

CAREERS360

JEE MAIN 2019 PAPER 1

**Official Question Paper
& Answer Key
(Jan 11 - Shift I and II)**

National Testing Agency

Question Paper Name: Paper I EH 11th Jan 2019 Shift 1
Subject Name: Paper I EH
Creation Date: 2019-01-11 18:32:18
Duration: 180
Total Marks: 360
Display Marks: Yes
Share Answer Key With Delivery Engine: Yes
Actual Answer Key: Yes

Paper I

Group Number : 1
Group Id : 416529115
Group Maximum Duration : 0
Group Minimum Duration : 180
Revisit allowed for view? : No
Revisit allowed for edit? : No
Break time: 0
Group Marks: 360

Physics

Section Id : 416529127
Section Number : 1
Section type : Online
Mandatory or Optional: Mandatory
Number of Questions: 30
Number of Questions to be attempted: 30
Section Marks: 120
Display Number Panel: Yes
Group All Questions: No

Sub-Section Number: 1
Sub-Section Id: 416529136
Question Shuffling Allowed : Yes

Question Number : 1 Question Id : 4165299146 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The force of interaction between two atoms

is given by $F = \alpha\beta \exp\left(-\frac{x^2}{\alpha kT}\right)$; where x

is the distance, k is the Boltzmann constant and T is temperature and α and β are two constants. The dimension of β is :

Options :

41652936042. MLT^{-2}

41652936043. $M^2L^2T^{-2}$

41652936044. $M^0L^2T^{-4}$

41652936045. M^2LT^{-4}

Question Number : 1 Question Id : 4165299146 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

दो परमाणुओं के मध्य अन्योन्यक्रिया बल सम्बन्ध

$F = \alpha\beta \exp\left(-\frac{x^2}{\alpha kT}\right)$ से दिया जाता है जहाँ x दूरी

है, k बोल्ट्जॉमैन नियतांक तथा T तापमान है और α तथा β दो स्थिरांक हैं। β की विमा होगी :

Options :

41652936042. MLT^{-2}

41652936043. $M^2L^2T^{-2}$

41652936044. $M^0L^2T^{-4}$

41652936045. M^2LT^{-4}

Question Number : 2 Question Id : 4165299147 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A particle is moving along a circular path with a constant speed of 10 ms^{-1} . What is the magnitude of the change in velocity of the particle, when it moves through an angle of 60° around the centre of the circle ?

Options :

41652936046. zero

41652936047. $10\sqrt{3}$ m/s

41652936048. $10\sqrt{2}$ m/s

41652936049. 10 m/s

Question Number : 2 Question Id : 4165299147 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक कण एक वृत्ताकार पथ पर 10 ms^{-1} की नियत गति से चल रहा है। जब यह कण वृत्त के केन्द्र के परितः 60° चलता है तो इसके वेग में हुये परिवर्तन का परिमाण होगा :

Options :

41652936046. शून्य

41652936047. $10\sqrt{3}$ m/s

41652936048. $10\sqrt{2}$ m/s

41652936049. 10 m/s

Question Number : 3 Question Id : 4165299148 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A body is projected at $t=0$ with a velocity 10 ms^{-1} at an angle of 60° with the horizontal. The radius of curvature of its trajectory at $t=1\text{s}$ is R . Neglecting air resistance and taking acceleration due to gravity $g = 10 \text{ ms}^{-2}$, the value of R is :

Options :

41652936050. 2.5 m

41652936051. 5.1 m

41652936052. 2.8 m

41652936053. 10.3 m

Question Number : 3 Question Id : 4165299148 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$t = 0$ पर क्षैतिज से 60° के कोण पर 10 ms^{-1} के वेग से एक पिण्ड को प्रक्षेपित करते हैं। $t = 1 \text{ s}$ पर प्रक्षेप पथ की वक्रता त्रिज्या R है। वायु प्रतिरोध को नगण्य मानकर तथा गुरुत्वायीय त्वरण $g = 10 \text{ ms}^{-2}$ लेकर R का मान है :

Options :

41652936050. 2.5 m

41652936051. 5.1 m

41652936052. 2.8 m

41652936053. 10.3 m

Question Number : 4 Question Id : 4165299149 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A liquid of density ρ is coming out of a hose pipe of radius a with horizontal speed v and hits a mesh. 50% of the liquid passes through the mesh unaffected. 25% loses all of its momentum and 25% comes back with the same speed. The resultant pressure on the mesh will be :

Options :

41652936054. $\frac{1}{4}\rho v^2$

41652936055. $\frac{1}{2}\rho v^2$

41652936056. $\frac{3}{4}\rho v^2$

41652936057. ρv^2

Question Number : 4 Question Id : 4165299149 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

ρ घनत्व का द्रव a त्रिज्या वाले होर्ज पाईप में से क्षैतिज चाल v से निकल रहा है और एक जाल से टकराता है। 50% द्रव जाल से अप्रभावित निकल जाता है, 25% द्रव का संवेग शून्य हो जाता है तथा 25% द्रव उसी चाल से वापस आ जाता है। जाल पर परिणामी दब होगा :

Options :

$$\frac{1}{4} \rho v^2$$

41652936054.

$$\frac{1}{2} \rho v^2$$

41652936055.

$$\frac{3}{4} \rho v^2$$

41652936056.

$$\rho v^2$$

41652936057.

Question Number : 5 Question Id : 4165299150 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A body of mass 1 kg falls freely from a height of 100 m, on a platform of mass 3 kg which is mounted on a spring having spring constant $k = 1.25 \times 10^6$ N/m. The body sticks to the platform and the spring's maximum compression is found to be x. Given that $g = 10 \text{ ms}^{-2}$, the value of x will be close to :

Options :

41652936058. 4 cm

41652936059. 8 cm

41652936060. 40 cm

41652936061. 80 cm

Question Number : 5 Question Id : 4165299150 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

1 kg द्रव्यमान का एक पिण्ड 100 m ऊँचाई से स्वतंत्र रूप से 3 kg द्रव्यमान के एक प्लेटफार्म पर गिरता है। यह प्लेटफार्म एक स्प्रिंग नियतांक $k = 1.25 \times 10^6$ N/m की स्प्रिंग पर लगा है। पिण्ड प्लेटफार्म पर चिपक जाता है और स्प्रिंग का अधिकतम संपीडन x पाया जाता है। x का निकटतम मान होगा : ($g = 10 \text{ ms}^{-2}$)

Options :

41652936058. 4 cm

41652936059. 8 cm

41652936060. 40 cm

41652936061. 80 cm

Question Number : 6 Question Id : 4165299151 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

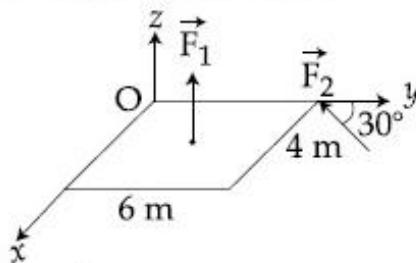
A slab is subjected to two forces \vec{F}_1 and

\vec{F}_2 of same magnitude F as shown in the

figure. Force \vec{F}_2 is in XY-plane while force \vec{F}_1 acts along z-axis at the point

$(2\hat{i} + 3\hat{j})$. The moment of these forces

about point O will be :



Options :

$$(3\hat{i} + 2\hat{j} - 3\hat{k})F$$

41652936062.

$$(3\hat{i} - 2\hat{j} + 3\hat{k})F$$

41652936063.

$$\left(3\hat{i} + 2\hat{j} + 3\hat{k} \right) F$$

41652936064.

$$\left(3\hat{i} - 2\hat{j} - 3\hat{k} \right) F$$

41652936065.

Question Number : 6 Question Id : 4165299151 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

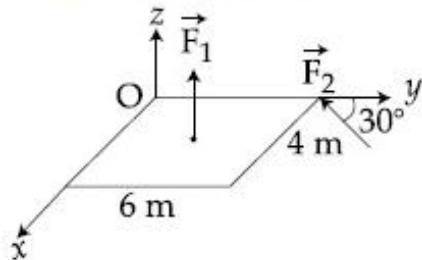
दिखाये गये चित्रानुसार एक तख्त पर समान परिमाण F

के दो बल \vec{F}_1 तथा \vec{F}_2 लगाये गये हैं। बल \vec{F}_2

XY-समतल में है जबकि बल \vec{F}_1 z-दिशा के अनुदिश

बिन्दु O के सापेक्ष विन्दु $(2\hat{i} + 3\hat{j})$ पर लगा है। बिन्दु O के सापेक्ष

इन बलों का आघूर्ण होगा :



Options :

$$\left(3\hat{i} + 2\hat{j} - 3\hat{k} \right) F$$

41652936062.

$$\left(3\hat{i} - 2\hat{j} + 3\hat{k} \right) F$$

41652936063.

$$\left(3\hat{i} + 2\hat{j} + 3\hat{k} \right) F$$

41652936064.

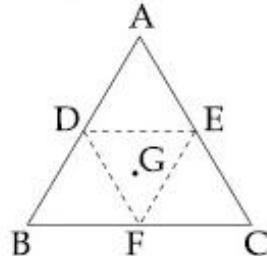
$$\left(3\hat{i} - 2\hat{j} - 3\hat{k} \right) F$$

41652936065.

Question Number : 7 Question Id : 4165299152 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

An equilateral triangle ABC is cut from a thin solid sheet of wood. (See figure) D, E and F are the mid-points of its sides as shown and G is the centre of the triangle. The moment of inertia of the triangle about an axis passing through G and perpendicular to the plane of the triangle is I_0 . If the smaller triangle DEF is removed from ABC, the moment of inertia of the remaining figure about the same axis is I. Then :



Options :

$$I = \frac{I_0}{4}$$

41652936066.

$$I = \frac{3}{4}I_0$$

41652936067.

$$I = \frac{9}{16}I_0$$

41652936068.

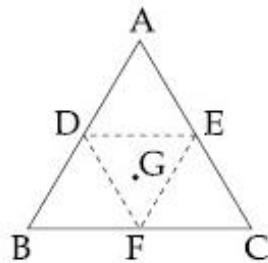
$$I = \frac{15}{16}I_0$$

41652936069.

Question Number : 7 Question Id : 4165299152 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक पतले ठोस लकड़ी के फलक से एक त्रिभुज ABC काटा गया है (चित्र देखिए)। दर्शाये गये अनुसार D, E तथा F इसकी भुजाओं के मध्य बिन्दु हैं तथा G त्रिभुज का केन्द्र है। G से गुजरने वाली तथा त्रिभुज के समतल के लम्बवत् अक्ष के सापेक्ष त्रिभुज का जड़त्व आघूर्ण I_0 है। यदि छोटा त्रिभुज DEF त्रिभुज ABC में से निकाल लिया जाये तो शेष बचे हुए भाग का उसी अक्ष के सापेक्ष जड़त्व आघूर्ण I है। तब :



Options :

$$I = \frac{I_0}{4}$$

41652936066.

$$I = \frac{3}{4}I_0$$

41652936067.

$$I = \frac{9}{16}I_0$$

41652936068.

$$I = \frac{15}{16}I_0$$

41652936069.

Question Number : 8 Question Id : 4165299153 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A satellite is revolving in a circular orbit at a height h from the earth surface, such that $h \ll R$ where R is the radius of the earth. Assuming that the effect of earth's atmosphere can be neglected the minimum increase in the speed required so that the satellite could escape from the gravitational field of earth is :

Options :

$$\sqrt{gR}$$

41652936070.

41652936071. $\sqrt{2gR}$

41652936072. $\sqrt{gR}(\sqrt{2}-1)$

41652936073. $\sqrt{\frac{gR}{2}}$

Question Number : 8 Question Id : 4165299153 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

पृथ्वी की सतह से h ऊँचाई पर एक उपग्रह एक वृत्तीय कक्षा में इस प्रकार घूम रहा है कि $h \ll R$ जहाँ R पृथ्वी की त्रिज्या है। माना कि पृथ्वी के वायुमण्डल का प्रभाव नगण्य है। कक्षीय चाल में कितनी न्यूनतम वृद्धि होनी चाहिए जिससे कि उपग्रह पृथ्वी के गुरुत्वीय क्षेत्र से पलायन कर सके :

Options :

41652936070. \sqrt{gR}

41652936071. $\sqrt{2gR}$

41652936072. $\sqrt{gR}(\sqrt{2}-1)$

41652936073. $\sqrt{\frac{gR}{2}}$

Question Number : 9 Question Id : 4165299154 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Ice at -20°C is added to 50 g of water at 40°C . When the temperature of the mixture reaches 0°C , it is found that 20 g of ice is still unmelted. The amount of ice added to the water was close to

(Specific heat of water = $4.2 \text{ J/g}/^\circ\text{C}$

Specific heat of Ice = $2.1 \text{ J/g}/^\circ\text{C}$

Heat of fusion of water at 0°C = 334 J/g)

Options :

41652936074. 60 g

41652936075. 40 g

41652936076. 50 g

41652936077. 100 g

Question Number : 9 Question Id : 4165299154 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

40°C पर 50 g पानी में – 20°C पर रखी बर्फ मिलाते हैं। जब मिश्रण का तापमान 0°C हो जाता है तो देखा जाता है कि 20 g बर्फ अभी भी जमी हुई है। पानी में मिलायी गयी बर्फ की मात्रा का सन्त्रिकट मान था :

(जल की विशिष्ट ऊष्मा = 4.2 J/g/°C
बर्फ की विशिष्ट ऊष्मा = 2.1 J/g/°C
0°C पर जल की संगलन ऊष्मा = 334 J/g)

Options :

41652936074. 60 g

41652936075. 40 g

41652936076. 50 g

41652936077. 100 g

Question Number : 10 Question Id : 4165299155 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A rigid diatomic ideal gas undergoes an adiabatic process at room temperature. The relation between temperature and volume for this process is $TV^x = \text{constant}$, then x is :

Options :

41652936078. $\frac{2}{3}$

41652936079. $\frac{2}{5}$

41652936080. $\frac{5}{3}$

41652936081. $\frac{3}{5}$

Question Number : 10 Question Id : 4165299155 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

कक्षीय तापमान पर एक दृढ़ द्विपरमाणुक आदर्श गैस
एक रुद्धोष्म प्रक्रम से गुजरती है। इस प्रक्रम के लिए
तापमान और आयतन में, $TV^x =$ नियतांक सम्बन्ध है
तो x होगा :

Options :

41652936078. $\frac{2}{3}$

41652936079. $\frac{2}{5}$

41652936080. $\frac{5}{3}$

41652936081. $\frac{3}{5}$

Question Number : 11 Question Id : 4165299156 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A gas mixture consists of 3 moles of oxygen and 5 moles of argon at temperature T. Considering only translational and rotational modes, the total internal energy of the system is :

Options :

41652936082. 4 RT

41652936083. 12 RT

41652936084. 15 RT

41652936085. 20 RT

Question Number : 11 Question Id : 4165299156 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

गैस के एक मिश्रण में ऑक्सीजन के 3 मोल तथा आर्गन के 5 मोल तापमान T पर हैं। केवल स्थानांतरीय और घूर्णन विधा मानें तो संकाय की कुल आन्तरिक ऊर्जा होगी :

Options :

41652936082. 4 RT

41652936083. 12 RT

41652936084. 15 RT

41652936085. 20 RT

Question Number : 12 Question Id : 4165299157 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A particle undergoing simple harmonic motion has time dependent displacement

given by $x(t) = A \sin \frac{\pi t}{90}$. The ratio of kinetic

to potential energy of this particle at $t = 210\text{ s}$ will be :

Options :

41652936086. 1

41652936087. 3

41652936088. $\frac{1}{9}$

41652936089. 2

Question Number : 12 Question Id : 4165299157 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

सरल आवर्त गति करते हुए एक कण का समय पर

निर्भर विस्थापन सम्बन्ध $x(t) = A \sin \frac{\pi t}{90}$ से दिया

गया है। $t = 210\text{ s}$ पर इस कण की गतिज एवं स्थितिज ऊर्जाओं का अनुपात होगा :

Options :

41652936086. 1

41652936087. 3

41652936088. $\frac{1}{9}$

41652936089. 2

Question Number : 13 Question Id : 4165299158 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Equation of travelling wave on a stretched string of linear density 5 g/m is $y = 0.03 \sin(450 t - 9x)$ where distance and time are measured in SI units. The tension in the string is :

Options :

41652936090. 5 N

41652936091. 7.5 N

41652936092. 10 N

41652936093. 12.5 N

Question Number : 13 Question Id : 4165299158 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

5 g/m रेखीय घनत्व वाली तर्नी हुई डोरी में प्रगामी तरंग का समीकरण निम्न है :

$y = 0.03 \sin(450 t - 9x)$ जहाँ दूरी और समय SI मात्रकों में हैं। डोरी में तनाव है :

Options :

41652936090. 5 N

41652936091. 7.5 N

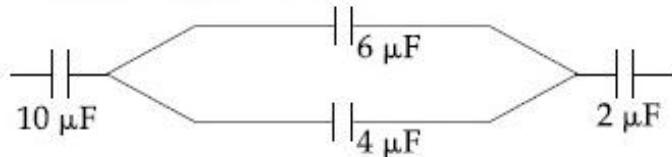
41652936092. 10 N

41652936093. 12.5 N

Question Number : 14 Question Id : 4165299159 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In the figure shown below, the charge on the left plate of the $10 \mu\text{F}$ capacitor is $-30 \mu\text{C}$. The charge on the right plate of the $6 \mu\text{F}$ capacitor is :



Options :

41652936094. $+18 \mu\text{C}$

41652936095. $-18 \mu\text{C}$

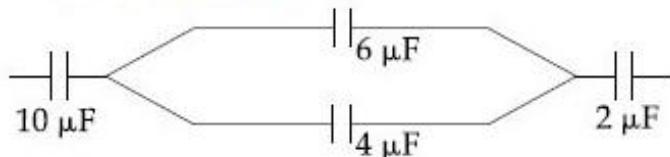
41652936096. $+12 \mu\text{C}$

41652936097. $-12 \mu\text{C}$

Question Number : 14 Question Id : 4165299159 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

दिखाये गये चित्र में $10 \mu\text{F}$ के संधारित्र की बाँयी प्लेट पर $-30 \mu\text{C}$ आवेश है। $6 \mu\text{F}$ के संधारित्र की दाँयी प्लेट पर आवेश होगा :



Options :

41652936094. $+18 \mu\text{C}$

41652936095. $-18 \mu\text{C}$

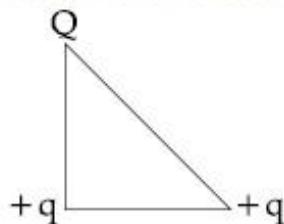
41652936096. $+12 \mu\text{C}$

41652936097. $-12 \mu\text{C}$

Question Number : 15 Question Id : 4165299160 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Three charges Q , $+q$ and $+q$ are placed at the vertices of a right-angle isosceles triangle as shown below. The net electrostatic energy of the configuration is zero, if the value of Q is :



Options :

41652936098. $\frac{-q}{1+\sqrt{2}}$

41652936099. $\frac{-\sqrt{2}q}{\sqrt{2}+1}$

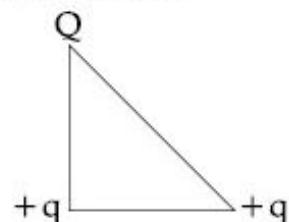
41652936100. $-2q$

41652936101. $+q$

Question Number : 15 Question Id : 4165299160 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

दिखाये गये समकोणीय समद्विबाहु त्रिभुज के कोनों पर तीन आवेश Q , $+q$ तथा $+q$ रखे गये हैं। इस विन्यास की कुल विद्युत्स्थैतिक ऊर्जा शून्य होगी यदि Q का मान है :



Options :

41652936098. $\frac{-q}{1+\sqrt{2}}$

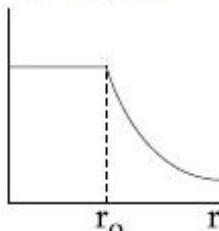
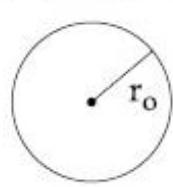
41652936099. $\frac{-\sqrt{2}q}{\sqrt{2}+1}$

41652936100. $-2q$

Question Number : 16 Question Id : 4165299161 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The given graph shows variation (with distance r from centre) of :



Options :

41652936102. Potential of a uniformly charged spherical shell

41652936103. Potential of a uniformly charged sphere

41652936104. Electric field of a uniformly charged spherical shell

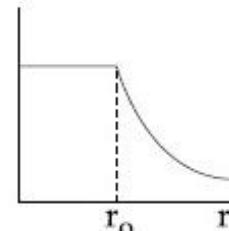
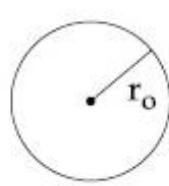
41652936105. Electric field of a uniformly charged sphere

Question Number : 16 Question Id : 4165299161 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

दिया गया ग्राफ (केन्द्र से दूरी r के साथ) बदलाव

दिखाता है :



Options :

41652936102. समावेशित गोलीय कोश का विभव

41652936103. समावेशित गोले का विभव

41652936104. समावेशित गोलीय कोश का विद्युत क्षेत्र

41652936105. समावेशित गोले का विद्युत क्षेत्र

Question Number : 17 Question Id : 4165299162 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Two equal resistances when connected in series to a battery, consume electric power of 60 W. If these resistances are now connected in parallel combination to the same battery, the electric power consumed will be :

Options :

41652936106. 60 W

41652936107. 240 W

41652936108. 120 W

41652936109. 30 W

Question Number : 17 Question Id : 4165299162 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

दो बराबर प्रतिरोधों को जब श्रेणीक्रम में एक बैटरी से जोड़ते हैं तो ये 60 W विद्युत शक्ति का उपभोग करते हैं। यदि इन प्रतिरोधों को अब समान्तर क्रम में इसी बैटरी से जोड़ा जाये तो उपभोग की गयी शक्ति होगी :

Options :

41652936106. 60 W

41652936107. 240 W

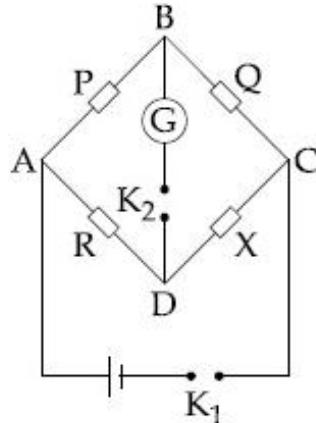
41652936108. 120 W

41652936109. 30 W

Question Number : 18 Question Id : 4165299163 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In a Wheatstone bridge(see fig.), Resistances P and Q are approximately equal. When $R = 400 \Omega$, the bridge is balanced. On interchanging P and Q, the value of R, for balance, is 405Ω . The value of X is close to :



Options :

41652936110. 401.5 ohm

41652936111. 404.5 ohm

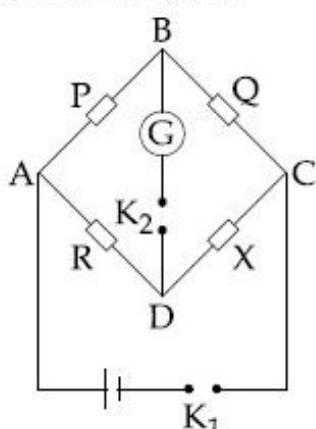
41652936112. 402.5 ohm

41652936113. 403.5 ohm

Question Number : 18 Question Id : 4165299163 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक व्हीटस्टोन सेतु में (चित्र देखिये) प्रतिरोध P तथा Q लगभग बराबर हैं। जब $R = 400 \Omega$ है तो सेतु संतुलित है। P तथा Q को परस्पर बदलने पर, सेतु को संतुलित रखने के लिए R का मान 405Ω है। X का सन्तुलित मान होगा :



Options :

41652936110. 401.5 ohm

41652936111. 404.5 ohm

41652936112. 402.5 ohm

41652936113. 403.5 ohm

Question Number : 19 Question Id : 4165299164 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In an experiment, electrons are accelerated, from rest, by applying a voltage of 500 V. Calculate the radius of the path if a magnetic field 100 mT is then applied.

[Charge of the electron = 1.6×10^{-19} C]

Mass of the electron = 9.1×10^{-31} kg]

Options :

41652936114. 7.5 m

41652936115. $7.5 \times 10^{-2}\text{ m}$

41652936116. $7.5 \times 10^{-4}\text{ m}$

41652936117. $7.5 \times 10^{-3}\text{ m}$

Question Number : 19 Question Id : 4165299164 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक प्रयोग में इलेक्ट्रॉन को विराम अवस्था से 500 V वोल्टेज लगाकर त्वरित करते हैं। पथ की त्रिज्या ज्ञात कीजिए यदि लगाया गया चुम्बकीय क्षेत्र 100 mT है।
(इलेक्ट्रॉन का आवेश = 1.6×10^{-19} C, इलेक्ट्रॉन का द्रव्यमान = 9.1×10^{-31} kg)

Options :

41652936114. 7.5 m

41652936115. $7.5 \times 10^{-2}\text{ m}$

41652936116. $7.5 \times 10^{-4}\text{ m}$

41652936117. $7.5 \times 10^{-3}\text{ m}$

Question Number : 20 Question Id : 4165299165 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

There are two long co-axial solenoids of same length l . The inner and outer coils have radii r_1 and r_2 and number of turns per unit length n_1 and n_2 , respectively. The ratio of mutual inductance to the self-inductance of the inner-coil is :

Options :

$$\frac{n_2}{n_1}$$

41652936118.

$$\frac{n_2}{n_1} \cdot \frac{r_2^2}{r_1^2}$$

41652936119.

$$\frac{n_2}{n_1} \cdot \frac{r_1}{r_2}$$

41652936120.

$$\frac{n_1}{n_2}$$

41652936121.

Question Number : 20 Question Id : 4165299165 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

समान लम्बाई l की दो लम्बी सम-अक्षीय परिनालिकाये हैं। आन्तरिक एवं बाह्य कुण्डलियों की त्रिज्यायें क्रमशः r_1 तथा r_2 हैं और प्रति इकाई लम्बाई फेरों की संख्या क्रमशः n_1 तथा n_2 हैं। आन्तरिक कुण्डली के अन्योन्य प्रेरकत्व तथा स्व प्रेरकत्व का अनुपात होगा :

Options :

$$\frac{n_2}{n_1}$$

41652936118.

$$\frac{n_2}{n_1} \cdot \frac{r_2^2}{r_1^2}$$

41652936119.

$$\frac{n_2}{n_1} \cdot \frac{r_1}{r_2}$$

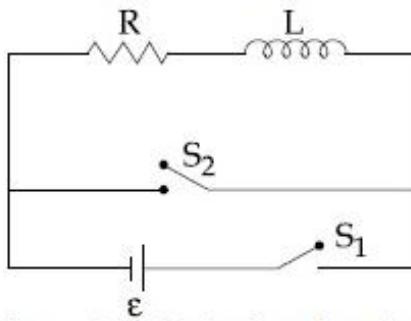
41652936120.

$$\frac{n_1}{n_2}$$

41652936121.

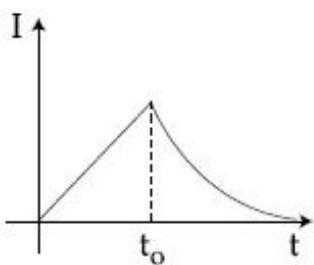
Correct Marks : 4 Wrong Marks : 1

In the circuit shown,

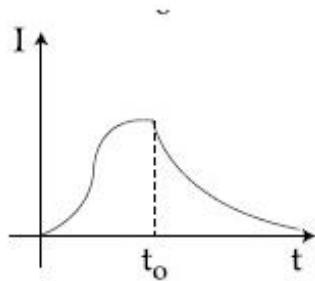


the switch S_1 is closed at time $t=0$ and the switch S_2 is kept open. At some later time(t_0), the switch S_1 is opened and S_2 is closed. The behaviour of the current I as a function of time 't' is given by :

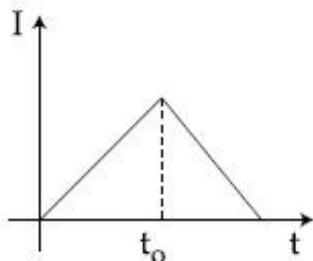
Options :



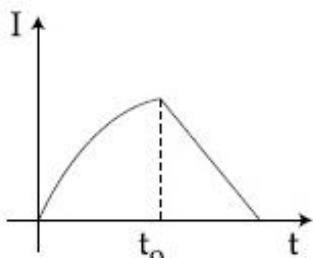
41652936122.



41652936123.

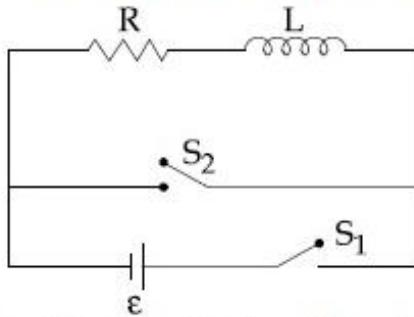


41652936124.



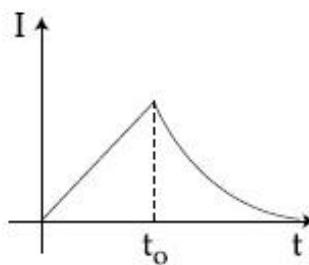
41652936125.

एक परिपथ को निम्न चित्र में दिखाया गया है :

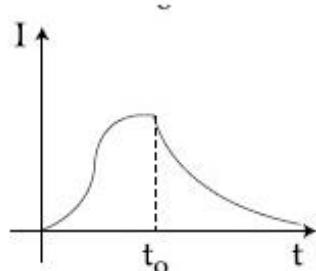


$t=0$ पर स्विच S_1 बन्द है जबकि स्विच S_2 खुला रहता है। किसी समय (t_0) के पश्चात् स्विच S_1 खुला है और S_2 बन्द है। धारा I में समय 't' के साथ परिवर्तन इससे दिखाया जा सकता है :

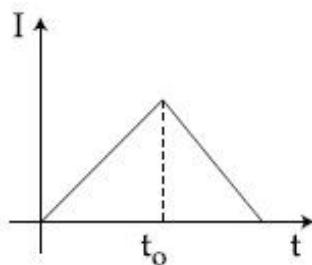
Options :



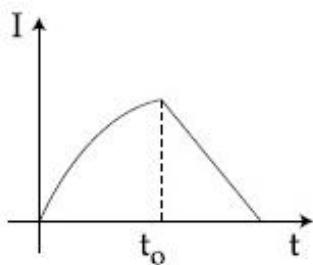
41652936122.



41652936123.



41652936124.



41652936125.

Question Number : 22 Question Id : 4165299167 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

An electromagnetic wave of intensity 50 Wm^{-2} enters in a medium of refractive index 'n' without any loss. The ratio of the magnitudes of electric fields, and the ratio of the magnitudes of magnetic fields of the wave before and after entering into the medium are respectively, given by :

Options :

$$\left(\frac{1}{\sqrt{n}}, \sqrt{n} \right)$$

41652936126.

$$\left(\sqrt{n}, \frac{1}{\sqrt{n}} \right)$$

41652936127.

$$\left(\sqrt{n}, \sqrt{n} \right)$$

41652936128.

$$\left(\frac{1}{\sqrt{n}}, \frac{1}{\sqrt{n}} \right)$$

41652936129.

Question Number : 22 Question Id : 4165299167 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

50 Wm^{-2} तीव्रता की एक विद्युत चुम्बकीय तरंग 'n' अपवर्तनांक के एक माध्यम में बिना किसी क्षय के प्रवेश करती है। तरंग के माध्यम में प्रवेश करने के पूर्व तथा पश्चात् विद्युत क्षेत्रों का अनुपात तथा चुम्बकीय क्षेत्रों का अनुपात क्रमशः होंगे :

Options :

$$\left(\frac{1}{\sqrt{n}}, \sqrt{n} \right)$$

41652936126.

$$\left(\sqrt{n}, \frac{1}{\sqrt{n}} \right)$$

41652936127.

$$\left(\sqrt{n}, \sqrt{n} \right)$$

41652936128.

$$\left(\frac{1}{\sqrt{n}}, \frac{1}{\sqrt{n}} \right)$$

41652936129.

Correct Marks : 4 Wrong Marks : 1

An object is at a distance of 20 m from a convex lens of focal length 0.3 m. The lens forms an image of the object. If the object moves away from the lens at a speed of 5 m/s, the speed and direction of the image will be :

Options :

41652936130. 2.26×10^{-3} m/s away from the lens

41652936131. 1.16×10^{-3} m/s towards the lens

41652936132. 3.22×10^{-3} m/s towards the lens

41652936133. 0.92×10^{-3} m/s away from the lens

Correct Marks : 4 Wrong Marks : 1

0.3 m फोकस दूरी के एक उत्तल लेन्स से कोई वस्तु 20 m की दूरी पर है। लेन्स द्वारा वस्तु का प्रतिबिम्ब बनता है। यदि यह वस्तु लेन्स से दूर 5 m/s की चाल से जाती है तो प्रतिबिम्ब की चाल और दिशा होगी :

Options :

41652936130. 2.26×10^{-3} m/s, लेन्स से दूर

41652936131. 1.16×10^{-3} m/s, लेन्स की ओर

41652936132. 3.22×10^{-3} m/s, लेन्स की ओर

41652936133. 0.92×10^{-3} m/s, लेन्स से दूर

Correct Marks : 4 Wrong Marks : 1

In a Young's double slit experiment, the path difference, at a certain point on the screen, between two interfering waves is

$\frac{1}{8}$ th of wavelength. The ratio of the intensity at this point to that at the centre of a bright fringe is close to :

Options :

41652936134. 0.74

41652936135. 0.80

41652936136. 0.85

41652936137. 0.94

Question Number : 24 Question Id : 4165299169 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यंग के द्वि-दिशी प्रयोग में, पर्दे के एक बिन्दु पर व्यतिकरण

करने वाली दो तरंगों का पथान्तर तरंगदैर्घ्य का $\frac{1}{8}$ गुना

है। इस बिन्दु पर तीव्रता तथा दीप्त फ्रिन्ज के केन्द्र पर
तीव्रता का अनुपात लगभग होगा :

Options :

41652936134. 0.74

41652936135. 0.80

41652936136. 0.85

41652936137. 0.94

Question Number : 25 Question Id : 4165299170 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If the deBroglie wavelength of an electron is equal to 10^{-3} times the wavelength of a photon of frequency 6×10^{14} Hz, then the speed of electron is equal to :

(Speed of light = 3×10^8 m/s)

Planck's constant = 6.63×10^{-34} J.s

Mass of electron = 9.1×10^{-31} kg)

Options :

41652936138. 1.8×10^6 m/s

41652936139. 1.45×10^6 m/s

41652936140. 1.1×10^6 m/s

41652936141. 1.7×10^6 m/s

Question Number : 25 Question Id : 4165299170 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि इलेक्ट्रॉन की डी-ब्राग्ल तरंगदैर्घ्य $6 \times 10^{14} \text{ Hz}$ आवृत्ति के फोटॉन की तरंगदैर्घ्य के 10^{-3} गुना है तो इलेक्ट्रॉन की चाल होगी :
(दिया है प्रकाश की चाल $= 3 \times 10^8 \text{ m/s}$
प्लांक नियतांक $= 6.63 \times 10^{-34} \text{ J.s}$
इलेक्ट्रॉन का द्रव्यमान $= 9.1 \times 10^{-31} \text{ kg}$)

Options :

41652936138. $1.8 \times 10^6 \text{ m/s}$

41652936139. $1.45 \times 10^6 \text{ m/s}$

41652936140. $1.1 \times 10^6 \text{ m/s}$

41652936141. $1.7 \times 10^6 \text{ m/s}$

Question Number : 26 Question Id : 4165299171 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A hydrogen atom, initially in the ground state is excited by absorbing a photon of wavelength 980\AA . The radius of the atom in the excited state, in terms of Bohr radius a_0 , will be :
($hc = 12500 \text{ eV-\AA}$)

Options :

41652936142. $4a_0$

41652936143. $9a_0$

41652936144. $16a_0$

41652936145. $25a_0$

Question Number : 26 Question Id : 4165299171 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

आरम्भिक मूल अवस्था में हाइड्रोजन परमाणु 980\AA तरंगदैर्घ्य का फोटॉन अवशोषित कर उत्तेजित हो जाता है। इस उत्तेजित स्तर में परमाणु की त्रिज्या बोर त्रिज्या a_0 के मात्रक में होगी :
($hc = 12500 \text{ eV-\AA}$)

Options :

41652936142. $4a_0$

41652936143. $9a_0$

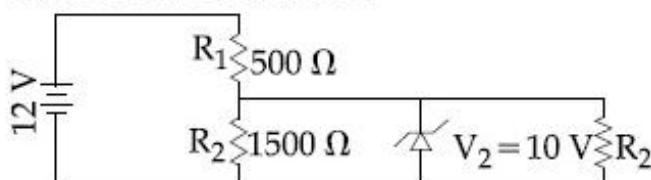
41652936144. $16a_0$

41652936145. $25a_0$

Question Number : 27 Question Id : 4165299172 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In the given circuit the current through Zener Diode is close to :



Options :

41652936146. 6.7 mA

41652936147. 4.0 mA

41652936148. 0.0 mA

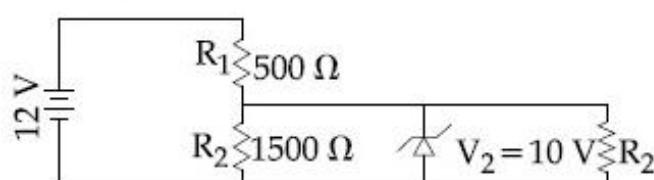
41652936149. 6.0 mA

Question Number : 27 Question Id : 4165299172 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

दिये गये परिपथ में ज़ेनर डायोड में धारा का लगभग

मान होगा :



Options :

41652936146. 6.7 mA

41652936147. 4.0 mA

41652936148. 0.0 mA

Question Number : 28 Question Id : 4165299173 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
 Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

An amplitude modulated signal is given by
 $V(t) = 10[1 + 0.3\cos(2.2 \times 10^4 t)]\sin(5.5 \times 10^5 t)$.

Here t is in seconds. The sideband frequencies (in kHz) are, [Given $\pi = 22/7$]

Options :

41652936150. 892.5 and 857.5

41652936151. 89.25 and 85.75

41652936152. 178.5 and 171.5

41652936153. 1785 and 1715

Question Number : 28 Question Id : 4165299173 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
 Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक आयाम मॉड्युलेटेड सिग्नल निम्नवत् दिया गया है
 $V(t) = 10[1 + 0.3\cos(2.2 \times 10^4 t)]\sin(5.5 \times 10^5 t)$
 यहाँ t सेकण्ड में है। पार्श्व बैण्ड की आवृत्तियाँ
 (kHz में) होंगी : [दिया है $\pi = 22/7$]

Options :

41652936150. 892.5 तथा 857.5

41652936151. 89.25 तथा 85.75

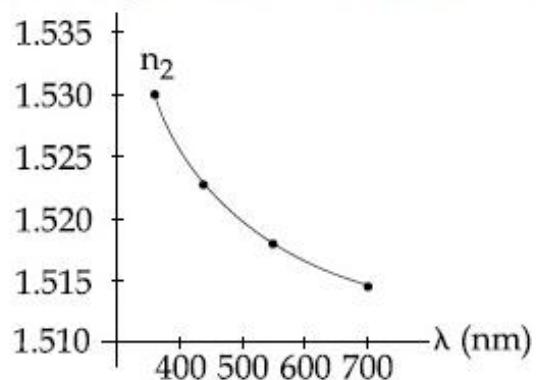
41652936152. 178.5 तथा 171.5

41652936153. 1785 तथा 1715

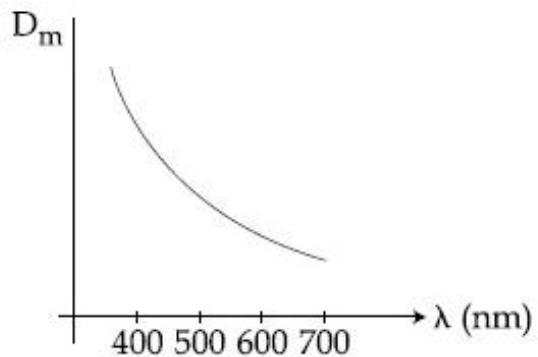
Question Number : 29 Question Id : 4165299174 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
 Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

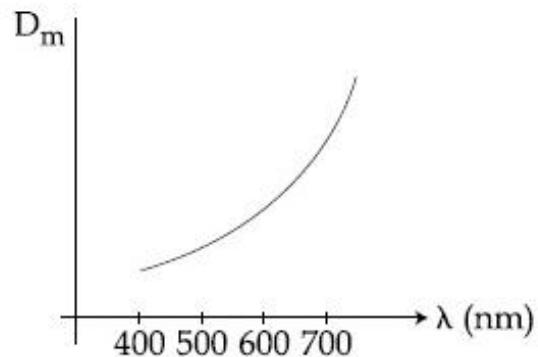
The variation of refractive index of a crown glass thin prism with wavelength of the incident light is shown. Which of the following graphs is the correct one, if D_m is the angle of minimum deviation?



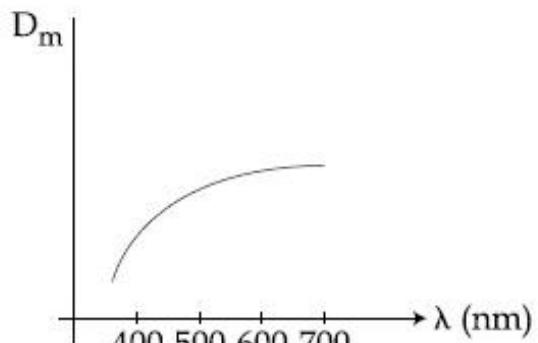
Options :



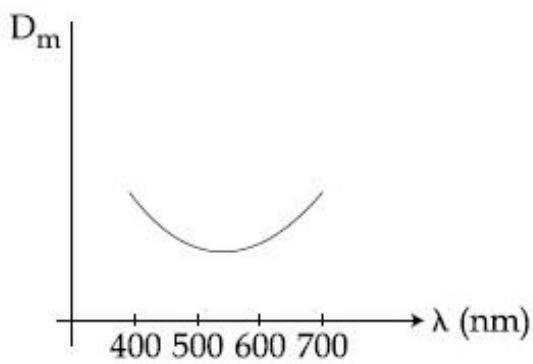
41652936154.



41652936155.



41652936156.

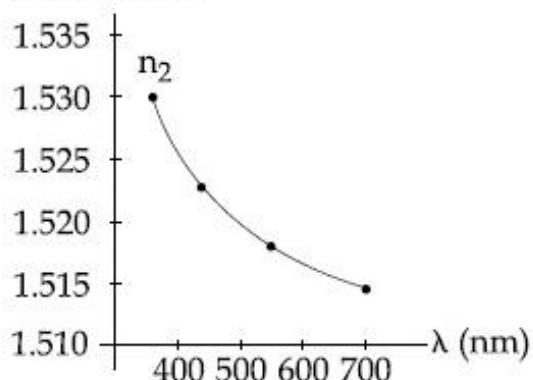


41652936157.

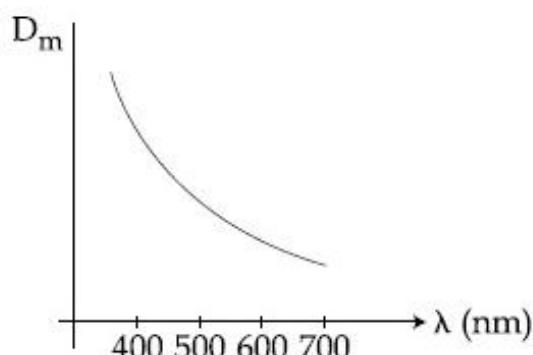
Question Number : 29 Question Id : 4165299174 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

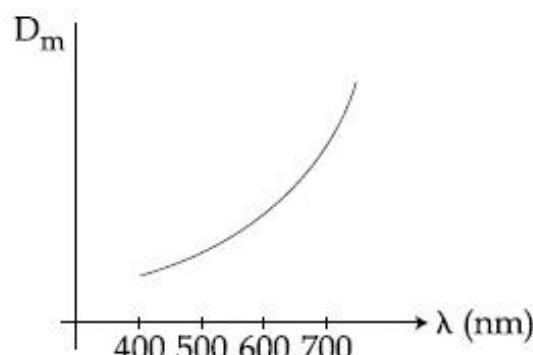
क्राऊन काँच के प्रिज्म के अपवर्तनांक परिवर्तन को
आपतित प्रकाश की तरंगदैध्य के साथ दिखाया गया है।
यदि D_m न्यूनतम विचलन कोण है तो निम्न में से कौन
सा ग्राफ सही है?



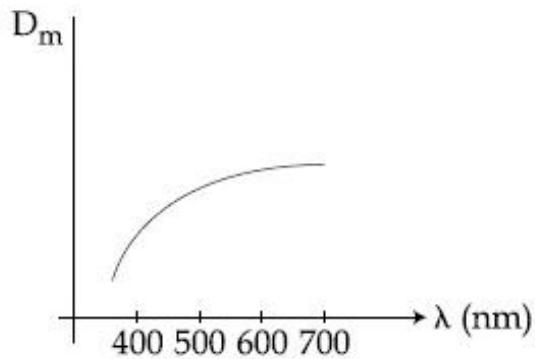
Options :



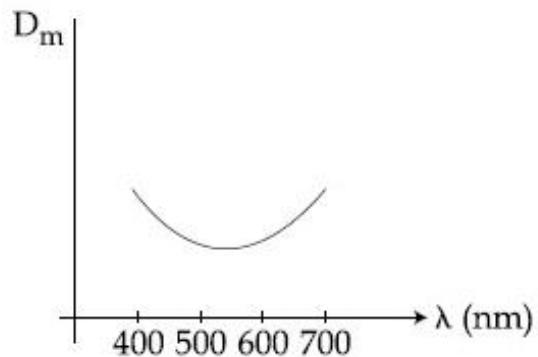
41652936154.



41652936155.



41652936156.

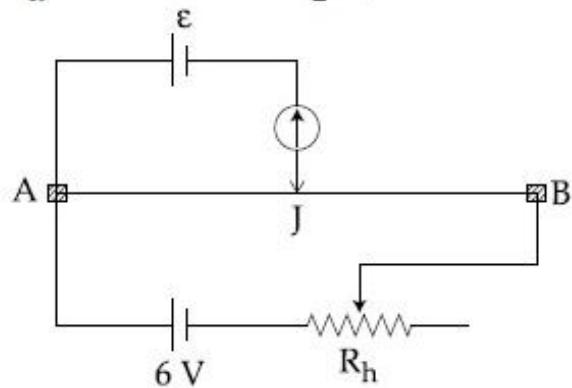


41652936157.

Question Number : 30 Question Id : 4165299175 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The resistance of the meter bridge AB in given figure is 4Ω . With a cell of emf $\varepsilon = 0.5 \text{ V}$ and rheostat resistance $R_h = 2 \Omega$ the null point is obtained at some point J. When the cell is replaced by another one of emf $\varepsilon = \varepsilon_2$ the same null point J is found for $R_h = 6 \Omega$. The emf ε_2 is :



Options :

41652936158. 0.3 V

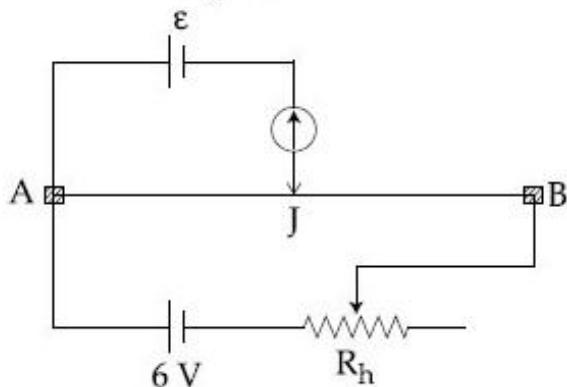
41652936159. 0.5 V

41652936160. 0.4 V

41652936161. 0.6 V

Correct Marks : 4 Wrong Marks : 1

दिये गये परिपथ में मीटर सेतु AB का प्रतिरोध 4Ω है। वि.वा.बल $\epsilon = 0.5\text{ V}$ तथा धारा नियन्त्रक के प्रतिरोध $R_h = 2\Omega$ के लिये शून्य बिन्दु J पर प्राप्त होता है। जब इस सेल को वि.वा.बल $\epsilon = \epsilon_2$ की सेल से बदल देते हैं तो $R_h = 6\Omega$ के लिये शून्य बिन्दु पुनः J पर मिलता है। वि.वा.बल ϵ_2 होगा :



Options :

41652936158. 0.3 V

41652936159. 0.5 V

41652936160. 0.4 V

41652936161. 0.6 V

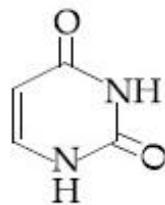
Chemistry

Section Id :	416529128
Section Number :	2
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	30
Number of Questions to be attempted:	30
Section Marks:	120
Display Number Panel:	Yes
Group All Questions:	No

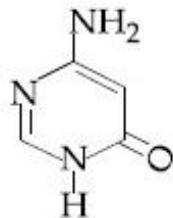
Sub-Section Number:	1
Sub-Section Id:	416529137
Question Shuffling Allowed :	Yes

Among the following compounds, which one is found in RNA ?

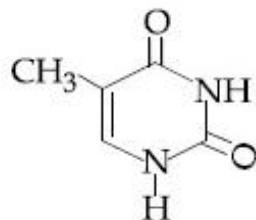
Options :



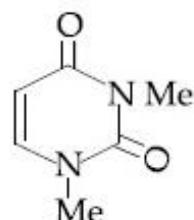
41652936162.



41652936163.



41652936164.



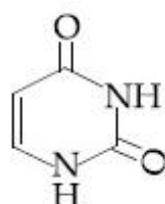
41652936165.

Question Number : 31 Question Id : 4165299176 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

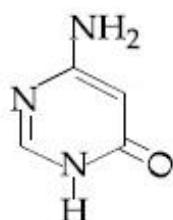
Correct Marks : 4 Wrong Marks : 1

निम्नलिखित यौगिकों में से कौन सा एक RNA में पाया जाता है?

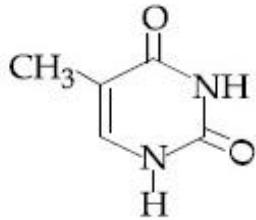
Options :



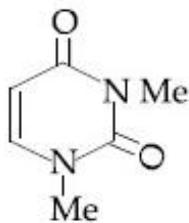
41652936162.



41652936163.



41652936164.

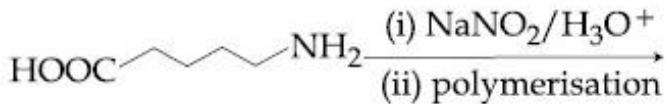


41652936165.

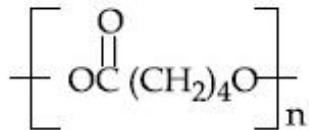
Question Number : 32 Question Id : 4165299177 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

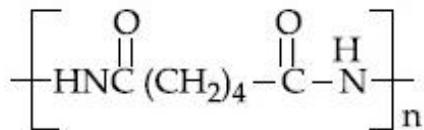
The polymer obtained from the following reactions is :



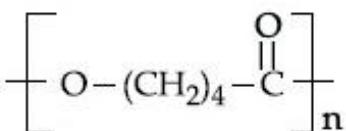
Options :



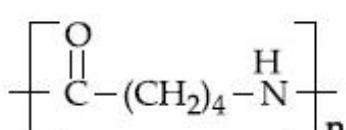
41652936166.



41652936167.



41652936168.

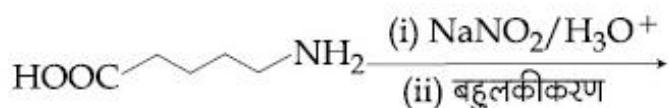


41652936169.

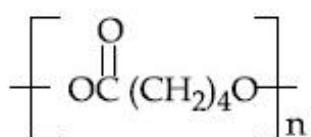
Question Number : 32 Question Id : 4165299177 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

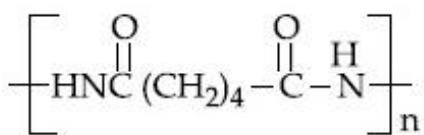
निम्नलिखित अभिक्रियाओं से प्राप्त होने वाला बहुलक है :



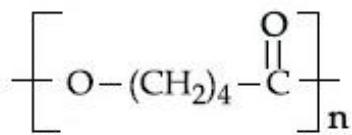
Options :



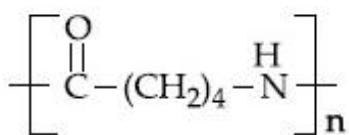
41652936166.



41652936167.



41652936168.

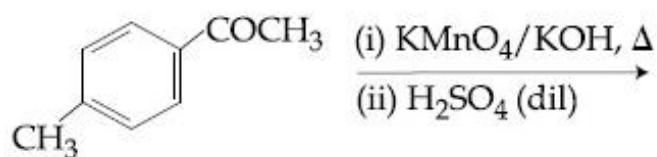


41652936169.

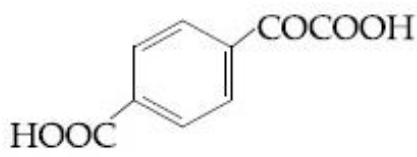
Question Number : 33 Question Id : 4165299178 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

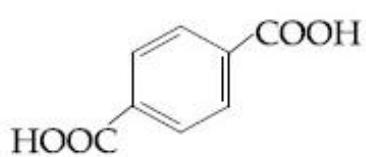
The major product of the following reaction is



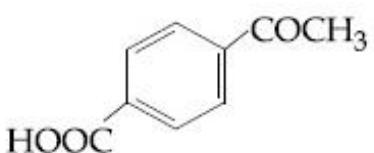
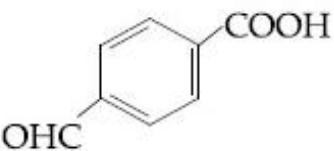
Options :



41652936170.



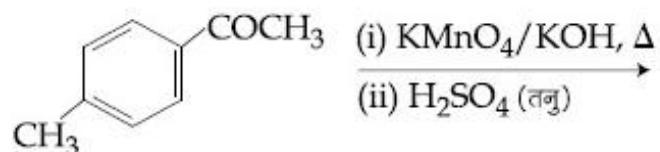
41652936171.



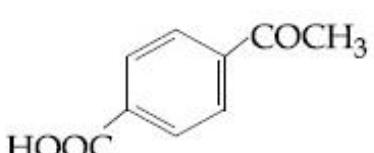
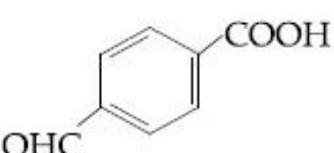
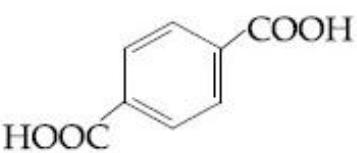
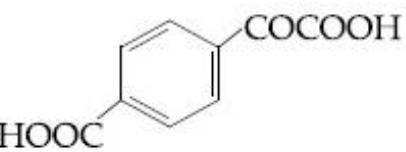
Question Number : 33 Question Id : 4165299178 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया का मुख्य उत्पाद है :



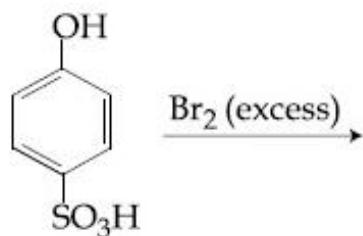
Options :



Question Number : 34 Question Id : 4165299179 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

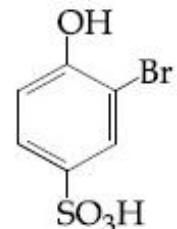
The major product of the following reaction
is :



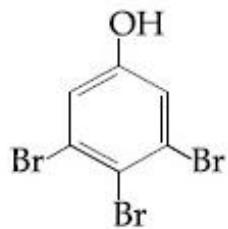
Options :



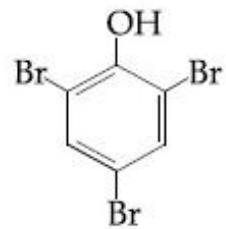
41652936174.



41652936175.



41652936176.



41652936177.

Question Number : 34 Question Id : 4165299179 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

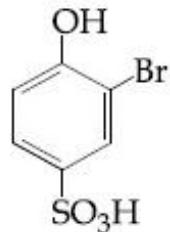
निम्नलिखित अभिक्रिया का मुख्य उत्पाद है :



Options :



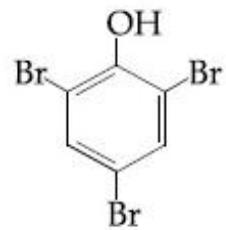
41652936174.



41652936175.



41652936176.

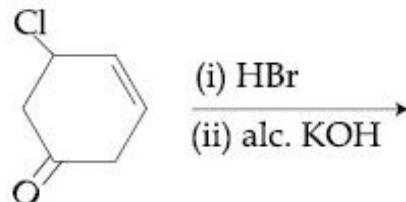


41652936177.

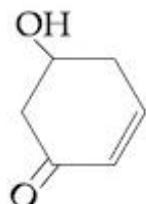
Question Number : 35 Question Id : 4165299180 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

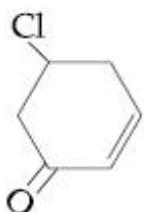
The major product of the following reaction
is :



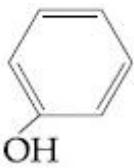
Options :



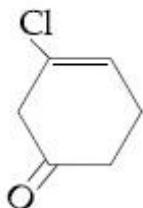
41652936178.



41652936179.



41652936180.

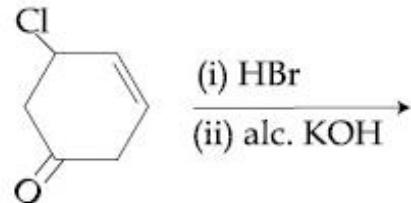


41652936181.

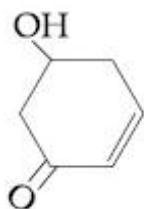
Question Number : 35 Question Id : 4165299180 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

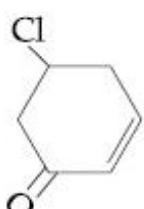
निम्नलिखित अभिक्रिया का मुख्य उत्पाद है :



Options :



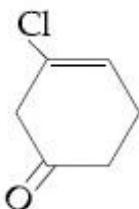
41652936178.



41652936179.



41652936180.

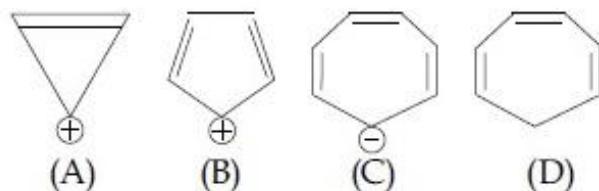


41652936181.

Question Number : 36 Question Id : 4165299181 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Which compound (s) out of the following is/are not aromatic ?



Options :

41652936182. (B)

41652936183. (A) and (C)

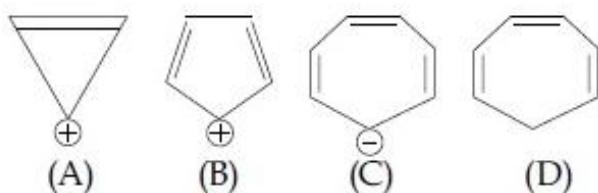
41652936184. (B), (C) and (D)

41652936185. (C) and (D)

Question Number : 36 Question Id : 4165299181 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में से कौन सा/से यौगिक ऐरोमैटिक नहीं है/हैं ?



Options :

41652936182. (B)

41652936183. (A) तथा (C)

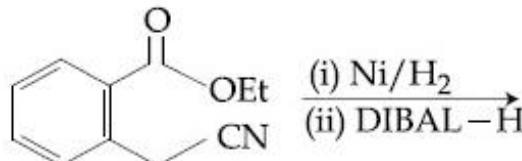
41652936184. (B), (C) तथा (D)

41652936185. (C) तथा (D)

Question Number : 37 Question Id : 4165299182 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

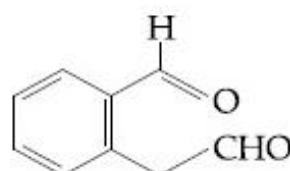
Correct Marks : 4 Wrong Marks : 1

The major product of the following reaction is :

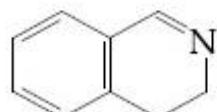


(i) Ni/H₂
(ii) DIBAL-H

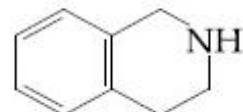
Options :



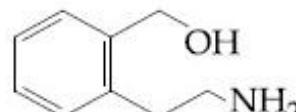
41652936186.



41652936187.



41652936188.

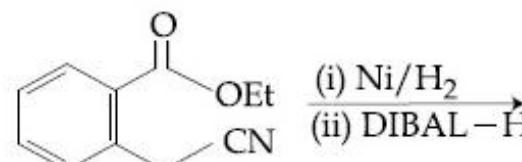


41652936189.

Question Number : 37 Question Id : 4165299182 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

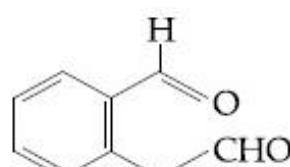
Correct Marks : 4 Wrong Marks : 1

निम्न अभिक्रिया से प्राप्त होनेवाला मुख्य उत्पाद है :

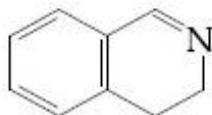


(i) Ni/H₂
(ii) DIBAL-H

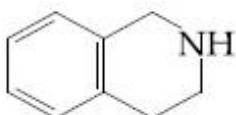
Options :



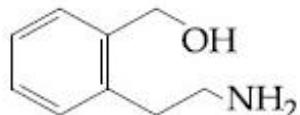
41652936186.



41652936187.



41652936188.



41652936189.

Question Number : 38 Question Id : 4165299183 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The correct match between items I and II
is :

Item - I (Mixture)	Item - II (Separation method)
(A) H ₂ O : Sugar	(P) Sublimation
(B) H ₂ O : Aniline	(Q) Recrystallization
(C) H ₂ O : Toluene	(R) Steam distillation
	(S) Differential extraction

Options :

41652936190. (A)→(R); (B)→(P); (C)→(S)

41652936191. (A)→(S); (B)→(R); (C)→(P)

41652936192. (A)→(Q); (B)→(R); (C)→(S)

41652936193. (A)→(Q); (B)→(R); (C)→(P)

Question Number : 38 Question Id : 4165299183 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

मदों I तथा II के बीच सही सुमेल है :

मद I	मद II
(मिश्रण)	(पृथक्करण विधि)
(A) H ₂ O : शर्करा	(P) ऊर्ध्वपातन
(B) H ₂ O : एनिलीन	(Q) पुनः क्रिस्टलन
(C) H ₂ O : टॉलूइन	(R) भाप आसवन
	(S) प्रभाजी आसवन

Options :

41652936190. (A)→(R); (B)→(P); (C)→(S)

41652936191. (A)→(S); (B)→(R); (C)→(P)

41652936192. (A)→(Q); (B)→(R); (C)→(S)

41652936193. (A)→(Q); (B)→(R); (C)→(P)

Question Number : 39 Question Id : 4165299184 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The correct match between item (I) and item (II) is :

Item - I	Item - II
(A) Norethindrone	(P) Anti-biotic
(B) Ofloxacin	(Q) Anti-fertility
(C) Equanil	(R) Hypertension
	(S) Analgesics

Options :

41652936194. (A)→(R); (B)→(P); (C)→(S)

41652936195. (A)→(R); (B)→(P); (C)→(R)

41652936196. (A)→(Q); (B)→(R); (C)→(S)

41652936197. (A)→(Q); (B)→(P); (C)→(R)

Question Number : 39 Question Id : 4165299184 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

मदों (I) तथा (II) के बीच सही सुमेल है :

मद I	मद II
(A) नॉरएथिनड्रान	(P) प्रतिजैविक
(B) आफ्लोक्सासिन	(Q) प्रतिजनन क्षमता
(C) इक्वैनिल	(R) अतितनाव
	(S) पीड़ाहारी

Options :

41652936194. (A)→(R); (B)→(P); (C)→(S)

41652936195. (A)→(R); (B)→(P); (C)→(R)

41652936196. (A)→(Q); (B)→(R); (C)→(S)

41652936197. (A)→(Q); (B)→(P); (C)→(R)

Question Number : 40 Question Id : 4165299185 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

An organic compound is estimated through Dumus method and was found to evolve 6 moles of CO_2 , 4 moles of H_2O and 1 mole of nitrogen gas. The formula of the compound is :

Options :

41652936198. $\text{C}_{12}\text{H}_8\text{N}_2$

41652936199. $\text{C}_{12}\text{H}_8\text{N}$

41652936200. $\text{C}_6\text{H}_8\text{N}_2$

41652936201. $\text{C}_6\text{H}_8\text{N}$

Question Number : 40 Question Id : 4165299185 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक कार्बनिक यौगिक का ढ्यूमा विधि से आकलन करने पर पाया गया कि 6 मोल CO_2 , 4 मोल H_2O तथा 1 मोल नाइट्रोजन उत्सर्जित होते हैं। इस यौगिक का सूत्र है :

Options :

41652936198. $\text{C}_{12}\text{H}_8\text{N}_2$

41652936199. $C_{12}H_8N$

41652936200. $C_6H_8N_2$

41652936201. C_6H_8N

Question Number : 41 Question Id : 4165299186 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The correct order of the atomic radii of C, Cs, Al, and S is :

Options :

41652936202. $S < C < Cs < Al$

41652936203. $C < S < Al < Cs$

41652936204. $C < S < Cs < Al$

41652936205. $S < C < Al < Cs$

Question Number : 41 Question Id : 4165299186 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

C, Cs, Al एवं S के परमाणुकोण त्रिज्याओं का सही अनुक्रम है :

Options :

41652936202. $S < C < Cs < Al$

41652936203. $C < S < Al < Cs$

41652936204. $C < S < Cs < Al$

41652936205. $S < C < Al < Cs$

Question Number : 42 Question Id : 4165299187 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Match the ores (column A) with the metals (column B) :

(Column A)	(Column B)
Ores	Metals
(I) Siderite	(a) Zinc
(II) Kaolinite	(b) Copper
(III) Malachite	(c) Iron
(IV) Calamine	(d) Aluminium

Options :

41652936206. (I) - (a); (II) - (b); (III) - (c); (IV) - (d)

41652936207. (I) - (c); (II) - (d); (III) - (b); (IV) - (a)

41652936208. (I) - (b); (II) - (c); (III) - (d); (IV) - (a)

41652936209. (I) - (c); (II) - (d); (III) - (a); (IV) - (b)

Question Number : 42 Question Id : 4165299187 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

अयस्कों (कालम A) को धातुओं (कालम B) के साथ सुमेलित कीजिए :

(कालम A)	(कालम B)
अयस्क	धातु
(I) सिडेराइट	(a) जिंक
(II) केओलिनाइट	(b) कॉपर
(III) मैलेकाइट	(c) आयरन
(IV) कैलामाइन	(d) एलूमीनियम

Options :

41652936206. (I) - (a); (II) - (b); (III) - (c); (IV) - (d)

41652936207. (I) - (c); (II) - (d); (III) - (b); (IV) - (a)

41652936208. (I) - (b); (II) - (c); (III) - (d); (IV) - (a)

41652936209. (I) - (c); (II) - (d); (III) - (a); (IV) - (b)

Question Number : 43 Question Id : 4165299188 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

NaH is an example of :

Options :

41652936210. metallic hydride

41652936211. molecular hydride

41652936212. saline hydride

41652936213. electron-rich hydride

**Question Number : 43 Question Id : 4165299188 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical**

Correct Marks : 4 Wrong Marks : 1

NaH एक उदाहरण है :

Options :

41652936210. धात्विक हाइड्राइड का

41652936211. आण्विक हाइड्राइड का

41652936212. लवण हाइड्राइड का

41652936213. इलेक्ट्रॉन-धनी हाइड्राइड का

**Question Number : 44 Question Id : 4165299189 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical**

Correct Marks : 4 Wrong Marks : 1

The correct statements among (a) to (d) regarding H₂ as a fuel are :

- (a) It produces less pollutants than petrol.
- (b) A cylinder of compressed dihydrogen weighs ~30 times more than a petrol tank producing the same amount of energy.
- (c) Dihydrogen is stored in tanks of metal alloys like NaNi₅.
- (d) On combustion, values of energy released per gram of liquid dihydrogen and LPG are 50 and 142 kJ, respectively.

Options :

41652936214. (a) and (c) only

41652936215. (b), (c) and (d) only

41652936216. (b) and (d) only

41652936217. (a), (b) and (c) only

Question Number : 44 Question Id : 4165299189 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

ईंधन के रूप में H_2 के बारे में, (a) से (d) में से सही कथन हैं :

- (a) यह पेट्रोल की अपेक्षा कम प्रदूषकों को बनाता है।
- (b) उसी मात्रा की ऊर्जा उत्पन्न करने के लिए एक पेट्रोल टैंक की तुलना में एक संपीड़ित डाइहाइड्रोजन का सिलिन्डर ~30 गुना अधिक भारी होता है।
- (c) डाइहाइड्रोजन को $NaNi_5$ की तरह के धातु मिश्रातु के टैंक में रखा जाता है।
- (d) दहन के उपरांत, प्रति ग्राम द्रवित डाइहाइड्रोजन तथा LPG से उत्सर्जित ऊर्जा के मान क्रमशः 50 तथा 142 kJ हैं।

Options :

41652936214. (a) तथा (c) मात्र

41652936215. (b), (c) तथा (d) मात्र

41652936216. (b) तथा (d) मात्र

41652936217. (a), (b) तथा (c) मात्र

Question Number : 45 Question Id : 4165299190 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

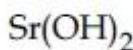
The amphoteric hydroxide is :

Options :

41652936218. $Be(OH)_2$

41652936219. $Mg(OH)_2$

41652936220. $Ca(OH)_2$



41652936221.

Question Number : 45 Question Id : 4165299190 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

उभयधर्मी हाइड्रोक्साइड है :

Options :

41652936218. Be(OH)_2

41652936219. Mg(OH)_2

41652936220. Ca(OH)_2

41652936221. Sr(OH)_2

Question Number : 46 Question Id : 4165299191 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The chloride that CANNOT get hydrolysed
is :

Options :

41652936222. CCl_4

41652936223. SiCl_4

41652936224. SnCl_4

41652936225. PbCl_4

Question Number : 46 Question Id : 4165299191 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

क्लोराइड जिसका जल-अपघटन नहीं हो सकता है,
वह है :

Options :

41652936222. CCl_4

41652936223. SiCl_4

41652936224. SnCl_4

Question Number : 47 Question Id : 4165299192 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The element that usually does NOT show variable oxidation states is :

Options :

41652936226. Sc

41652936227. Cu

41652936228. Ti

41652936229. V

Question Number : 47 Question Id : 4165299192 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

सामान्य रूप से परिवर्तनीय आक्सीकरण अवस्था नहीं प्रदर्शित करने वाला तत्व है :

Options :

41652936226. Sc

41652936227. Cu

41652936228. Ti

41652936229. V

Question Number : 48 Question Id : 4165299193 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Match the metals (column I) with the coordination compound(s)/enzyme(s) (column II) :

(column I) (column II)

Metals Coordination

 compound(s)/enzyme(s)

(A) Co (i) Wilkinson catalyst

(B) Zn (ii) Chlorophyll

(C) Rh (iii) Vitamin B₁₂

(D) Mg (iv) Carbonic anhydrase

Options :

41652936230. (A)-(ii); (B)-(i); (C)-(iv); (D)-(iii)

41652936231. (A)-(iv); (B)-(iii); (C)-(i); (D)-(ii)

41652936232. (A)-(i); (B)-(ii); (C)-(iii); (D)-(iv)

41652936233. (A)-(iii); (B)-(iv); (C)-(i); (D)-(ii)

Question Number : 48 Question Id : 4165299193 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

धातुओं (कालम I) को उपसहसंयोजन यौगिकों/
एन्जाइम (कालम II) के साथ सुमेलित कीजिए :

(कालम I) (कालम II)

धातु उपसहसंयोजन यौगिक/एन्जाइम

- | | | |
|--------|-------|-------------------------|
| (A) Co | (i) | विलिंसन उत्प्रेरक |
| (B) Zn | (ii) | क्लोरोफिल |
| (C) Rh | (iii) | विटामिन B ₁₂ |
| (D) Mg | (iv) | कार्बोनिक एन्हाइड्रेज |

Options :

41652936230. (A)-(ii); (B)-(i); (C)-(iv); (D)-(iii)

41652936231. (A)-(iv); (B)-(iii); (C)-(i); (D)-(ii)

41652936232. (A)-(i); (B)-(ii); (C)-(iii); (D)-(iv)

41652936233. (A)-(iii); (B)-(iv); (C)-(i); (D)-(ii)

Question Number : 49 Question Id : 4165299194 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The concentration of dissolved oxygen
(DO) in cold water can go upto :

Options :

41652936234. 8 ppm

41652936235. 10 ppm

41652936236. 14 ppm

41652936237. 16 ppm

Question Number : 49 Question Id : 4165299194 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

ठंडे जल में घुलित ऑक्सीजन (DO) के सान्द्रता की
ऊपरी सीमा हो सकती है :

Options :

41652936234. 8 ppm

41652936235. 10 ppm

41652936236. 14 ppm

41652936237. 16 ppm

Question Number : 50 Question Id : 4165299195 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Peroxyacetyl nitrate (PAN), an eye irritant
is produced by :

Options :

41652936238. acid rain

41652936239. organic waste

41652936240. photochemical smog

41652936241. classical smog

Question Number : 50 Question Id : 4165299195 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

पराक्सीएसीटाइल नाइट्रोट (PAN), एक नेत्र उत्तेजक,
निम्नलिखित में से किससे उत्पन्न होता है ?

Options :

41652936238. अम्ल वर्षा

41652936239. कार्बनिक अपशिष्ट

41652936240. प्रकाश रासायनिक धूमकुहा

Question Number : 51 Question Id : 4165299196 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A 10 mg effervescent tablet containing sodium bicarbonate and oxalic acid releases 0.25 ml of CO_2 at $T = 298.15\text{ K}$ and $p = 1\text{ bar}$. If molar volume of CO_2 is 25.0 L under such condition, what is the percentage of sodium bicarbonate in each tablet ?

[Molar mass of $\text{NaHCO}_3 = 84\text{ g mol}^{-1}$]

Options :

41652936242. 8.4

41652936243. 0.84

41652936244. 16.8

41652936245. 33.6

Question Number : 51 Question Id : 4165299196 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

सोडियम बाइकार्बोनेट तथा आक्साइलिक अम्ल युक्त एक 10 mg का बुदबुदाने वाला टैबलेट $T = 298.15\text{ K}$ तथा $p = 1\text{ bar}$ पर 0.25 ml CO_2 उत्सर्जित करता है। ऐसी दशा में, यदि CO_2 का मोलर आयतन 25.0 L है, तो प्रत्येक टैबलेट में सोडियम बाइकार्बोनेट का क्या प्रतिशत है? (NaHCO_3 का मोलर द्रव्यमान = 84 g mol^{-1})

Options :

41652936242. 8.4

41652936243. 0.84

41652936244. 16.8

41652936245. 33.6

Question Number : 52 Question Id : 4165299197 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A solid having density of $9 \times 10^3 \text{ kg m}^{-3}$ forms face centred cubic crystals of edge length $200\sqrt{2} \text{ pm}$. What is the molar mass of the solid ?

[Avogadro constant $\approx 6 \times 10^{23} \text{ mol}^{-1}$, $\pi \approx 3$]

Options :

41652936246. $0.0432 \text{ kg mol}^{-1}$

41652936247. $0.4320 \text{ kg mol}^{-1}$

41652936248. $0.0216 \text{ kg mol}^{-1}$

41652936249. $0.0305 \text{ kg mol}^{-1}$

Question Number : 52 Question Id : 4165299197 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक ठोस, जिसका घनत्व $9 \times 10^3 \text{ kg m}^{-3}$ है, फलक केन्द्रित घनीय क्रिस्टल बनाता है जिसके कोर की लम्बाई $200\sqrt{2} \text{ pm}$ है। ठोस का मोलर द्रव्यमान क्या है?

[अवगाह्रो नियतांक $\approx 6 \times 10^{23} \text{ mol}^{-1}$, $\pi \approx 3$]

Options :

41652936246. $0.0432 \text{ kg mol}^{-1}$

41652936247. $0.4320 \text{ kg mol}^{-1}$

41652936248. $0.0216 \text{ kg mol}^{-1}$

41652936249. $0.0305 \text{ kg mol}^{-1}$

Question Number : 53 Question Id : 4165299198 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Heat treatment of muscular pain involves radiation of wavelength of about 900 nm. Which spectral line of H-atom is suitable for this purpose ?

[$R_H = 1 \times 10^5 \text{ cm}^{-1}$, $h = 6.6 \times 10^{-34} \text{ Js}$, $c = 3 \times 10^8 \text{ ms}^{-1}$]

Options :

41652936250. Lyman, $\infty \rightarrow 1$

41652936251. Balmer, $\infty \rightarrow 2$

41652936252. Paschen, 5→3

41652936253. Paschen, ∞→3

Question Number : 53 Question Id : 4165299198 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

मांसपेशीय दर्द के ऊष्मा उपचार के लिए लगभग 900 nm के तरंगदैर्घ्य के विकिरण का उपयोग होता है। इसके लिए H-परमाणु की कौनसी स्पेक्ट्रल लाइन उपयुक्त है?

[$R_H = 1 \times 10^5 \text{ cm}^{-1}$, $h = 6.6 \times 10^{-34} \text{ Js}$, $c = 3 \times 10^8 \text{ ms}^{-1}$]

Options :

41652936250. लाईमैन, ∞→1

41652936251. बामर, ∞→2

41652936252. पाशन, 5→3

41652936253. पाशन, ∞→3

Question Number : 54 Question Id : 4165299199 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

For the chemical reaction $X \rightleftharpoons{} Y$, the standard reaction Gibbs energy depends on temperature T (in K) as

$$\Delta_f G^\circ \text{ (in kJ mol}^{-1}\text{)} = 120 - \frac{3}{8} T.$$

The major component of the reaction mixture at T is :

Options :

41652936254. X if T=350 K

41652936255. Y if T=300 K

41652936256. X if T=315 K

41652936257. Y if T=280 K

Correct Marks : 4 Wrong Marks : 1

रासायनिक अभिक्रिया $X \rightleftharpoons[Y]$ के लिए, मानक अभिक्रिया गिब्स ऊर्जा ताप (K में) पर निम्नलिखित की तरह आश्रित होती है :

$$\Delta_r G^\circ \text{ (in kJ mol}^{-1}\text{)} = 120 - \frac{3}{8} T$$

अभिक्रिया मिश्रण का मुख्य संघटक T पर है :

Options :

41652936254. X यदि $T = 350\text{ K}$

41652936255. Y यदि $T = 300\text{ K}$

41652936256. X यदि $T = 315\text{ K}$

41652936257. Y यदि $T = 280\text{ K}$

Correct Marks : 4 Wrong Marks : 1

Two blocks of the same metal having same mass and at temperature T_1 and T_2 , respectively, are brought in contact with each other and allowed to attain thermal equilibrium at constant pressure. The change in entropy, ΔS , for this process is :

Options :

$$41652936258. 2C_p \ln \left(\frac{T_1 + T_2}{4T_1 T_2} \right)$$

$$C_p \ln \left[\frac{(T_1 + T_2)^2}{4T_1 T_2} \right]$$

41652936259.

$$2C_p \ln \left[\frac{T_1 + T_2}{2T_1 T_2} \right]$$

41652936260.

$$2C_p \ln \left[\frac{(T_1 + T_2)^{\frac{1}{2}}}{T_1 T_2} \right]$$

41652936261.

Question Number : 55 Question Id : 4165299200 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक ही धातु के समान संहति वाले दो ब्लाकों को क्रमशः
ताप T_1 तथा T_2 पर परस्पर एक दूसरे के सम्पर्क में
लाया गया तथा नियत दाब पर ऊष्मीय साम्य प्राप्त
करने दिया गया। इस प्रक्रम में, एन्ट्रोपी परिवर्तन ΔS
है :

Options :

$$2C_p \ln \left(\frac{T_1 + T_2}{4T_1 T_2} \right)$$

41652936258.

$$C_p \ln \left[\frac{(T_1 + T_2)^2}{4T_1 T_2} \right]$$

41652936259.

$$2C_p \ln \left[\frac{T_1 + T_2}{2T_1 T_2} \right]$$

41652936260.

$$2C_p \ln \left[\frac{(T_1 + T_2)^{\frac{1}{2}}}{T_1 T_2} \right]$$

41652936261.

Question Number : 56 Question Id : 4165299201 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The freezing point of a diluted milk sample
is found to be -0.2°C , while it should have
been -0.5°C for pure milk. How much
water has been added to pure milk to make
the diluted sample?

Options :

41652936262. 1 cup of water to 2 cups of pure milk

41652936263. 2 cups of water to 3 cups of pure milk

41652936264. 3 cups of water to 2 cups of pure milk

41652936265. 1 cup of water to 3 cups of pure milk

Question Number : 56 Question Id : 4165299201 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक तनुकृत दुग्ध प्रतिदर्श का हिमांक -0.2°C पाया गया, जबकि विशुद्ध दुग्ध का हिमांक -0.5°C होना चाहिए। तनुकृत दुग्ध प्रतिदर्श को बनाने के लिए विशुद्ध दुग्ध में कितना जल मिलाया गया है?

Options :

41652936262. 2 कप विशुद्ध दुग्ध में 1 कप जल

41652936263. 3 कप विशुद्ध दुग्ध में 2 कप जल

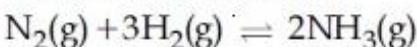
41652936264. 2 कप विशुद्ध दुग्ध में 3 कप जल

41652936265. 3 कप विशुद्ध दुग्ध में 1 कप जल

Question Number : 57 Question Id : 4165299202 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Consider the reaction



The equilibrium constant of the above reaction is K_p . If pure ammonia is left to dissociate, the partial pressure of ammonia at equilibrium is given by (Assume that

$$P_{\text{NH}_3} \ll P_{\text{total}} \text{ at equilibrium}$$

Options :

$$\frac{K_p^{1/2} P^2}{16}$$

$$\frac{3^{3/2} K_p^{1/2} P^2}{4}$$

41652936267.

$$\frac{K_p^{1/2} P^2}{4}$$

41652936268.

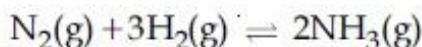
$$\frac{3^{3/2} K_p^{1/2} P^2}{16}$$

41652936269.

Question Number : 57 Question Id : 4165299202 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया पर विचार कीजिए :



उपर्युक्त अभिक्रिया का साम्य स्थिरांक K_p है। यदि विशुद्ध अमोनिया को वियोजित होने दिया जाता है, तो साम्यावस्था पर अमोनिया का आंशिक दाब है :

(मान लीजिए साम्यावस्था पर $P_{NH_3} \ll P_{\text{समूर्ण}}$)

Options :

$$\frac{K_p^{1/2} P^2}{16}$$

41652936266.

$$\frac{3^{3/2} K_p^{1/2} P^2}{4}$$

41652936267.

$$\frac{K_p^{1/2} P^2}{4}$$

41652936268.

$$\frac{3^{3/2} K_p^{1/2} P^2}{16}$$

41652936269.

Question Number : 58 Question Id : 4165299203 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

For the cell $Zn(s)|Zn^{2+}(aq)||M^{x+}(aq)|M(s)$, different half cells and their standard electrode potentials are given below :

$M^{x+}(aq)/M(s)$	$Au^{3+}(aq)/Au(s)$	$Ag^{+}(aq)/Ag(s)$	$Fe^{3+}(aq)/Fe^{2+}(aq)$	$Fe^{2+}(aq)/Fe(s)$
$E^\circ_{M^{x+}/M}(V)$	1.40	0.80	0.77	-0.44

If $E^\circ_{Zn^{2+}/Zn} = -0.76 V$, which cathode will give a maximum value of E°_{cell} per electron transferred ?

Options :

41652936270. Au^{3+}/Au

41652936271. Ag^{+}/Ag

41652936272. Fe^{3+}/Fe^{2+}

41652936273. Fe^{2+}/Fe

Question Number : 58 Question Id : 4165299203 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

सेल $Zn(s)|Zn^{2+}(aq)||M^{x+}(aq)|M(s)$ के लिए विभिन्न अर्द्ध-सेल तथा उनके मानक इलेक्ट्रोड विभव नीचे दिये गये हैं

$M^{x+}(aq)/M(s)$	$Au^{3+}(aq)/Au(s)$	$Ag^{+}(aq)/Ag(s)$	$Fe^{3+}(aq)/Fe^{2+}(aq)$	$Fe^{2+}(aq)/Fe(s)$
$E^\circ_{M^{x+}/M}(V)$	1.40	0.80	0.77	-0.44

यदि $E^\circ_{Zn^{2+}/Zn} = -0.76 V$, तो प्रति इलेक्ट्रॉन स्थानांतरण के लिए कौन से कैथोड का E°_{cell} सर्वाधिक होगा :

Options :

41652936270. Au^{3+}/Au

41652936271. Ag^{+}/Ag

41652936272. Fe^{3+}/Fe^{2+}

41652936273. Fe^{2+}/Fe

Question Number : 59 Question Id : 4165299204 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If a reaction follows the Arrhenius equation, the plot $\ln k$ vs $1/(RT)$ gives straight line with a gradient ($-y$) unit. The energy required to activate the reactant is :

Options :

41652936274. yR unit

41652936275. y unit

41652936276. $-y$ unit

41652936277. y/R unit

Question Number : 59 Question Id : 4165299204 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि एक अभिक्रिया आर्हेनिअस समीकरण का अनुसरण करती है, तो प्लाट $\ln k$ vs $1/(RT)$, तो प्रवणता ($-y$) मात्रक के साथ एक सीधी रेखा देता है। अभिकारकों को सक्रिय करने के लिए आवश्यक ऊर्जा है :

Options :

41652936274. yR मात्रक

41652936275. y मात्रक

41652936276. $-y$ मात्रक

41652936277. y/R मात्रक

Question Number : 60 Question Id : 4165299205 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

An example of solid sol is :

Options :

41652936278. Gem stones

41652936279. Paint

41652936280. Butter

41652936281. Hair cream

Question Number : 60 Question Id : 4165299205 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

ठोस सॉल किसका एक उदाहरण है?

Options :

41652936278. जेम स्टोन

41652936279. पेन्ट

41652936280. मक्खन

41652936281. हेयर क्रीम

Mathematics

Section Id :	416529129
Section Number :	3
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	30
Number of Questions to be attempted:	30
Section Marks:	120
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	416529138
Question Shuffling Allowed :	Yes

Question Number : 61 Question Id : 4165299206 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $f : \mathbf{R} \rightarrow \mathbf{R}$ be defined by $f(x) = \frac{x}{1+x^2}$,

$x \in \mathbf{R}$. Then the range of f is :

Options :

41652936282. $\mathbf{R} - \left[-\frac{1}{2}, \frac{1}{2} \right]$

41652936283. $\mathbf{R} - [-1, 1]$

41652936284. $(-1, 1) - \{0\}$

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

41652936285.

Question Number : 61 Question Id : 4165299206 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना $f: \mathbf{R} \rightarrow \mathbf{R}$, $f(x) = \frac{x}{1+x^2}$, $x \in \mathbf{R}$ द्वारा परिभाषित

किया गया है, तो f का परिसर है :

Options :

$$\mathbf{R} - \left[-\frac{1}{2}, \frac{1}{2} \right]$$

41652936282.

41652936283. $\mathbf{R} - [-1, 1]$

41652936284. $(-1, 1) - \{0\}$

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

41652936285.

Question Number : 62 Question Id : 4165299207 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If one real root of the quadratic equation
 $81x^2 + kx + 256 = 0$ is cube of the other root,
then a value of k is :

Options :

41652936286. -300

41652936287. 100

41652936288. 144

41652936289. -81

Question Number : 62 Question Id : 4165299207 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि द्विघात समीकरण $81x^2 + kx + 256 = 0$ का एक मूल दूसरे मूल का घन (cube) है, तो k का एक मान है :

Options :

41652936286. -300

41652936287. 100

41652936288. 144

41652936289. -81

Question Number : 63 Question Id : 4165299208 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $\left(-2 - \frac{1}{3}i\right)^3 = \frac{x+iy}{27}$ ($i = \sqrt{-1}$), where

x and y are real numbers, then $y-x$ equals :

Options :

41652936290. 91

41652936291. 85

41652936292. -91

41652936293. -85

Question Number : 63 Question Id : 4165299208 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना $\left(-2 - \frac{1}{3}i\right)^3 = \frac{x+iy}{27}$ ($i = \sqrt{-1}$), जहाँ

x तथा y वास्तविक संख्यायें हैं, तो $y-x$ बराबर है :

Options :

41652936290. 91

41652936291. 85

41652936292. -91

Question Number : 64 Question Id : 4165299209 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $A = \begin{pmatrix} 0 & 2q & r \\ p & q & -r \\ p & -q & r \end{pmatrix}$. If $AA^T = I_3$, then

$|p|$ is :

Options :

41652936294. $\frac{1}{\sqrt{2}}$

41652936295. $\frac{1}{\sqrt{3}}$

41652936296. $\frac{1}{\sqrt{5}}$

41652936297. $\frac{1}{\sqrt{6}}$

Question Number : 64 Question Id : 4165299209 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना $A = \begin{pmatrix} 0 & 2q & r \\ p & q & -r \\ p & -q & r \end{pmatrix}$. यदि $AA^T = I_3$, तो

$|p|$ बराबर है :

Options :

41652936294. $\frac{1}{\sqrt{2}}$

41652936295. $\frac{1}{\sqrt{3}}$

41652936296. $\frac{1}{\sqrt{5}}$

$$\frac{1}{\sqrt{6}}$$

41652936297.

Question Number : 65 Question Id : 4165299210 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If the system of linear equations

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

$$3x - y + 5z = b$$

$$x - 3y + 2z = c$$

where a, b, c are non-zero real numbers, has more than one solution, then :

Options :

41652936298. $b + c - a = 0$

41652936299. $b - c + a = 0$

41652936300. $b - c - a = 0$

41652936301. $a + b + c = 0$

Question Number : 65 Question Id : 4165299210 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि ऐक्यिक समीकरण निकाय

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

$$3x - y + 5z = b$$

$$x - 3y + 2z = c$$

जहाँ a, b, c शून्येतर वास्तविक संख्यायें हैं, के एक से

अधिक हल हैं, तो :

Options :

41652936298. $b + c - a = 0$

41652936299. $b - c + a = 0$

41652936300. $b - c - a = 0$

41652936301. $a + b + c = 0$

Question Number : 66 Question Id : 4165299211 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The sum of the real values of x for which the middle term in the binomial expansion

of $\left(\frac{x^3}{3} + \frac{3}{x}\right)^8$ equals 5670 is :

Options :

41652936302. 0

41652936303. 4

41652936304. 6

41652936305. 8

Question Number : 66 Question Id : 4165299211 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

x के उन वास्तविक मानों जिनके लिए $\left(\frac{x^3}{3} + \frac{3}{x}\right)^8$ के

द्विपद प्रसार का मध्य पद 5670 है, का योग है :

Options :

41652936302. 0

41652936303. 4

41652936304. 6

41652936305. 8

Question Number : 67 Question Id : 4165299212 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let a_1, a_2, \dots, a_{10} be a G.P. If $\frac{a_3}{a_1} = 25$, then

$\frac{a_9}{a_5}$ equals :

Options :

41652936306. $2(5^2)$

41652936307. $4(5^2)$

41652936308. 5^3

Question Number : 67 Question Id : 4165299212 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना a_1, a_2, \dots, a_{10} एक गुणोत्तर श्रेढ़ी है। यदि

$$\frac{a_3}{a_1} = 25, \text{ तो } \frac{a_9}{a_5} \text{ बराबर है:}$$

Options :

41652936306. $2(5^2)$

41652936307. $4(5^2)$

41652936308. 5^3

41652936309. 5^4

Question Number : 68 Question Id : 4165299213 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The sum of an infinite geometric series with positive terms is 3 and the sum of the cubes

of its terms is $\frac{27}{19}$. Then the common ratio

of this series is :

Options :

41652936310. $\frac{4}{9}$

41652936311. $\frac{2}{9}$

41652936312. $\frac{1}{3}$

41652936313. $\frac{2}{3}$

Question Number : 68 Question Id : 4165299213 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

धन पदों की एक अनन्त गुणोत्तर श्रेणी का योग 3 है

तथा इसके पदों के घनों (cubes) का योग $\frac{27}{19}$ है, तो

इस श्रेणी का सार्व अनुपात है :

Options :

4
9

2
9

1
3

2
3

Question Number : 69 Question Id : 4165299214 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The value of r for which
 ${}^{20}C_r {}^{20}C_0 + {}^{20}C_{r-1} {}^{20}C_1 + {}^{20}C_{r-2} {}^{20}C_2 + \dots + {}^{20}C_0 {}^{20}C_r$

is maximum, is :

Options :

41652936314. 11

41652936315. 15

41652936316. 10

41652936317. 20

Question Number : 69 Question Id : 4165299214 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

r का वह मान, जिसके लिए

${}^{20}C_r {}^{20}C_0 + {}^{20}C_{r-1} {}^{20}C_1 + {}^{20}C_{r-2} {}^{20}C_2 + \dots + {}^{20}C_0 {}^{20}C_r$

अधिकतम है, है :

Options :

41652936314. 11

41652936315. 15

41652936316. 10

41652936317. 20

Question Number : 70 Question Id : 4165299215 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $[x]$ denote the greatest integer less than or equal to x . Then :

$$\lim_{x \rightarrow 0} \frac{\tan(\pi \sin^2 x) + (|x| - \sin(x[x]))^2}{x^2} :$$

Options :

41652936318. equals π

41652936319. equals 0

41652936320. equals $\pi + 1$

41652936321. does not exist

Question Number : 70 Question Id : 4165299215 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना $[x], x$ के समान या उससे कम महत्तम पूर्णांक को दर्शाता है, तो

$$\lim_{x \rightarrow 0} \frac{\tan(\pi \sin^2 x) + (|x| - \sin(x[x]))^2}{x^2} :$$

Options :

41652936318. π के बराबर है

41652936319. 0 के बराबर है

41652936320. $\pi + 1$ के बराबर है

41652936321. का अस्तित्व नहीं है

Correct Marks : 4 Wrong Marks : 1

If $x \log_e (\log_e x) - x^2 + y^2 = 4$ ($y > 0$), then

$\frac{dy}{dx}$ at $x=e$ is equal to :

Options :

$$\frac{(2e-1)}{2\sqrt{4+e^2}}$$

41652936322.

$$\frac{e}{\sqrt{4+e^2}}$$

41652936323.

$$\frac{(1+2e)}{2\sqrt{4+e^2}}$$

41652936324.

$$\frac{(1+2e)}{\sqrt{4+e^2}}$$

41652936325.

Correct Marks : 4 Wrong Marks : 1

यदि $x \log_e (\log_e x) - x^2 + y^2 = 4$ ($y > 0$), तो

$x=e$ पर $\frac{dy}{dx}$ बराबर है :

Options :

$$\frac{(2e-1)}{2\sqrt{4+e^2}}$$

41652936322.

$$\frac{e}{\sqrt{4+e^2}}$$

41652936323.

$$\frac{(1+2e)}{2\sqrt{4+e^2}}$$

41652936324.

$$\frac{(1+2e)}{\sqrt{4+e^2}}$$

41652936325.

Question Number : 72 Question Id : 4165299217 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $f(x) = \begin{cases} -1, & -2 \leq x < 0 \\ x^2 - 1, & 0 \leq x \leq 2 \end{cases}$ and

$g(x) = |f(x)| + f(|x|)$. Then, in the interval $(-2, 2)$, g is :

Options :

41652936326. not continuous

41652936327. not differentiable at one point

41652936328. not differentiable at two points

41652936329. differentiable at all points

Question Number : 72 Question Id : 4165299217 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना $f(x) = \begin{cases} -1, & -2 \leq x < 0 \\ x^2 - 1, & 0 \leq x \leq 2 \end{cases}$ तथा

$g(x) = |f(x)| + f(|x|)$, तो अंतराल $(-2, 2)$ में g :

Options :

41652936326. संतत नहीं है

41652936327. एक बिन्दु पर अवकलनीय नहीं है

41652936328. दो बिन्दुओं पर अवकलनीय नहीं है

41652936329. सभी बिन्दुओं पर अवकलनीय है

Question Number : 73 Question Id : 4165299218 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The maximum value of the function $f(x) = 3x^3 - 18x^2 + 27x - 40$ on the set

$S = \{x \in \mathbb{R} : x^2 + 30 \leq 11x\}$ is :

Options :

41652936330. 122

41652936331. -122

41652936332. 222

41652936333. -222

Question Number : 73 Question Id : 4165299218 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

समुच्चय $S = \{x \in \mathbb{R} : x^2 + 30 \leq 11x\}$ पर फलन

$f(x) = 3x^3 - 18x^2 + 27x - 40$ का अधिकतम मान
है :

Options :

41652936330. 122

41652936331. -122

41652936332. 222

41652936333. -222

Question Number : 74 Question Id : 4165299219 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$$\text{If } \int \frac{\sqrt{1-x^2}}{x^4} dx = A(x) \left(\sqrt{1-x^2} \right)^m + C ,$$

for a suitable chosen integer m and a function $A(x)$, where C is a constant of integration, then $(A(x))^m$ equals :

Options :

41652936334. $\frac{1}{9x^4}$

41652936335. $\frac{-1}{3x^3}$

41652936336. $\frac{-1}{27x^9}$

$$\frac{1}{27x^6}$$

41652936337.

Question Number : 74 Question Id : 4165299219 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

उपयुक्त पूर्णांक m तथा एक फलन A(x) के लिए यदि

$$\int \frac{\sqrt{1-x^2}}{x^4} dx = A(x) \left(\sqrt{1-x^2} \right)^m + C ,$$

जहाँ C एक समाकलन अचर है, तो $(A(x))^m$ बराबर है :

Options :

$$\frac{1}{9x^4}$$

41652936334.

$$\frac{-1}{3x^3}$$

41652936335.

$$\frac{-1}{27x^9}$$

41652936336.

$$\frac{1}{27x^6}$$

41652936337.

Question Number : 75 Question Id : 4165299220 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The value of the integral $\int_{-2\lceil \frac{x}{\pi} \rceil}^2 \frac{\sin^2 x}{x} dx$

(where $[x]$ denotes the greatest integer less than or equal to x) is :

Options :

41652936338. $4 - \sin 4$

41652936339. 0

41652936340. 4

$\sin 4$

41652936341.

Question Number : 75 Question Id : 4165299220 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$$\text{समाकल} \int_{-2}^2 \left[\frac{\sin^2 x}{\left[\frac{x}{\pi} \right] + \frac{1}{2}} \right] dx$$

(जहाँ $[x]$, x के समान या उससे कम महत्तम पूर्णांक को दर्शाता है) का मान है :

Options :

41652936338. $4 - \sin 4$

41652936339. 0

41652936340. 4

41652936341. $\sin 4$

Question Number : 76 Question Id : 4165299221 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The area (in sq.units) of the region bounded by the curve $x^2 = 4y$ and the straight line $x = 4y - 2$ is :

Options :

41652936342. $\frac{3}{4}$

41652936343. $\frac{9}{8}$

41652936344. $\frac{5}{4}$

41652936345. $\frac{7}{8}$

Question Number : 76 Question Id : 4165299221 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

वक्र $x^2 = 4y$ तथा सरल रेखा $x = 4y - 2$ द्वारा घिरे क्षेत्र का क्षेत्रफल (वर्ग इकाइयों में) है :

Options :

41652936342. $\frac{3}{4}$

41652936343. $\frac{9}{8}$

41652936344. $\frac{5}{4}$

41652936345. $\frac{7}{8}$

Question Number : 77 Question Id : 4165299222 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

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

equation $\frac{dy}{dx} + \left(\frac{2x+1}{x}\right)y = e^{-2x}, x > 0,$

where $y(1) = \frac{1}{2}e^{-2}$, then :

Options :

41652936346. $y(\log_e 2) = \frac{\log_e 2}{4}$

41652936347. $y(\log_e 2) = \log_e 4$

41652936348. $y(x)$ is decreasing in $(0, 1)$

41652936349. $y(x)$ is decreasing in $\left(\frac{1}{2}, 1\right)$

Question Number : 77 Question Id : 4165299222 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि अवकल समीकरण

$$\frac{dy}{dx} + \left(\frac{2x+1}{x} \right) y = e^{-2x}, x > 0 \text{ का हल } y(x)$$

है, जहाँ $y(1) = \frac{1}{2}e^{-2}$, तो :

Options :

$$y(\log_e 2) = \frac{\log_e 2}{4}$$

41652936346.

$$41652936347. \quad y(\log_e 2) = \log_e 4$$

41652936348. $(0, 1)$ में $y(x)$ ह्रासमान है।

$$\left(\frac{1}{2}, 1 \right) \text{ में } y(x) \text{ ह्रासमान है।}$$

41652936349.

Question Number : 78 Question Id : 4165299223 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Two circles with equal radii are intersecting at the points $(0, 1)$ and $(0, -1)$. The tangent at the point $(0, 1)$ to one of the circles passes through the centre of the other circle. Then the distance between the centres of these circles is :

Options :

$$41652936350. \quad 2\sqrt{2}$$

$$41652936351. \quad 1$$

$$41652936352. \quad 2$$

$$41652936353. \quad \sqrt{2}$$

Question Number : 78 Question Id : 4165299223 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

बराबर त्रिज्या के दो वृत्त, बिन्दुओं $(0, 1)$ तथा $(0, -1)$ पर काटते हैं। इनमें से एक वृत्त के बिन्दु $(0, 1)$ पर स्पर्श रेखा दूसरे वृत्त के केन्द्र से होकर जाती है, तो इन वृत्तों के केन्द्रों के बीच की दूरी है :

Options :

41652936350. $2\sqrt{2}$

41652936351. 1

41652936352. 2

41652936353. $\sqrt{2}$

Question Number : 79 Question Id : 4165299224 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The straight line $x + 2y = 1$ meets the coordinate axes at A and B. A circle is drawn through A, B and the origin. Then the sum of perpendicular distances from A and B on the tangent to the circle at the origin is :

Options :

41652936354. $4\sqrt{5}$

41652936355. $\frac{\sqrt{5}}{4}$

41652936356. $2\sqrt{5}$

41652936357. $\frac{\sqrt{5}}{2}$

Question Number : 79 Question Id : 4165299224 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

सरल रेखा $x + 2y = 1$ निदेशांक अक्षों को A तथा B पर काटती है। मूल बिन्दु, A तथा B से होकर जाने वाला वृत्त खींचा गया है, तो मूल बिन्दु पर वृत्त की स्पर्श रेखा की A तथा B से लम्बवत् दूरियों का योग है :

Options :

41652936354. $4\sqrt{5}$

$$\frac{\sqrt{5}}{4}$$

41652936355.

$$2\sqrt{5}$$

$$\frac{\sqrt{5}}{2}$$

41652936357.

Question Number : 80 Question Id : 4165299225 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A square is inscribed in the circle $x^2 + y^2 - 6x + 8y - 103 = 0$ with its sides parallel to the coordinate axes. Then the distance of the vertex of this square which is nearest to the origin is :

Options :

41652936358. 6

41652936359. $\sqrt{41}$

41652936360. 13

41652936361. $\sqrt{137}$

Question Number : 80 Question Id : 4165299225 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अक्षों के समान्तर भुजाओं का एक वर्ग, वृत्त $x^2 + y^2 - 6x + 8y - 103 = 0$ के अंतर्गत है, तो इस वर्ग का वह शीर्ष जो मूल बिन्दु के सबसे निकट है, की दूरी है :

Options :

41652936358. 6

41652936359. $\sqrt{41}$

41652936360. 13

41652936361. $\sqrt{137}$

Question Number : 81 Question Id : 4165299226 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Equation of a common tangent to the parabola $y^2 = 4x$ and the hyperbola $xy = 2$ is :

Options :

41652936362. $x - 2y + 4 = 0$

41652936363. $x + y + 1 = 0$

41652936364. $4x + 2y + 1 = 0$

41652936365. $x + 2y + 4 = 0$

Question Number : 81 Question Id : 4165299226 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

परवलय $y^2 = 4x$ तथा अतिपरवलय $xy = 2$ की एक उभयनिष्ठ स्पर्श रेखा का समीकरण है :

Options :

41652936362. $x - 2y + 4 = 0$

41652936363. $x + y + 1 = 0$

41652936364. $4x + 2y + 1 = 0$

41652936365. $x + 2y + 4 = 0$

Question Number : 82 Question Id : 4165299227 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If tangents are drawn to the ellipse $x^2 + 2y^2 = 2$ at all points on the ellipse other than its four vertices then the mid points of the tangents intercepted between the coordinate axes lie on the curve :

Options :

$$\frac{1}{2x^2} + \frac{1}{4y^2} = 1$$

41652936366.

$$\frac{1}{4x^2} + \frac{1}{2y^2} = 1$$

41652936367.

$$\frac{x^2}{2} + \frac{y^2}{4} = 1$$

41652936368.

$$\frac{x^2}{4} + \frac{y^2}{2} = 1$$

41652936369.

Question Number : 82 Question Id : 4165299227 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि दीर्घवृत्त $x^2 + 2y^2 = 2$ के चार शीर्षों के अतिरिक्त
इसके सभी बिन्दुओं पर स्पर्श रेखायें खींची गई हैं, तो
इन स्पर्श रेखाओं के निदेशांक अक्षों के बीच के अंतर्खण्डों
के मध्य बिन्दु निम्न में से किस वक्र पर हैं?

Options :

$$\frac{1}{2x^2} + \frac{1}{4y^2} = 1$$

41652936366.

$$\frac{1}{4x^2} + \frac{1}{2y^2} = 1$$

41652936367.

$$\frac{x^2}{2} + \frac{y^2}{4} = 1$$

41652936368.

$$\frac{x^2}{4} + \frac{y^2}{2} = 1$$

41652936369.

Question Number : 83 Question Id : 4165299228 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The direction ratios of normal to the plane
through the points $(0, -1, 0)$ and $(0, 0, 1)$

and making an angle $\frac{\pi}{4}$ with the plane

$y - z + 5 = 0$ are :

Options :

$\sqrt{2}, 1, -1$

41652936370.

$2\sqrt{3}, 1, -1$

41652936371.

$2, -1, 1$

$2, \sqrt{2}, -\sqrt{2}$

41652936373.

Question Number : 83 Question Id : 4165299228 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

बिन्दुओं $(0, -1, 0)$ तथा $(0, 0, 1)$ से होकर जाने वाले

तथा समतल $y - z + 5 = 0$ के साथ $\frac{\pi}{4}$ का कोण

बनाने वाले समतल के अभिलम्ब के दिक अनुपात
(direction ratios) हैं :

Options :

$\sqrt{2}, 1, -1$

41652936370.

$2\sqrt{3}, 1, -1$

41652936371.

$2, -1, 1$

41652936372.

$2, \sqrt{2}, -\sqrt{2}$

41652936373.

Question Number : 84 Question Id : 4165299229 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The plane containing the line

$$\frac{x-3}{2} = \frac{y+2}{-1} = \frac{z-1}{3} \quad \text{and also}$$

containing its projection on the plane
 $2x + 3y - z = 5$, contains which one of the
following points ?

Options :

41652936374. $(0, -2, 2)$

41652936375. $(2, 0, -2)$

41652936376. (2, 2, 0)

41652936377. (-2, 2, 2)

Question Number : 84 Question Id : 4165299229 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

समतल, जिसमें रेखा

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

अन्तर्विष्ट है तथा इस रेखा का समतल $2x + 3y - z = 5$

पर प्रक्षेप (projection) भी अन्तर्विष्ट है, पर निम्न में से कौन सा बिन्दु स्थित है?

Options :

41652936374. (0, -2, 2)

41652936375. (2, 0, -2)

41652936376. (2, 2, 0)

41652936377. (-2, 2, 2)

Question Number : 85 Question Id : 4165299230 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $\vec{a} = \hat{i} + 2\hat{j} + 4\hat{k}$, $\vec{b} = \hat{i} + \lambda\hat{j} + 4\hat{k}$ and

$\vec{c} = 2\hat{i} + 4\hat{j} + (\lambda^2 - 1)\hat{k}$ be coplanar

vectors. Then the non-zero vector $\vec{a} \times \vec{c}$ is :

Options :

41652936378. $-10\hat{i} - 5\hat{j}$

41652936379. $-14\hat{i} - 5\hat{j}$

41652936380. $-10\hat{i} + 5\hat{j}$

$$-14\hat{i} + 5\hat{j}$$

41652936381.

Question Number : 85 Question Id : 4165299230 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना $\vec{a} = \hat{i} + 2\hat{j} + 4\hat{k}$, $\vec{b} = \hat{i} + \lambda\hat{j} + 4\hat{k}$ तथा

$\vec{c} = 2\hat{i} + 4\hat{j} + (\lambda^2 - 1)\hat{k}$ समतलीय सदिश हैं, तो

शून्येतर सदिश $\vec{a} \times \vec{c}$ है :

Options :

$$-10\hat{i} - 5\hat{j}$$

41652936378.

$$-14\hat{i} - 5\hat{j}$$

41652936379.

$$-10\hat{i} + 5\hat{j}$$

41652936380.

$$-14\hat{i} + 5\hat{j}$$

41652936381.

Question Number : 86 Question Id : 4165299231 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The outcome of each of 30 items was observed ; 10 items gave an outcome

$\frac{1}{2} - d$ each, 10 items gave outcome

$\frac{1}{2}$ each and the remaining 10 items gave

outcome $\frac{1}{2} + d$ each. If the variance of this

outcome data is $\frac{4}{3}$ then $|d|$ equals :

Options :

41652936382. $\sqrt{2}$

41652936383. 2

$$\frac{\sqrt{5}}{2}$$

41652936384.

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

41652936385.

Question Number : 86 Question Id : 4165299231 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

30 आइटम (items) का परिणाम देखा गया; इनमें से

10 आइटम में प्रत्येक ने परिणाम $\frac{1}{2} - d$ दिया,

10 आइटम में प्रत्येक ने परिणाम $\frac{1}{2}$ दिया तथा बाकी

10 आइटम में प्रत्येक ने परिणाम $\frac{1}{2} + d$ दिया। यदि

इन आँकड़ों का प्रसरण $\frac{4}{3}$ है, तो $|d|$ बराबर है :

Options :

41652936382. $\sqrt{2}$

41652936383. 2

$$\frac{\sqrt{5}}{2}$$

41652936384.

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

41652936385.

Question Number : 87 Question Id : 4165299232 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Two integers are selected at random from the set {1, 2, ..., 11}. Given that the sum of selected numbers is even, the conditional probability that both the numbers are even is :

Options :

$$\frac{2}{5}$$

41652936386.

$\frac{1}{2}$

41652936387.

$\frac{3}{5}$

41652936388.

$\frac{7}{10}$

41652936389.

Question Number : 87 Question Id : 4165299232 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

समुच्चय $\{1, 2, \dots, 11\}$ से दो पूर्णांक यादृच्छिक लिए गये हैं। दिया है कि ली गई संख्याओं का योग सम है, दोनों संख्याओं के सम होने की सप्रतिबंध (conditional) प्रायिकता है :

Options :

$\frac{2}{5}$

41652936386.

$\frac{1}{2}$

41652936387.

$\frac{3}{5}$

41652936388.

$\frac{7}{10}$

41652936389.

Question Number : 88 Question Id : 4165299233 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $f_k(x) = \frac{1}{k}(\sin^k x + \cos^k x)$ for

$k = 1, 2, 3, \dots$ Then for all $x \in \mathbb{R}$, the value of $f_4(x) - f_6(x)$ is equal to :

Options :

$\frac{1}{12}$

41652936390.

$\frac{-1}{12}$

41652936391.

$\frac{1}{4}$

41652936392.

$\frac{5}{12}$

41652936393.

Question Number : 88 Question Id : 4165299233 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना $k = 1, 2, 3, \dots$ के लिए

$$f_k(x) = \frac{1}{k}(\sin^k x + \cos^k x)$$

तो सभी $x \in \mathbb{R}$ के लिए, $f_4(x) - f_6(x)$ का मान बराबर है :

Options :

$\frac{1}{12}$

41652936390.

$\frac{-1}{12}$

41652936391.

$\frac{1}{4}$

41652936392.

$\frac{5}{12}$

41652936393.

Question Number : 89 Question Id : 4165299234 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In a triangle, the sum of lengths of two sides is x and the product of the lengths of the same two sides is y . If $x^2 - c^2 = y$, where c is the length of the third side of the triangle, then the circumradius of the triangle is :

Options :

41652936394. $\frac{c}{3}$

41652936395. $\frac{c}{\sqrt{3}}$

41652936396. $\frac{y}{\sqrt{3}}$

41652936397. $\frac{3}{2}y$

Question Number : 89 Question Id : 4165299234 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक त्रिभुज की दो भुजाओं की लम्बाई का योग x है
और इन्हीं दो भुजाओं की लम्बाई का गुणनफल y है।
यदि $x^2 - c^2 = y$, जहाँ c त्रिभुज की तीसरी भुजा की
लम्बाई है, तब त्रिभुज के परिवृत्त की त्रिज्या है :

Options :

41652936394. $\frac{c}{3}$

41652936395. $\frac{c}{\sqrt{3}}$

41652936396. $\frac{y}{\sqrt{3}}$

41652936397. $\frac{3}{2}y$

Question Number : 90 Question Id : 4165299235 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If q is false and $p \wedge q \leftrightarrow r$ is true, then which
one of the following statements is a
tautology ?

Options :

41652936398. $p \wedge r$

41652936399. $P \vee r$

41652936400. $(P \wedge r) \rightarrow (P \vee r)$

41652936401. $(P \vee r) \rightarrow (P \wedge r)$

Question Number : 90 Question Id : 4165299235 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि q असत्य है तथा $p \wedge q \leftrightarrow r$ सत्य है, तो निम्न में
से कौन सा कथन एक पुनरुक्ति (tautology) है?

Options :

41652936398. $P \wedge r$

41652936399. $P \vee r$

41652936400. $(P \wedge r) \rightarrow (P \vee r)$

41652936401. $(P \vee r) \rightarrow (P \wedge r)$

Paper	QuestionID	Correct Option(s)
Paper - I : Physics	4165299146	41652936045
Paper - I : Physics	4165299147	41652936049
Paper - I : Physics	4165299148	41652936052
Paper - I : Physics	4165299149	41652936056
Paper - I : Physics	4165299150	41652936059
Paper - I : Physics	4165299151	41652936063
Paper - I : Physics	4165299152	41652936069
Paper - I : Physics	4165299153	41652936072
Paper - I : Physics	4165299154	41652936075
Paper - I : Physics	4165299155	41652936079
Paper - I : Physics	4165299156	41652936084
Paper - I : Physics	4165299157	41652936087
Paper - I : Physics	4165299158	41652936093
Paper - I : Physics	4165299159	41652936095
Paper - I : Physics	4165299160	41652936099
Paper - I : Physics	4165299161	41652936102
Paper - I : Physics	4165299162	41652936107
Paper - I : Physics	4165299163	41652936112
Paper - I : Physics	4165299164	41652936116
Paper - I : Physics	4165299165	41652936118
Paper - I : Physics	4165299166	41652936123
Paper - I : Physics	4165299167	41652936127
Paper - I : Physics	4165299168	41652936131
Paper - I : Physics	4165299169	41652936136
Paper - I : Physics	4165299170	41652936139
Paper - I : Physics	4165299171	41652936144
Paper - I : Physics	4165299172	41652936148
Paper - I : Physics	4165299173	41652936151
Paper - I : Physics	4165299174	41652936154
Paper - I : Physics	4165299175	41652936158
Paper - I : Chemistry	4165299176	41652936162
Paper - I : Chemistry	4165299177	41652936168
Paper - I : Chemistry	4165299178	41652936171
Paper - I : Chemistry	4165299179	41652936177
Paper - I : Chemistry	4165299180	41652936180
Paper - I : Chemistry	4165299181	41652936184
Paper - I : Chemistry	4165299182	41652936187
Paper - I : Chemistry	4165299183	41652936192
Paper - I : Chemistry	4165299184	41652936197
Paper - I : Chemistry	4165299185	41652936200
Paper - I : Chemistry	4165299186	41652936203
Paper - I : Chemistry	4165299187	41652936207
Paper - I : Chemistry	4165299188	41652936212
Paper - I : Chemistry	4165299189	41652936217
Paper - I : Chemistry	4165299190	41652936218
Paper - I : Chemistry	4165299191	41652936222
Paper - I : Chemistry	4165299192	41652936226
Paper - I : Chemistry	4165299193	41652936233
Paper - I : Chemistry	4165299194	41652936235
Paper - I : Chemistry	4165299195	41652936240
Paper - I : Chemistry	4165299196	41652936242
Paper - I : Chemistry	4165299197	41652936249
Paper - I : Chemistry	4165299198	41652936253
Paper - I : Chemistry	4165299199	41652936256
Paper - I : Chemistry	4165299200	41652936259
Paper - I : Chemistry	4165299201	41652936264
Paper - I : Chemistry	4165299202	41652936269
Paper - I : Chemistry	4165299203	41652936271
Paper - I : Chemistry	4165299204	41652936275
Paper - I : Chemistry	4165299205	41652936278
Paper - I : Mathematics	4165299206	41652936285
Paper - I : Mathematics	4165299207	41652936286
Paper - I : Mathematics	4165299208	41652936290
Paper - I : Mathematics	4165299209	41652936294
Paper - I : Mathematics	4165299210	41652936300
Paper - I : Mathematics	4165299211	41652936302
Paper - I : Mathematics	4165299212	41652936309
Paper - I : Mathematics	4165299213	41652936313
Paper - I : Mathematics	4165299214	41652936317
Paper - I : Mathematics	4165299215	41652936321
Paper - I : Mathematics	4165299216	41652936322
Paper - I : Mathematics	4165299217	41652936327
Paper - I : Mathematics	4165299218	41652936330
Paper - I : Mathematics	4165299219	41652936336
Paper - I : Mathematics	4165299220	41652936339
Paper - I : Mathematics	4165299221	41652936343
Paper - I : Mathematics	4165299222	41652936349
Paper - I : Mathematics	4165299223	41652936352
Paper - I : Mathematics	4165299224	41652936357
Paper - I : Mathematics	4165299225	41652936359
Paper - I : Mathematics	4165299226	41652936365
Paper - I : Mathematics	4165299227	41652936366
Paper - I : Mathematics	4165299228	41652936370
Paper - I : Mathematics	4165299229	41652936375
Paper - I : Mathematics	4165299230	41652936380
Paper - I : Mathematics	4165299231	41652936382
Paper - I : Mathematics	4165299232	41652936386
Paper - I : Mathematics	4165299233	41652936390
Paper - I : Mathematics	4165299234	41652936395
Paper - I : Mathematics	4165299235	41652936400

National Testing Agency

Question Paper Name:	Paper I EH 11th Jan 2019 Shift 2
Subject Name:	Paper I EH
Creation Date:	2019-01-11 21:10:47
Duration:	180
Total Marks:	360
Display Marks:	Yes
Share Answer Key With Delivery Engine:	Yes
Actual Answer Key:	Yes

Paper I

Group Number :	1
Group Id :	416529119
Group Maximum Duration :	0
Group Minimum Duration :	180
Revisit allowed for view? :	No
Revisit allowed for edit? :	No
Break time:	0
Group Marks:	360

Physics

Section Id :	416529139
Section Number :	1
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	30
Number of Questions to be attempted:	30
Section Marks:	120
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	416529148
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 4165299506 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If speed (V), acceleration (A) and force (F) are considered as fundamental units, the dimension of Young's modulus will be :

Options :

41652937482. $V^{-4} A^2 F$

41652937483. $V^{-4}A^{-2}F$

41652937484. $V^{-2}A^2F^2$

41652937485. $V^{-2}A^2F^{-2}$

Question Number : 1 Question Id : 4165299506 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि गति (V), त्वरण (A) तथा बल (F) को मूल भौतिक इकाइयाँ मानें तो, यंग प्रत्यास्थता गुणांक की विमा होगी :

Options :

41652937482. $V^{-4}A^2F$

41652937483. $V^{-4}A^{-2}F$

41652937484. $V^{-2}A^2F^2$

41652937485. $V^{-2}A^2F^{-2}$

Question Number : 2 Question Id : 4165299507 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A particle moves from the point

$(2.0\hat{i} + 4.0\hat{j})$ m, at $t=0$, with an initial

velocity $(5.0\hat{i} + 4.0\hat{j})$ ms $^{-1}$. It is acted upon by a constant force which produces a

constant acceleration $(4.0\hat{i} + 4.0\hat{j})$ ms $^{-2}$.

What is the distance of the particle from the origin at time 2 s ?

Options :

41652937486. $20\sqrt{2}$ m

41652937487. 15 m

41652937488. $10\sqrt{2}$ m

41652937489. 5 m

Question Number : 2 Question Id : 4165299507 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

समय $t=0$ पर एक कण बिन्दु $(2.0\hat{i} + 4.0\hat{j})$ m

से, आरम्भिक वेग $(5.0\hat{i} + 4.0\hat{j})$ ms $^{-1}$ से,

गतिशील है। यह एक स्थिर त्वरण

$(4.0\hat{i} + 4.0\hat{j})$ ms $^{-2}$ उत्पन्न करने वाले एक स्थिर

बल के प्रभाव में चलता है। समय 2 s पर कण की मूल बिन्दु से दूरी क्या होगी ?

Options :

41652937486. $20\sqrt{2}$ m

41652937487. 15 m

41652937488. $10\sqrt{2}$ m

41652937489. 5 m

Question Number : 3 Question Id : 4165299508 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The magnitude of torque on a particle of mass 1 kg is 2.5 Nm about the origin. If the force acting on it is 1 N, and the distance of the particle from the origin is 5 m, the angle between the force and the position vector is (in radians) :

Options :

41652937490. $\frac{\pi}{3}$

41652937491. $\frac{\pi}{6}$

41652937492. $\frac{\pi}{4}$

41652937493. $\frac{\pi}{8}$

Question Number : 3 Question Id : 4165299508 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

1 kg द्रव्यमान पर मूल बिन्दु के सापेक्ष बल आघूर्ण का परिमाण 2.5 Nm है। यदि इस पर लगने वाला बल 1 N है, तथा कण की मूल बिन्दु से दूरी 5 m है तो बल तथा स्थिति सदिश के बीच कोण (रेडियन में) है :

Options :

41652937490. $\frac{\pi}{3}$

41652937491. $\frac{\pi}{6}$

41652937492. $\frac{\pi}{4}$

41652937493. $\frac{\pi}{8}$

Question Number : 4 Question Id : 4165299509 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A particle of mass m is moving in a straight line with momentum p . Starting at time $t = 0$, a force $F = kt$ acts in the same direction on the moving particle during time interval T so that its momentum changes from p to $3p$. Here k is a constant. The value of T is :

Options :

41652937494. $\sqrt{\frac{2p}{k}}$

41652937495. $2\sqrt{\frac{p}{k}}$

41652937496. $2\sqrt{\frac{k}{p}}$

$$\sqrt{\frac{2k}{p}}$$

41652937497.

Question Number : 4 Question Id : 4165299509 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

m द्रव्यमान का एक कण संवेग p से एक सीधी रेखा में जा रहा है। समय t=0 से आरम्भ करके उसी दिशा में एक बल F = kt इस गतिमान कण पर समयान्तराल T तक लगता है तो, इसका संवेग p से बदलकर 3p हो जाता है। यहाँ k एक स्थिरांक है। T का मान है :

Options :

$$\sqrt{\frac{2p}{k}}$$

41652937494.

$$2\sqrt{\frac{p}{k}}$$

41652937495.

$$2\sqrt{\frac{k}{p}}$$

41652937496.

$$\sqrt{\frac{2k}{p}}$$

41652937497.

Question Number : 5 Question Id : 4165299510 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A particle of mass m and charge q is in an electric and magnetic field given by

$$\vec{E} = 2\hat{i} + 3\hat{j}; \vec{B} = 4\hat{j} + 6\hat{k}.$$

The charged particle is shifted from the origin to the point P(x=1; y=1) along a straight path. The magnitude of the total work done is :

Options :

41652937498. 5q

41652937499. (2.5)q

41652937500. (0.15)q

41652937501. (0.35)q

Question Number : 5 Question Id : 4165299510 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

द्रव्यमान m तथा आवेश q का एक कण $\vec{E} = 2\hat{i} + 3\hat{j}$;

$\vec{B} = 4\hat{j} + 6\hat{k}$ द्वारा दिये गये विद्युत एवं चुम्बकीय क्षेत्र में है। इस आवेश को मूल बिन्दु से बिन्दु P(x=1; y=1) तक एक सीधी रेखा के पथ के अनुगत विस्थापित करते हैं। किये गये कुल कार्य का परिमाण है :

Options :

41652937498. 5q

41652937499. (2.5)q

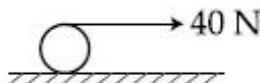
41652937500. (0.15)q

41652937501. (0.35)q

Question Number : 6 Question Id : 4165299511 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A string is wound around a hollow cylinder of mass 5 kg and radius 0.5 m. If the string is now pulled with a horizontal force of 40 N, and the cylinder is rolling without slipping on a horizontal surface (see figure), then the angular acceleration of the cylinder will be (Neglect the mass and thickness of the string) :



Options :

41652937502. 10 rad/s^2

41652937503. 12 rad/s^2

41652937504. 16 rad/s^2

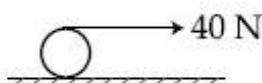
20 rad/s²

41652937505.

Question Number : 6 Question Id : 4165299511 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

5 kg द्रव्यमान तथा 0.5 m त्रिज्या के एक खोखले बेलन पर एक डोरी को लपेटा गया है। यदि डोरी को अब 40 N के क्षेत्रिक बल से खींचा जाये और, बेलन बिना फिसले क्षेत्रिक समतल पर लुढ़कता है (चित्र देखिये) तो, बेलन का कोणीय त्वरण होगा (डोरी का द्रव्यमान तथा मोटाई नगण्य है) :



Options :

41652937502. 10 rad/s²

41652937503. 12 rad/s²

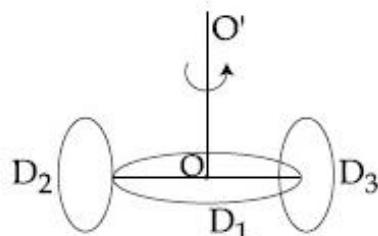
41652937504. 16 rad/s²

41652937505. 20 rad/s²

Question Number : 7 Question Id : 4165299512 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A circular disc D_1 of mass M and radius R has two identical discs D_2 and D_3 of the same mass M and radius R attached rigidly at its opposite ends (see figure). The moment of inertia of the system about the axis OO' , passing through the centre of D_1 , as shown in the figure, will be :



Options :

41652937506. MR^2

41652937507. $\frac{2}{3}MR^2$

$$3MR^2$$

41652937508.

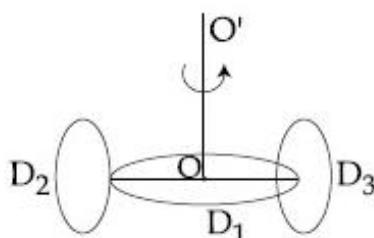
$$\frac{4}{5}MR^2$$

41652937509.

Question Number : 7 Question Id : 4165299512 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

द्रव्यमान M तथा त्रिज्या R की एक डिस्क D_1 से समान द्रव्यमान M तथा त्रिज्या R की दो डिस्क D_2 और D_3 को आमने-सामने टूटापूर्वक जोड़ा गया है (चित्र देखिये)। इस संयोजन का, दिखाये गये चित्रानुसार D_1 के केन्द्र से गुजरने वाली अक्ष OO' के सापेक्ष, जड़त्व आघूर्ण होगा :



Options :

$$MR^2$$

41652937506.

$$\frac{2}{3}MR^2$$

41652937507.

$$3MR^2$$

41652937508.

$$\frac{4}{5}MR^2$$

41652937509.

Question Number : 8 Question Id : 4165299513 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The mass and the diameter of a planet are three times the respective values for the Earth. The period of oscillation of a simple pendulum on the Earth is 2 s. The period of oscillation of the same pendulum on the planet would be :

Options :

$$\frac{3}{2} \text{ s}$$

41652937510.

$$\frac{\sqrt{3}}{2} \text{ s}$$

41652937511.

$$\frac{2}{\sqrt{3}} \text{ s}$$

41652937512.

$$2\sqrt{3} \text{ s}$$

Question Number : 8 Question Id : 4165299513 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक ग्रह का द्रव्यमान तथा व्यास, पृथ्वी की संगत राशियों का तीन गुना है। पृथ्वी पर एक सरल लोलक का आवर्तकाल 2s है। उसी लोलक का ग्रह पर आवर्तकाल होगा :

Options :

$$\frac{3}{2} \text{ s}$$

41652937510.

$$\frac{\sqrt{3}}{2} \text{ s}$$

41652937511.

$$\frac{2}{\sqrt{3}} \text{ s}$$

41652937512.

$$2\sqrt{3} \text{ s}$$

Question Number : 9 Question Id : 4165299514 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

When 100 g of a liquid A at 100°C is added to 50 g of a liquid B at temperature 75°C , the temperature of the mixture becomes 90°C . The temperature of the mixture, if 100 g of liquid A at 100°C is added to 50 g of liquid B at 50°C , will be :

Options :

41652937514. 60°C

41652937515. 70°C

41652937516. 80°C

41652937517. 85°C

Question Number : 9 Question Id : 4165299514 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

100 g द्रव्यमान तथा 100°C तापमान वाले द्रव A को
50 g द्रव्यमान तथा 75°C तापमान वाले दूसरे द्रव B
के साथ मिलाते हैं तो मिश्रण का तापमान 90°C हो
जाता है। यदि 100 g द्रव्यमान तथा 100°C तापमान
वाले द्रव A को 50 g द्रव्यमान तथा 50°C तापमान
वाले द्रव B के साथ मिलाये तो मिश्रण का तापमान
होगा :

Options :

41652937514. 60°C

41652937515. 70°C

41652937516. 80°C

41652937517. 85°C

Question Number : 10 Question Id : 4165299515 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In a process, temperature and volume of one mole of an ideal monoatomic gas are varied according to the relation $VT = K$, where K is a constant. In this process the temperature of the gas is increased by ΔT . The amount of heat absorbed by gas is (R is gas constant) :

Options :

$$\frac{1}{2} R \Delta T$$

41652937518.

$$\frac{1}{2} K R \Delta T$$

41652937519.

$$\frac{2K}{3} \Delta T$$

41652937520.

$$\frac{3}{2}R\Delta T$$

41652937521.

Question Number : 10 Question Id : 4165299515 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक प्रक्रम में, एक आदर्श एकपरमाणुक गैस के एक मोल का आयतन व तापमान, सम्बन्ध $VT = K$ द्वारा बदलता है, जहाँ कि K एक नियतांक है। इस प्रक्रिया में गैस का तापमान ΔT बढ़ जाता है। गैस द्वारा अवशोषित ऊष्मा का मान है (R गैस स्थिरांक है) :

Options :

$$\frac{1}{2}R\Delta T$$

41652937518.

$$\frac{1}{2}KR\Delta T$$

41652937519.

$$\frac{2K}{3}\Delta T$$

41652937520.

$$\frac{3}{2}R\Delta T$$

41652937521.

Question Number : 11 Question Id : 4165299516 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A metal ball of mass 0.1 kg is heated upto 500°C and dropped into a vessel of heat capacity 800 JK^{-1} and containing 0.5 kg water. The initial temperature of water and vessel is 30°C. What is the approximate percentage increment in the temperature of the water ? [Specific Heat Capacities of water and metal are, respectively,

$4200 \text{ Jkg}^{-1}\text{K}^{-1}$ and $400 \text{ Jkg}^{-1}\text{K}^{-1}$]

Options :

41652937522. 30 %

41652937523. 25 %

41652937524. 15 %

41652937525. 20 %

Question Number : 11 Question Id : 4165299516 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

0.1 kg द्रव्यमान की धातु की एक गेंद को 500°C तक गर्म करते हैं और 800 JK⁻¹ ऊष्माधारिता वाले एक पात्र, जिसमें 0.5 kg पानी है, के अन्दर डाल देते हैं। पानी तथा पात्र का आरम्भिक तापमान 30°C है। पानी के तापमान में हुई प्रतिशत वृद्धि लगभग क्या है? (पानी तथा धातु की विशिष्ट ऊष्माधारितायें क्रमशः 4200 Jkg⁻¹K⁻¹ तथा 400 Jkg⁻¹K⁻¹ हैं)

Options :

41652937522. 30 %

41652937523. 25 %

41652937524. 15 %

41652937525. 20 %

Question Number : 12 Question Id : 4165299517 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A pendulum is executing simple harmonic motion and its maximum kinetic energy is K₁. If the length of the pendulum is doubled and it performs simple harmonic motion with the same amplitude as in the first case, its maximum kinetic energy is K₂. Then :

Options :

41652937526. K₂ = K₁

41652937527. K₂ = 2K₁

41652937528. K₂ = $\frac{K_1}{2}$

41652937529. K₂ = $\frac{K_1}{4}$

Question Number : 12 Question Id : 4165299517 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक लोलक सरल आवर्त गति कर रहा है और इसकी अधिकतम गतिज ऊर्जा K_1 है। यदि लोलक की लम्बाई दोगुनी कर दें और यह पहले के समान आयाम से ही सरल आवर्त गति करता है तो इसकी अधिकतम गतिज ऊर्जा K_2 है। तब :

Options :

41652937526. $K_2 = K_1$

41652937527. $K_2 = 2K_1$

41652937528. $K_2 = \frac{K_1}{2}$

41652937529. $K_2 = \frac{K_1}{4}$

Question Number : 13 Question Id : 4165299518 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A simple pendulum of length 1 m is oscillating with an angular frequency 10 rad/s. The support of the pendulum starts oscillating up and down with a small angular frequency of 1 rad/s and an amplitude of 10^{-2} m. The relative change in the angular frequency of the pendulum is best given by :

Options :

41652937530. 10^{-1} rad/s

41652937531. 10^{-3} rad/s

41652937532. 10^{-5} rad/s

41652937533. 1 rad/s

Question Number : 13 Question Id : 4165299518 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

1 m लम्बाई का एक सरल लोलक कोणीय आवृत्ति 10 rad/s से दोलन कर रहा है। लोलक का आधार ऊपर तथा नीचे एक अल्प कोणीय आवृत्ति 1 rad/s से, तथा 10^{-2} m आयाम से, दोलन आरम्भ करता है। लोलक की कोणीय आवृत्ति में आपेक्षिक परिवर्तन सबसे अच्छा दिया जाता है :

Options :

41652937530. 10^{-1} rad/s

41652937531. 10^{-3} rad/s

41652937532. 10^{-5} rad/s

41652937533. 1 rad/s

Question Number : 14 Question Id : 4165299519 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

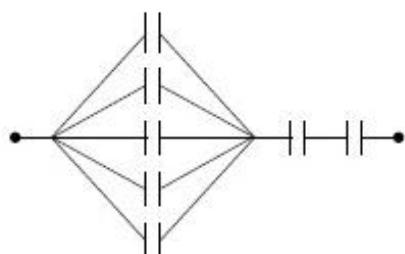
Correct Marks : 4 Wrong Marks : 1

Seven capacitors, each of capacitance 2 μ F, are to be connected in a configuration to

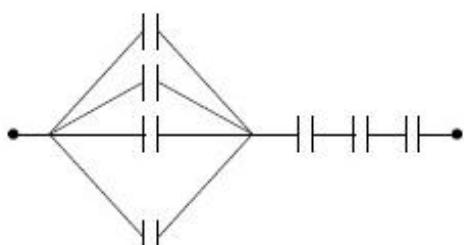
obtain an effective capacitance of $\left(\frac{6}{13}\right)$ μ F.

Which of the combinations, shown in figures below, will achieve the desired value ?

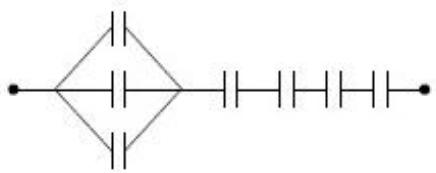
Options :



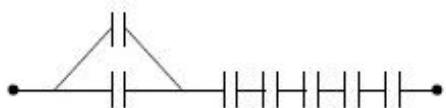
41652937534.



41652937535.



41652937536.



41652937537.

Question Number : 14 Question Id : 4165299519 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

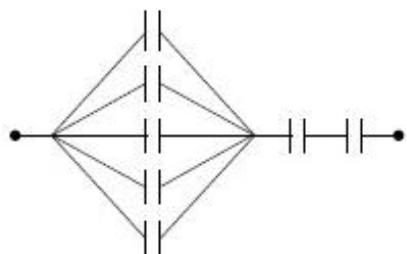
Correct Marks : 4 Wrong Marks : 1

2 μ F धारिता के 7 संधारित्रों को एक संयोजन में जोड़ने

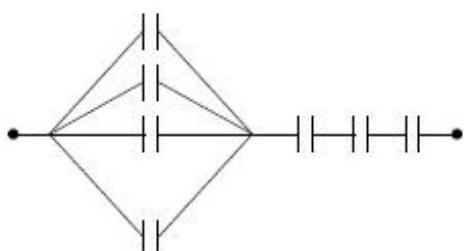
पर प्रभावी धारिता $\left(\frac{6}{13}\right) \mu$ F प्राप्त होती है। दिखाये

गये चित्रों में से कौन सा संयोजन इच्छित मान देगा ?

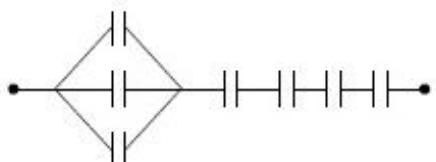
Options :



41652937534.



41652937535.



41652937536.



41652937537.

Question Number : 15 Question Id : 4165299520 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

An electric field of 1000 V/m is applied to an electric dipole at angle of 45°. The value of electric dipole moment is 10^{-29} C.m. What is the potential energy of the electric dipole ?

Options :

41652937538. -7×10^{-27} J

41652937539. -10×10^{-29} J

41652937540. -9×10^{-20} J

41652937541. -20×10^{-18} J

Question Number : 15 Question Id : 4165299520 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

1000 V/m के एक विद्युत क्षेत्र को 45° कोण पर एक विद्युत द्विध्रुव पर लगाते हैं। विद्युत द्विध्रुव आघूर्ण का मान 10^{-29} C.m है। विद्युत द्विध्रुव की स्थिति ऊर्जा क्या है?

Options :

41652937538. -7×10^{-27} J

41652937539. -10×10^{-29} J

41652937540. -9×10^{-20} J

41652937541. -20×10^{-18} J

Question Number : 16 Question Id : 4165299521 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Two rods A and B of identical dimensions are at temperature 30°C. If A is heated upto 180°C and B upto T°C, then the new lengths are the same. If the ratio of the coefficients of linear expansion of A and B is 4 : 3, then the value of T is :

Options :

41652937542. 200°C

41652937543. 230°C

41652937544. 250°C

41652937545. 270°C

Question Number : 16 Question Id : 4165299521 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एकसमान आकार की दो छड़ A तथा B, 30°C तापमान पर हैं। यदि A को 180°C तक तथा B को $T^{\circ}\text{C}$ तक गर्म करते हैं तो इनकी नई लम्बाइयाँ समान हैं। यदि A तथा B के रेखीय प्रसार गुणांकों का अनुपात $4:3$ है तो, T का मान है :

Options :

41652937542. 200°C

41652937543. 230°C

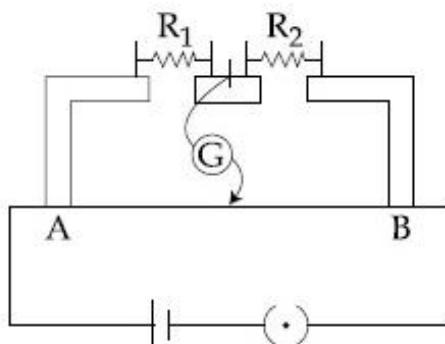
41652937544. 250°C

41652937545. 270°C

Question Number : 17 Question Id : 4165299522 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In the experimental set up of metre bridge shown in the figure, the null point is obtained at a distance of 40 cm from A. If a $10\ \Omega$ resistor is connected in series with R_1 , the null point shifts by 10 cm . The resistance that should be connected in parallel with $(R_1 + 10)\ \Omega$ such that the null point shifts back to its initial position is :



Options :

41652937546. $60\ \Omega$

41652937547. 40Ω

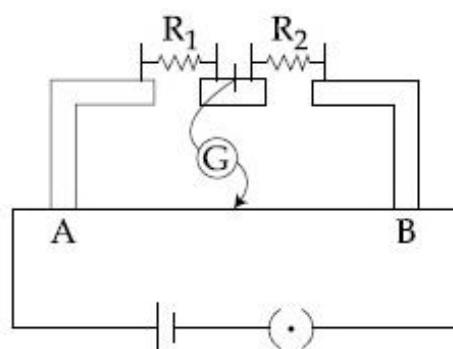
41652937548. 30Ω

41652937549. 20Ω

Question Number : 17 Question Id : 4165299522 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

दिखाये गये चित्रानुसार मीटर सेटु के एक प्रयोग में A से 40 cm दूरी पर शून्य बिन्दु प्राप्त होता है। यदि 10Ω के एक प्रतिरोध को R_1 के साथ श्रेणी क्रम में लगाते हैं, तो शून्य बिन्दु 10 cm विस्थापित हो जाता है। वह प्रतिरोध, जिसको $(R_1 + 10)\Omega$ के साथ समान्तर क्रम में लगाने से शून्य बिन्दु पुनः अपनी आरम्भिक स्थिति में आ जाता है, होना चाहिये :



Options :

41652937546. 60Ω

41652937547. 40Ω

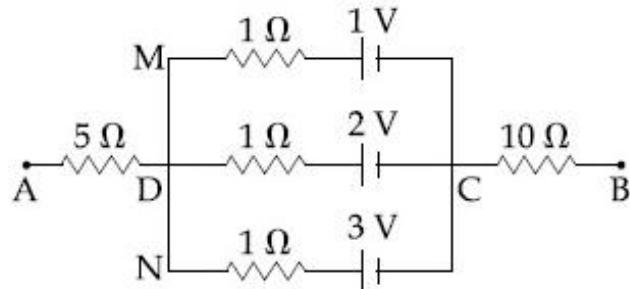
41652937548. 30Ω

41652937549. 20Ω

Question Number : 18 Question Id : 4165299523 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In the circuit shown, the potential difference between A and B is :



Options :

41652937550. 2 V

41652937551. 3 V

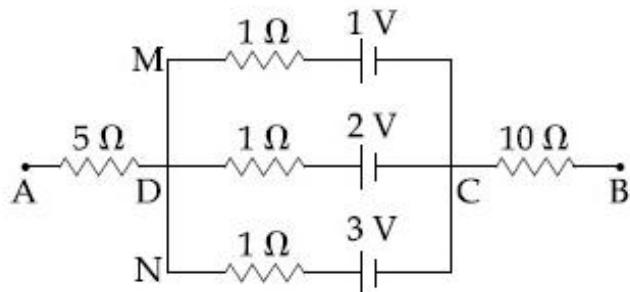
41652937552. 6 V

41652937553. 1 V

Question Number : 18 Question Id : 4165299523 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

दिये गये परिपथ में A तथा B के बीच विभवान्तर है :



Options :

41652937550. 2 V

41652937551. 3 V

41652937552. 6 V

41652937553. 1 V

Question Number : 19 Question Id : 4165299524 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A paramagnetic substance in the form of a cube with sides 1 cm has a magnetic dipole moment of 20×10^{-6} J/T when a magnetic intensity of 60×10^3 A/m is applied. Its magnetic susceptibility is :

Options :

41652937554. 3.3×10^{-2}

41652937555. 4.3×10^{-2}

41652937556. 2.3×10^{-2}

41652937557. 3.3×10^{-4}

Question Number : 19 Question Id : 4165299524 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

1 cm भुजा के घनरूपी अनुचुम्बकीय पदार्थ पर,
चुम्बकीय तीव्रता 60×10^3 A/m लगाने पर उसका
चुम्बकीय द्विध्रुव आघूर्ण 20×10^{-6} J/T होता है।
इसकी चुम्बकीय प्रवृत्ति है :

Options :

41652937554. 3.3×10^{-2}

41652937555. 4.3×10^{-2}

41652937556. 2.3×10^{-2}

41652937557. 3.3×10^{-4}

Question Number : 20 Question Id : 4165299525 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The region between $y=0$ and $y=d$ contains

a magnetic field $\vec{B} = B\hat{z}$. A particle of mass m and charge q enters the region with

a velocity $\vec{v} = v\hat{i}$. If $d = \frac{mv}{2qB}$, the

acceleration of the charged particle at the point of its emergence at the other side is :

Options :

$$\frac{qvB}{m} \left(\frac{\sqrt{3}}{2} \hat{i} + \frac{1}{2} \hat{j} \right)$$

41652937558.

$$\frac{qvB}{m} \left(\frac{1}{2} \hat{i} - \frac{\sqrt{3}}{2} \hat{j} \right)$$

$$\frac{qvB}{m} \left(\frac{\hat{i} + \hat{j}}{\sqrt{2}} \right)$$

41652937560.

$$\frac{qvB}{m} \left(\frac{-\hat{j} + \hat{i}}{\sqrt{2}} \right)$$

41652937561.

Question Number : 20 Question Id : 4165299525 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$y=0$ तथा $y=d$ के बीच के क्षेत्र में एक समान

चुम्बकीय क्षेत्र $\vec{B} = B_z \hat{z}$ विद्यमान है। द्रव्यमान m

तथा आवेश q का एक कण, वेग $\vec{v} = v \hat{i}$ से इस क्षेत्र

में प्रवेश करता है। यदि $d = \frac{mv}{2qB}$ है, तो दूसरी ओर

से बाहर निकलने वाले बिन्दु पर, आवेशित कण का
त्वरण होगा :

Options :

$$\frac{qvB}{m} \left(\frac{\sqrt{3}}{2} \hat{i} + \frac{1}{2} \hat{j} \right)$$

41652937558.

$$\frac{qvB}{m} \left(\frac{1}{2} \hat{i} - \frac{\sqrt{3}}{2} \hat{j} \right)$$

41652937559.

$$\frac{qvB}{m} \left(\frac{\hat{i} + \hat{j}}{\sqrt{2}} \right)$$

41652937560.

$$\frac{qvB}{m} \begin{pmatrix} \hat{i} + \hat{j} \\ \sqrt{2} \end{pmatrix}$$

41652937561.

Question Number : 21 Question Id : 4165299526 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A copper wire is wound on a wooden frame, whose shape is that of an equilateral triangle. If the linear dimension of each side of the frame is increased by a factor of 3, keeping the number of turns of the coil per unit length of the frame the same, then the self inductance of the coil :

Options :

41652937562. increases by a factor of 3

41652937563. decreases by a factor of 9

41652937564. increases by a factor of 27

41652937565. decreases by a factor of $9\sqrt{3}$

Question Number : 21 Question Id : 4165299526 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

ताँचे के तार को एक लकड़ी के खाँचे, जिसका आकार एक समबाहु त्रिभुज है, पर लपेटा गया है। खाँचे की प्रति लम्बाई के फेरों की संख्या समान रखते हुए, यदि खाँचे की प्रत्येक भुजा की रेखीय विमायें 3 के गुणांक से बढ़ा दी जायें तो कुण्डली में स्वप्रेरण :

Options :

41652937562. 3 के गुणांक से बढ़ेगा

41652937563. 9 के गुणांक से घटेगा

41652937564. 27 के गुणांक से बढ़ेगा

41652937565. $9\sqrt{3}$ के गुणांक से घटेगा

Question Number : 22 Question Id : 4165299527 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A 27 mW laser beam has a cross-sectional area of 10 mm^2 . The magnitude of the maximum electric field in this electromagnetic wave is given by :

[Given permittivity of space $\epsilon_0 = 9 \times 10^{-12}$ SI units, Speed of light $c = 3 \times 10^8 \text{ m/s}$]

Options :

41652937566. 1.4 kV/m

41652937567. 1 kV/m

41652937568. 2 kV/m

41652937569. 0.7 kV/m

Question Number : 22 Question Id : 4165299527 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

27 mW के एक लेसर किरणपूँज के अनुप्रस्थ काट का क्षेत्रफल 10 mm^2 है। इस विद्युत चुम्बकीय तरंग के महत्म वैद्युत क्षेत्र का परिमाण होगा (दिया है निर्वात की विद्युतशीलता $\epsilon_0 = 9 \times 10^{-12}$ SI मात्रक में प्रकाश की चाल, $c = 3 \times 10^8 \text{ m/s}$)

Options :

41652937566. 1.4 kV/m

41652937567. 1 kV/m

41652937568. 2 kV/m

41652937569. 0.7 kV/m

Question Number : 23 Question Id : 4165299528 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A monochromatic light is incident at a certain angle on an equilateral triangular prism and suffers minimum deviation. If the refractive index of the material of the prism is $\sqrt{3}$, then the angle of incidence is :

Options :

41652937570. 45°

41652937571. 30°

41652937572. 60°

41652937573. 90°

Question Number : 23 Question Id : 4165299528 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक एकवर्णीय प्रकाश किसी समबाहु त्रिभुजीय प्रिज्म पर एक निश्चित कोण पर आपतित होता है और उसका न्यूनतम विचलन होता है। यदि प्रिज्म के पदार्थ का अपवर्तनांक $\sqrt{3}$ हो, तो आपतन कोण है :

Options :

41652937570. 45°

41652937571. 30°

41652937572. 60°

41652937573. 90°

Question Number : 24 Question Id : 4165299529 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In a double-slit experiment, green light (5303\AA) falls on a double slit having a separation of $19.44 \mu\text{m}$ and a width of $4.05 \mu\text{m}$. The number of bright fringes between the first and the second diffraction minima is :

Options :

41652937574. 10

41652937575. 09

41652937576. 05

41652937577. 04

Correct Marks : 4 Wrong Marks : 1

एक द्वि-जिरी प्रयोग में, हरा प्रकाश (5303\AA) द्वि-जिरी पर पड़ता है। जिरियों के बीच की दूरी $19.44 \mu\text{m}$ तथा इनकी चौड़ाई $4.05 \mu\text{m}$ है। प्रथम तथा द्वितीय विवर्तन निम्निष्ठ के बीच में कितनी दीप्त फिल्जें हैं?

Options :

41652937574. 10

41652937575. 09

41652937576. 05

41652937577. 04

Correct Marks : 4 Wrong Marks : 1

In a photoelectric experiment, the wavelength of the light incident on a metal is changed from 300 nm to 400 nm . The decrease in the stopping potential is close

$$\text{to : } \left(\frac{hc}{e} = 1240 \text{ nm-V} \right)$$

Options :

41652937578. 1.0 V

41652937579. 2.0 V

41652937580. 0.5 V

41652937581. 1.5 V

Correct Marks : 4 Wrong Marks : 1

प्रकाश-विद्युत प्रभाव के एक प्रयोग में धातु पर आपतित प्रकाश की तरंगदैर्घ्य 300 nm से बदलकर 400 nm करते हैं। निरोधी विभव में कमी होगी, लगभग (दिया

$$\text{है : } \left(\frac{hc}{e} = 1240 \text{ nm-V} \right)$$

Options :

41652937578. 1.0 V

41652937579. 2.0 V

41652937580. 0.5 V

41652937581. 1.5 V

Question Number : 26 Question Id : 4165299531 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In a hydrogen like atom, when an electron jumps from the M - shell to the L - shell, the wavelength of emitted radiation is λ . If an electron jumps from N-shell to the L-shell, the wavelength of emitted radiation will be :

Options :

41652937582. $\frac{16}{25} \lambda$

41652937583. $\frac{25}{16} \lambda$

41652937584. $\frac{20}{27} \lambda$

41652937585. $\frac{27}{20} \lambda$

Question Number : 26 Question Id : 4165299531 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक हाइड्रोजन समान परमाणु में, जब इलेक्ट्रॉन M - कक्षा से L - कक्षा में संक्रमण करता है, तो उत्सर्जित विकिरण की तरंगदैर्घ्य λ है। यदि इलेक्ट्रॉन N-कक्षा से L-कक्षा में संक्रमण करे तो उत्सर्जित विकिरण की तरंगदैर्घ्य होगी :

Options :

41652937582. $\frac{16}{25} \lambda$

$$\frac{25}{16} \lambda$$

41652937583.

$$\frac{20}{27} \lambda$$

41652937584.

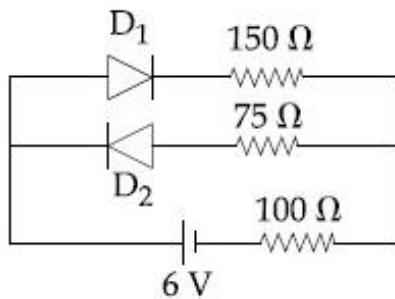
$$\frac{27}{20} \lambda$$

41652937585.

Question Number : 27 Question Id : 4165299532 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The circuit shown below contains two ideal diodes, each with a forward resistance of 50Ω . If the battery voltage is 6 V, the current through the 100Ω resistance(in Amperes) is :



Options :

41652937586. 0.020

41652937587. 0.027

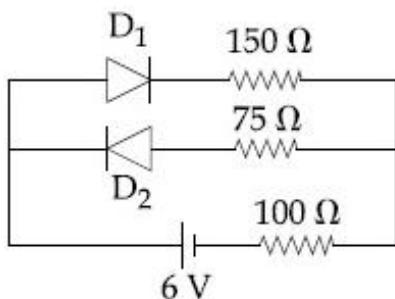
41652937588. 0.030

41652937589. 0.036

Question Number : 27 Question Id : 4165299532 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

दिखाये गये परिपथ में दो आदर्श डायोड हैं, जिनमें प्रत्येक का अग्रदिशिक प्रतिरोध $50\ \Omega$ है। यदि बैटरी की वोल्टता 6 V है, तो $100\ \Omega$ के प्रतिरोध में धारा (एम्पियर में) होगी :



Options :

41652937586. 0.020

41652937587. 0.027

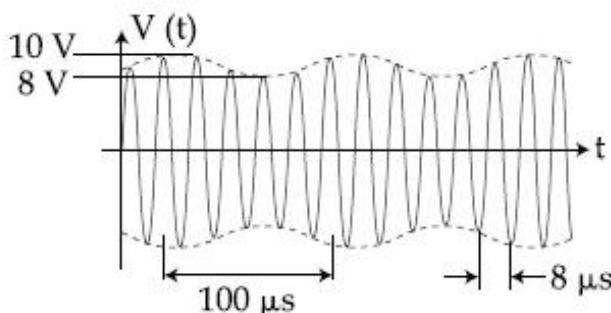
41652937588. 0.030

41652937589. 0.036

Question Number : 28 Question Id : 4165299533 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

An amplitude modulated signal is plotted below :



Which one of the following best describes the above signal ?

Options :

41652937590. $(9 + \sin(2.5\pi \times 10^5 t))\sin(2\pi \times 10^4 t)$ V

41652937591. $(1 + 9\sin(2\pi \times 10^4 t))\sin(2.5\pi \times 10^5 t)$ V

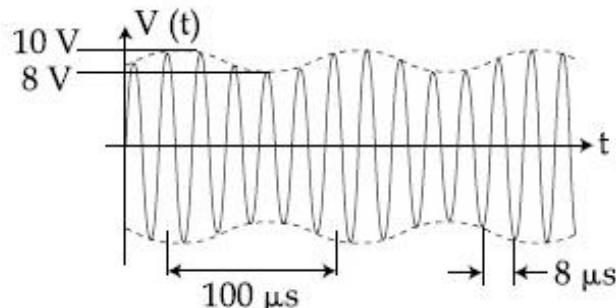
41652937592. $(9 + \sin(4\pi \times 10^4 t))\sin(5\pi \times 10^5 t)$ V

41652937593. $(9 + \sin(2\pi \times 10^4 t))\sin(2.5\pi \times 10^5 t)$ V

Question Number : 28 Question Id : 4165299533 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक आयाम-माडुलित सिग्नल को चित्र में दिखाया गया है :



निम्न में से कौन उपरोक्त सिग्नल को सबसे अच्छा दर्शाता है?

Options :

41652937590. $(9 + \sin(2.5\pi \times 10^5 t))\sin(2\pi \times 10^4 t)$ V

41652937591. $(1 + 9\sin(2\pi \times 10^4 t))\sin(2.5\pi \times 10^5 t)$ V

41652937592. $(9 + \sin(4\pi \times 10^4 t))\sin(5\pi \times 10^5 t)$ V

41652937593. $(9 + \sin(2\pi \times 10^4 t))\sin(2.5\pi \times 10^5 t)$ V

Question Number : 29 Question Id : 4165299534 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A galvanometer having a resistance of 20Ω and 30 divisions on both sides has figure of merit 0.005 ampere/division. The resistance that should be connected in series such that it can be used as a voltmeter upto 15 volt, is :

Options :

41652937594. 80Ω

41652937595. 100Ω

41652937596. 120Ω

41652937597. 125Ω

Question Number : 29 Question Id : 4165299534 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक धारामापी जिसका प्रतिरोध $20\ \Omega$ है तथा दोनों ओर 30 भाग हैं, की धारा सुग्राहिता 0.005 एम्पियर/भाग है। कितना प्रतिरोध ब्रेणीबद्ध क्रम में लगाये कि, इसको 15 V तक के एक वोल्टमीटर के रूप में प्रयोग किया जा सके?

Options :

41652937594. $80\ \Omega$

41652937595. $100\ \Omega$

41652937596. $120\ \Omega$

41652937597. $125\ \Omega$

Question Number : 30 Question Id : 4165299535 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A thermometer graduated according to a linear scale reads a value x_0 when in contact with boiling water, and $x_0/3$ when in contact with ice. What is the temperature of an object in $^{\circ}\text{C}$, if this thermometer in the contact with the object reads $x_0/2$?

Options :

41652937598. 60

41652937599. 25

41652937600. 35

41652937601. 40

Question Number : 30 Question Id : 4165299535 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

रेखीय स्केल के अनुसार मापांकित एक तापमापी (thermometer) का पाठ्यांक उबलते हुए पानी के सम्पर्क में x_0 , तथा बर्फ के सम्पर्क में $x_0/3$ आता है। इस तापमापी को किसी वस्तु के सम्पर्क में रखने पर इसका पाठ्यांक $x_0/2$ आता है तो, वस्तु का तापमान $^{\circ}\text{C}$ में क्या है?

Options :

41652937598. 60

41652937599. 25

41652937600. 35

41652937601. 40

Chemistry

Section Id :	416529140
Section Number :	2
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	30
Number of Questions to be attempted:	30
Section Marks:	120
Display Number Panel:	Yes
Group All Questions:	No

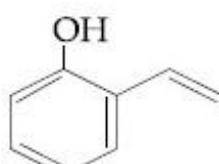
Sub-Section Number:	1
Sub-Section Id:	416529149
Question Shuffling Allowed :	Yes

Question Number : 31 Question Id : 4165299536 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

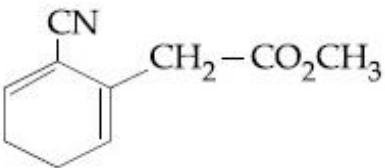
Correct Marks : 4 Wrong Marks : 1

Which of the following compounds reacts with ethylmagnesium bromide and also decolourizes bromine water solution :

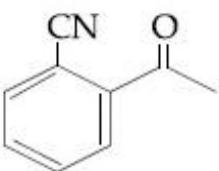
Options :



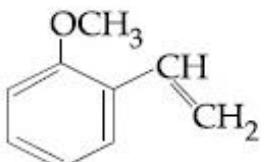
41652937602.



41652937603.



41652937604.



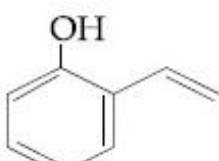
41652937605.

Question Number : 31 Question Id : 4165299536 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

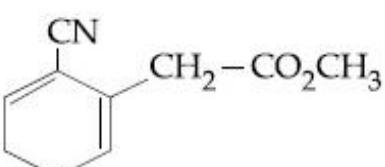
Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में से कौन-सा यौगिक एथिल मैग्नीशियम
ब्रोमाइड से अभिक्रिया करता है तथा ब्रोमीन जल को
रंगहीन भी करता है?

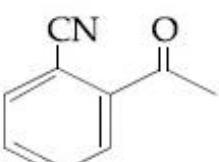
Options :



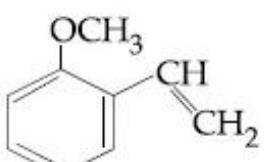
41652937602.



41652937603.



41652937604.



41652937605.

Question Number : 32 Question Id : 4165299537 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The correct match between Item I and Item II is :

Item I		Item II
(A) Ester test	(P)	Tyr
(B) Carbylamine test	(Q)	Asp
(C) Phthalein dye test	(R)	Ser
	(S)	Lys

Options :

41652937606. (A)→(Q); (B)→(S); (C)→(R)

41652937607. (A)→(Q); (B)→(S); (C)→(P)

41652937608. (A)→(R); (B)→(Q); (C)→(P)

41652937609. (A)→(R); (B)→(S); (C)→(Q)

Question Number : 32 Question Id : 4165299537 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

मद I तथा मद II के बीच सही सुमेल है :

मद I		मद II
(A) एस्टर परीक्षण	(P)	Tyr
(B) कार्बोलेमीन जांच	(Q)	Asp
(C) थैलीन डाइ टेस्ट	(R)	Ser
	(S)	Lys

Options :

41652937606. (A)→(Q); (B)→(S); (C)→(R)

41652937607. (A)→(Q); (B)→(S); (C)→(P)

41652937608. (A)→(R); (B)→(Q); (C)→(P)

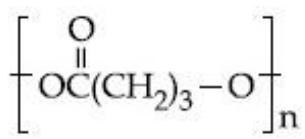
41652937609. (A)→(R); (B)→(S); (C)→(Q)

Question Number : 33 Question Id : 4165299538 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

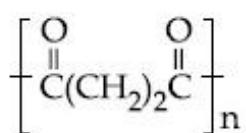
Correct Marks : 4 Wrong Marks : 1

The homopolymer formed from 4-hydroxy-butanoic acid is :

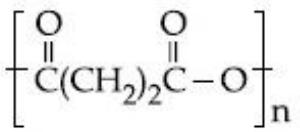
Options :



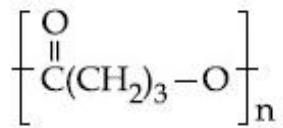
41652937610.



41652937611.



41652937612.



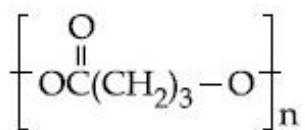
41652937613.

Question Number : 33 Question Id : 4165299538 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

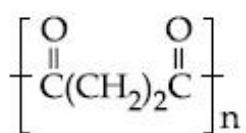
Correct Marks : 4 Wrong Marks : 1

4-हाइड्रोक्सी ब्यूटेनोइक अम्ल से बनने वाला समबहुलक
है :

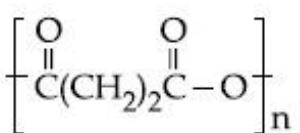
Options :



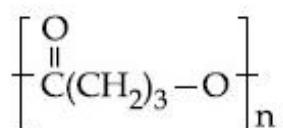
41652937610.



41652937611.



41652937612.

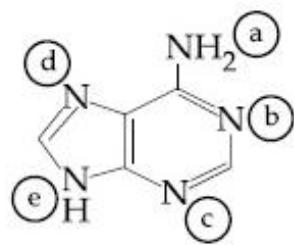


41652937613.

Question Number : 34 Question Id : 4165299539 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In the following compound,



the favourable site/s for protonation is/are :

Options :

41652937614. (a)

41652937615. (a) and (e)

41652937616. (b), (c) and (d)

41652937617. (a) and (d)

Question Number : 34 Question Id : 4165299539 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

निम्न यौगिक में



प्रोटोनीकरण के लिए अनुकूल स्थल हैं/हैं :

Options :

41652937614. (a)

41652937615. (a) तथा (e)

41652937616. (b), (c) तथा (d)

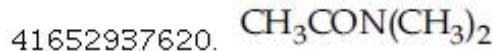
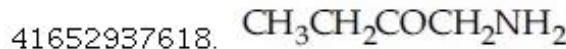
41652937617. (a) तथा (d)

Question Number : 35 Question Id : 4165299540 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A compound 'X' on treatment with Br_2/NaOH , provided $\text{C}_3\text{H}_9\text{N}$, which gives positive carbylamine test. Compound 'X' is :

Options :



Question Number : 35 Question Id : 4165299540 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक यौगिक 'X' को Br_2/NaOH के साथ अभिकृत करने पर $\text{C}_3\text{H}_9\text{N}$ दिया जो धनात्मक कार्बिलेमीन जाँच देता है। यौगिक 'X' की संरचना है :

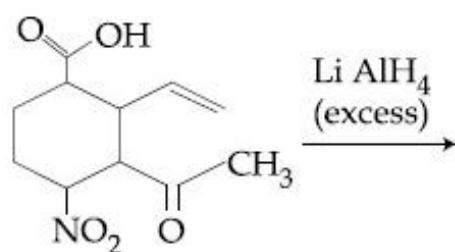
Options :



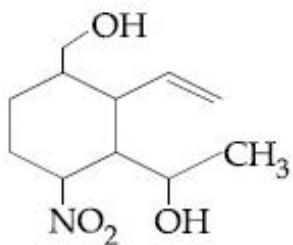
Question Number : 36 Question Id : 4165299541 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

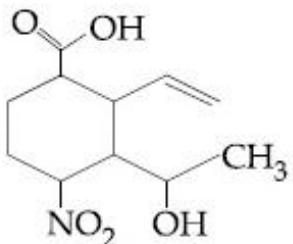
The major product obtained in the following reaction is :



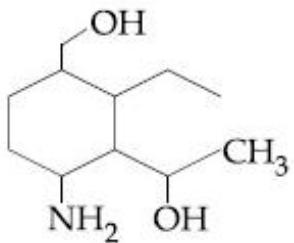
Options :



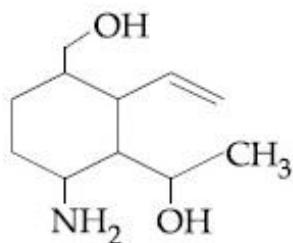
41652937622.



41652937623.



41652937624.

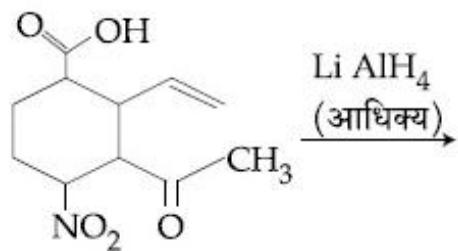


41652937625.

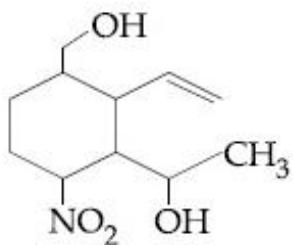
Question Number : 36 Question Id : 4165299541 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

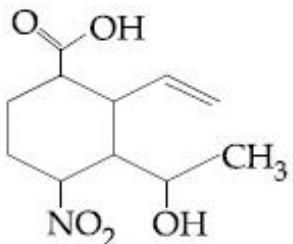
निम्न अभिक्रिया में प्राप्त मुख्य उत्पाद है :



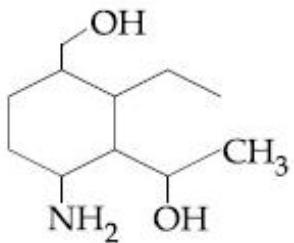
Options :



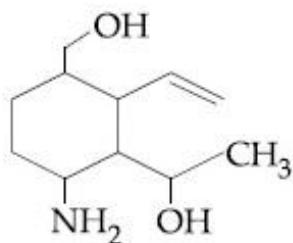
41652937622.



41652937623.



41652937624.

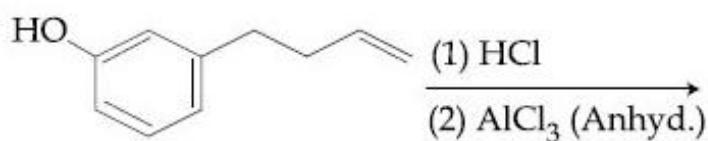


41652937625.

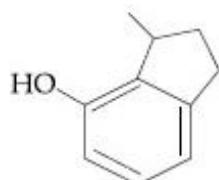
Question Number : 37 Question Id : 4165299542 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

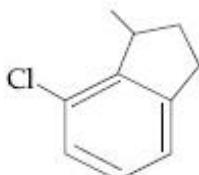
The major product of the following reaction
is :



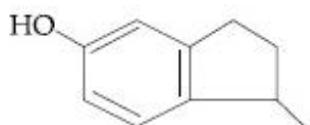
Options :



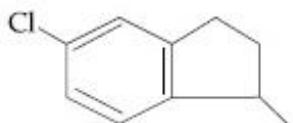
41652937626.



41652937627.



41652937628.

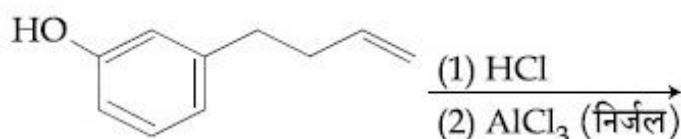


41652937629.

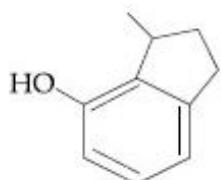
Question Number : 37 Question Id : 4165299542 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

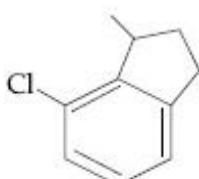
निम्न अभिक्रिया का मुख्य उत्पाद है :



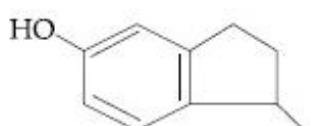
Options :



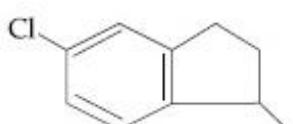
41652937626.



41652937627.



41652937628.

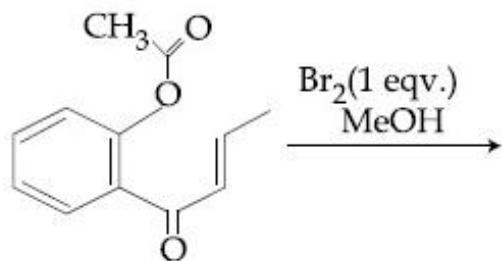


41652937629.

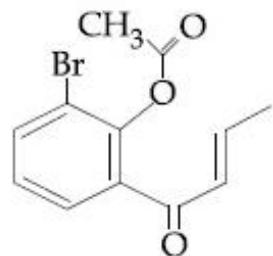
Question Number : 38 Question Id : 4165299543 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

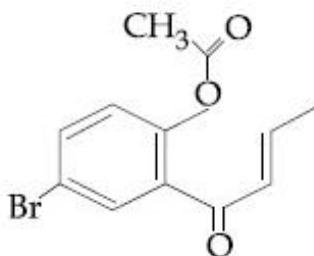
The major product obtained in the following conversion is :



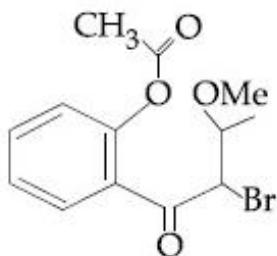
Options :



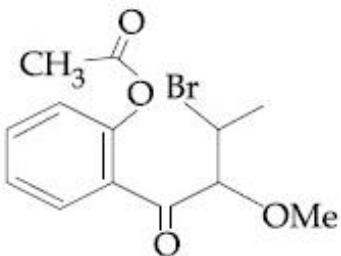
41652937630.



41652937631.



41652937632.

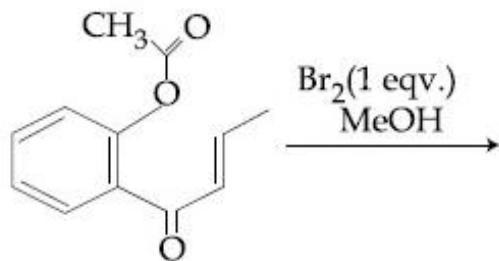


41652937633.

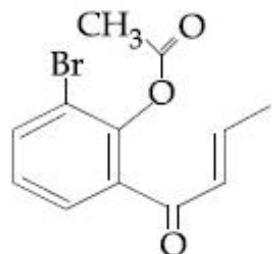
Question Number : 38 Question Id : 4165299543 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

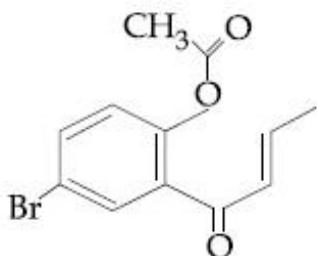
निम्न रूपान्तरण में प्राप्त होने वाला मुख्य उत्पाद है :



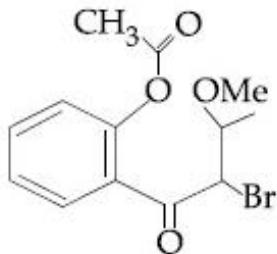
Options :



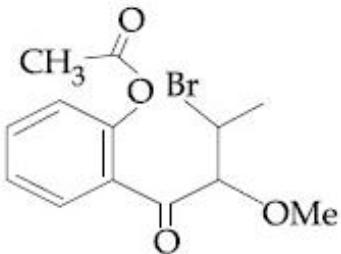
41652937630.



41652937631.



41652937632.



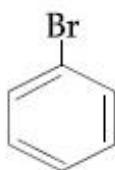
41652937633.

Question Number : 39 Question Id : 4165299544 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

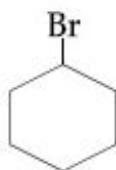
Correct Marks : 4 Wrong Marks : 1

Which of the following compounds will produce a precipitate with AgNO_3 ?

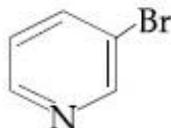
Options :



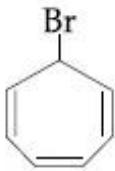
41652937634.



41652937635.



41652937636.



41652937637.

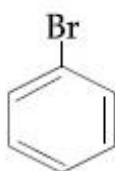
Question Number : 39 Question Id : 4165299544 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

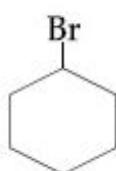
AgNO₃ के साथ निम्न यौगिकों में से कौन सा अवक्षेप

देगा :

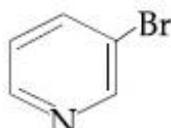
Options :



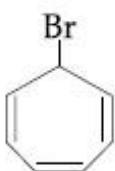
41652937634.



41652937635.



41652937636.



41652937637.

Correct Marks : 4 Wrong Marks : 1

The correct match between Item I and Item II is :

Item I	Item II
(A) Allosteric effect	(P) Molecule binding to the active site of enzyme
(B) Competitive inhibitor	(Q) Molecule crucial for communication in the body
(C) Receptor	(R) Molecule binding to a site other than the active site of enzyme
(D) Poison	(S) Molecule binding to the enzyme covalently

Options :

41652937638. (A)→(P); (B)→(R); (C)→(Q); (D)→(S)

41652937639. (A)→(P); (B)→(R); (C)→(S); (D)→(Q)

41652937640. (A)→(R); (B)→(P); (C)→(Q); (D)→(S)

41652937641. (A)→(R); (B)→(P); (C)→(S); (D)→(Q)

Correct Marks : 4 Wrong Marks : 1

मद I तथा मद II के बीच सही सुमेल है :

मद I	मद II
(A) ऐलोस्टेरिक प्रभार	एन्जाइम के सक्रिय भाग से अणु का बंधन
(B) प्रतियोगी निरोधक	शरीर में संकटकालीन संसूचक अणु
(C) ग्राही	एन्जाइम के सक्रिय भाग के अलावा अणु का बंधन
(D) विष	अणु जो एन्जाइम से सहसंयोजक रूप से आबंधित है

Options :

41652937638. (A)→(P); (B)→(R); (C)→(Q); (D)→(S)

41652937639. (A)→(P); (B)→(R); (C)→(S); (D)→(Q)

41652937640. (A)→(R); (B)→(P); (C)→(Q); (D)→(S)

41652937641. (A)→(R); (B)→(P); (C)→(S); (D)→(Q)

Question Number : 41 Question Id : 4165299546 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The correct option with respect to the Pauling electronegativity values of the elements is :

Options :

41652937642. Te > Se

41652937643. P > S

41652937644. Si < Al

41652937645. Ga < Ge

Question Number : 41 Question Id : 4165299546 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

तत्वों के पाउलिंग विद्युत ऋणात्मकता मान का सही विकल्प है :

Options :

41652937642. Te > Se

41652937643. P > S

41652937644. Si < Al

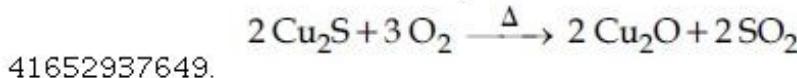
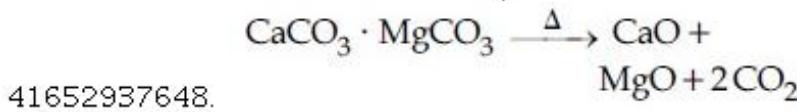
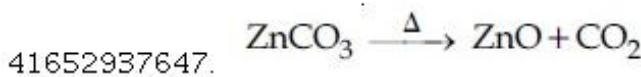
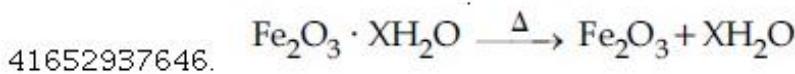
41652937645. Ga < Ge

Question Number : 42 Question Id : 4165299547 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The reaction that does NOT define calcination is :

Options :

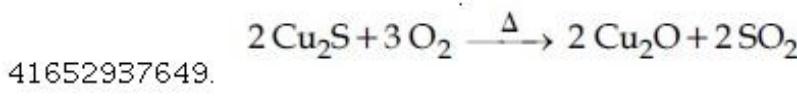
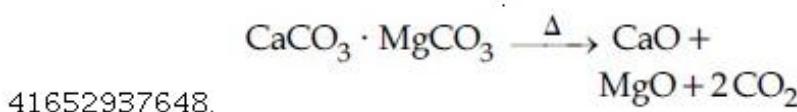
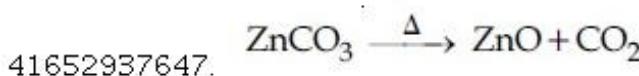
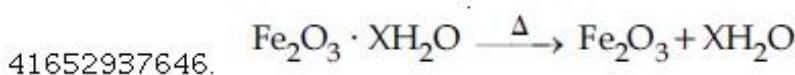


Question Number : 42 Question Id : 4165299547 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

अभिक्रिया जो निस्तापन को परिभाषित नहीं करती है,
है :

Options :

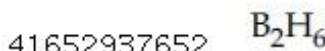
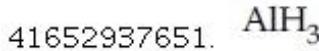
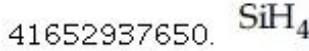


Question Number : 43 Question Id : 4165299548 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The hydride that is NOT electron deficient
is :

Options :



GaH₃

41652937653.

Question Number : 43 Question Id : 4165299548 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

हाइड्रॉजन जो इलेक्ट्रॉन-न्यून नहीं है, वह है :

Options :

41652937650. SiH₄

41652937651. AlH₃

41652937652. B₂H₆

41652937653. GaH₃

Question Number : 44 Question Id : 4165299549 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Match the following items in column I with
the corresponding items in column II.

Column I	Column II
(i) Na ₂ CO ₃ · 10 H ₂ O (A)	Portland cement ingredient
(ii) Mg(HCO ₃) ₂ (B)	Castner-Kellner process
(iii) NaOH (C)	Solvay process
(iv) Ca ₃ Al ₂ O ₆ (D)	Temporary hardness

Options :

41652937654. (i)→(B); (ii)→(C); (iii)→(A); (iv)→(D)

41652937655. (i)→(C); (ii)→(B); (iii)→(D); (iv)→(A)

41652937656. (i)→(C); (ii)→(D); (iii)→(B); (iv)→(A)

41652937657. (i)→(D); (ii)→(A); (iii)→(B); (iv)→(C)

Question Number : 44 Question Id : 4165299549 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

कॉलम I में दिये गये निम्न मटों को उनके संगत
कॉलम II में दिये गये मटों से सुमेलित कीजिए।

कॉलम I कॉलम II

- | | |
|--|---------------------------|
| (i) $\text{Na}_2\text{CO}_3 \cdot 10 \text{H}_2\text{O}$ (A) | पोर्टलैंड सीमेंट का संघटक |
| (ii) $\text{Mg}(\text{HCO}_3)_2$ (B) | कैस्टनर केलनर प्रक्रम |
| (iii) NaOH (C) | साल्वे प्रक्रम |
| (iv) $\text{Ca}_3\text{Al}_2\text{O}_6$ (D) | अस्थायी कठोरता |

Options :

41652937654. (i)→(B); (ii)→(C); (iii)→(A); (iv)→(D)

41652937655. (i)→(C); (ii)→(B); (iii)→(D); (iv)→(A)

41652937656. (i)→(C); (ii)→(D); (iii)→(B); (iv)→(A)

41652937657. (i)→(D); (ii)→(A); (iii)→(B); (iv)→(C)

Question Number : 45 Question Id : 4165299550 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The relative stability of +1 oxidation state of group 13 elements follows the order :

Options :

41652937658. $\text{Al} < \text{Ga} < \text{In} < \text{Tl}$

41652937659. $\text{Tl} < \text{In} < \text{Ga} < \text{Al}$

41652937660. $\text{Ga} < \text{Al} < \text{In} < \text{Tl}$

41652937661. $\text{Al} < \text{Ga} < \text{Tl} < \text{In}$

Question Number : 45 Question Id : 4165299550 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

ग्रुप 13 तत्वों की +1 ऑक्सीकरण अवस्था का आपेक्षिक स्थायित्व इस क्रम में है :

Options :

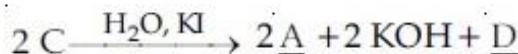
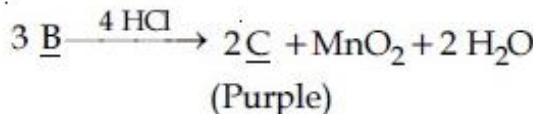
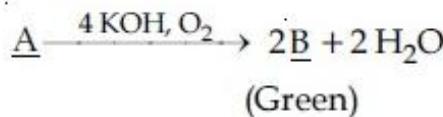
41652937658. $\text{Al} < \text{Ga} < \text{In} < \text{Tl}$

41652937659. $\text{Tl} < \text{In} < \text{Ga} < \text{Al}$

41652937660. $\text{Ga} < \text{Al} < \text{In} < \text{Tl}$

Question Number : 46 Question Id : 4165299551 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1



In the above sequence of reactions,

A and D, respectively, are :

Options :

41652937662. KI and K_2MnO_4

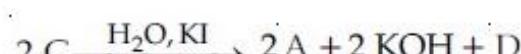
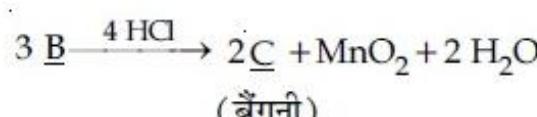
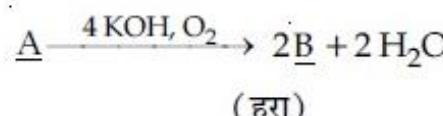
41652937663. MnO_2 and KIO_3

41652937664. KIO_3 and MnO_2

41652937665. KI and KMnO_4

Question Number : 46 Question Id : 4165299551 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1



अभिक्रियाओं के उपरोक्त क्रम में, A तथा D क्रमशः
हैं :

Options :

41652937662. KI तथा K_2MnO_4

41652937663. MnO_2 तथा KIO_3

41652937664. KIO_3 तथा MnO_2

Question Number : 47 Question Id : 4165299552 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The number of bridging CO ligand(s) and Co-Co bond(s) in $\text{Co}_2(\text{CO})_8$, respectively are :

Options :

41652937666. 0 and 2

41652937667. 2 and 0

41652937668. 2 and 1

41652937669. 4 and 0

Question Number : 47 Question Id : 4165299552 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$\text{Co}_2(\text{CO})_8$ में सेतु बंधन CO लिगन्ड तथा Co-Co आबन्ध/आबन्धों की संख्या क्रमशः है :

Options :

41652937666. 0 तथा 2

41652937667. 2 तथा 0

41652937668. 2 तथा 1

41652937669. 4 तथा 0

Question Number : 48 Question Id : 4165299553 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The coordination number of Th in $\text{K}_4[\text{Th}(\text{C}_2\text{O}_4)_4(\text{OH}_2)_2]$ is :

$(\text{C}_2\text{O}_4^{2-} = \text{Oxalato})$

Options :

41652937670. 6

41652937671. 8

41652937672. 10

41652937673. 14

Question Number : 48 Question Id : 4165299553 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$K_4[Th(C_2O_4)_4(OH_2)_2]$ में Th की समन्वय संख्या
है :

$(C_2O_4^{2-} = \text{Oxalato})$

Options :

41652937670. 6

41652937671. 8

41652937672. 10

41652937673. 14

Question Number : 49 Question Id : 4165299554 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Taj Mahal is being slowly disfigured and
discoloured. This is primarily due to :

Options :

41652937674. soil pollution

41652937675. global warming

41652937676. acid rain

41652937677. water pollution

Question Number : 49 Question Id : 4165299554 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

ताजमहल धीरे-धीरे विरूप तथा बेरंग होता जा रहा है।

यह मुख्य रूप से इस कारण से है :

Options :

41652937674. मृदा प्रदूषण

41652937675. ग्लोबल वार्मिंग

41652937676. अम्ल वृष्टि

41652937677. जल प्रदूषण

Question Number : 50 Question Id : 4165299555 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The higher concentration of which gas in air can cause stiffness of flower buds ?

Options :

41652937678. SO_2

41652937679. CO_2

41652937680. NO_2

41652937681. CO

Question Number : 50 Question Id : 4165299555 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

हवा में किसकी उच्च सान्दर्भता फूल की कलियों में सख्तापन ला सकती है?

Options :

41652937678. SO_2

41652937679. CO_2

41652937680. NO_2

41652937681. CO

Question Number : 51 Question Id : 4165299556 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

25 ml of the given HCl solution requires 30 mL of 0.1 M sodium carbonate solution. What is the volume of this HCl solution required to titrate 30 mL of 0.2 M aqueous NaOH solution ?

Options :

41652937682. 25 mL

41652937683. 50 mL

41652937684. 75 mL

41652937685. 12.5 mL

Question Number : 51 Question Id : 4165299556 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

25 mL HCl विलयन के लिये 0.1 M सोडियम कार्बोनेट विलयन का 30 mL आवश्यक होता है, 0.2 M जलीय NaOH के विलयन को अनुमापित करने के लिये इस HCl विलयन के कितने आयतन की आवश्यकता होगी ?

Options :

41652937682. 25 mL

41652937683. 50 mL

41652937684. 75 mL

41652937685. 12.5 mL

Question Number : 52 Question Id : 4165299557 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The radius of the largest sphere which fits properly at the centre of the edge of a body centred cubic unit cell is : (Edge length is represented by 'a')

Options :

41652937686. 0.134 a

41652937687. 0.067 a

41652937688. 0.027 a

41652937689. 0.047 a

Question Number : 52 Question Id : 4165299557 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

काय केन्द्रित घन एकल सेल के कोर के केन्द्र में बैठने वाले (फिट होने वाले) सबसे बड़े गोले की त्रिज्या होगी (कोर लम्बाई को 'a' द्वारा व्यक्त किया गया है) :

Options :

41652937686. 0.134 a

41652937687. 0.067 a

41652937688. 0.027 a

41652937689. 0.047 a

Question Number : 53 Question Id : 4165299558 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The de Broglie wavelength (λ) associated with a photoelectron varies with the frequency (v) of the incident radiation as, [v_0 is threshold frequency] :

Options :

$$\lambda \propto \frac{1}{(v - v_0)^{\frac{1}{2}}}$$

41652937690.

$$\lambda \propto \frac{1}{(v - v_0)}$$

41652937691.

$$\lambda \propto \frac{1}{(v - v_0)^{\frac{1}{4}}}$$

41652937692.

$$\lambda \propto \frac{1}{(v - v_0)^{\frac{3}{2}}}$$

41652937693.

Question Number : 53 Question Id : 4165299558 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

प्रकाशिक इलेक्ट्रॉन से सम्बन्धित डि-ब्रॉली तरंगदैर्घ्य (λ), आपतित विकिरण की आवृत्ति (v) के साथ इस प्रकार परिवर्तित होती है, (v_0 = देहली आवृत्ति)

Options :

$$\lambda \propto \frac{1}{(\nu - \nu_0)^{\frac{1}{2}}}$$

41652937690.

$$\lambda \propto \frac{1}{(\nu - \nu_0)}$$

41652937691.

$$\lambda \propto \frac{1}{(\nu - \nu_0)^{\frac{1}{4}}}$$

41652937692.

$$\lambda \propto \frac{1}{(\nu - \nu_0)^{\frac{3}{2}}}$$

41652937693.

Question Number : 54 Question Id : 4165299559 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The standard reaction Gibbs energy for a chemical reaction at an absolute temperature T is given by

$$\Delta_r G^\circ = A - BT$$

Where A and B are non-zero constants.
Which of the following is TRUE about this reaction ?

Options :

41652937694. Endothermic if $A > 0$

41652937695. Exothermic if $B < 0$

41652937696. Endothermic if $A < 0$ and $B > 0$

41652937697. Exothermic if $A > 0$ and $B < 0$

Question Number : 54 Question Id : 4165299559 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

परम ताप T पर एक रासायनिक अभिक्रिया के लिए मानक अभिक्रिया गिब्ज ऊर्जा निम्न के द्वारा अभिव्यक्त की जाती है :

$$\Delta_r G^\circ = A - BT$$

जहाँ A तथा B शून्य न होने वाले स्थिरांक हैं। इस अभिक्रिया के लिए निम्न में से कौन-सा सत्य है?

Options :

41652937694. ऊष्माशोषी यदि A > 0

41652937695. ऊष्माक्षेपी यदि B < 0

41652937696. ऊष्माशोषी यदि A < 0 तथा B > 0

41652937697. ऊष्माक्षेपी यदि A > 0 तथा B < 0

Question Number : 55 Question Id : 4165299560 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The reaction,

$MgO(s) + C(s) \rightarrow Mg(s) + CO(g)$, for which $\Delta_rH^\circ = + 491.1 \text{ kJ mol}^{-1}$ and $\Delta_rS^\circ = 198.0 \text{ JK}^{-1} \text{ mol}^{-1}$, is not feasible at 298 K. Temperature above which reaction will be feasible is :

Options :

41652937698. 2040.5 K

41652937699. 2480.3 K

41652937700. 2380.5 K

41652937701. 1890.0 K

Question Number : 55 Question Id : 4165299560 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

अभिक्रिया $MgO(s) + C(s) \rightarrow Mg(s) + CO(g)$

जिसका $\Delta_rH^\circ = + 491.1 \text{ kJ mol}^{-1}$ तथा $\Delta_rS^\circ = 198.0 \text{ JK}^{-1} \text{ mol}^{-1}$ है, 298 K पर सम्भव नहीं है। वह ताप जिसके ऊपर अभिक्रिया सम्भव होगी, है :

Options :

41652937698. 2040.5 K

41652937699. 2480.3 K

41652937700. 2380.5 K

41652937701. 1890.0 K

Question Number : 56 Question Id : 4165299561 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

K_2HgI_4 is 40% ionised in aqueous solution.

The value of its van't Hoff factor (i) is :

Options :

41652937702. 1.6

41652937703. 1.8

41652937704. 2.0

41652937705. 2.2

Question Number : 56 Question Id : 4165299561 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

K_2HgI_4 जलीय विलयन में 40% आयनित है। इसके

वान्टहॉफ गुणांक (i) का मान होगा :

Options :

41652937702. 1.6

41652937703. 1.8

41652937704. 2.0

41652937705. 2.2

Question Number : 57 Question Id : 4165299562 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

For the equilibrium,

$2 H_2O \rightleftharpoons H_3O^+ + OH^-$, the value of ΔG°

at 298 K is approximately :

Options :

41652937706. -100 kJ mol^{-1}

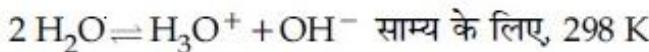
41652937707. -80 kJ mol^{-1}

41652937708. 80 kJ mol^{-1}

41652937709. 100 kJ mol^{-1}

Question Number : 57 Question Id : 4165299562 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1



पर ΔG° का मान लगभग है :

Options :

41652937706. -100 kJ mol^{-1}

41652937707. -80 kJ mol^{-1}

41652937708. 80 kJ mol^{-1}

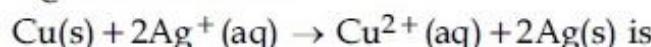
41652937709. 100 kJ mol^{-1}

Question Number : 58 Question Id : 4165299563 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Given the equilibrium constant :

K_C of the reaction :



10×10^{15} , calculate the E_{cell}^θ of this reaction at 298 K

$$\left[2.303 \frac{RT}{F} \text{ at } 298\text{ K} = 0.059\text{ V} \right]$$

Options :

41652937710. 0.04736 V

41652937711. 0.4736 V

41652937712. 0.04736 mV

41652937713. 0.4736 mV

Question Number : 58 Question Id : 4165299563 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1



अभिक्रिया का दिया गया साम्य स्थिरांक, K_C ,

10×10^{15} है। 298 K पर इस अभिक्रिया के E_{cell}^θ की गणना कीजिए।

$$\left[2.303 \frac{RT}{F} \text{ at } 298\text{ K} = 0.059\text{ V} \right]$$

Options :

41652937710. 0.04736 V

41652937711. 0.4736 V

41652937712. 0.04736 mV

41652937713. 0.4736 mV

Question Number : 59 Question Id : 4165299564 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The reaction $2X \rightarrow B$ is a zeroth order reaction. If the initial concentration of X is 0.2 M, the half-life is 6 h. When the initial concentration of X is 0.5 M, the time required to reach its final concentration of 0.2 M will be :

Options :

41652937714. 7.2 h

41652937715. 18.0 h

41652937716. 9.0 h

41652937717. 12.0 h

Question Number : 59 Question Id : 4165299564 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

अभिक्रिया, $2X \rightarrow B$ एक शून्य कोटि की अभिक्रिया है। 0.2 M की प्रारम्भिक सान्दर्ता के लिए, अर्द्धआयु 6 h है। यदि X की प्रारम्भिक सान्दर्ता 0.5 M हो, तो 0.2 M की अंतिम सान्दर्ता पहुचने में लगने वाला समय होगा :

Options :

41652937714. 7.2 h

41652937715. 18.0 h

41652937716. 9.0 h

41652937717. 12.0 h

Question Number : 60 Question Id : 4165299565 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Among the colloids cheese (C), milk (M) and smoke (S), the correct combination of the dispersed phase and dispersion medium, respectively is :

Options :

C : solid in liquid; M : liquid in liquid ;

41652937718. S : gas in solid

41652937719. C : solid in liquid; M : solid in liquid ;

S : solid in gas

41652937720. C : liquid in solid; M : liquid in solid ;

S : solid in gas

41652937721. C : liquid in solid; M : liquid in liquid ;

S : solid in gas

Question Number : 60 Question Id : 4165299565 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

कोलाइडों, जैसे पनीर (C), दूध (M) तथा धूआं (S) के विषय में परिक्षित प्रावस्था तथा परिक्षेपण माध्यम का सही मेल क्रमशः होगा :

Options :

41652937718. C : द्रव में ठोस; M : द्रव में द्रव; S : द्रव में गैस

41652937719. C : द्रव में ठोस; M : द्रव में ठोस; S : गैस में ठोस

41652937720. C : ठोस में द्रव; M : ठोस में द्रव; S : गैस में ठोस

41652937721. C : ठोस में द्रव; M : द्रव में द्रव; S : गैस में ठोस

Mathematics

Section Id :	416529141
Section Number :	3
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	30
Number of Questions to be attempted:	30
Section Marks:	120

Display Number Panel:
Group All Questions:

Yes
No

Sub-Section Number: 1
Sub-Section Id: 416529150
Question Shuffling Allowed : Yes

Question Number : 61 Question Id : 4165299566 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let a function $f: (0, \infty) \rightarrow (0, \infty)$ be defined

by $f(x) = \left|1 - \frac{1}{x}\right|$. Then f is :

Options :

41652937722. injective only

41652937723. not injective but it is surjective

41652937724. neither injective nor surjective

41652937725. both injective as well as surjective

Question Number : 61 Question Id : 4165299566 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना एक फलन $f: (0, \infty) \rightarrow (0, \infty)$

$f(x) = \left|1 - \frac{1}{x}\right|$ द्वारा परिभाषित है, तो f :

Options :

41652937722. केवल एकेकी है।

41652937723. आच्छादी है पर एकेकी नहीं है।

41652937724. न एकेकी है न आच्छादी है।

41652937725. एकेकी और आच्छादी दोनों हैं।

Question Number : 62 Question Id : 4165299567 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let z be a complex number such that

$$|z| + z = 3 + i \text{ (where } i = \sqrt{-1} \text{).}$$

Then |z| is equal to :

Options :

$$\frac{5}{3}$$

41652937726.

$$\frac{5}{4}$$

41652937727.

$$\frac{\sqrt{34}}{3}$$

41652937728.

$$\frac{\sqrt{41}}{4}$$

41652937729.

Question Number : 62 Question Id : 4165299567 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना एक सम्मिश्र संख्या z इस प्रकार है कि
 $|z| + z = 3 + i$ (जहाँ $i = \sqrt{-1}$), तो $|z|$ बराबर
है :

Options :

$$\frac{5}{3}$$

41652937726.

$$\frac{5}{4}$$

41652937727.

$$\frac{\sqrt{34}}{3}$$

41652937728.

$$\frac{\sqrt{41}}{4}$$

41652937729.

Question Number : 63 Question Id : 4165299568 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let α and β be the roots of the quadratic equation

$$x^2 \sin\theta - x (\sin\theta \cos\theta + 1) + \cos\theta = 0$$

($0 < \theta < 45^\circ$), and $\alpha < \beta$. Then

$$\sum_{n=0}^{\infty} \left(\alpha^n + \frac{(-1)^n}{\beta^n} \right)$$
 is equal to :

Options :

41652937730. $\frac{1}{1+\cos\theta} - \frac{1}{1-\sin\theta}$

41652937731. $\frac{1}{1-\cos\theta} - \frac{1}{1+\sin\theta}$

41652937732. $\frac{1}{1+\cos\theta} + \frac{1}{1-\sin\theta}$

41652937733. $\frac{1}{1-\cos\theta} + \frac{1}{1+\sin\theta}$

Question Number : 63 Question Id : 4165299568 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना द्विघात समीकरण

$$x^2 \sin\theta - x (\sin\theta \cos\theta + 1) + \cos\theta = 0$$

($0 < \theta < 45^\circ$), के मूल α तथा β ($\alpha < \beta$) हैं, तो

$$\sum_{n=0}^{\infty} \left(\alpha^n + \frac{(-1)^n}{\beta^n} \right)$$
 बराबर है :

Options :

41652937730. $\frac{1}{1+\cos\theta} - \frac{1}{1-\sin\theta}$

41652937731. $\frac{1}{1-\cos\theta} - \frac{1}{1+\sin\theta}$

41652937732. $\frac{1}{1+\cos\theta} + \frac{1}{1-\sin\theta}$

$$\frac{1}{1-\cos\theta} + \frac{1}{1+\sin\theta}$$

41652937733.

Question Number : 64 Question Id : 4165299569 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let A and B be two invertible matrices of order 3×3 . If $\det(ABA^T) = 8$ and $\det(AB^{-1}) = 8$, then $\det(BA^{-1}B^T)$ is equal to :

Options :

41652937734. 1

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

41652937735.

$$\frac{1}{16}$$

41652937736.

$$\frac{1}{16}$$

Question Number : 64 Question Id : 4165299569 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना A तथा B, 3×3 कोटि के दो व्युत्क्रमणीय आव्यूह हैं। यदि $\det(ABA^T) = 8$ तथा $\det(AB^{-1}) = 8$, तो $\det(BA^{-1}B^T)$ बराबर है :

Options :

41652937734. 1

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

41652937735.

$$\frac{1}{16}$$

41652937736.

$$\frac{1}{16}$$

41652937737.

Question Number : 65 Question Id : 4165299570 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If
$$\begin{vmatrix} a-b-c & 2a & 2a \\ 2b & b-c-a & 2b \\ 2c & 2c & c-a-b \end{vmatrix}$$

 $= (a+b+c) (x+a+b+c)^2, \quad x \neq 0 \text{ and}$
 $a+b+c \neq 0,$ then x is equal to :

Options :

41652937738. abc

41652937739. $2(a+b+c)$

41652937740. $-(a+b+c)$

41652937741. $-2(a+b+c)$

Question Number : 65 Question Id : 4165299570 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि
$$\begin{vmatrix} a-b-c & 2a & 2a \\ 2b & b-c-a & 2b \\ 2c & 2c & c-a-b \end{vmatrix}$$

$= (a+b+c) (x+a+b+c)^2, \quad x \neq 0 \quad \text{तथा}$
 $a+b+c \neq 0,$ तो x बराबर है :

Options :

41652937738. abc

41652937739. $2(a+b+c)$

41652937740. $-(a+b+c)$

41652937741. $-2(a+b+c)$

Question Number : 66 Question Id : 4165299571 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The number of functions f from
 $\{1, 2, 3, \dots, 20\}$ onto $\{1, 2, 3, \dots, 20\}$ such that
 $f(k)$ is a multiple of 3, whenever k is a
multiple of 4, is :

Options :

41652937742. $5! \times 6!$

41652937743. $5^6 \times 15$

41652937744. $6^5 \times (15)!$

41652937745. $(15)! \times 6!$

Question Number : 66 Question Id : 4165299571 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

{1, 2, 3, ..., 20} से {1, 2, 3, ..., 20} पर ऐसे आच्छादक फलनों, जिनके लिए $f(k)$ तीन का गुणज है जब k चार का गुणज है, की संख्या है :

Options :

41652937742. $5! \times 6!$

41652937743. $5^6 \times 15$

41652937744. $6^5 \times (15)!$

41652937745. $(15)! \times 6!$

Question Number : 67 Question Id : 4165299572 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $(x + 10)^{50} + (x - 10)^{50}$
 $= a_0 + a_1 x + a_2 x^2 + \dots + a_{50} x^{50}$, for all

$x \in \mathbb{R}$; then $\frac{a_2}{a_0}$ is equal to :

Options :

41652937746. 12.75

41652937747. 12.50

41652937748. 12.25

41652937749. 12.00

Question Number : 67 Question Id : 4165299572 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना सभी $x \in \mathbb{R}$ के लिए
 $(x+10)^{50} + (x-10)^{50}$

$$= a_0 + a_1 x + a_2 x^2 + \dots + a_{50} x^{50}, \text{ तो } \frac{a_2}{a_0}$$

बराबर है :

Options :

41652937746. 12.75

41652937747. 12.50

41652937748. 12.25

41652937749. 12.00

Question Number : 68 Question Id : 4165299573 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If 19th term of a non-zero A.P. is zero, then
its (49th term) : (29th term) is :

Options :

41652937750. 4 : 1

41652937751. 1 : 3

41652937752. 2 : 1

41652937753. 3 : 1

Question Number : 68 Question Id : 4165299573 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि एक शून्येतर समान्तर श्रेढ़ी का 19वां पद शून्य है,
तो इसका (49वां पद) : (29वां पद) है :

Options :

41652937750. 4 : 1

41652937751. 1 : 3

41652937752. 2 : 1

41652937753. 3 : 1

Question Number : 69 Question Id : 4165299574 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $S_n = 1 + q + q^2 + \dots + q^n$ and

$$T_n = 1 + \left(\frac{q+1}{2}\right) + \left(\frac{q+1}{2}\right)^2 + \dots + \left(\frac{q+1}{2}\right)^n$$

where q is a real number and $q \neq 1$. If

$${}^{101}C_1 + {}^{101}C_2 \cdot S_1 + \dots + {}^{101}C_{101} \cdot S_{100} = \alpha T_{100}$$

then α is equal to :

Options :

41652937754. 202

41652937755. 200

41652937756. 2^{100}

41652937757. 2^{99}

Question Number : 69 Question Id : 4165299574 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना $S_n = 1 + q + q^2 + \dots + q^n$ तथा

$$T_n = 1 + \left(\frac{q+1}{2}\right) + \left(\frac{q+1}{2}\right)^2 + \dots + \left(\frac{q+1}{2}\right)^n, \text{ जहाँ}$$

q एक वास्तविक संख्या है तथा $q \neq 1$ । यदि

$${}^{101}C_1 + {}^{101}C_2 \cdot S_1 + \dots + {}^{101}C_{101} \cdot S_{100} = \alpha T_{100},$$

तो α बराबर है :

Options :

41652937754. 202

41652937755. 200

41652937756. 2^{100}

41652937757. 2^{99}

Question Number : 70 Question Id : 4165299575 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$\lim_{x \rightarrow 0} \frac{x \cot(4x)}{\sin^2 x \cot^2(2x)}$ is equal to :

Options :

41652937758. 2

41652937759. 0

41652937760. 1

41652937761. 4

Question Number : 70 Question Id : 4165299575 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$$\lim_{x \rightarrow 0} \frac{x \cot(4x)}{\sin^2 x \cot^2(2x)} \text{ बराबर है :}$$

Options :

41652937758. 2

41652937759. 0

41652937760. 1

41652937761. 4

Question Number : 71 Question Id : 4165299576 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let K be the set of all real values of x where
the function
 $f(x) = \sin |x| - |x| + 2(x - \pi) \cos |x|$ is not
differentiable. Then the set K is equal to :

Options :

41652937762. $\{0\}$

41652937763. $\{\pi\}$

41652937764. $\{0, \pi\}$

41652937765. \emptyset (an empty set)

Question Number : 71 Question Id : 4165299576 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना K (x के) उन सभी वास्तविक मानों का समुच्चय है जहाँ फलन

$f(x) = \sin|x| - |x| + 2(x - \pi) \cos|x|$
अवकलनीय नहीं है, तो समुच्चय K बराबर है :

Options :

41652937762. $\{0\}$

41652937763. $\{\pi\}$

41652937764. $\{0, \pi\}$

41652937765. ϕ (एक रिक्त समुच्चय)

Question Number : 72 Question Id : 4165299577 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $f(x) = \frac{x}{\sqrt{a^2+x^2}} - \frac{d-x}{\sqrt{b^2+(d-x)^2}}, x \in \mathbf{R},$

where a, b and d are non-zero real constants. Then :

Options :

41652937766. f is an increasing function of x

41652937767. f is neither increasing nor decreasing function of x

41652937768. f is a decreasing function of x

41652937769. f' is not a continuous function of x

Question Number : 72 Question Id : 4165299577 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना $f(x) = \frac{x}{\sqrt{a^2+x^2}} - \frac{d-x}{\sqrt{b^2+(d-x)^2}}, x \in \mathbf{R},$

जहाँ a, b तथा d शून्येतर वास्तविक अचर हैं, तो :

Options :

41652937766. f, x का एक वर्धमान फलन है।

f, x का न तो वर्धमान न ही हासमान फलन है।

41652937767.

f, x का हासमान फलन है।

f', x का संतत फलन नहीं है।

41652937769.

Question Number : 73 Question Id : 4165299578 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let x, y be positive real numbers and m, n positive integers. The maximum value of

the expression $\frac{x^m y^n}{(1+x^{2m})(1+y^{2n})}$ is :

Options :

$\frac{1}{4}$

41652937770.

1

$\frac{m+n}{6mn}$

$\frac{1}{2}$

41652937773.

Question Number : 73 Question Id : 4165299578 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना x, y धनात्मक वास्तविक संख्याएँ हैं तथा m, n धनपूर्णक हैं।

व्यंजक $\frac{x^m y^n}{(1+x^{2m})(1+y^{2n})}$ का अधिकतम मान
है :

Options :

$\frac{1}{4}$

41652937770.

1

41652937771.

$$\frac{m+n}{6mn}$$

$$\frac{1}{2}$$

41652937773.

Question Number : 74 Question Id : 4165299579 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If $\int \frac{x+1}{\sqrt{2x-1}} dx = f(x)\sqrt{2x-1} + C$, where C

is a constant of integration, then $f(x)$ is equal to :

Options :

$$\frac{1}{3}(x+1)$$

41652937774.

$$\frac{2}{3}(x+2)$$

41652937775.

$$\frac{2}{3}(x-4)$$

41652937776.

$$\frac{1}{3}(x+4)$$

41652937777.

Question Number : 74 Question Id : 4165299579 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि $\int \frac{x+1}{\sqrt{2x-1}} dx = f(x)\sqrt{2x-1} + C$ है, जहाँ C

एक समाकलन अचर है, तो $f(x)$ बराबर है :

Options :

$$\frac{1}{3}(x+1)$$

41652937774.

$$\frac{2}{3}(x+2)$$

41652937775.

$$\frac{2}{3}(x-4)$$

41652937776.

$$\frac{1}{3}(x+4)$$

41652937777.

Question Number : 75 Question Id : 4165299580 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The integral $\int_{\pi/6}^{\pi/4} \frac{dx}{\sin 2x (\tan^5 x + \cot^5 x)}$

equals :

Options :

$$\frac{1}{10} \left(\frac{\pi}{4} - \tan^{-1} \left(\frac{1}{9\sqrt{3}} \right) \right)$$

41652937778.

$$\frac{1}{5} \left(\frac{\pi}{4} - \tan^{-1} \left(\frac{1}{3\sqrt{3}} \right) \right)$$

41652937779.

$$\frac{\pi}{40}$$

41652937780.

$$\frac{1}{20} \tan^{-1} \left(\frac{1}{9\sqrt{3}} \right)$$

41652937781.

Question Number : 75 Question Id : 4165299580 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

समाकल $\int_{\pi/6}^{\pi/4} \frac{dx}{\sin 2x (\tan^5 x + \cot^5 x)}$ बराबर

है :

Options :

$$\frac{1}{10} \left(\frac{\pi}{4} - \tan^{-1} \left(\frac{1}{9\sqrt{3}} \right) \right)$$

41652937778.

$$\frac{1}{5} \left(\frac{\pi}{4} - \tan^{-1} \left(\frac{1}{3\sqrt{3}} \right) \right)$$

41652937779.

$$\frac{\pi}{40}$$

41652937780.

$$\frac{1}{20} \tan^{-1} \left(\frac{1}{9\sqrt{3}} \right)$$

41652937781.

Question Number : 76 Question Id : 4165299581 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The area(in sq. units) in the first quadrant bounded by the parabola, $y = x^2 + 1$, the tangent to it at the point (2, 5) and the coordinate axes is :

Options :

$$\frac{37}{24}$$

41652937782.

$$\frac{8}{3}$$

41652937783.

$$\frac{187}{24}$$

41652937784.

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

41652937785.

Question Number : 76 Question Id : 4165299581 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

परवलय $y = x^2 + 1$, इस के एक बिंदु (2, 5) पर खींची गई स्पर्श रेखा तथा निर्देशांक अक्षों द्वारा प्रथम चतुर्थांश में घिरे क्षेत्र का क्षेत्रफल (वर्ग इकाइयों में) है :

Options :

$$\frac{37}{24}$$

41652937782.

$$\frac{8}{3}$$

41652937783.

$$\frac{187}{24}$$

41652937784.

14
3

41652937785.

Question Number : 77 Question Id : 4165299582 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The solution of the differential equation,

$$\frac{dy}{dx} = (x-y)^2, \text{ when } y(1)=1, \text{ is :}$$

Options :

$$-\log_e \left| \frac{1-x+y}{1+x-y} \right| = 2(x-1)$$

41652937786.

$$\log_e \left| \frac{2-y}{2-x} \right| = 2(y-1)$$

41652937787.

$$\log_e \left| \frac{2-x}{2-y} \right| = x-y$$

41652937788.

$$-\log_e \left| \frac{1+x-y}{1-x+y} \right| = x+y-2$$

41652937789.

Question Number : 77 Question Id : 4165299582 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

अवकल समीकरण $\frac{dy}{dx} = (x-y)^2$, जबकि $y(1)=1$

है, का हल है :

Options :

$$-\log_e \left| \frac{1-x+y}{1+x-y} \right| = 2(x-1)$$

41652937786.

$$\log_e \left| \frac{2-y}{2-x} \right| = 2(y-1)$$

41652937787.

$$\log_e \left| \frac{2-x}{2-y} \right| = x-y$$

41652937788.

$$-\log_e \left| \frac{1+x-y}{1-x+y} \right| = x+y-2$$

41652937789.

Question Number : 78 Question Id : 4165299583 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If in a parallelogram ABDC, the coordinates of A, B and C are respectively (1, 2), (3, 4) and (2, 5), then the equation of the diagonal AD is :

Options :

41652937790. $5x + 3y - 11 = 0$

41652937791. $5x - 3y + 1 = 0$

41652937792. $3x - 5y + 7 = 0$

41652937793. $3x + 5y - 13 = 0$

Question Number : 78 Question Id : 4165299583 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि एक समांतर चतुर्भुज ABDC के बिंदुओं A, B तथा C के निर्देशांक क्रमशः (1, 2), (3, 4) तथा (2, 5) हैं, तो विकर्ण AD का समीकरण है :

Options :

41652937790. $5x + 3y - 11 = 0$

41652937791. $5x - 3y + 1 = 0$

41652937792. $3x - 5y + 7 = 0$

41652937793. $3x + 5y - 13 = 0$

Question Number : 79 Question Id : 4165299584 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let the length of the latus rectum of an ellipse with its major axis along x -axis and centre at the origin, be 8. If the distance between the foci of this ellipse is equal to the length of its minor axis, then which one of the following points lies on it ?

Options :

41652937794. $(4\sqrt{2}, 2\sqrt{2})$

41652937795. $(4\sqrt{2}, 2\sqrt{3})$

41652937796. $(4\sqrt{3}, 2\sqrt{3})$

41652937797. $(4\sqrt{3}, 2\sqrt{2})$

Question Number : 79 Question Id : 4165299584 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना एक दीर्घवृत्त, जिसका दीर्घ-अक्ष x -अक्ष के अनुदिश है तथा केंद्र मूलबिंदु पर है, के नाभिलंब की लंबाई 8 है। यदि दीर्घवृत्त की नाभियों के बीच की दूरी, इसके लघु-अक्ष की लंबाई के समान हो, तो निम्न में से कौन-सा बिंदु इस पर स्थित है?

Options :

41652937794. $(4\sqrt{2}, 2\sqrt{2})$

41652937795. $(4\sqrt{2}, 2\sqrt{3})$

41652937796. $(4\sqrt{3}, 2\sqrt{3})$

41652937797. $(4\sqrt{3}, 2\sqrt{2})$

Question Number : 80 Question Id : 4165299585 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A circle cuts a chord of length $4a$ on the x -axis and passes through a point on the y -axis, distant $2b$ from the origin. Then the locus of the centre of this circle, is :

Options :

41652937798. a straight line

an ellipse

41652937799.

a parabola

41652937800.

a hyperbola

41652937801.

Question Number : 80 Question Id : 4165299585 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक वृत्त x -अक्ष पर एक जीवा काटता है जिसकी लंबाई $4a$ है तथा यह वृत्त y -अक्ष के एक बिन्दु से हो कर जाता है जिसकी मूलबिंदु से दूरी $2b$ है। तो वृत्त के केंद्र का बिंदुपथ (locus) है :

Options :

41652937798. एक सरल रेखा

41652937799. एक दीर्घवृत्त

41652937800. एक परवलय

41652937801. एक अतिपरवलय

Question Number : 81 Question Id : 4165299586 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If the area of the triangle whose one vertex is at the vertex of the parabola, $y^2 + 4(x - a^2) = 0$ and the other two vertices are the points of intersection of the parabola and y -axis, is 250 sq. units, then a value of 'a' is :

Options :

41652937802. $5(2^{1/3})$

41652937803. $(10)^{2/3}$

41652937804. 5

41652937805. $5\sqrt{5}$

Question Number : 81 Question Id : 4165299586 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि एक त्रिभुज, जिसका एक शीर्ष परवलय $y^2 + 4(x - a^2) = 0$ के शीर्ष पर है तथा अन्य दो शीर्ष परवलय तथा y -अक्ष के प्रतिच्छेदन बिंदुओं पर हैं, का क्षेत्रफल 250 वर्ग इकाई है, तो 'a' का एक मान है :

Options :

41652937802. $5(2^{1/3})$

41652937803. $(10)^{2/3}$

41652937804. 5

$5\sqrt{5}$

41652937805.

Question Number : 82 Question Id : 4165299587 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If a hyperbola has length of its conjugate axis equal to 5 and the distance between its foci is 13, then the eccentricity of the hyperbola is :

Options :

41652937806. $\frac{13}{6}$

41652937807. 2

41652937808. $\frac{13}{8}$

41652937809. $\frac{13}{12}$

Question Number : 82 Question Id : 4165299587 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि एक अतिपरवलय के संयुग्मी अक्ष (conjugate axis) की लंबाई 5 है तथा इसकी नाभियों के बीच की दूरी 13 है, तो इस अतिपरवलय की उत्केंद्रता है :

Options :

$$\frac{13}{6}$$

41652937806.

$$2$$

$$\frac{13}{8}$$

$$\frac{13}{12}$$

41652937809.

Question Number : 83 Question Id : 4165299588 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Two lines $\frac{x-3}{1} = \frac{y+1}{3} = \frac{z-6}{-1}$ and

$\frac{x+5}{7} = \frac{y-2}{-6} = \frac{z-3}{4}$ intersect at the point R.

The reflection of R in the xy -plane has coordinates :

Options :

41652937810. $(2, -4, -7)$

41652937811. $(2, 4, 7)$

41652937812. $(2, -4, 7)$

41652937813. $(-2, 4, 7)$

Question Number : 83 Question Id : 4165299588 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

दो रेखाएँ $\frac{x-3}{1} = \frac{y+1}{3} = \frac{z-6}{-1}$ तथा

$\frac{x+5}{7} = \frac{y-2}{-6} = \frac{z-3}{4}$ बिंदु R पर काटती हैं। बिंदु

R के xy -तल में प्रतिबिंब के निर्देशांक हैं :

Options :

41652937810. $(2, -4, -7)$

41652937811. $(2, 4, 7)$

41652937812. $(2, -4, 7)$

41652937813. $(-2, 4, 7)$

Question Number : 84 Question Id : 4165299589 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If the point $(2, \alpha, \beta)$ lies on the plane which passes through the points $(3, 4, 2)$ and $(7, 0, 6)$ and is perpendicular to the plane $2x - 5y = 15$, then $2\alpha - 3\beta$ is equal to :

Options :

41652937814. 17

41652937815. 12

41652937816. 5

41652937817. 7

Question Number : 84 Question Id : 4165299589 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि बिंदु $(2, \alpha, \beta)$ उस समतल पर स्थित है जो बिंदुओं $(3, 4, 2)$ तथा $(7, 0, 6)$ से हो कर जाता है तथा समतल $2x - 5y = 15$ के लंबवत है, तो $2\alpha - 3\beta$ बराबर है :

Options :

41652937814. 17

41652937815. 12

41652937816. 5

41652937817. 7

Question Number : 85 Question Id : 4165299590 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $\sqrt{3}\hat{i} + \hat{j}$, $\hat{i} + \sqrt{3}\hat{j}$ and $\beta\hat{i} + (1-\beta)\hat{j}$

respectively be the position vectors of the points A, B and C with respect to the origin O. If the distance of C from the bisector of

the acute angle between OA and OB is $\frac{3}{\sqrt{2}}$,

then the sum of all possible values of β is :

Options :

41652937818. 1

41652937819. 2

41652937820. 3

41652937821. 4

Question Number : 85 Question Id : 4165299590 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना $\sqrt{3}\hat{i} + \hat{j}$, $\hat{i} + \sqrt{3}\hat{j}$ तथा $\beta\hat{i} + (1-\beta)\hat{j}$

क्रमशः तीन विंदुओं A, B तथा C के मूलविंदु O के सापेक्ष, स्थिति सदिश हैं। यदि C की, OA तथा OB

के बीच बने न्यूनकोण के समद्विभाजक से दूरी $\frac{3}{\sqrt{2}}$ है,

तो β के सभी संभावित मानों का योग है :

Options :

41652937818. 1

41652937819. 2

41652937820. 3

41652937821. 4

Question Number : 86 Question Id : 4165299591 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A bag contains 30 white balls and 10 red balls. 16 balls are drawn one by one randomly from the bag with replacement. If X be the number of white balls drawn,

then $\left(\frac{\text{mean of } X}{\text{standard deviation of } X} \right)$ is equal to :

Options :

41652937822. $3\sqrt{2}$

41652937823. $\frac{4\sqrt{3}}{3}$

41652937824. $4\sqrt{3}$

41652937825. 4

Question Number : 86 Question Id : 4165299591 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक थैले में 30 सफेद गेंदें तथा 10 लाल गेंदें हैं। थैले में से यादृच्छया, एक एक करके (प्रतिस्थापना सहित) 16 गेंदें निकाली गईं। यदि निकाली गई सफेद गेंदों की

संख्या X है, तो $\left(\frac{X \text{ का माध्य}}{X \text{ का मानक विचलन}} \right)$ बराबर है :

Options :

41652937822. $3\sqrt{2}$

41652937823. $\frac{4\sqrt{3}}{3}$

41652937824. $4\sqrt{3}$

41652937825. 4

Question Number : 87 Question Id : 4165299592 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $S = \{1, 2, \dots, 20\}$. A subset B of S is said to be "nice", if the sum of the elements of B is 203. Then the probability that a randomly chosen subset of S is "nice" is :

Options :

$$\frac{5}{2^{20}}$$

41652937826.

$$\frac{6}{2^{20}}$$

41652937827.

$$\frac{4}{2^{20}}$$

41652937828.

$$\frac{7}{2^{20}}$$

41652937829.

Question Number : 87 Question Id : 4165299592 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना $S = \{1, 2, \dots, 20\}$ है। S के एक उपसमुच्य B को "nice" कहा जाता है यदि इसके अवयवों का योग 203 है। तो, S के एक यादृच्छ्या चुने गए उपसमुच्य के "nice" होने की प्रायिकता है :

Options :

$$\frac{5}{2^{20}}$$

41652937826.

$$\frac{6}{2^{20}}$$

41652937827.

$$\frac{4}{2^{20}}$$

41652937828.

$$\frac{7}{2^{20}}$$

41652937829.

Question Number : 88 Question Id : 4165299593 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Given $\frac{b+c}{11} = \frac{c+a}{12} = \frac{a+b}{13}$ for a ΔABC with

usual notation. If $\frac{\cos A}{\alpha} = \frac{\cos B}{\beta} = \frac{\cos C}{\gamma}$,

then the ordered triad (α, β, γ) has a value :

Options :

41652937830. (3, 4, 5)

41652937831. (19, 7, 25)

41652937832. (7, 19, 25)

41652937833. (5, 12, 13)

Question Number : 88 Question Id : 4165299593 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक ΔABC में सामान्य संकेतों के आधार पर दिया है

कि $\frac{b+c}{11} = \frac{c+a}{12} = \frac{a+b}{13}$ है। यदि

$\frac{\cos A}{\alpha} = \frac{\cos B}{\beta} = \frac{\cos C}{\gamma}$ है, तो क्रमित त्रिक

(α, β, γ) का एक मान है :

Options :

41652937830. (3, 4, 5)

41652937831. (19, 7, 25)

41652937832. (7, 19, 25)

41652937833. (5, 12, 13)

Question Number : 89 Question Id : 4165299594 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

All x satisfying the inequality

$(\cot^{-1}x)^2 - 7(\cot^{-1}x) + 10 > 0$, lie in the interval :

Options :

41652937834. ($\cot 5, \cot 4$)

41652937835. $(\cot 2, \infty)$

41652937836. $(-\infty, \cot 5) \cup (\cot 4, \cot 2)$

41652937837. $(-\infty, \cot 5) \cup (\cot 2, \infty)$

Question Number : 89 Question Id : 4165299594 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

वे सभी x , जो असमीकरण

$(\cot^{-1}x)^2 - 7(\cot^{-1}x) + 10 > 0$ को संतुष्ट करते हैं, निम्न में से किस अंतराल में हैं?

Options :

41652937834. $(\cot 5, \cot 4)$

41652937835. $(\cot 2, \infty)$

41652937836. $(-\infty, \cot 5) \cup (\cot 4, \cot 2)$

41652937837. $(-\infty, \cot 5) \cup (\cot 2, \infty)$

Question Number : 90 Question Id : 4165299595 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Contrapositive of the statement

“If two numbers are not equal, then their squares are not equal.” is :

Options :

If the squares of two numbers are equal, then the numbers are not equal.

41652937838.

If the squares of two numbers are not equal, then the numbers are not equal.

41652937839.

If the squares of two numbers are not equal, then the numbers are equal.

41652937840.

If the squares of two numbers are equal, then the numbers are equal.

41652937841.

Correct Marks : 4 Wrong Marks : 1

कथन

“यदि दो संख्याएँ बराबर नहीं हैं, तो उनके वर्ग भी बराबर नहीं हैं”

का प्रतिधिनात्मक (contrapositive) कथन है :

Options :

यदि दो संख्याओं के वर्ग बराबर हैं, तो संख्याएँ

41652937838. बराबर नहीं हैं।

यदि दो संख्याओं के वर्ग बराबर नहीं हैं, तो

41652937839. संख्याएँ बराबर नहीं हैं।

यदि दो संख्याओं के वर्ग बराबर नहीं हैं, तो

41652937840. संख्याएँ बराबर हैं।

यदि दो संख्याओं के वर्ग बराबर हैं, तो संख्याएँ

बराबर हैं।

41652937841.

Paper	QuestionID	Correct Option(s)
Paper - I : Physics	4165299506	41652937482
Paper - I : Physics	4165299507	41652937486
Paper - I : Physics	4165299508	41652937491
Paper - I : Physics	4165299509	41652937495
Paper - I : Physics	4165299510	41652937498
Paper - I : Physics	4165299511	41652937504
Paper - I : Physics	4165299512	41652937508
Paper - I : Physics	4165299513	41652937513
Paper - I : Physics	4165299514	41652937516
Paper - I : Physics	4165299515	41652937518
Paper - I : Physics	4165299516	41652937525
Paper - I : Physics	4165299517	41652937528
Paper - I : Physics	4165299518	41652937531
Paper - I : Physics	4165299519	41652937536
Paper - I : Physics	4165299520	41652937538
Paper - I : Physics	4165299521	41652937543
Paper - I : Physics	4165299522	41652937546
Paper - I : Physics	4165299523	41652937550
Paper - I : Physics	4165299524	41652937557
Paper - I : Physics	4165299525	41652937558
Paper - I : Physics	4165299526	41652937564
Paper - I : Physics	4165299527	41652937566
Paper - I : Physics	4165299528	41652937572
Paper - I : Physics	4165299529	41652937577
Paper - I : Physics	4165299530	41652937578
Paper - I : Physics	4165299531	41652937584
Paper - I : Physics	4165299532	41652937586
Paper - I : Physics	4165299533	41652937593
Paper - I : Physics	4165299534	41652937594
Paper - I : Physics	4165299535	41652937599
Paper - I : Chemistry	4165299536	41652937602
Paper - I : Chemistry	4165299537	41652937607
Paper - I : Chemistry	4165299538	41652937613
Paper - I : Chemistry	4165299539	41652937616
Paper - I : Chemistry	4165299540	41652937619
Paper - I : Chemistry	4165299541	41652937625
Paper - I : Chemistry	4165299542	41652937628
Paper - I : Chemistry	4165299543	41652937632
Paper - I : Chemistry	4165299544	41652937637
Paper - I : Chemistry	4165299545	41652937640
Paper - I : Chemistry	4165299546	41652937645
Paper - I : Chemistry	4165299547	41652937649
Paper - I : Chemistry	4165299548	41652937650
Paper - I : Chemistry	4165299549	41652937656
Paper - I : Chemistry	4165299550	41652937658
Paper - I : Chemistry	4165299551	41652937663
Paper - I : Chemistry	4165299552	41652937668
Paper - I : Chemistry	4165299553	41652937672
Paper - I : Chemistry	4165299554	41652937676
Paper - I : Chemistry	4165299555	41652937678
Paper - I : Chemistry	4165299556	41652937682
Paper - I : Chemistry	4165299557	41652937687
Paper - I : Chemistry	4165299558	41652937690
Paper - I : Chemistry	4165299559	41652937694
Paper - I : Chemistry	4165299560	41652937699
Paper - I : Chemistry	4165299561	41652937703
Paper - I : Chemistry	4165299562	41652937708
Paper - I : Chemistry	4165299563	41652937711
Paper - I : Chemistry	4165299564	41652937715
Paper - I : Chemistry	4165299565	41652937721
Paper - I : Mathematics	4165299566	41652937723
Paper - I : Mathematics	4165299567	41652937726
Paper - I : Mathematics	4165299568	41652937733
Paper - I : Mathematics	4165299569	41652937737
Paper - I : Mathematics	4165299570	41652937741
Paper - I : Mathematics	4165299571	41652937745
Paper - I : Mathematics	4165299572	41652937748
Paper - I : Mathematics	4165299573	41652937753
Paper - I : Mathematics	4165299574	41652937756
Paper - I : Mathematics	4165299575	41652937760
Paper - I : Mathematics	4165299576	41652937765
Paper - I : Mathematics	4165299577	41652937766
Paper - I : Mathematics	4165299578	41652937772
Paper - I : Mathematics	4165299579	41652937777
Paper - I : Mathematics	4165299580	41652937778
Paper - I : Mathematics	4165299581	41652937782
Paper - I : Mathematics	4165299582	41652937786
Paper - I : Mathematics	4165299583	41652937791
Paper - I : Mathematics	4165299584	41652937797
Paper - I : Mathematics	4165299585	41652937800
Paper - I : Mathematics	4165299586	41652937804
Paper - I : Mathematics	4165299587	41652937809
Paper - I : Mathematics	4165299588	41652937810
Paper - I : Mathematics	4165299589	41652937817
Paper - I : Mathematics	4165299590	41652937818
Paper - I : Mathematics	4165299591	41652937824
Paper - I : Mathematics	4165299592	41652937826
Paper - I : Mathematics	4165299593	41652937832
Paper - I : Mathematics	4165299594	41652937835
Paper - I : Mathematics	4165299595	41652937841