National Testing Agency

Question Paper Name :	BTECH E 2nd Sep 2020 Shift 2
Subject Name :	BTECH E
Creation Date :	2020-09-02 20:59:16
Duration :	180
Total Marks :	300
Display Marks:	Yes
Share Answer Key With Delivery Engine :	Yes
Actual Answer Key :	Yes

BTECH

Group Number :	1
Group Id :	405036116
Group Maximum Duration :	0
Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	300
Is this Group for Examiner? :	No

Physics

Section Id :	405036388
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	100
Display Number Panel :	Yes
Group All Questions :	Yes
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	405036743
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 40503610706 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Helpstudentpoint.com

Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

If momentum (P), area (A) and time (T) are taken to be the fundamental quantities then the dimensional formula for energy is :

Options :

40503638991. $[P^2AT^{-2}]$

40503638992. $[PA^{-1}T^{-2}]$

40503638993. $[PA^{1/2}T^{-1}]$

40503638994. $[P^{1/2}AT^{-1}]$

Question Number : 1 Question Id : 40503610706 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

यदि संवेग (P), क्षेत्रफल (A) और समय (T) को मूल इकाई माना जाय तो ऊर्जा की विमाएँ होगी :

Options :

40503638991. $[P^2AT^{-2}]$

40503638992. $[PA^{-1}T^{-2}]$

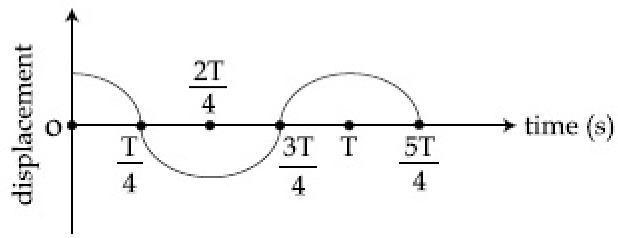
40503638993. $[PA^{1/2}T^{-1}]$

40503638994. $[P^{1/2}AT^{-1}]$

Question Number : 2 Question Id : 40503610707 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Helpstudentpoint.com

The displacement time graph of a particle executing S.H.M. is given in figure : (sketch is schematic and not to scale)



Which of the following statements is/are true for this motion ?

(A) The force is zero at $t = \frac{3T}{4}$

(B) The acceleration is maximum at $t = T$

(C) The speed is maximum at $t = \frac{T}{4}$

(D) The P.E. is equal to K.E. of the oscillation at $t = \frac{T}{2}$

Options :

40503638995. (A), (B) and (D)

40503638996. (A) and (D)

40503638997. (A), (B) and (C)

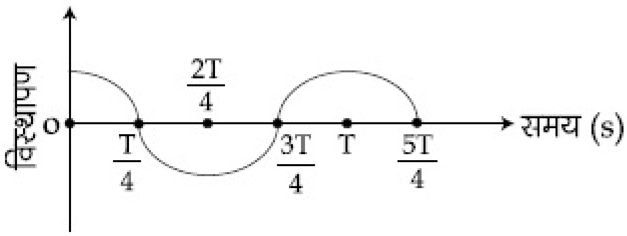
40503638998. (B), (C) and (D)

Helpstudentpoint.com

Question Number : 2 Question Id : 40503610707 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

सरल आवर्त गति करते हुए एक कण का विस्थापन समय ग्राफ चित्र में दिखाया गया है। (रेखाचित्र सांकेतिक है)



दिखाये गये ग्राफ के लिये निम्न में से कौन सा/से कथन **सही** होंगे?

(A) $t = \frac{3T}{4}$ पर बल शून्य है।

(B) $t = T$ पर त्वरण अधिकतम है।

(C) $t = \frac{T}{4}$ पर गति अधिकतम है।

(D) $t = \frac{T}{2}$ पर दोलन की स्थितिज एवं गतिज ऊर्जा बराबर है।

Options :

40503638995. (A), (B) व (D)

40503638996. (A) व (D)

40503638997. (A), (B) व (C)

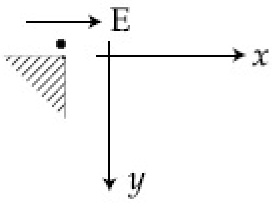
40503638998. (B), (C) व (D)

Helpstudentpoint.com

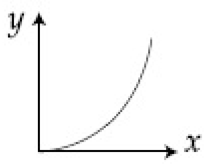
Question Number : 3 Question Id : 40503610708 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

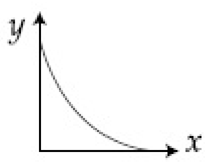
Correct Marks : 4 Wrong Marks : 1

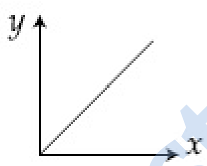
A small point mass carrying some positive charge on it, is released from the edge of a table. There is a uniform electric field in this region in the horizontal direction. Which of the following options then correctly describe the trajectory of the mass ? (Curves are drawn schematically and are not to scale).

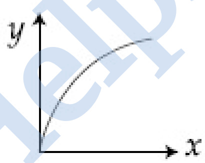


Options :

40503638999. 

40503639000. 

40503639001. 

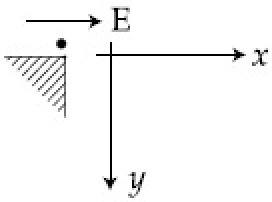
40503639002. 

Helpstudentpoint.com

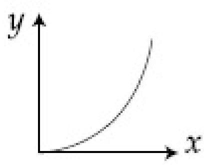
Question Number : 3 Question Id : 40503610708 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

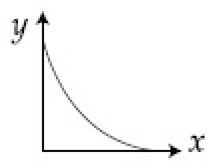
Correct Marks : 4 Wrong Marks : 1

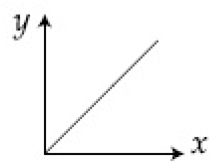
एक छोटे धनावेशित कण को एक मेज़ के किनारे से छोड़ा जाता है। इस क्षेत्र में क्षैतिज दिशा में एक एकसमान विद्युत क्षेत्र है (चित्र देखें)। ऐसी अवस्था में निम्न में से कौन सा ग्राफ कण के पथ को उचित रूप से दर्शाता है? (ग्राफ सांकेतिक है)

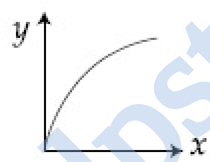


Options :

40503638999. 

40503639000. 

40503639001. 

40503639002. 

Question Number : 4 Question Id : 40503610709 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Helpstudentpoint.com

Two uniform circular discs are rotating independently in the same direction around their common axis passing through their centres. The moment of inertia and angular velocity of the first disc are 0.1 kg-m^2 and 10 rad s^{-1} respectively while those for the second one are 0.2 kg-m^2 and 5 rad s^{-1} respectively. At some instant they get stuck together and start rotating as a single system about their common axis with some angular speed. The Kinetic energy of the combined system is :

Options :

40503639003. $\frac{2}{3}$ J

40503639004. $\frac{5}{3}$ J

40503639005. $\frac{10}{3}$ J

40503639006. $\frac{20}{3}$ J

Question Number : 4 Question Id : 40503610709 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

दो एकसमान वृत्ताकार डिस्क अपने उभयनिष्ठ अक्ष जो कि उनके केन्द्रों से होकर जाता है, पर एक ही दिशा में स्वतंत्र रूप से घूम रहे हैं। पहली डिस्क का जड़त्व आघूर्ण व कोणीय वेग क्रमश: 0.1 kg-m^2 और 10 rad s^{-1} हैं तथा दूसरी डिस्क का जड़त्व आघूर्ण और कोणीय वेग क्रमश: 0.2 kg-m^2 और 5 rad s^{-1} हैं। किसी क्षण पर दोनों डिस्क आपस में चिपक जाती है और अब एक निकाय की भाँति उनके उभयनिष्ठ अक्ष पर समान कोणीय वेग से घूमने लगती हैं। इस नये निकाय की गतिज ऊर्जा होगी :

Helpstudentpoint.com

Options :

40503639003. $\frac{2}{3}$ J

40503639004. $\frac{5}{3}$ J

40503639005. $\frac{10}{3}$ J

40503639006. $\frac{20}{3}$ J

Question Number : 5 Question Id : 40503610710 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The height 'h' at which the weight of a body will be the same as that at the same depth 'h' from the surface of the earth is (Radius of the earth is R and effect of the rotation of the earth is neglected) :

Options :

40503639007. $\frac{R}{2}$

40503639008. $\frac{\sqrt{5}}{2}R - R$

40503639009. $\frac{\sqrt{5}\,R - R}{2}$

40503639010. $\frac{\sqrt{3}\,R - R}{2}$

Question Number : 5 Question Id : 40503610710 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Helpstudentpoint.com

Correct Marks : 4 Wrong Marks : 1

पृथ्वी की सतह से ऊँचाई h पर एक पिण्ड का भार उतना ही है जितना सतह से उतनी ही गहराई h पर। h का मान है (R = पृथ्वी की त्रिज्या, पृथ्वी के घूर्णन का भार पर प्रभाव नगण्य मानें) :

Options :

40503639007. $\frac{R}{2}$

40503639008. $\frac{\sqrt{5}}{2}R - R$

40503639009. $\frac{\sqrt{5}R - R}{2}$

40503639010. $\frac{\sqrt{3}R - R}{2}$

Question Number : 6 Question Id : 40503610711 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

When the temperature of a metal wire is increased from 0°C to 10°C, its length increases by 0.02%. The percentage change in its mass density will be closest to :

Options :

40503639011. 2.3

40503639012. 0.008

40503639013. 0.8

40503639014. 0.06

Question Number : 6 Question Id : 40503610711 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Helpstudentpoint.com

Correct Marks : 4 Wrong Marks : 1

जब एक धातु से बने तार का तापमान 0°C से 10°C तक बढ़ाया जाता है तो इसकी लम्बाई 0.02% बढ़ जाती है। इस कारण इसके घनत्व में होने वाले प्रतिशत बदलाव का मान निम्न में से किसके निकटतम है?

Options :

40503639011. 2.3

40503639012. 0.008

40503639013. 0.8

40503639014. 0.06

Question Number : 7 Question Id : 40503610712 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A capillary tube made of glass of radius 0.15 mm is dipped vertically in a beaker filled with methylene iodide (surface tension $= 0.05\ Nm^{-1}$, density $= 667\ kg\ m^{-3}$) which rises to height h in the tube. It is observed that the two tangents drawn from liquid-glass interfaces (from opp. sides of the capillary) make an angle of 60° with one another. Then h is close to ($g = 10\ ms^{-2}$).

Options :

40503639015. 0.172 m

40503639016. 0.137 m

40503639017. 0.087 m

40503639018. 0.049 m

Helpstudentpoint.com

Question Number : 7 Question Id : 40503610712 Question Type : MCQ Option Shuffling : Yes Display

Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

त्रिज्या 0.15 mm की एक काँच से बनी केशिका को मीथाइल आयोडाइड (पृष्ठ तनाव$=0.05\ Nm^{-1}$, घनत्व$=667\ kg\ m^{-3}$) से भरे एक बीकर में सीधा (ऊर्ध्वाधर दिशा में) डुबाया जाता है तो यह द्रव इसमें h ऊँचाई तक चढ़ जाता है। इस पर यह देखा जाता है कि काँच और द्रव की अन्तरसतह पर यदि विपरीत दिशाओं से स्पर्शी रेखाएँ खींची जाये तो वे एक दूसरे से 60° का कोण बनाती हैं। तब h का मान निम्न में से किसके निकट है ? ($g=10\ ms^{-2}$).

Options :

40503639015. 0.172 m

40503639016. 0.137 m

40503639017. 0.087 m

40503639018. 0.049 m

Question Number : 8 Question Id : 40503610713 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A heat engine is involved with exchange of heat of 1915 J, −40 J, +125 J and −QJ, during one cycle achieving an efficiency of 50.0%. The value of Q is :

Options :

40503639019. 40 J

40503639020. 400 J

40503639021. 640 J

40503639022. 980 J

Helpstudentpoint.com

Question Number : 8 Question Id : 40503610713 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

50.0% दक्षता का एक इन्जन 1915 J, −40 J, +125 J व −QJ ऊष्मा का प्रदान एक चक्र में करता है। ऐसी स्थिति में Q का मान है :

Options :

40503639019. 40 J

40503639020. 400 J

40503639021. 640 J

40503639022. 980 J

Question Number : 9 Question Id : 40503610714 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

An ideal gas in a closed container is slowly heated. As its temperature increases, which of the following statements are true ?

(A) the mean free path of the molecules decreases.

(B) the mean collision time between the molecules decreases.

(C) the mean free path remains unchanged.

(D) the mean collision time remains unchanged.

Options :

40503639023. (A) and (B)

40503639024. (A) and (D)

Helpstudentpoint.com

40503639025. (B) and (C)

40503639026. (C) and (D)

Question Number : 9 Question Id : 40503610714 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक बन्द बर्तन में भरी आदर्श गैस को धीरे–धीरे गर्म किया जाता है। जैसे–जैसे इसका तापमान बढ़ता है तो निम्नलिखित कथनों में से कौन–कौन से कथन **सत्य** होंगे ?

(A) गैस के अणुओं के औसत मुक्त पथ का मान घटता है।

(B) गैस के अणुओं के औसत टकराने के समय का मान घटता है।

(C) गैस के अणुओं के औसत मुक्त पथ का मान नहीं बदलता है।

(D) गैस के अणुओं के औसत टकराने के समय का मान नहीं बदलता है।

Options :

40503639023. (A) व (B)

40503639024. (A) व (D)

40503639025. (B) व (C)

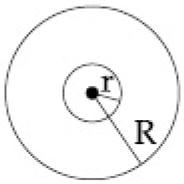
40503639026. (C) व (D)

Helpstudentpoint.com

Question Number : 10 Question Id : 40503610715 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A charge Q is distributed over two concentric conducting thin spherical shells radii r and R (R > r). If the surface charge densities on the two shells are equal, the electric potential at the common centre is :



Options :

40503639027. $\frac{1}{4\pi\epsilon_0}\ \frac{(2R+r)}{(R^2+r^2)}Q$

40503639028. $\frac{1}{4\pi\epsilon_0}\ \frac{(R+r)}{2(R^2+r^2)}Q$

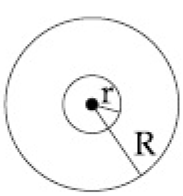
40503639029. $\frac{1}{4\pi\epsilon_0}\ \frac{(R+2r)Q}{2(R^2+r^2)}$

40503639030. $\frac{1}{4\pi\epsilon_0}\ \frac{(R+r)}{(R^2+r^2)}Q$

Question Number : 10 Question Id : 40503610715 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

आवेश Q दो समकेन्द्रीय सुचालक पतले गोलीय कवच पदार्थ पर इस प्रकार बंटा हुआ है कि दोनों कवचों पर आवेश का पृष्ठ आवेश घनत्व बराबर है। कवचों की त्रिज्याएँ r और R (R > r) हैं। उभयनिष्ट केन्द्र पर वैद्युत विभव होगा :



Options :

Helpstudentpoint.com

40503639027. $\frac{1}{4\pi\epsilon_0}\ \frac{(2R + r)}{(R^2 + r^2)}\ Q$

40503639028. $\frac{1}{4\pi\epsilon_0}\ \frac{(R + r)}{2(R^2 + r^2)}\ Q$

40503639029. $\frac{1}{4\pi\epsilon_0}\ \frac{(R + 2r)Q}{2(R^2 + r^2)}$

40503639030. $\frac{1}{4\pi\epsilon_0}\ \frac{(R + r)}{(R^2 + r^2)}\ Q$

Question Number : 11 Question Id : 40503610716 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A 10 μF capacitor is fully charged to a potential difference of 50 V. After removing the source voltage it is connected to an uncharged capacitor in parallel. Now the potential difference across them becomes 20 V. The capacitance of the second capacitor is :

Options :

40503639031. 15 μF

40503639032. 30 μF

40503639033. 20 μF

40503639034. 10 μF

Helpstudentpoint.com

Question Number : 11 Question Id : 40503610716 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक 10 μF धारिता वाले संधारित्र को 50 V के विभवान्तर से जोड़कर पूरी तरह आवेशित करा जाता है। अब इसे वोल्टता के स्रोत से हटाकर एक दूसरे संधारित्र से पार्श्व संबंधन में जोड़ दिया जाता है। यदि अब संधारित्रों में विभवान्तर 20 V हो जाय तो दूसरे संधारित्र की धारिता है :

Options :

40503639031. 15 μF

40503639032. 30 μF

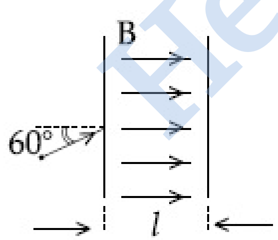
40503639033. 20 μF

40503639034. 10 μF

Question Number : 12 Question Id : 40503610717 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The figure shows a region of length 'l' with a uniform magnetic field of 0.3 T in it and a proton entering the region with velocity 4×10^5 ms^{-1} making an angle 60° with the field. If the proton completes 10 revolution by the time it cross the region shown, 'l' is close to (mass of proton = 1.67×10^{-27} kg, charge of the proton = 1.6×10^{-19} C)



Options :

40503639035. 0.88 m

40503639036. 0.44 m

40503639037. 0.22 m

40503639038. 0.11 m

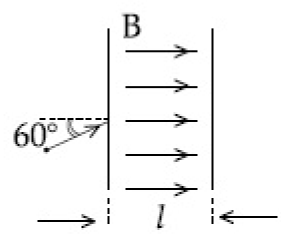
Question Number : 12 Question Id : 40503610717 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

चित्र में 'l' लम्बाई का एक क्षेत्र दिखाया गया है जिसमें 0.3 T का एक एकसमान चुम्बकीय क्षेत्र है। इस क्षेत्र में एक प्रोटॉन 4×10^5 ms^{-1} गति से चुम्बकीय क्षेत्र से 60° कोण बनाते हुए प्रवेश करता है। (यदि इस क्षेत्र को पार करने तक प्रोटॉन 10 परिक्रमण पूरे करता है, तो 'l' का मान निम्न में से किसके निकट है?

(प्रोटॉन का द्रव्यमान $= 1.67 \times 10^{-27}$ kg

प्रोटॉन पर आवेश$= 1.6 \times 10^{-19}$ C)



Options :

40503639035. 0.88 m

40503639036. 0.44 m

40503639037. 0.22 m

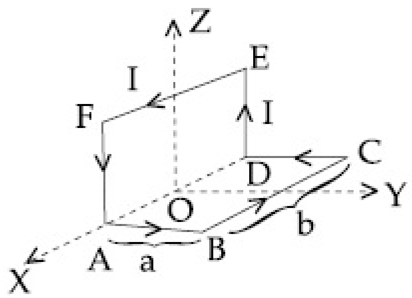
40503639038. 0.11 m

Question Number : 13 Question Id : 40503610718 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Helpstudentpoint.com

A wire carrying current I is bent in the shape ABCDEFA as shown, where rectangle ABCDA and ADEFA are perpendicular to each other. If the sides of the rectangles are of lengths a and b, then the magnitude and direction of magnetic moment of the loop ABCDEFA is :



Options :

40503639039. $\sqrt{2}$ abI , along $\left(\frac{\hat{j}}{\sqrt{5}} + \frac{2\hat{k}}{\sqrt{5}}\right)$

40503639040. abI, along $\left(\frac{\hat{j}}{\sqrt{5}} + \frac{2\hat{k}}{\sqrt{5}}\right)$

40503639041. $\sqrt{2}$ abI , along $\left(\frac{\hat{j}}{\sqrt{2}} + \frac{\hat{k}}{\sqrt{2}}\right)$

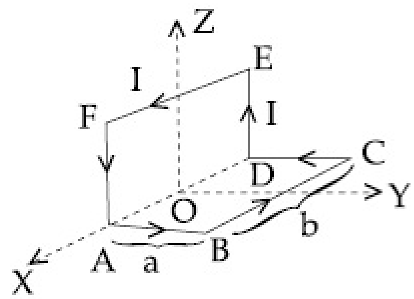
40503639042. abI, along $\left(\frac{\hat{j}}{\sqrt{2}} + \frac{\hat{k}}{\sqrt{2}}\right)$

Helpstudentpoint.com

Question Number : 13 Question Id : 40503610718 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

जैसा कि चित्र में दिखाया गया है, एक तार, जिसमें विद्युत धारा I बह रही है, से ABCDEFA आकृति बनायी गयी है। इसमें ABCDA तथा ADEFA दो आयत है जो एक दूसरे पर लम्बवत् हैं। यदि इन आयतों का आकार $a \times b$ हो तो आकृति ABCDEFA के चुम्बकीय आघूर्ण का परिमाण व दिशा होगी :



Options :

40503639039. $\sqrt{2}\, abI, \left(\frac{\hat{j}}{\sqrt{5}} + \frac{2\hat{k}}{\sqrt{5}}\right)$ दिशा में

40503639040. $abI, \left(\frac{\hat{j}}{\sqrt{5}} + \frac{2\hat{k}}{\sqrt{5}}\right)$ दिशा में

40503639041. $\sqrt{2}\, abI, \left(\frac{\hat{j}}{\sqrt{2}} + \frac{\hat{k}}{\sqrt{2}}\right)$ दिशा में

40503639042. $abI, \left(\frac{\hat{j}}{\sqrt{2}} + \frac{\hat{k}}{\sqrt{2}}\right)$ दिशा में

Question Number : 14 Question Id : 40503610719 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

An inductance coil has a reactance of 100 Ω. When an AC signal of frequency 1000 Hz is applied to the coil, the applied voltage leads the current by 45°. The self-inductance of the coil is :

Options :

40503639043. 1.1×10^{-1} H

40503639044. 1.1×10^{-2} H

40503639045. 5.5×10^{-5} H

40503639046. 6.7×10^{-7} H

Question Number : 14 Question Id : 40503610719 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक प्रेरकत्व कुंडली की प्रतिघात (reactance) क्षमता 100 Ω है। जब इसे 1000 Hz आवृत्ति के एक प्रत्यावर्ती धारा (AC) के स्रोत से जोड़ा जाता है तो लगायी गई वोल्टता इसमें बहने वाली धारा से 45° आगे रहती है। कुंडली के स्वप्रेरकत्व (self-inductance) का मान है :

Options :

40503639043. 1.1×10^{-1} H

40503639044. 1.1×10^{-2} H

40503639045. 5.5×10^{-5} H

40503639046. 6.7×10^{-7} H

Question Number : 15 Question Id : 40503610720 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Helpstudentpoint.com

In a plane electromagnetic wave, the directions of electric field and magnetic field are represented by $\hat{k}$ and $2\hat{i} - 2\hat{j}$, respectively. What is the unit vector along direction of propagation of the wave.

Options :

40503639047. $\frac{1}{\sqrt{2}}\left(\hat{j} + \hat{k}\right)$

40503639048. $\frac{1}{\sqrt{2}}\left(\hat{i} + \hat{j}\right)$

40503639049. $\frac{1}{\sqrt{5}}\left(\hat{i} + 2\hat{j}\right)$

40503639050. $\frac{1}{\sqrt{5}}\left(2\hat{i} + \hat{j}\right)$

Question Number : 15 Question Id : 40503610720 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक समतल विद्युत-चुम्बकीय तरंग में विद्युत क्षेत्र व चुम्बकीय क्षेत्र की दिशाएँ क्रमशः $\hat{k}$ और $2\hat{i} - 2\hat{j}$ की ओर है। तरंग के चलने की दिशा में इकाई वेक्टर है :

Options :

40503639047. $\frac{1}{\sqrt{2}}\left(\hat{j} + \hat{k}\right)$

40503639048. $\frac{1}{\sqrt{2}}\left(\hat{i} + \hat{j}\right)$

40503639049. $\frac{1}{\sqrt{5}}\left(\hat{i} + 2\hat{j}\right)$

Helpstudentpoint.com

40503639050. $\frac{1}{\sqrt{5}}\left(2\hat{i} + \hat{j}\right)$

Question Number : 16 Question Id : 40503610721 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In a Young's double slit experiment, 16 fringes are observed in a certain segment of the screen when light of wavelength 700 nm is used. If the wavelength of light is changed to 400 nm, the number of fringes observed in the same segment of the screen would be :

Options :

40503639051. 18

40503639052. 24

40503639053. 28

40503639054. 30

Helpstudentpoint.com

Question Number : 16 Question Id : 40503610721 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यंग के द्वि–झिरी प्रयोग में जब 700 nm तरंगदैर्ध्य के प्रकाश से पर्दे के एक भाग में बनने वाली फ्रिंजों की संख्या 16 है। यदि प्रकाश का तरंगदैर्ध्य 400 nm कर दिया जाय तो पर्दे के उसी भाग में बनने वाली फ्रिंजों की संख्या होगी :

Options :

40503639051. 18

40503639052. 24

40503639053. 28

40503639054. 30

Question Number : 17 Question Id : 40503610722 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A particle is moving 5 times as fast as an electron. The ratio of the de-Broglie wavelength of the particle to that of the electron is 1.878×10^{-4}. The mass of the particle is close to :

Options :

40503639055. 9.1×10^{-31} kg

40503639056. 9.7×10^{-28} kg

40503639057. 1.2×10^{-28} kg

40503639058. 4.8×10^{-27} kg

Question Number : 17 Question Id : 40503610722 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

तेजी से चलते हुए एक कण की गति एक गतिमान इलैक्ट्रॉन से 5 गुना ज्यादा है। कण के डी–ब्रोग्ली तरंगदैर्ध्य और इस इलैक्ट्रॉन के डी–ब्रोग्ली तरंगदैर्ध्य का अनुपात 1.878×10^{-4} है। कण का द्रव्यमान लगभग होगा :

Options :

40503639055. 9.1×10^{-31} kg

40503639056. 9.7×10^{-28} kg

40503639057. 1.2×10^{-28} kg

Helpstudentpoint.com

40503639058. 4.8×10^{-27} kg

Question Number : 18 Question Id : 40503610723 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In a hydrogen atom the electron makes a transition from $(n+1)^{th}$ level to the n^{th} level. If n>>1, the frequency of radiation emitted is proportional to :

Options :

40503639059. $\frac{1}{n}$

40503639060. $\frac{1}{n^2}$

40503639061. $\frac{1}{n^4}$

40503639062. $\frac{1}{n^3}$

Question Number : 18 Question Id : 40503610723 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक हाइड्रोजन परमाणु इलैक्ट्रॉन $(n+1)^{th}$ कक्षा से n^{th} कक्षा पर जाता है। यदि n>>1 हो तो उत्सर्जित विकिरण की आवृत्ति निम्न में से किसके समानुपाती होगी ?

Options :

40503639059. $\frac{1}{n}$

Helpstudentpoint.com

40503639060. $\frac{1}{n^2}$

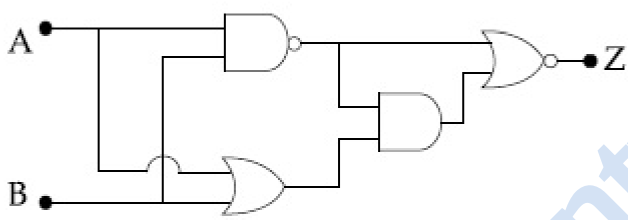
40503639061. $\frac{1}{n^4}$

40503639062. $\frac{1}{n^3}$

Question Number : 19 Question Id : 40503610724 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

In the following digital circuit, what will be the output at 'Z', when the input (A, B) are (1, 0), (0, 0), (1, 1), (0, 1) :



Options :

40503639063. 1, 0, 1, 1

40503639064. 0, 1, 0, 0

40503639065. 0, 0, 1, 0

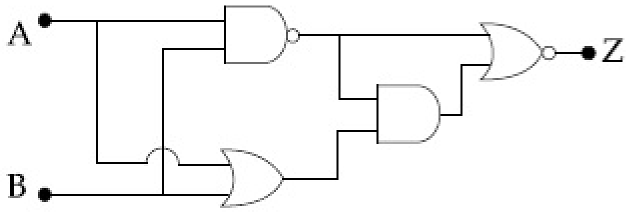
40503639066. 1, 1, 0, 1

Helpstudentpoint.com

Question Number : 19 Question Id : 40503610724 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

दिखाये गये अंकक परिपथ (digital circuit) में 'Z' पर निर्गत के मान होंगे जब निवेश (A, B) के मान (1, 0), (0, 0), (1, 1) और (0, 1) हो :



Options :

40503639063. 1, 0, 1, 1

40503639064. 0, 1, 0, 0

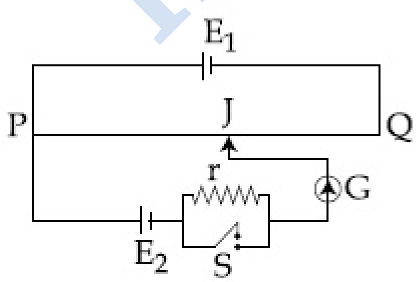
40503639065. 0, 0, 1, 0

40503639066. 1, 1, 0, 1

Question Number : 20 Question Id : 40503610725 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A potentiometer wire PQ of 1 m length is connected to a standard cell E_1. Another cell E_2 of emf 1.02 V is connected with a resistance 'r' and switch S (as shown in figure). With switch S open, the null position is obtained at a distance of 49 cm from Q. The potential gradient in the potentiometer wire is :



Options :

40503639067. 0.01 V/cm

Helpstudentpoint.com

40503639068. 0.02 V/cm

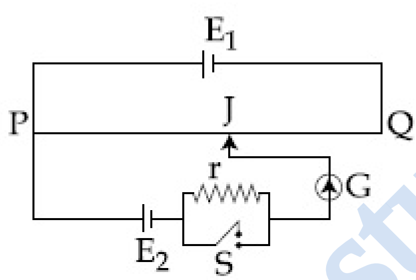
40503639069. 0.03 V/cm

40503639070. 0.04 V/cm

Question Number : 20 Question Id : 40503610725 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक पोटेन्शियोमीटर के तार PQ की लम्बाई 1 m है और इसे एक मानक सैल E_1 के साथ जोड़ा गया है। 1.02 V विद्युत-वाहक बल वाले एक दूसरे सैल E_2 को एक प्रतिरोधक 'r' तथा एक स्विच S से चित्रानुसार जोड़ा गया है। जब स्विच S खुला रखा गया हो तो शून्य बिन्दु की स्थिति Q से 49 cm दूरी पर पायी जाती है। पोटेन्शियोमीटर के तार में विभव प्रवणता (potential gradient) है :



Options :

40503639067. 0.01 V/cm

40503639068. 0.02 V/cm

40503639069. 0.03 V/cm

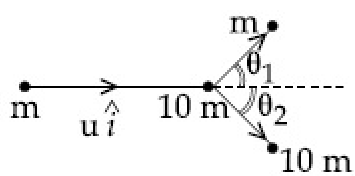
40503639070. 0.04 V/cm

Sub-Section Number :	2
Sub-Section Id :	405036744
Question Shuffling Allowed :	Yes

Helpstudentpoint.com

Question Number : 21 Question Id : 40503610726 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

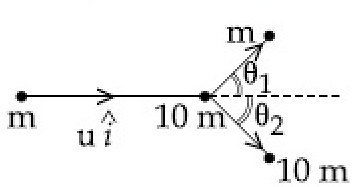
A particle of mass m is moving along the x-axis with initial velocity $u\hat{i}$. It collides elastically with a particle of mass 10 m at rest and then moves with half its initial kinetic energy (see figure). If $\sin\theta_1 = \sqrt{n}\sin\theta_2$ then value of n is ________.



Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Range
Text Areas : PlainText
Possible Answers :
5 to 5.002

Question Number : 21 Question Id : 40503610726 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

द्रव्यमान m का एक कण x-अक्ष पर आरम्भिक वेग $u\hat{i}$ से चल रहा है। यह द्रव्यमान 10 m के विरामावस्था में रखे हुए एक कण से प्रत्यास्थ टक्कर करता है और तत्पश्चात यह अपनी आरम्भिक गतिज ऊर्जा की आधी ऊर्जा से चलता है (चित्र देखें)। यदि $\sin\theta_1 = \sqrt{n}\sin\theta_2$ तो n का मान है__________ ।



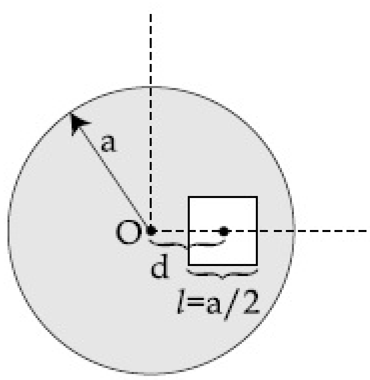
Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes

Helpstudentpoint.com

Answers Type : Range
Text Areas : PlainText
Possible Answers :
5 to 5.002

Question Number : 22 Question Id : 40503610727 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

A square shaped hole of side $l = \frac{a}{2}$ is carved out at a distance $d = \frac{a}{2}$ from the centre 'O' of a uniform circular disk of radius a. If the distance of the centre of mass of the remaining portion from O is $-\frac{a}{X}$, value of X (to the nearest integer) is ________.

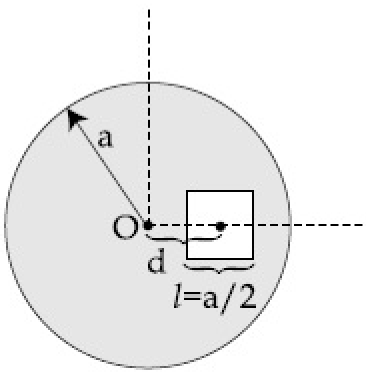


Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Range
Text Areas : PlainText
Possible Answers :
5 to 5.002

Question Number : 22 Question Id : 40503610727 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

Helpstudentpoint.com

त्रिज्या a की एक वृत्ताकार डिस्क केन्द्र 'O' से $d = \frac{a}{2}$ दूरी पर $l = \frac{a}{2}$ भुजा का एक वर्गाकार छिद्र काटा जाता है। यदि बचे हुए हिस्से का संहति-केन्द्र O से $-\frac{a}{X}$ दूरी पर हो तो X किस पूर्णांक के निकटतम है ________।



Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Range
Text Areas : PlainText
Possible Answers :
5 to 5.002

Question Number : 23 Question Id : 40503610728 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

A wire of density 9×10^{-3} kg cm^{-3} is stretched between two clamps 1 m apart. The resulting strain in the wire is 4.9×10^{-4}. The lowest frequency of the transverse vibrations in the wire is (Young's modulus of wire $Y = 9 \times 10^{10}$ Nm^{-2}), (to the nearest integer), ________.

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

Helpstudentpoint.com

5 to 5.002

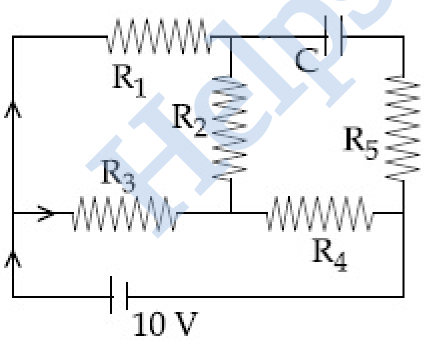
Question Number : 23 Question Id : 40503610728 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

9×10^{-3} kg cm^{-3} घनत्व के एक तार को खींचकर 1 मीटर दूरी पर लगे दो क्लैम्प्स् पर कस दिया जाता है। इस कारण तार में उत्पन्न विकृति (strain) 4.9×10^{-4} है। इस स्थिति में तार में अनुप्रस्थ कंपन की निम्नतम आवृत्ति के निकटतम पूर्णांक कितना होगा (तार के यंग गुणांक का मान $Y=9\times10^{10}$ Nm^{-2}) ________ ।

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Range
Text Areas : PlainText
Possible Answers :
5 to 5.002

Question Number : 24 Question Id : 40503610729 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

An ideal cell of emf 10 V is connected in circuit shown in figure. Each resistance is $2\,\Omega$. The potential difference (in V) across the capacitor when it is fully charged is ________.



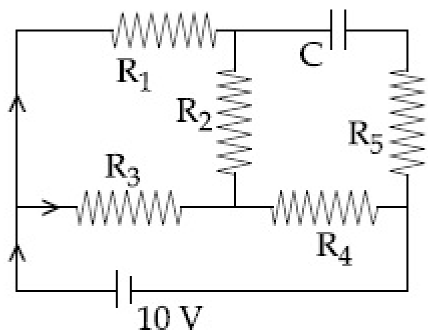
Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Range
Text Areas : PlainText
Possible Answers :

Helpstudentpoint.com

5 to 5.002

Question Number : 24 Question Id : 40503610729 Question Type : SA Display Question Number : Yes Correct Marks : 4 Wrong Marks : 0

एक 10 V विद्युत-वाहक बल के आदर्श सैल को चित्रानुसार एक परिपथ में जोड़ा गया है। इस परिपथ में प्रत्येक प्रतिरोधक का मान 2 Ω है। इस स्थिति में जब संधारित्र पूर्ण रूप से आवेशित हो जाय तो उसके बीच विभवान्तर (V में) होगा ________.



Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Range
Text Areas : PlainText
Possible Answers :
5 to 5.002

Question Number : 25 Question Id : 40503610730 Question Type : SA Display Question Number : Yes Correct Marks : 4 Wrong Marks : 0

A light ray enters a solid glass sphere of refractive index $\mu = \sqrt{3}$ at an angle of incidence 60°. The ray is both reflected and refracted at the farther surface of the sphere. The angle (in degrees) between the reflected and refracted rays at this surface is ________.

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

Helpstudentpoint.com

Possible Answers :

5 to 5.002

Question Number : 25 Question Id : 40503610730 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

काँच के बने हुए एक ठोस गोले का अपवर्तनांक $\mu = \sqrt{3}$ है। इसमें 60° आपतित कोण बनाते हुए एक प्रकाश की किरण प्रवेश करती है और दूसरी ओर की सतह पर परावर्तित और साथ में अपवर्तित भी होती है। ऐसी स्थिति में परावर्तित व अपवर्तित किरणों के बीच बनने वाले कोण का डिग्री में मान होगा __________।

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

5 to 5.002

Chemistry

Section Id :	405036389
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	100
Display Number Panel :	Yes
Group All Questions :	Yes
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	405036745
Question Shuffling Allowed :	Yes

Question Number : 26 Question Id : 40503610731 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Helpstudentpoint.com

The results given in the below table were obtained during kinetic studies of the following reaction :

$2\,A + B \rightarrow C + D$

Experiment	[A]/ $molL^{-1}$	[B]/ $molL^{-1}$	Initial rate/ $molL^{-1}\,min^{-1}$
I	0.1	0.1	6.00×10^{-3}
II	0.1	0.2	2.40×10^{-2}
III	0.2	0.1	1.20×10^{-2}
IV	X	0.2	7.20×10^{-2}
V	0.3	Y	2.88×10^{-1}

X and Y in the given table are respectively :

Options :

40503639076. 0.4, 0.4

40503639077. 0.4, 0.3

40503639078. 0.3, 0.3

40503639079. 0.3, 0.4

Question Number : 26 Question Id : 40503610731 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया के गतिक अध्ययन के दौरान नीचे सारणी में दिये गये परिणाम प्राप्त हुए :

$2\,A + B \rightarrow C + D$

प्रयोग	[A]/ $molL^{-1}$	[B]/ $molL^{-1}$	आरम्भिक दर/ $molL^{-1}\,min^{-1}$
I	0.1	0.1	6.00×10^{-3}
II	0.1	0.2	2.40×10^{-2}
III	0.2	0.1	1.20×10^{-2}
IV	X	0.2	7.20×10^{-2}
V	0.3	Y	2.88×10^{-1}

दी गई सारणी में X तथा Y क्रमशः हैं :

Helpstudentpoint.com

Options :

40503639076. 0.4, 0.4

40503639077. 0.4, 0.3

40503639078. 0.3, 0.3

40503639079. 0.3, 0.4

Question Number : 27 Question Id : 40503610732 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The size of a raw mango shrinks to a much smaller size when kept in a concentrated salt solution. Which one of the following processes can explain this ?

Options :

40503639080. Dialysis

40503639081. Diffusion

40503639082. Osmosis

40503639083. Reverse osmosis

Question Number : 27 Question Id : 40503610732 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

जब कच्चे आम को सान्द्र लवण के विलयन में रखा जाता है तो उसका साइज़ सिकुड़ कर बहुत कम हो जाता है। नीचे दिये गये किस प्रक्रम का उपयोग करके इसके कारण को बताया जा सकता है?

Options :

40503639080. अपोहन

Helpstudentpoint.com

40503639081. विसरण

40503639082. परासरण

40503639083. उत्क्रम परासरण

Question Number : 28 Question Id : 40503610733 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Amongst the following statements regarding adsorption, those that are valid are :

(a) ΔH becomes less negative as adsorption proceeds.

(b) On a given adsorbent, ammonia is adsorbed more than nitrogen gas.

(c) On adsorption, the residual force acting along the surface of the adsorbent increases.

(d) With increase in temperature, the equilibrium concentration of adsorbate increases.

Options :

40503639084. (a) and (b)

40503639085. (b) and (c)

40503639086. (c) and (d)

40503639087. (d) and (a)

Helpstudentpoint.com

Question Number : 28 Question Id : 40503610733 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

अधिशोषण के संबंध में नीचे दिये गये कथनों में से जो मान्य हैं वह है :

(a) जैसे जैसे अधिशोषण होता है ΔH का मान कम ऋणात्मक होता जाता है।

(b) किसी दिये गये अधिशोषक पर, नाइट्रोजन गैस की अपेक्षा अमोनिया का अधिशोषण अधिक होता है।

(c) अधिशोषण होने पर, अधिशोषक के पृष्ठ के साथ कार्य करने वाला अवशिष्ट बल बढ़ जाता है।

(d) ताप के बढ़ने पर, अधिशोष्य का साम्य सान्द्रण बढ़ जाता है।

Options :

40503639084. (a) तथा (b)

40503639085. (b) तथा (c)

40503639086. (c) तथा (d)

40503639087. (d) तथा (a)

Question Number : 29 Question Id : 40503610734 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The molecular geometry of SF_6 is octahedral. What is the geometry of SF_4 (including lone pair(s) of electrons, if any)?

Options :

40503639088. Square planar

40503639089. Pyramidal

40503639090. Tetrahedral

40503639091. Trigonal bipyramidal

Helpstudentpoint.com

Question Number : 29 Question Id : 40503610734 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

SF_6 की आण्विक ज्यामिति अष्टफलकीय है। SF_4 की ज्यामिति (इलेक्ट्रानों के एकल युग्म(मों) के सहित, यदि कोई है) क्या हैं?

Options :

40503639088. वर्ग समतलीय

40503639089. पिरैमिडी

40503639090. चतुष्फलकीय

40503639091. त्रिसमनताक्ष द्विपिरैमिडी

Question Number : 30 Question Id : 40503610735 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The number of subshells associated with $n=4$ and $m=-2$ quantum numbers is :

Options :

40503639092. 2

40503639093. 4

40503639094. 8

40503639095. 16

Question Number : 30 Question Id : 40503610735 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Helpstudentpoint.com

क्वांटम संख्या $n=4$ तथा $m=-2$ के साथ सहचारी उपकोशिकाओं की संख्या है :

Options :

40503639092. 2

40503639093. 4

40503639094. 8

40503639095. 16

Question Number : 31 Question Id : 40503610736 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Match the type of interaction in column A with the distance dependence of their interaction energy in column B :

	A		**B**
(I)	ion-ion	(a)	$\frac{1}{r}$
(II)	dipole - dipole	(b)	$\frac{1}{r^2}$
(III)	London dispersion	(c)	$\frac{1}{r^3}$
		(d)	$\frac{1}{r^6}$

Options :

40503639096. (I)-(a), (II)-(b), (III)-(d)

40503639097. (I)-(a), (II)-(c), (III)-(d)

40503639098. (I)-(b), (II)-(d), (III)-(c)

40503639099. (I)-(a), (II)-(b), (III)-(c)

Helpstudentpoint.com

Question Number : 31 Question Id : 40503610736 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

कालम A के अन्योन्यक्रिया के प्रकार को कालम B में उनके अन्योन्यक्रिया ऊर्जा की दूरी निर्भरता के साथ सुमेलित कीजिए :

	A		B
(I)	आयन–आयन	(a)	$\frac{1}{r}$
(II)	द्विध्रुव–द्विध्रुव	(b)	$\frac{1}{r^2}$
(III)	लंडन–परिक्षेपण	(c)	$\frac{1}{r^3}$
		(d)	$\frac{1}{r^6}$

Options :

40503639096. (I)-(a), (II)-(b), (III)-(d)

40503639097. (I)-(a), (II)-(c), (III)-(d)

40503639098. (I)-(b), (II)-(d), (III)-(c)

40503639099. (I)-(a), (II)-(b), (III)-(c)

Helpstudentpoint.com

Question Number : 32 Question Id : 40503610737 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Three elements X, Y and Z are in the 3[rd] period of the periodic table. The oxides of X, Y and Z, respectively, are basic, amphoteric and acidic. The correct order of the atomic numbers of X, Y and Z is :

Options :

40503639100. X < Y < Z

40503639101. Z < Y < X

40503639102. X < Z < Y

40503639103. Y < X < Z

Question Number : 32 Question Id : 40503610737 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

तीन तत्व X, Y तथा Z आवर्त सारणी के तृतीय आवर्तक में हैं। X, Y तथा Z की ऑक्साइड क्रमशः क्षारीय, उभयधर्मी तथा अम्लीय हैं। X, Y तथा Z के परमाणु संख्याओं का सही क्रम है :

Options :

40503639100. X < Y < Z

40503639101. Z < Y < X

40503639102. X < Z < Y

40503639103. Y < X < Z

Question Number : 33 Question Id : 40503610738 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Cast iron is used for the manufacture of :

Options :

40503639104. wrought iron and steel

40503639105. wrought iron and pig iron

40503639106. pig iron, scrap iron and steel

Helpstudentpoint.com

40503639107. wrought iron, pig iron and steel

Question Number : 33 Question Id : 40503610738 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

ढलवाँ लोहे को किसके उत्पादन के लिए उपयोग में लाया जाता है?

Options :

40503639104. पिटवाँ लोहा तथा इस्पात

40503639105. पिटवाँ लोहा तथा कच्चा लोहा

40503639106. कच्चा लोहा, स्क्रैप लोहा तथा इस्पात

40503639107. पिटवाँ लोहा, कच्चा लोहा तथा इस्पात

Question Number : 34 Question Id : 40503610739 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If you spill a chemical toilet cleaning liquid on your hand, your first aid would be :

Options :

40503639108. aqueous NaOH

40503639109. aqueous NH_3

40503639110. aqueous $NaHCO_3$

40503639111. vinegar

Question Number : 34 Question Id : 40503610739 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Helpstudentpoint.com

यदि आप शौचालय को साफ करने वाले एक रासायनिक द्रव को अपने हाथ पर गिरा लेते हैं, तो आपका प्राथमिक उपचार होगा :

Options :

40503639108. जलीय NaOH

40503639109. जलीय NH_3

40503639110. जलीय $NaHCO_3$

40503639111. सिरका

Question Number : 35 Question Id : 40503610740 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Two elements A and B have similar chemical properties. They don't form solid hydrogencarbonates, but react with nitrogen to form nitrides. A and B, respectively, are :

Options :

40503639112. Na and Rb

40503639113. Na and Ca

40503639114. Li and Mg

40503639115. Cs and Ba

Question Number : 35 Question Id : 40503610740 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Helpstudentpoint.com

दो तत्व A तथा B के समान रासायनिक गुण हैं। वे ठोस हाइड्रोजनकार्बोनेट नहीं बनाते हैं, परन्तु नाइट्रोजन के साथ अभिक्रिया करके नाइट्राइड बनाते हैं। A तथा B क्रमश: हैं :

Options :

40503639112. Na तथा Rb

40503639113. Na तथा Ca

40503639114. Li तथा Mg

40503639115. Cs तथा Ba

Question Number : 36 Question Id : 40503610741 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The shape/structure of $[XeF_5]^-$ and XeO_3F_2, respectively, are :

Options :

40503639116. trigonal bipyramidal and trigonal bipyramidal

40503639117. pentagonal planar and trigonal bipyramidal

40503639118. trigonal bipyramidal and pentagonal planar

40503639119. octahedral and square pyramidal

Helpstudentpoint.com

Question Number : 36 Question Id : 40503610741 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$[XeF_5]^-$ तथा XeO_3F_2 का आकार/संरचना क्रमशः हैं :

Options :

40503639116. त्रिसमनताक्ष द्विपिरैमिडी तथा त्रिसमनताक्ष द्विपिरैमिडी

40503639117. पंचकोणीय समतलीय तथा त्रिसमनताक्ष द्विपिरैमिडी

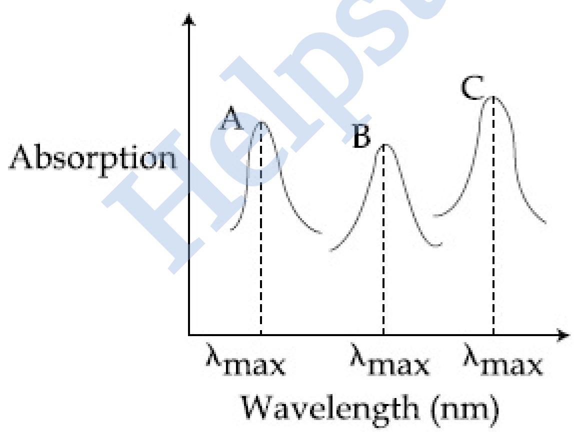
40503639118. त्रिसमनताक्ष द्विपिरैमिडी तथा पंचकोणीय समतलीय

40503639119. अष्टफलकीय तथा वर्ग पिरैमिडी

Question Number : 37 Question Id : 40503610742 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Simplified absorption spectra of three complexes ((i), (ii) and (iii)) of M^{n+} ion are provided below; their λ_{max} values are marked as A, B and C respectively. The correct match between the complexes and their λ_{max} values is :



(i) $[M(NCS)_6]^{(-6+n)}$

(ii) $[MF_6]^{(-6+n)}$

(iii) $[M(NH_3)_6]^{n+}$

Helpstudentpoint.com

Options :

40503639120. A-(i), B-(ii), C-(iii)

40503639121. A-(ii), B-(i), C-(iii)

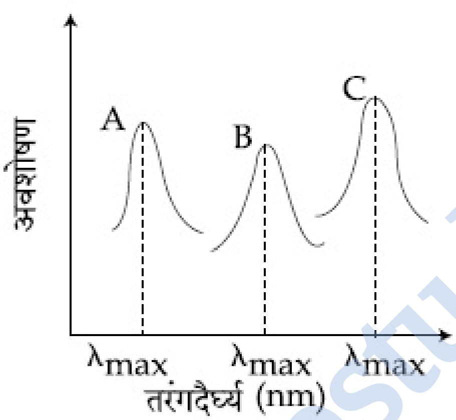
40503639122. A-(ii), B-(iii), C-(i)

40503639123. A-(iii), B-(i), C-(ii)

Question Number : 37 Question Id : 40503610742 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

M^{n+} आयन के तीन संकुलों ((i), (ii) तथा (iii)) के सरलीकृत अवशोषण स्पेक्ट्रा नीचे दिये गये हैं। उनके λ_{max} के मानों को A, B तथा C से क्रमश: चिन्हित किया गया है।



(i) $[M(NCS)_6]^{(-6+n)}$

(ii) $[MF_6]^{(-6+n)}$

(iii) $[M(NH_3)_6]^{n+}$

संकुलों तथा उनके λ_{max} मानों के बीच **सही** सुमेल है :

Options :

40503639120. A-(i), B-(ii), C-(iii)

40503639121. A-(ii), B-(i), C-(iii)

40503639122. A-(ii), B-(iii), C-(i)

Helpstudentpoint.com

40503639123. A-(iii), B-(i), C-(ii)

Question Number : 38 Question Id : 40503610743 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The one that is not expected to show isomerism is :

Options :

40503639124. $[Ni(NH_3)_2Cl_2]$

40503639125. $[Ni(NH_3)_4(H_2O)_2]^{2+}$

40503639126. $[Ni(en)_3]^{2+}$

40503639127. $[Pt(NH_3)_2Cl_2]$

Question Number : 38 Question Id : 40503610743 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

वह एक जिसकी समावयवता प्रदर्शित करने की संभावना नहीं है, है :

Options :

40503639124. $[Ni(NH_3)_2Cl_2]$

40503639125. $[Ni(NH_3)_4(H_2O)_2]^{2+}$

40503639126. $[Ni(en)_3]^{2+}$

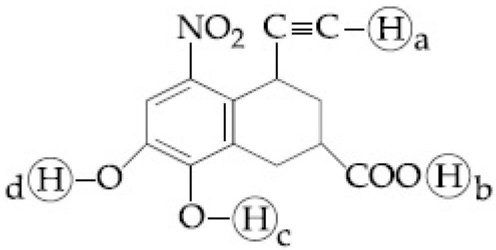
40503639127. $[Pt(NH_3)_2Cl_2]$

Helpstudentpoint.com

Question Number : 39 Question Id : 40503610744 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Arrange the following labelled hydrogens in decreasing order of acidity :



Options :

40503639128. b > c > d > a

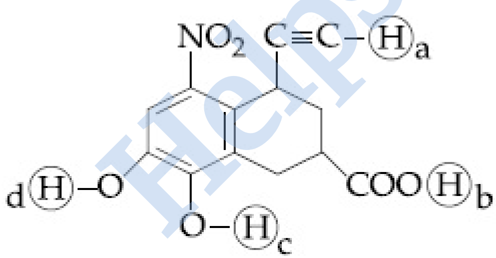
40503639129. c > b > d > a

40503639130. b > a > c > d

40503639131. c > b > a > d

Question Number : 39 Question Id : 40503610744 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

निम्नलिखित लेबलित हाइड्रोजनों को अम्लीयता के घटते क्रम में क्रमबद्ध कीजिए :



Options :

40503639128. b > c > d > a

40503639129. c > b > d > a

40503639130. b > a > c > d

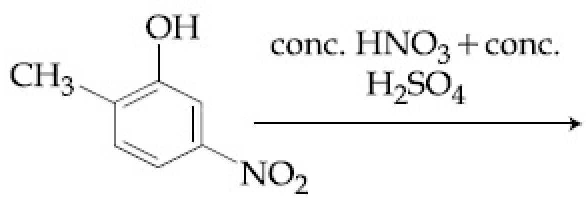
Helpstudentpoint.com

40503639131. c > b > a > d

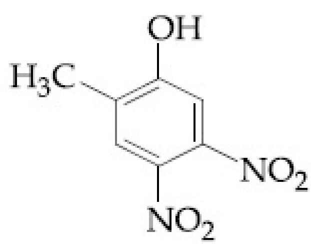
Question Number : 40 Question Id : 40503610745 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

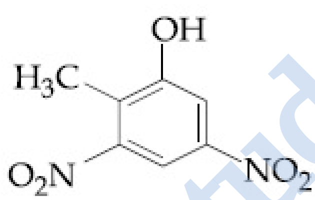
Correct Marks : 4 Wrong Marks : 1

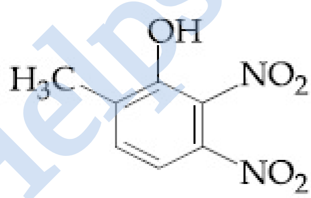
The major product of the following reaction is :

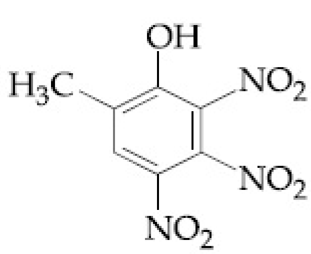


Options :

40503639132. 

40503639133. 

40503639134. 

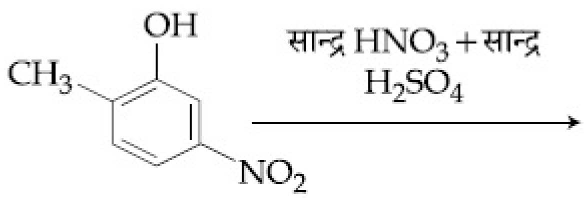
40503639135. 

Helpstudentpoint.com

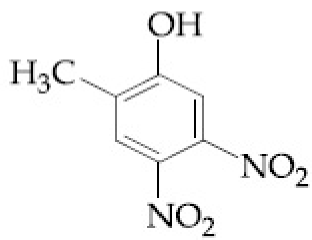
Question Number : 40 Question Id : 40503610745 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

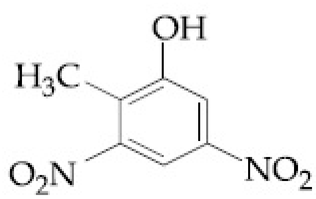
Correct Marks : 4 Wrong Marks : 1

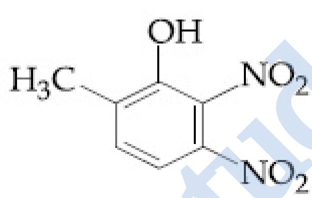
निम्नलिखित अभिक्रिया का मुख्य उत्पाद है :

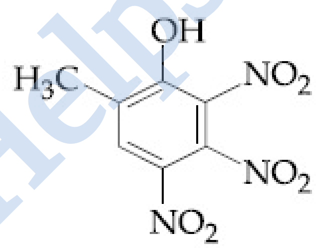


Options :

40503639132. 

40503639133. 

40503639134. 

40503639135. 

Helpstudentpoint.com

Question Number : 41 Question Id : 40503610746 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The correct observation in the following reactions is :

$$\text{Sucrose} \xrightarrow[\text{Cleavage (Hydrolysis)}]{\text{Glycosidic bond}} A + B \xrightarrow[\text{reagent}]{\text{Seliwanoff's}} ?$$

Options :

40503639136. Formation of red colour

40503639137. Formation of blue colour

40503639138. Formation of violet colour

40503639139. Gives no colour

Question Number : 41 Question Id : 40503610746 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया में सही प्रेक्षण है :

$$\text{सूक्रोस} \xrightarrow[\text{(जल अपघटन)}]{\text{ग्लाइकोसिडीक आबंध विदलन}} A + B \xrightarrow[\text{अभिकर्मक}]{\text{सेलिवेनॉफ}} ?$$

Options :

40503639136. लाल रंग का बनना

40503639137. नीले रंग का बनना

40503639138. बैंगनी रंग का बनना

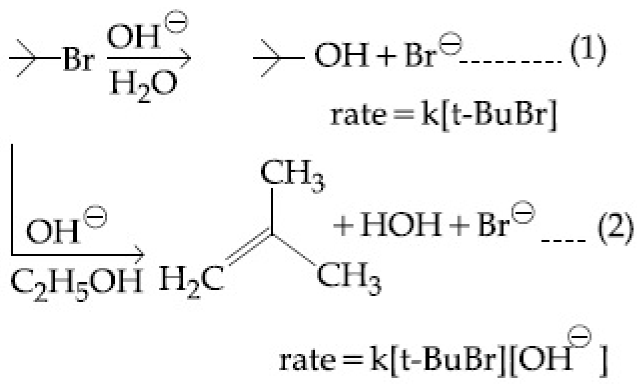
40503639139. कोई रंग नहीं देता है

Helpstudentpoint.com

Question Number : 42 Question Id : 40503610747 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Consider the reaction sequence given below :



Which of the following statements is true :

Options :

40503639140. Doubling the concentration of base will double the rate of both the reactions.

40503639141. Changing the concentration of base will have no effect on reaction (2).

40503639142. Changing the concentration of base will have no effect on reaction (1).

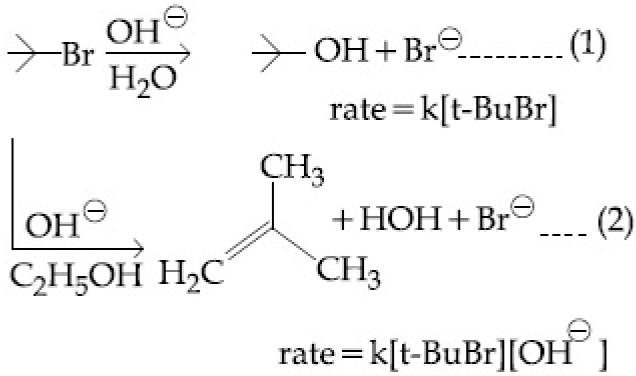
40503639143. Changing the base from $OH^{\ominus}$ to $^{\ominus}OR$ will have no effect on reaction (2).

Helpstudentpoint.com

Question Number : 42 Question Id : 40503610747 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

नीचे दिये गये अभिक्रिया अनुक्रम पर विचार कीजिए :



निम्नलिखित में से कौन सा कथन **सही** है?

Options :

40503639140. क्षार की सान्द्रता को दुगुना करने पर दोनों अभिक्रियाओं की दर दुगुनी हो जायेगी।

40503639141. क्षार की सान्द्रता को बदलने पर अभिक्रिया (2) पर कोई प्रभाव नहीं पड़ेगा।

40503639142. क्षार की सान्द्रता को बदलने पर अभिक्रिया (1) पर कोई प्रभाव नहीं पड़ेगा।

40503639143. क्षार को $OH^{\ominus}$ से $^{\ominus}OR$ में बदलने पर अभिक्रिया (2) पर कोई प्रभाव नहीं पड़ेगा।

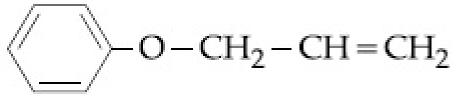
Question Number : 43 Question Id : 40503610748 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

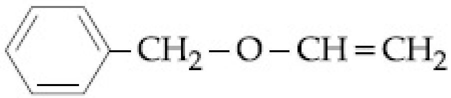
Correct Marks : 4 Wrong Marks : 1

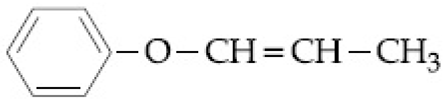
An organic compound 'A' ($C_9H_{10}O$) when treated with conc. HI undergoes cleavage to yield compounds 'B' and 'C'. 'B' gives yellow precipitate with $AgNO_3$ where as 'C' tautomerizes to 'D'. 'D' gives positive iodoform test. 'A' could be :

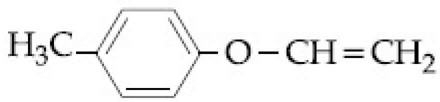
Helpstudentpoint.com

Options :

40503639144. 

40503639145. 

40503639146. 

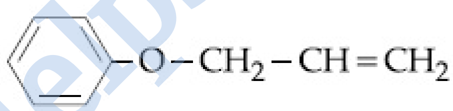
40503639147. 

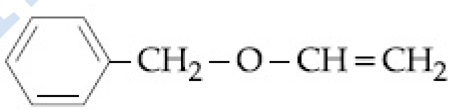
Question Number : 43 Question Id : 40503610748 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

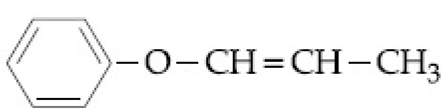
Correct Marks : 4 Wrong Marks : 1

एक कार्बनिक यौगिक 'A' ($C_9H_{10}O$) को जब सान्द्र HI के साथ अभिक्रियित कराया जाता है, तो इसका विदलन होता है तथा यौगिक 'B' तथा 'C' प्राप्त होते हैं। 'B' $AgNO_3$ के साथ पीले रंग का अवक्षेप देता है जबकि 'C', 'D' में चलावयवित होता है। 'D' सकारात्मक आयोडोफार्म परीक्षण देता है। 'A' हो सकता है :

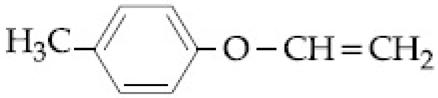
Options :

40503639144. 

40503639145. 

40503639146. 

Helpstudentpoint.com

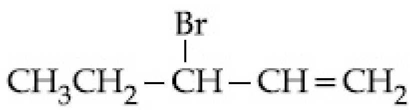
40503639147. 

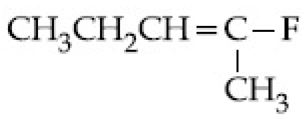
Question Number : 44 Question Id : 40503610749 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

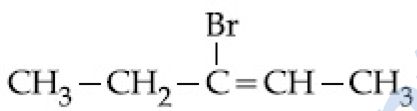
Correct Marks : 4 Wrong Marks : 1

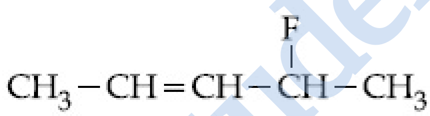
The major product obtained from E_2-elimination of 3-bromo-2-fluoropentane is :

Options :

40503639148. 

40503639149. 

40503639150. 

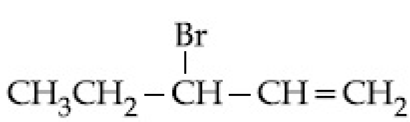
40503639151. 

Question Number : 44 Question Id : 40503610749 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

3-ब्रोमो-2-फ्लोरोपेन्टेन के E_2-विलोपन से प्राप्त मुख्य उत्पाद है :

Options :

40503639148. 

Helpstudentpoint.com

$$CH_3CH_2CH=\underset{\substack{|\\CH_3}}{C}-F$$
40503639149.

$$CH_3-CH_2-\overset{\substack{Br\\|}}{C}=CH-CH_3$$
40503639150.

$$CH_3-CH=CH-\overset{\substack{F\\|}}{C}H-CH_3$$
40503639151.

Question Number : 45 Question Id : 40503610750 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Two compounds A and B with same molecular formula (C_3H_6O) undergo Grignard's reaction with methylmagnesium bromide to give products C and D. Products C and D show following chemical tests.

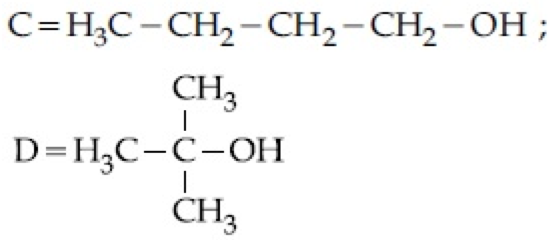
Test	C	D
Ceric ammonium nitrate Test	Positive	Positive
Lucas Test	Turbidity obtained after five minutes	Turbidity obtained immediately
Iodoform Test	Positive	Negative

C and D respectively are :

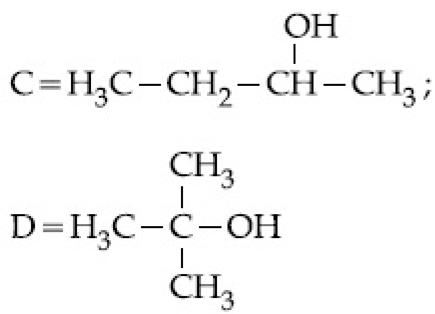
Options :

$$C=H_3C-CH_2-CH_2-CH_2-OH;$$
$$D=H_3C-CH_2-\underset{\substack{|\\OH}}{C}H-CH_3$$
40503639152.

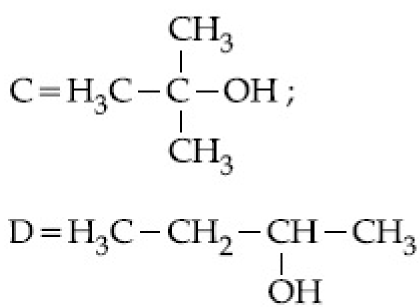
Helpstudentpoint.com



40503639153.



40503639154.



40503639155.

Question Number : 45 Question Id : 40503610750 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Helpstudentpoint.com

दो यौगिक A तथा B जिनका आण्विक सूत्र (C_3H_6O) समान हैं, मेथिलमैग्नीशियम ब्रोमाइड के साथ ग्रिग्नार्ड अभिक्रिया करके उत्पाद C तथा D देते हैं। उत्पाद C तथा D निम्नलिखित रासायनिक परीक्षण देते हैं :

परीक्षण	C	D
सेरिक अमोनियम नाइट्रेट परीक्षण	सकारात्मक	सकारात्मक
लूकास परीक्षण	5 मिनट के बाद आविलता की प्राप्ति	तुरंत आविलता की प्राप्ति
आयोडोफार्म परीक्षण	सकारात्मक	नकारात्मक

C तथा D क्रमश: हैं :

Options :

40503639152. $C = H_3C-CH_2-CH_2-CH_2-OH;$ $D = H_3C-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3$

40503639153. $C = H_3C-CH_2-CH_2-CH_2-OH;$ $D = H_3C-\overset{\displaystyle CH_3}{\overset{|}{\underset{\displaystyle CH_3}{\underset{|}{C}}}}-OH$

40503639154. $C = H_3C-CH_2-\overset{\displaystyle OH}{\overset{|}{CH}}-CH_3;$ $D = H_3C-\overset{\displaystyle CH_3}{\overset{|}{\underset{\displaystyle CH_3}{\underset{|}{C}}}}-OH$

Helpstudentpoint.com

$$C = H_3C-\underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\underset{|}{\overset{|}{C}}}}-OH;$$

$$D = H_3C-CH_2-\underset{\displaystyle OH}{\underset{|}{CH}}-CH_3$$

40503639155.

Sub-Section Number : 2
Sub-Section Id : 405036746
Question Shuffling Allowed : Yes

Question Number : 46 Question Id : 40503610751 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

The work function of sodium metal is 4.41×10^{-19} J. If photons of wavelength 300 nm are incident on the metal, the kinetic energy of the ejected electrons will be ($h = 6.63 \times 10^{-34}$ J s; $c = 3 \times 10^{8}$ m/s) ________ $\times 10^{-21}$ J.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Range
Text Areas : PlainText
Possible Answers :
5 to 5.002

Question Number : 46 Question Id : 40503610751 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

सोडियम धातु का कार्यफलन 4.41×10^{-19} J है। यदि धातु पर तरंगदैर्घ्य 300 nm के फोटान आपतित होते हैं, तो उत्क्षेपित इलेक्ट्रॉनों की गतिज ऊर्जा ________ $\times 10^{-21}$ J होगी।
($h = 6.63 \times 10^{-34}$ J s; $c = 3 \times 10^{8}$ m/s)

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

Helpstudentpoint.com

5 to 5.002

Question Number : 47 Question Id : 40503610752 Question Type : SA Display Question Number : Yes Correct Marks : 4 Wrong Marks : 0

The heat of combustion of ethanol into carbon dioxids and water is -327 kcal at constant pressure. The heat evolved (in cal) at constant volume and 27°C (if all gases behave ideally) is ($R=2$ cal mol^{-1} K^{-1}) ________.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Range
Text Areas : PlainText
Possible Answers :
5 to 5.002

Question Number : 47 Question Id : 40503610752 Question Type : SA Display Question Number : Yes Correct Marks : 4 Wrong Marks : 0

स्थिर दाब पर एथेनॉल का कार्बन डाइआक्साइड तथा जल में दहन की ऊष्मा -327 kcal है। स्थिर आयतन तथा 27°C पर (यदि सभी गैसों का स्वभाव आदर्श है) उत्सर्जित ऊष्मा (cal में) है ($R=2$ cal mol^{-1} K^{-1}) ________।

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Range
Text Areas : PlainText
Possible Answers :
5 to 5.002

Question Number : 48 Question Id : 40503610753 Question Type : SA Display Question Number : Yes Correct Marks : 4 Wrong Marks : 0

Helpstudentpoint.com

For the disproportionation reaction $2\,Cu^{+}(aq) \rightleftharpoons Cu(s) + Cu^{2+}(aq)$ at 298 K, ln K (where K is the equilibrium constant) is ________ $\times 10^{-1}$.

Given :

$(E^{0}_{Cu^{2+}/Cu^{+}} = 0.16\ V$

$E^{0}_{Cu^{+}/Cu} = 0.52\ V$

$\frac{RT}{F} = 0.025)$

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Range
Text Areas : PlainText
Possible Answers :
5 to 5.002

Question Number : 48 Question Id : 40503610753 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

298 K पर असमानुपातन अभिक्रिया $2\,Cu^{+}(aq) \rightleftharpoons Cu(s) + Cu^{2+}(aq)$ के लिए ln K है (जहाँ K साम्यस्थिरांक है) ________ $\times 10^{-1}$।

दिया गया है :

$(E^{0}_{Cu^{2+}/Cu^{+}} = 0.16\ V$

$E^{0}_{Cu^{+}/Cu} = 0.52\ V$

$\frac{RT}{F} = 0.025)$

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Range
Text Areas : PlainText
Possible Answers :
5 to 5.002

Question Number : 49 Question Id : 40503610754 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

Helpstudentpoint.com

The oxidation states of transition metal atoms in $K_2Cr_2O_7$, $KMnO_4$ and K_2FeO_4, respectively, are x, y and z. The sum of x, y and z is ________.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Range
Text Areas : PlainText
Possible Answers :
5 to 5.002

Question Number : 49 Question Id : 40503610754 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

$K_2Cr_2O_7$, $KMnO_4$ तथा K_2FeO_4 में संक्रमण धातु परमाणुओं की ऑक्सीकरण अवस्थाएँ क्रमशः x, y तथा z है। x, y तथा z का योग है ________।

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Range
Text Areas : PlainText
Possible Answers :
5 to 5.002

Question Number : 50 Question Id : 40503610755 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

The ratio of the mass percentages of 'C & H' and 'C & O' of a saturated acyclic organic compound 'X' are 4 : 1 and 3 : 4 respectively. Then, the moles of oxygen gas required for complete combustion of two moles of organic compound 'X' is ________.

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

Helpstudentpoint.com

Possible Answers :

5 to 5.002

Question Number : 50 Question Id : 40503610755 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

एक संतृप्त अचक्रीय कार्बनिक यौगिक 'X' के 'C & H' तथा 'C & O' की संहति प्रतिशतताओं का अनुपात क्रमश: 4 : 1 तथा 3 : 4 हैं। तो कार्बनिक यौगिक 'X' के दो मोल के सम्पूर्ण दहन के लिए ऑक्सीजन गैस के आवश्यक मोल हैं ________।

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

5 to 5.002

Mathematics

Section Id :	405036390
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	100
Display Number Panel :	Yes
Group All Questions :	Yes
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	405036747
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 40503610756 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Helpstudentpoint.com

Let $f : \mathbf{R} \to \mathbf{R}$ be a function which satisfies $f(x+y) = f(x) + f(y) \ \forall \ x, y \in \mathbf{R}$. If $f(1) = 2$ and

$$g(n) = \sum_{k=1}^{(n-1)} f(k), \ n \in \mathbf{N}$$ then the value of n, for which $g(n) = 20$, is :

Options :

40503639161. 4

40503639162. 5

40503639163. 9

40503639164. 20

Question Number : 51 Question Id : 40503610756 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना एक फलन $f : \mathbf{R} \to \mathbf{R}$, प्रत्येक $x, y \in \mathbf{R}$ के लिए $f(x+y) = f(x) + f(y)$ को संतुष्ट करता है।

यदि $f(1) = 2$ तथा $g(n) = \sum_{k=1}^{(n-1)} f(k)$, $n \in \mathbf{N}$ है,

तो n का वह मान जिसके लिए $g(n) = 20$ है, है :

Options :

40503639161. 4

40503639162. 5

40503639163. 9

40503639164. 20

Helpstudentpoint.com

Question Number : 52 Question Id : 40503610757 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $f(x)$ be a quadratic polynomial such that $f(-1)+f(2)=0$. If one of the roots of $f(x)=0$ is 3, then its other root lies in :

Options :

40503639165. $(-3, -1)$

40503639166. $(-1, 0)$

40503639167. $(0, 1)$

40503639168. $(1, 3)$

Question Number : 52 Question Id : 40503610757 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना $f(x)$ एक द्विघात बहुपद है जिसके लिए $f(-1)+f(2)=0$ है। यदि $f(x)=0$ का एक मूल 3 है, तो दूसरा मूल निम्न में से किस अन्तराल में स्थित है?

Options :

40503639165. $(-3, -1)$

40503639166. $(-1, 0)$

40503639167. $(0, 1)$

40503639168. $(1, 3)$

Helpstudentpoint.com

Question Number : 53 Question Id : 40503610758 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The imaginary part of

.

$\left(3+2\sqrt{-54}\right)^{1/2} - \left(3-2\sqrt{-54}\right)^{1/2}$ can be :

Options :

40503639169. 6

40503639170. $\sqrt{6}$

40503639171. $-2\sqrt{6}$

40503639172. $-\sqrt{6}$

Question Number : 53 Question Id : 40503610758 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$\left(3+2\sqrt{-54}\right)^{1/2} - \left(3-2\sqrt{-54}\right)^{1/2}$ का

काल्पनिक भाग हो सकता है :

Options :

40503639169. 6

40503639170. $\sqrt{6}$

40503639171. $-2\sqrt{6}$

40503639172. $-\sqrt{6}$

Helpstudentpoint.com

Question Number : 54 Question Id : 40503610759 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let a, b, c ∈ R be all non-zero and satisfy $a^3+b^3+c^3=2$. If the matrix

$$A = \begin{pmatrix} a & b & c \\ b & c & a \\ c & a & b \end{pmatrix}$$

satisfies $A^TA=I$, then a value of abc can be :

Options :

40503639173. $-\frac{1}{3}$

40503639174. $\frac{1}{3}$

40503639175. $\frac{2}{3}$

40503639176. 3

Question Number : 54 Question Id : 40503610759 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना a, b, c $\in$ **R** तथा सभी अशून्य हैं और $a^3+b^3+c^3=2$ को संतुष्ट करते हैं। यदि आव्यूह

$$A=\begin{pmatrix} a & b & c \\ b & c & a \\ c & a & b \end{pmatrix}$$ के लिए $A^T A = I$ है, तो abc का

एक मान हो सकता है :

Options :

40503639173. $-\frac{1}{3}$

40503639174. $\frac{1}{3}$

40503639175. $\frac{2}{3}$

40503639176. 3

Question Number : 55 Question Id : 40503610760 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Helpstudentpoint.com

Let $A = \{X = (x, \ y, \ z)^T \ : \ PX = 0$ and

$x^2 + y^2 + z^2 = 1\}$, where $P = \begin{bmatrix} 1 & 2 & 1 \\ -2 & 3 & -4 \\ 1 & 9 & -1 \end{bmatrix}$,

then the set A :

Options :

40503639177. is an empty set.

40503639178. is a singleton.

40503639179. contains exactly two elements.

40503639180. contains more than two elements.

Question Number : 55 Question Id : 40503610760 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि $A = \{X = (x, \ y, \ z)^T \ : \ PX = 0$ तथा

$x^2 + y^2 + z^2 = 1\}$ जबकि $P = \begin{bmatrix} 1 & 2 & 1 \\ -2 & 3 & -4 \\ 1 & 9 & -1 \end{bmatrix}$ है,

तो A :

Options :

40503639177. एक रिक्त समुच्चय है।

40503639178. एक ही अवयव वाला समुच्चय है।

40503639179. में मात्र दो अवयव हैं।

40503639180. में दो से अधिक अवयव हैं।

Question Number : 56 Question Id : 40503610761 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Helpstudentpoint.com

Correct Marks : 4 Wrong Marks : 1

Let n > 2 be an integer. Suppose that there are n Metro stations in a city located along a circular path. Each pair of stations is connected by a straight track only. Further, each pair of nearest stations is connected by blue line, whereas all remaining pairs of stations are connected by red line. If the number of red lines is 99 times the number of blue lines, then the value of n is :

Options :

40503639181. 201

40503639182. 200

40503639183. 101

40503639184. 199

Question Number : 56 Question Id : 40503610761 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना n > 2 एक पूर्णांक है तथा एक शहर में n मेट्रो स्टेशन हैं जो एक वृत्ताकार पथ पर स्थित हैं। प्रत्येक दो स्टेशन एक सीधे ट्रैक (Track) से जोड़े गए हैं। इसके अतिरिक्त, प्रत्येक दो निकटतम स्टेशन ब्लू लाईन (Blue Line) से तथा अन्य सभी दो स्टेशन रेड लाईन (Red Line) से जोड़े गए हैं। यदि रेड लाईन्स की संख्या ब्लू लाईन्स की संख्या का 99 गुणा है, तो n का मान है :

Options :

40503639181. 201

40503639182. 200

40503639183. 101

Helpstudentpoint.com

40503639184. 199

Question Number : 57 Question Id : 40503610762 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If the sum of first 11 terms of an A.P., a_1, a_2, a_3, ... is 0 ($a_1 \neq 0$), then the sum of the A.P., a_1, a_3, a_5, ..., a_{23} is ka_1, where k is equal to :

Options :

40503639185. $\frac{121}{10}$

40503639186. $\frac{72}{5}$

40503639187. $-\frac{121}{10}$

40503639188. $-\frac{72}{5}$

Question Number : 57 Question Id : 40503610762 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि A.P., a_1, a_2, a_3, ... के प्रथम 11 पदों का योगफल 0 ($a_1 \neq 0$) है और A.P., a_1, a_3, a_5, ..., a_{23} का योगफल ka_1 है, तो k बराबर है :

Options :

40503639185. $\frac{121}{10}$

40503639186. $\frac{72}{5}$

Helpstudentpoint.com

40503639187. $-\frac{121}{10}$

40503639188. $-\frac{72}{5}$

Question Number : 58 Question Id : 40503610763 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let S be the sum of the first 9 terms of the series :

$\{x+ka\}+\{x^2+(k+2)a\}+\{x^3+(k+4)a\}+\{x^4+(k+6)a\}+\ldots$ where $a \neq 0$ and $x \neq 1$. If $S = \frac{x^{10}-x+45a(x-1)}{x-1}$, then k is equal to :

Options :

40503639189. -3

40503639190. -5

40503639191. 1

40503639192. 3

Question Number : 58 Question Id : 40503610763 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना श्रेणी

$\{x+ka\}+\{x^2+(k+2)a\}+\{x^3+(k+4)a\}+\{x^4+(k+6)a\}+\ldots$ के प्रथम 9 पदों का योगफल S के बराबर है, जबकि $a \neq 0$ तथा $x \neq 1$ है। यदि

$S = \frac{x^{10}-x+45a(x-1)}{x-1}$ है, तो k बराबर है :

Options :

Helpstudentpoint.com

40503639189. -3

40503639190. -5

40503639191. 1

40503639192. 3

Question Number : 59 Question Id : 40503610764 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$\lim_{x \to 0}\left(\tan\left(\frac{\pi}{4}+x\right)\right)^{1/x}$ is equal to :

Options :

40503639193. 1

40503639194. 2

40503639195. e

40503639196. e^2

Question Number : 59 Question Id : 40503610764 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$\lim_{x \to 0}\left(\tan\left(\frac{\pi}{4}+x\right)\right)^{1/x}$ बराबर है :

Options :

40503639193. 1

40503639194. 2

40503639195. e

Helpstudentpoint.com

40503639196. e^2

Question Number : 60 Question Id : 40503610765 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The equation of the normal to the curve

$y=(1+x)^{2y}+\cos^2(\sin^{-1}x)$ at $x=0$ is :

Options :

40503639197. $x+4y=8$

40503639198. $y=4x+2$

40503639199. $y+4x=2$

40503639200. $2y+x=4$

Question Number : 60 Question Id : 40503610765 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

$x=0$ पर, वक्र $y=(1+x)^{2y}+\cos^2(\sin^{-1}x)$ पर खींचे गए अभिलम्ब का समीकरण है :

Options :

40503639197. $x+4y=8$

40503639198. $y=4x+2$

40503639199. $y+4x=2$

40503639200. $2y+x=4$

Helpstudentpoint.com

Question Number : 61 Question Id : 40503610766 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $f: (-1, \infty) \rightarrow \mathbf{R}$ be defined by $f(0) = 1$

and $f(x) = \frac{1}{x} \log_e (1+x), x \neq 0$. Then the

function f:

Options :

40503639201. decreases in $(-1, 0)$ and increases in $(0, \infty)$.

40503639202. increases in $(-1, 0)$ and decreases in $(0, \infty)$.

40503639203. increases in $(-1, \infty)$.

40503639204. decreases in $(-1, \infty)$.

Question Number : 61 Question Id : 40503610766 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि $f: (-1, \infty) \rightarrow \mathbf{R}$, $f(0) = 1$ तथा

$f(x) = \frac{1}{x} \log_e (1+x), x \neq 0$ द्वारा परिभाषित है,

तो फलन f:

Options :

40503639201. $(-1, 0)$ में ह्रासमान है तथा $(0, \infty)$ में वर्धमान है।

40503639202. $(-1, 0)$ में वर्धमान है तथा $(0, \infty)$ में ह्रासमान है।

40503639203. $(-1, \infty)$ में वर्धमान है।

40503639204. $(-1, \infty)$ में ह्रासमान है।

Question Number : 62 Question Id : 40503610767 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Helpstudentpoint.com

Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Consider a region $R = \{(x, y) \in \mathbf{R}^2 : x^2 \leq y \leq 2x\}$. If a line $y = \alpha$ divides the area of region R into two equal parts, then which of the following is true ?

Options :

40503639205. $3\alpha^2 - 8\alpha + 8 = 0$

40503639206. $\alpha^3 - 6\alpha^2 + 16 = 0$

40503639207. $3\alpha^2 - 8\alpha^{3/2} + 8 = 0$

40503639208. $\alpha^3 - 6\alpha^{3/2} - 16 = 0$

Question Number : 62 Question Id : 40503610767 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

एक क्षेत्र $R = \{(x, y) \in \mathbf{R}^2 : x^2 \leq y \leq 2x\}$ पर विचार कीजिए। यदि एक सरल रेखा $y = \alpha$, क्षेत्र R के क्षेत्रफल को दो बराबर भागों में बांटती है, तो निम्न में से कौन-सा सत्य है ?

Options :

40503639205. $3\alpha^2 - 8\alpha + 8 = 0$

40503639206. $\alpha^3 - 6\alpha^2 + 16 = 0$

40503639207. $3\alpha^2 - 8\alpha^{3/2} + 8 = 0$

40503639208. $\alpha^3 - 6\alpha^{3/2} - 16 = 0$

Question Number : 63 Question Id : 40503610768 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

Helpstudentpoint.com

If a curve $y=f(x)$, passing through the point (1, 2), is the solution of the differential equation, $2x^2dy=(2xy+y^2)dx$, then $f\left(\frac{1}{2}\right)$ is equal to :

Options :

40503639209. $\frac{1}{1+\log_e 2}$

40503639210. $\frac{1}{1-\log_e 2}$

40503639211. $1 + \log_e 2$

40503639212. $\frac{-1}{1+\log_e 2}$

Question Number : 63 Question Id : 40503610768 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि एक वक्र, $y=f(x)$, बिन्दु (1, 2) से होकर जाता है तथा अवकल समीकरण $2x^2dy=(2xy+y^2)dx$, का हल है, तो $f\left(\frac{1}{2}\right)$ बराबर है :

Options :

40503639209. $\frac{1}{1+\log_e 2}$

40503639210. $\frac{1}{1-\log_e 2}$

40503639211. $1 + \log_e 2$

40503639212. $\frac{-1}{1+\log_e 2}$

Helpstudentpoint.com

Question Number : 64 Question Id : 40503610769 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The set of all possible values of θ in the interval $(0, \pi)$ for which the points $(1, 2)$ and $(\sin\theta, \cos\theta)$ lie on the same side of the line $x+y=1$ is :

Options :

40503639213. $\left(0, \frac{3\pi}{4}\right)$

40503639214. $\left(0, \frac{\pi}{4}\right)$

40503639215. $\left(\frac{\pi}{4}, \frac{3\pi}{4}\right)$

40503639216. $\left(0, \frac{\pi}{2}\right)$

Helpstudentpoint.com

Question Number : 64 Question Id : 40503610769 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

अन्तराल $(0, \pi)$ में θ के सभी संभावित मूल्यों का समुच्चय, जिसके लिए दोनों बिन्दु, $(1, 2)$ तथा $(\sin\theta, \cos\theta)$, सरल रेखा $x+y=1$ के एक ही तरफ स्थित हैं, है :

Options :

40503639213. $\left(0, \frac{3\pi}{4}\right)$

40503639214. $\left(0, \frac{\pi}{4}\right)$

40503639215. $\left(\frac{\pi}{4}, \frac{3\pi}{4}\right)$

40503639216. $\left(0, \frac{\pi}{2}\right)$

Question Number : 65 Question Id : 40503610770 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

The area (in sq. units) of an equilateral triangle inscribed in the parabola $y^2 = 8x$, with one of its vertices on the vertex of this parabola, is :

Options :

40503639217. $64\sqrt{3}$

40503639218. $128\sqrt{3}$

40503639219. $192\sqrt{3}$

40503639220. $256\sqrt{3}$

Question Number : 65 Question Id : 40503610770 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक समबाहु त्रिभुज, जिसका एक शीर्ष, परवलय, $y^2 = 8x$ के शीर्ष पर है, परवलय के अंतर्गत खींचा गया है। तो त्रिभुज का क्षेत्रफल (वर्ग इकाइयों में) है :

Options :

40503639217. $64\sqrt{3}$

40503639218. $128\sqrt{3}$

Helpstudentpoint.com

40503639219. $192\sqrt{3}$

40503639220. $256\sqrt{3}$

Question Number : 66 Question Id : 40503610771 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

For some $\theta \in \left(0, \frac{\pi}{2}\right)$, if the eccentricity of the hyperbola, $x^2 - y^2 \sec^2\theta = 10$ is $\sqrt{5}$ times the eccentricity of the ellipse, $x^2\sec^2\theta + y^2 = 5$, then the length of the latus rectum of the ellipse, is :

Options :

40503639221. $2\sqrt{6}$

40503639222. $\sqrt{30}$

40503639223. $\frac{4\sqrt{5}}{3}$

40503639224. $\frac{2\sqrt{5}}{3}$

Question Number : 66 Question Id : 40503610771 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

किसी $\theta \in \left(0, \frac{\pi}{2}\right)$ के लिए, यदि अतिपरवलय, $x^2 - y^2\sec^2\theta = 10$ की उत्केन्द्रता, दीर्घवृत्त, $x^2\sec^2\theta + y^2 = 5$ की उत्केन्द्रता का $\sqrt{5}$ गुणा है, तो दीर्घवृत्त की नाभिलम्ब जीवा की लम्बाई बराबर है :

Helpstudentpoint.com

Options :

40503639221. $2\sqrt{6}$

40503639222. $\sqrt{30}$

40503639223. $\frac{4\sqrt{5}}{3}$

40503639224. $\frac{2\sqrt{5}}{3}$

Question Number : 67 Question Id : 40503610772 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A plane passing through the point (3, 1, 1) contains two lines whose direction ratios are 1, -2, 2 and 2, 3, -1 respectively. If this plane also passes through the point (α, -3, 5), then α is equal to :

Options :

40503639225. 10

40503639226. -5

40503639227. 5

40503639228. -10

Helpstudentpoint.com

Question Number : 67 Question Id : 40503610772 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

बिन्दु (3, 1, 1) से होकर जाने वाले समतल में दो सरल रेखाएँ स्थित हैं जिनके दिक् अनुपात (direction ratios) क्रमश: $1, -2, 2$ तथा $2, 3, -1$ हैं। यदि यह समतल बिन्दु $(\alpha, -3, 5)$ से भी होकर जाता है, तो α बराबर है :

Options :

40503639225. 10

40503639226. -5

40503639227. 5

40503639228. -10

Question Number : 68 Question Id : 40503610773 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let E^C denote the complement of an event E. Let E_1, E_2 and E_3 be any pairwise independent events with $P(E_1) > 0$ and $P(E_1 \cap E_2 \cap E_3)=0$. Then $P\left(E_2^C \cap E_3^C / E_1\right)$ is equal to :

Options :

40503639229. $P\left(E_2^C\right) + P(E_3)$

40503639230. $P\left(E_3^C\right) - P\left(E_2^C\right)$

40503639231. $P\left(E_3^C\right) - P(E_2)$

40503639232. $P(E_3) - P\left(E_2^C\right)$

Question Number : 68 Question Id : 40503610773 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Helpstudentpoint.com

Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

माना E^C घटना E का पूरक है। यदि कोई तीन घटनाएँ E_1, E_2 तथा E_3 युग्मों में स्वतंत्र हैं, तथा $P(E_1) > 0$ और $P(E_1 \cap E_2 \cap E_3)=0$, तो $P\left(E_2^C \cap E_3^C / E_1\right)$ बराबर है :

Options :

40503639229. $P\left(E_2^C\right) + P(E_3)$

40503639230. $P\left(E_3^C\right) - P\left(E_2^C\right)$

40503639231. $P\left(E_3^C\right) - P(E_2)$

40503639232. $P(E_3) - P\left(E_2^C\right)$

Question Number : 69 Question Id : 40503610774 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

If the equation $\cos^4\theta + \sin^4\theta + \lambda = 0$ has real solutions for θ, then λ lies in the interval :

Options :

40503639233. $\left(-\frac{1}{2}, -\frac{1}{4}\right]$

40503639234. $\left[-1, -\frac{1}{2}\right]$

40503639235. $\left(-\frac{5}{4}, -1\right)$

40503639236. $\left[-\frac{3}{2}, -\frac{5}{4}\right]$

Helpstudentpoint.com

Question Number : 69 Question Id : 40503610774 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

यदि समीकरण $\cos^4\theta + \sin^4\theta + \lambda = 0$ के θ में वास्तविक हल हैं, तो λ निम्न में से किस अन्तराल में स्थित है?

Options :

40503639233. $\left(-\frac{1}{2}, -\frac{1}{4}\right]$

40503639234. $\left[-1, -\frac{1}{2}\right]$

40503639235. $\left(-\frac{5}{4}, -1\right)$

40503639236. $\left[-\frac{3}{2}, -\frac{5}{4}\right]$

Question Number : 70 Question Id : 40503610775 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Which of the following is a tautology ?

Options :

40503639237. $(p \to q) \wedge (q \to p)$

40503639238. $(\sim p) \wedge (p \vee q) \to q$

40503639239. $(\sim q) \vee (p \wedge q) \to q$

40503639240. $(q \to p) \vee \sim (p \to q)$

Helpstudentpoint.com

Question Number : 70 Question Id : 40503610775 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

निम्न में से कौन सा कथन पुनरुक्ति है?

Options :

40503639237. $(p \rightarrow q) \wedge (q \rightarrow p)$

40503639238. $(\sim p) \wedge (p \vee q) \rightarrow q$

40503639239. $(\sim q) \vee (p \wedge q) \rightarrow q$

40503639240. $(q \rightarrow p) \vee \sim (p \rightarrow q)$

Sub-Section Number : 2

Sub-Section Id : 405036748

Question Shuffling Allowed : Yes

Question Number : 71 Question Id : 40503610776 Question Type : SA Display Question Number : Yes

Correct Marks : 4 Wrong Marks : 0

For a positive integer n, $\left(1 + \frac{1}{x}\right)^n$ is expanded in increasing powers of x. If three consecutive coefficients in this expansion are in the ratio, 2 : 5 : 12, then n is equal to ________.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.002

Question Number : 71 Question Id : 40503610776 Question Type : SA Display Question Number : Yes

Correct Marks : 4 Wrong Marks : 0

Helpstudentpoint.com

एक धन पूर्णांक n के लिए, $\left(1+\frac{1}{x}\right)^{n}$ को x की बढ़ती घातों में प्रसारित किया गया है। यदि इस प्रसार में तीन क्रमागत गुणांकों का अनुपात, 2 : 5 : 12 है, तो n बराबर है __________ ।

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Range
Text Areas : PlainText
Possible Answers :
5 to 5.002

Question Number : 72 Question Id : 40503610777 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

If $y=\sum_{k=1}^{6} k\cos^{-1}\left\{\frac{3}{5}\cos kx-\frac{4}{5}\sin kx\right\}$,

then $\frac{dy}{dx}$ at $x=0$ is __________.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Range
Text Areas : PlainText
Possible Answers :
5 to 5.002

Question Number : 72 Question Id : 40503610777 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

यदि $y=\sum_{k=1}^{6} k\cos^{-1}\left\{\frac{3}{5}\cos kx-\frac{4}{5}\sin kx\right\}$,

तो $x=0$ पर $\frac{dy}{dx}$ का मान है __________ ।

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

Helpstudentpoint.com

5 to 5.002

Question Number : 73 Question Id : 40503610778 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

Let the position vectors of points 'A' and 'B' be $\hat{i} + \hat{j} + \hat{k}$ and $2\hat{i} + \hat{j} + 3\hat{k}$, respectively. A point 'P' divides the line segment AB internally in the ratio $\lambda : 1$ $(\lambda > 0)$. If O is the origin and $\vec{OB} \cdot \vec{OP} - 3\left|\vec{OA} \times \vec{OP}\right|^2 = 6$, then λ is equal to ________.

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Range
Text Areas : PlainText
Possible Answers :
5 to 5.002

Question Number : 73 Question Id : 40503610778 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

माना बिन्दुओं 'A' तथा 'B' के स्थिति सदिश क्रमश: $\hat{i} + \hat{j} + \hat{k}$ तथा $2\hat{i} + \hat{j} + 3\hat{k}$ हैं। एक बिन्दु P, रेखा खंड AB को अन्त: अनुपात $\lambda : 1$ $(\lambda > 0)$ में विभाजित करता है। यदि O मूल बिन्दु है तथा $\vec{OB} \cdot \vec{OP} - 3\left|\vec{OA} \times \vec{OP}\right|^2 = 6$ है, तो λ बराबर है ________।

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes
Answers Type : Range
Text Areas : PlainText
Possible Answers :
5 to 5.002

Question Number : 74 Question Id : 40503610779 Question Type : SA Display Question Number : Yes

Helpstudentpoint.com

Correct Marks : 4 Wrong Marks : 0

Let [t] denote the greatest integer less than or equal to t. Then the value of $\int_1^2 |2x - [3x]|\, dx$ is ________.

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

5 to 5.002

Question Number : 74 Question Id : 40503610779 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

यदि [t] महत्तम पूर्णांक $\leq$ t है, तो $\int_1^2 |2x - [3x]|\, dx$ का मान बराबर है ________ ।

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

5 to 5.002

Question Number : 75 Question Id : 40503610780 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

If the variance of the terms in an increasing A.P., $b_1, b_2, b_3, \ldots, b_{11}$ is 90, then the common difference of this A.P. is ________.

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

5 to 5.002

Helpstudentpoint.com

Question Number : 75 Question Id : 40503610780 Question Type : SA Display Question Number : Yes
Correct Marks : 4 Wrong Marks : 0

यदि $b_1, b_2, b_3, \ldots, b_{11}$ एक वर्धमान A.P. है और इसके पदों का प्रसरण 90 है, तो इस A.P. का सार्व अन्तर है __________ ।

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

5 to 5.002

Helpstudentpoint.com