x except at $x = 1$

70819152985. continuous only at $x = 1$

70819152986. continuous for every real x

Question Number : 69 Question Id : 70819115942 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଯଦି $f: \mathrm{R} \to \mathrm{R}$ ଏକ ଫଳନକୁ $f(x) = [x-1] \cos\left(\frac{2x-1}{2}\right)\pi$, ($[\cdot]$ ର ଅର୍ଥ ଏକ ସର୍ବାଧିକ ପୂର୍ଣ୍ଣସଂଖ୍ୟା ଫଳନ)

ଏହିପରି ପ୍ରକାଶ କରାଯାଏ, ତେବେ ଫଳନ f ଟି :

Options :

70819152983. କେବଳ $x = 1$ ଠାରେ ନିରବଚ୍ଛିନ୍ନ ନୁହେଁ (ବିଚ୍ଛିନ୍ନ)

70819152984. କେବଳ $x = 1$ କୁ ଛାଡ଼ି x ର ସମସ୍ତ ପୂର୍ଣ୍ଣ ସଂଖ୍ୟା ମୂଲ୍ୟଠାରେ ନିରବଚ୍ଛିନ୍ନ ନୁହେଁ (ବିଚ୍ଛିନ୍ନ)

70819152985. କେବଳ $x = 1$ ଠାରେ ନିରବଚ୍ଛିନ୍ନ ଅଟେ (ଅବିଚ୍ଛିନ୍ନ)

70819152986. x ର ସମସ୍ତ ବାସ୍ତବ ମୂଲ୍ୟ ପାଇଁ ନିରବଚ୍ଛିନ୍ନ ଅଟେ (ଅବିଚ୍ଛିନ୍ନ)

Question Number : 70 Question Id : 70819115943 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 :

70819152987. $(3, 1)$

70819152988. $(1, 3)$

70819152989. $(-1, 3)$

70819152990. $(1, -3)$

Question Number : 70 Question Id : 70819115943 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଯଦି $\int\frac{\cos x-\sin x}{\sqrt{8-\sin 2x}}dx = a\sin^{-1}\left(\frac{\sin x+\cos x}{b}\right)+c$, ଯେଉଁଠାରେ c ଏକ ସମାକଳନ ସ୍ଥିରାଙ୍କ, ତେବେ ଶୃଙ୍ଖଳ ଯୋଡ଼ି (a, b) ସମାନ :

Options :

70819152987. $(3, 1)$

70819152988. $(1, 3)$

70819152989. $(-1, 3)$

70819152990. $(1, -3)$

Question Number : 71 Question Id : 70819115944 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 :

70819152991. $24\pi + 3\sqrt{3}$

70819152992. $24\pi - 3\sqrt{3}$

70819152993. $12\pi + 3\sqrt{3}$

70819152994. $12\pi - 3\sqrt{3}$

Question Number : 71 Question Id : 70819115944 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$x^2+y^2=36$ ବୃତ୍ତଟିର ଅଂଶର କ୍ଷେତ୍ରଫଳ (ବର୍ଗ ଏକକରେ), ଯାହା $y^2=9x$ ପାରାବୋଲାର ବହିର୍ଭାଗ, ଅଟେ :

Options :

70819152991. $24\pi + 3\sqrt{3}$

70819152992. $24\pi - 3\sqrt{3}$

70819152993. $12\pi + 3\sqrt{3}$

70819152994. $12\pi - 3\sqrt{3}$

Question Number : 72 Question Id : 70819115945 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 $\frac{dP}{dt} = 0.5P - 450$. If $P(0) = 850$, then the time at which population becomes zero is :

Options :

70819152995. $\log_e 9$

70819152996. $\frac{1}{2}\log_e 18$

70819152997. $\log_e 18$

70819152998. $2\log_e 18$

Question Number : 72 Question Id : 70819115945 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ସମୟ 't' ରେ ଏକ ଜାତିର ଜନସଂଖ୍ୟା $P = P(t)$, $\frac{dP}{dt} = 0.5P - 450$. ସମୀକରଣଟିକୁ ମାନିଥାଏ । ଯଦି $P(0) = 850$, ତେବେ ଗୋଟିଏ ସମୟ, ଯେଉଁ ସମୟରେ ଜନସଂଖ୍ୟା ଶୂନ ହେବ, ତାହା ଅଟେ :

Options :

70819152995. $\log_e 9$

70819152996. $\frac{1}{2}\log_e 18$

70819152997. $\log_e 18$

70819152998. $2\log_e 18$

Question Number : 73 Question Id : 70819115946 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 :

70819152999. A only

70819153000. B only

70819153001. C only

70819153002. All the three

Question Number : 73 Question Id : 70819115946 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଜଣେ ଲୋକ ଏକ ସରଳରେଖା ଉପରେ ଚାଲୁଅଛି । କାର୍ଟେଜୀୟ (କୋଅର୍ଡିନେଟ୍) ଅକ୍ଷ ଦ୍ୱୟରେ ଏହି ସରଳ ରେଖାର ଛେଦାଂଶ ମାନଙ୍କର ପ୍ରତିଲୋମୀ ସଂଖ୍ୟା ଦୁଇଟିର ସମାନ୍ତର ମାଧ୍ୟମାନ (ମଧ୍ୟକ) $\frac{1}{4}$ ଅଟେ । ତିନିଗୋଟି ପଥର A, B ଓ C କୁ ଯଥାକ୍ରମେ (1, 1), (2, 2) ଓ (4, 4) ବିନ୍ଦୁ ସ୍ଥାନରେ ରଖାଯାଇଛି । ତେବେ ପଥରମାନଙ୍କ ମଧ୍ୟରୁ କେଉଁଗୋଟି/ ଗୁଡ଼ିକ ଲୋକଟିର ଚଲାପଥରେ ଅଛି ?

Options :

70819152999. କେବଳ A

70819153000. କେବଳ B

70819153001. କେବଳ C

70819153002. ସମସ୍ତ ତିନିଗୋଟି

Question Number : 74 Question Id : 70819115947 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 :

70819153003. $x = a$

70819153004. $x = -\frac{a}{2}$

70819153005. $x = 0$

70819153006. $x = \frac{a}{2}$

Question Number : 74 Question Id : 70819115947 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ପାରାବୋଲା $y^2=4ax$ ର ଫୋକସ୍ ଓ ପାରାବୋଲାର ଉପରେ ସ୍ଥାନ ବଦଳାଉଥିବା ଏକ ବିନ୍ଦୁକୁ ଯୋଗ କରୁଥିବା ରେଖାଖଣ୍ଡର ମଧ୍ୟବିନ୍ଦୁର ସଂଚାର ପଥ (ଲୋକସ୍) ଅନ୍ୟ ଏକ ପାରାବୋଲା ଯାହାର ନିୟାମକ ରେଖା (ଡାଇରେକ୍ଟ୍ରିକ୍ସ) ଅଟେ :

Options :

70819153003. $x=a$

70819153004. $x=-\frac{a}{2}$

70819153005. $x=0$

70819153006. $x=\frac{a}{2}$

Question Number : 75 Question Id : 70819115948 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 :

70819153007. 0

70819153008. $2t^3$

70819153009. $-t^3$

70819153010. $-2t^3$

Question Number : 75 Question Id : 70819115948 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$P(t, t^3)$ ବିନ୍ଦୁରେ $y=x^3$ ବକ୍ରରେଖା ପ୍ରତି ଅଙ୍କିତ ସ୍ପର୍ଶକ ଯଦି ପୁନର୍ବାର ବକ୍ରରେଖାକୁ Q ବିନ୍ଦୁ ଠାରେ ମିଳିତ ହୁଏ, ତେବେ ଯେଉଁ ବିନ୍ଦୁ PQ କୁ 1 : 2 ଅନୁପାତରେ ଅନ୍ତଃଛେଦ କରେ ତାହାର y -ସ୍ଥାନାଙ୍କ (ଅର୍ଡିନେଟ୍) ଅଟେ :

Options :

70819153007. 0

70819153008. $2t^3$

70819153009. $-t^3$

70819153010. $-2t^3$

Question Number : 76 Question Id : 70819115949 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 :

70819153011. $6x-5y+2z+10=0$

70819153012. $11x+y+17z+38=0$

70819153013. $6x-5y-2z-2=0$

70819153014. $3x-10y-2z+11=0$

Question Number : 76 Question Id : 70819115949 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ବିନ୍ଦୁ $(1, 2, -3)$ ମଧ୍ୟ ଦେଇ ଗତି କରୁଥିବା ଓ $3x+y-2z=5$ ଏବଂ $2x-5y-z=7$ ସମତଳ ଦୁଇଟି ସହ ସମାନ୍ତର ହୋଇଥିବା ସମତଳଟିର ସମୀକରଣ ଅଟେ :

Options :

70819153011. $6x-5y+2z+10=0$

70819153012. $11x+y+17z+38=0$

70819153013. $6x-5y-2z-2=0$

70819153014. $3x-10y-2z+11=0$

Question Number : 77 Question Id : 70819115950 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 $\frac{x-3}{1}=\frac{y-4}{2}=\frac{z-5}{2}$ and the plane $x+y+z=17$ is :

Options :

70819153015. $2\sqrt{19}$

70819153016. $19\sqrt{2}$

70819153017. $\sqrt{38}$

70819153018. 38

Question Number : 77 Question Id : 70819115950 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ରେଖା $\frac{x-3}{1}=\frac{y-4}{2}=\frac{z-5}{2}$ ଏବଂ ସମତଳ $x+y+z=17$ ର ଛେଦ ବିନ୍ଦୁ ଠାରୁ ବିନ୍ଦୁ $(1, 1, 9)$ ର ଦୂରତା

ଅଟେ :

Options :

70819153015. $2\sqrt{19}$

70819153016. $19\sqrt{2}$

70819153017. $\sqrt{38}$

70819153018. 38

Question Number : 78 Question Id : 70819115951 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 :

70819153019. $\frac{1}{32}$

70819153020. $\frac{3}{16}$

70819153021. $\frac{5}{16}$

70819153022. $\frac{1}{2}$

Question Number : 78 Question Id : 70819115951 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଏକ ସାଧାରଣ ପଶାକାଠିକୁ କିଛି ନିର୍ଦ୍ଦିଷ୍ଟ ସ୍ତର ପାଇଁ ଗଡ଼ାଇ ଦିଆଗଲା । ଯଦି 2 ଥର ଅଯୁଗ୍ମ ସଂଖ୍ୟା ମିଳିବା (ପାଇବା)ର ସମ୍ଭାବ୍ୟତା, 3 ଥର ଯୁଗ୍ମ ସଂଖ୍ୟା ମିଳିବା ସମ୍ଭାବ୍ୟତା ସହ ସମାନ, ତେବେ ଅଯୁଗ୍ମ ସଂଖ୍ୟକ ପଦମାନଙ୍କ ପାଇଁ, ଏକ ଅଯୁଗ୍ମ ସଂଖ୍ୟା ମିଳିବାର ସମ୍ଭାବ୍ୟତା ଅଟେ :

Options :

70819153019. $\frac{1}{32}$

70819153020. $\frac{3}{16}$

70819153021. $\frac{5}{16}$

70819153022. $\frac{1}{2}$

Question Number : 79 Question Id : 70819115952 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 :

70819153023. 25

70819153024. 30

70819153025. $20\sqrt{3}$

70819153026. $25\sqrt{3}$

Question Number : 79 Question Id : 70819115952 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ଦୁଇଟି ଭୂଲମ୍ବ ଖମ୍ବକୁ 150 ମିଟର ଦୂରତାରେ ରଖାଯାଇଛି ଏବଂ ଗୋଟିକର ଉଚ୍ଚତା ଅନ୍ୟଟିର 3 ଗୁଣ । ଯଦି ସେମାନଙ୍କ ପାଦ ବିନ୍ଦୁକୁ ଯୋଗ କରୁଥିବା ରେଖାର ମଝି ବିନ୍ଦୁଠାରେ ଜଣେ ଦର୍ଶକ, ସେ ଖମ୍ବମାନଙ୍କର ଶୀର୍ଷ ବିନ୍ଦୁର ଉତ୍ତୋଳନ କୋଣ ଗୁଡ଼ିକୁ ଲକ୍ଷ କରେ ଯେ ସେମାନେ ପରସ୍ପର ଅନୁପୂରକ (କମ୍ପଲିମେଣ୍ଟାରୀ), ତେବେ ସାନ ଖମ୍ବଟିର ଉଚ୍ଚତା (ମିଟରରେ) ଅଟେ :

Options :

70819153023. 25

70819153024. 30

70819153025. $20\sqrt{3}$

70819153026. $25\sqrt{3}$

Question Number : 80 Question Id : 70819115953 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 :

70819153027. $A \wedge (A \vee B)$

70819153028. $A \vee (A \wedge B)$

70819153029. $[A \wedge (A \rightarrow B)] \rightarrow B$

70819153030. $B \rightarrow [A \wedge (A \rightarrow B)]$

Question Number : 80 Question Id : 70819115953 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ନିମ୍ନରେ ଥିବା ଉକ୍ତି ମାନଙ୍କ ମଧ୍ୟରେ, ଯାହା ଏକ ପୁନରୁକ୍ତି (ଟଟୋଲୋଜି) ଅଟେ ସେଇଟି :

Options :

70819153027. $A \wedge (A \vee B)$

70819153028. $A \vee (A \wedge B)$

70819153029. $[\, A \wedge (A \rightarrow B)\,] \rightarrow B$

70819153030. $B \rightarrow [\, A \wedge (A \rightarrow B)\,]$

Mathematics Section B

Section Id :	708191603
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 :	708191883
Question Shuffling Allowed :	Yes

Question Number : 81 Question Id : 70819115954 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If the least and the largest real values of α, for which the equation $z+\alpha|z-1|+2i=0$ ($z\in C$ 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 : 70819115954 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ଯଦି α ର ସର୍ବନିମ୍ନ ଏବଂ ସର୍ବାଧିକ ବାସ୍ତବ ମୂଲ୍ୟ ଯଥାକ୍ରମେ p ଓ q ହୁଏ, ଯେଉଁଥି ପାଇଁ ସମୀକରଣ $z+\alpha|z-1|+2i=0$ ($z\in C, i=\sqrt{-1}$) ର ଏକ ସମାଧାନ ଅଛି, ତେବେ $4(p^2+q^2)$ ସମାନ _____ ।

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 : 70819115955 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 : 70819115955 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ମନେକର ଏକ ସାମ୍ପୁଲ୍ ସ୍ପେସ୍‌ରେ B_i $(i=1, 2, 3)$, 3 ଗୋଟି ସ୍ୱାଧୀନ (ଇଣ୍ଡେପେଣ୍ଡେଣ୍ଟ) ଘଟଣା । B_1 ଘଟଣା ଘଟିବାର ସମ୍ଭାବ୍ୟତା α, B_2 ଘଟଣା ଘଟିବାର ସମ୍ଭାବ୍ୟତା β ଓ B_3 ଘଟଣା ଘଟିବାର ସମ୍ଭାବ୍ୟତା γ ଅଟେ । କୌଣସି ଘଟଣା B_1, B_2, B_3 ନ ଘଟିବାର ସମ୍ଭାବ୍ୟତା p ଏବଂ ଏହି 4 ଗୋଟି ସମ୍ଭାବ୍ୟତା ସମୀକରଣ $(\alpha-2\beta)\,p=\alpha\beta$ ଏବଂ $(\beta-3\gamma)\,p=2\beta\gamma$ କୁ ସିଦ୍ଧ କରେ । (ମାନି ନିଆଯାଏ ଯେ ସମସ୍ତ ସମ୍ଭାବ୍ୟତା (0, 1) ଅନ୍ତରାଳ ମଧ୍ୟରେ ରହେ) । ତେବେ $\frac{P(B_1)}{P(B_3)}$ ସମାନ _____ ।

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 : 70819115956 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 $\alpha\in R$. Suppose $Q=[q_{ij}]$ is a matrix satisfying $PQ=kI_3$ for some non-zero $k\in R$. If $q_{23}=-\frac{k}{8}$ and $|Q|=\frac{k^2}{2}$, then α^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 : 70819115956 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ମନେକର $P=\begin{bmatrix}3 & -1 & -2\\ 2 & 0 & \alpha\\ 3 & -5 & 0\end{bmatrix}$, ଯେଉଁଠାରେ $\alpha\in R$ । $Q=[q_{ij}]$ ଏକ ମାଟ୍ରିକ୍ସ ଯେପରି $PQ=kI_3$, (k କୌଣସି ଏକ ଅଣଶୂନ୍ୟ ବାସ୍ତବ ସଂଖ୍ୟା) ଯଦି $q_{23}=-\frac{k}{8}$ ଏବଂ $|Q|=\frac{k^2}{2}$, ତେବେ α^2+k^2 ସମାନ _____ ।

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 : 70819115957 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^TM 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 : 70819115957 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ମନେକର ସେଟ୍ {0, 1, 2} ର ଉପାଦାନଙ୍କୁ ନେଇ M ଏକ 3×3 ମାଟ୍ରିକ୍ସ । ମାଟ୍ରିକ୍ସ M^TM ର ଡାଇଗୋନାଲ୍ ଉପାଦାନ ମାନଙ୍କର ସମଷ୍ଟି 7 ହେଉଥିଲେ, ଏହିପରି ମାଟ୍ରିକ୍ସ M ତିଆରି କରିବାର ସର୍ବାଧିକ ସଂଖ୍ୟା ଅଟେ _____ ।

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 : 70819115958 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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

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

and $C = \{ 9k + l : k \in N \}$ 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 : 70819115958 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ମନେକର $A=\{n\in N : n$ ଏକ ତିନି ଅଙ୍କ ବିଶିଷ୍ଟ ସଂଖ୍ୟା$\}$

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

ଏବଂ $C=\{9k+l : k\in N\}$, କୌଣସି $l\ (0<l<9)$ ପାଇଁ ଯଦି $A\cap(B\cup C)$ ସେଟ୍‌ର ସମସ୍ତ ଉପାଦାନ ଗୁଡ଼ିକର ମିଶାଣ ଫଳ 274×400, ତେବେ l ସମାନ _____ ।

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 : 70819115959 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 : 70819115959 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$\left(0, \frac{\pi}{2}\right)$ ଅନ୍ତରାଳରେ, ସମୀକରଣ $\frac{4}{\sin x} + \frac{1}{1 - \sin x} = \alpha$, ର ଅତି କମ୍‌ରେ ଗୋଟିଏ ସମାଧାନ ଅଛି । ତେବେ α ର ସର୍ବନିମ୍ନ ମୂଲ୍ୟ ଅଟେ _____.

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 : 70819115960 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 : 70819115960 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ଯଦି $\int_{-a}^{a}(|x|+|x-2|)dx = 22, (a>2)$ ଏବଂ $[x]$ ର ଅର୍ଥ, x ର ମୂଲ୍ୟ ଏକ ପୂର୍ଣ୍ଣସଂଖ୍ୟା ଯାହା x ଠାରୁ ସାନ ବା

ସମାନ, ତେବେ $\int_{a}^{-a}(x+[x])\,dx$ ସମାନ _____ ।

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 : 70819115961 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 : 70819115961 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ଯଦି $x^2+y^2-2x-6y+6=0$ ବୃତ୍ତର ଗୋଟିଏ ବ୍ୟାସ ଅନ୍ୟ ଏକ ବୃତ୍ତ 'C' ର ଜ୍ୟା ହୁଏ, ଯାହାର କେନ୍ଦ୍ରବିନ୍ଦୁ (2, 1), ତେବେ ଏହାର ବ୍ୟାସାର୍ଦ୍ଧ ଅଟେ _____ ।

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 : 70819115962 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 $2\left|\vec{a} + \vec{b} + \vec{c}\right|^2$ 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 : 70819115962 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ତିନିଗୋଟି ସଦିଶ ରାଶି $\vec{a}$, $\vec{b}$ ଓ $\vec{c}$ କୁ ନେବା ଯେପରିକି $\vec{c}$, $\vec{a}$ ଓ $\vec{b}$ ସହ ଏକ ସମତଳ ଉପରେ ଅବସ୍ଥିତ । $\vec{a} \cdot \vec{c} = 7$ ଏବଂ $\vec{b}$, $\vec{c}$ ପ୍ରତି ଲମ୍ବ, ଯେଉଁଠି $\vec{a} = -\hat{i} + \hat{j} + \hat{k}$ ଏବଂ $\vec{b} = 2\hat{i} + \hat{k}$, ତେବେ $2\left|\vec{a} + \vec{b} + \vec{c}\right|^2$ ର ମୂଲ୍ୟ _____ ଅଟେ ।

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 : 70819115963 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$\lim\limits_{n\to\infty} \tan\left\{\sum\limits_{r=1}^{n} \tan^{-1}\left(\frac{1}{1+r+r^2}\right)\right\}$ 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 : 90 Question Id : 70819115963 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$\lim\limits_{n\to\infty} \tan\left\{\sum\limits_{r=1}^{n} \tan^{-1}\left(\frac{1}{1+r+r^2}\right)\right\}$ ସମାନ _____ ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001