National Testing Agency

Question Paper Name:	Paper I EHG 9th Jan 2019 Shift 1 Set 2
Subject Name:	Paper I EHG
Creation Date:	2019-01-09 20:32:59
Duration:	180
Total Marks:	360
Display Marks:	Yes

Paper I

Group Number :	1
Group Id :	416529126
Group Maximum Duration :	0
Group Minimum Duration :	180
Revisit allowed for view? :	No
Revisit allowed for edit? :	No
Break time:	0
Group Marks:	360

Physics

Section Id :	416529160
Section Number :	1
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	30
Number of Questions to be attempted:	30
Section Marks:	120
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	416529169
Question Shuffling Allowed :	Yes

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

Correct Marks : 4 Wrong Marks : 1

A copper wire is stretched to make it 0.5% longer. The percentage change in its electrical resistance if its volume remains unchanged is :

Options :

1. 0.5 %

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3. 2.5 %

4. 2.0 %

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

Correct Marks : 4 Wrong Marks : 1

एक ताँबे के तार को खींचकर 0.5% से लम्बा कर दिया जाता है। यदि इसका आयतन नहीं बदलता है तो, इसके विद्युत-प्रतिरोध में प्रतिशत परिवर्तन का मान होगा :

Options :

1. 0.5 %

2. 1.0 %

3. 2.5 %

4. 2.0 %

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

Correct Marks : 4 Wrong Marks : 1

એક તાંબા (કૉપર)ના તારની ખેંચીને 0.5% જેટલો લાંબો બનાવવામાં આવે છે. જો તેનુ કદ બદલવામાં નહીં આવે તો તેના અવરોધમાં થતો પ્રતિશત ફેરફાર હશે :

Options :

1. 0.5 %

2. 1.0 %

3. 2.5 %

4. 2.0 %

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

Correct Marks : 4 Wrong Marks : 1

A particle is moving with a velocity

$\vec{v} = K(y\hat{i} + x\hat{j})$, where K is a constant.

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1. $y^2 = x^2 + \text{constant}$

2. $y = x^2 + \text{constant}$

3. $y^2 = x + \text{constant}$

4. $xy = \text{constant}$

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

Correct Marks : 4 Wrong Marks : 1

एक कण वेग $\vec{v} = K(y\hat{i} + x\hat{j})$ दर से चल रहा है, जहाँ K एक नियतांक है। इस कण के पथ का व्यापक समीकरण होगा :

Options :

1. $y^2 = x^2 + \text{नियतांक}$

2. $y = x^2 + \text{नियतांक}$

3. $y^2 = x + \text{नियतांक}$

4. $xy = \text{नियतांक}$

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

Correct Marks : 4 Wrong Marks : 1

એક કણ $\vec{v} = K(y\hat{i} + x\hat{j})$ વેગથી ગતિ કરે છે. અહીં K એ અચળાંક છે. તેના પથનું વ્યાપક સમીકરણ _____ છે.

Options :

1. $y^2 = x^2 + \text{અચળાંક}$

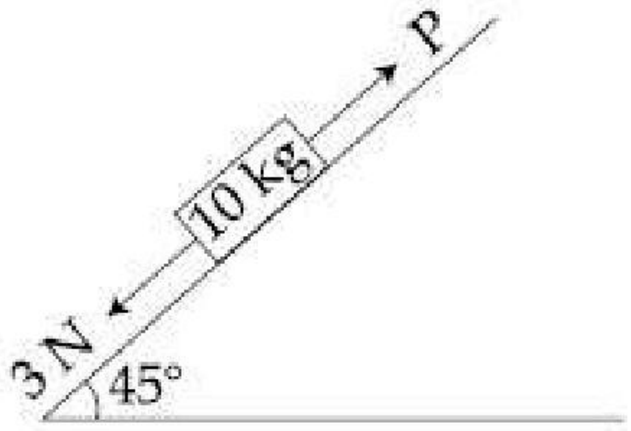
2. $y = x^2 + \text{અચળાંક}$

3. $y^2 = x + \text{અચળાંક}$

4. $xy = \text{અચળાંક}$

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A block of mass 10 kg is kept on a rough inclined plane as shown in the figure. A force of 3 N is applied on the block. The coefficient of static friction between the plane and the block is 0.6. What should be the minimum value of force P, such that the block doesnot move downward ?
(take $g = 10\ ms^{-2}$)



Options :

1. 25 N

2. 32 N

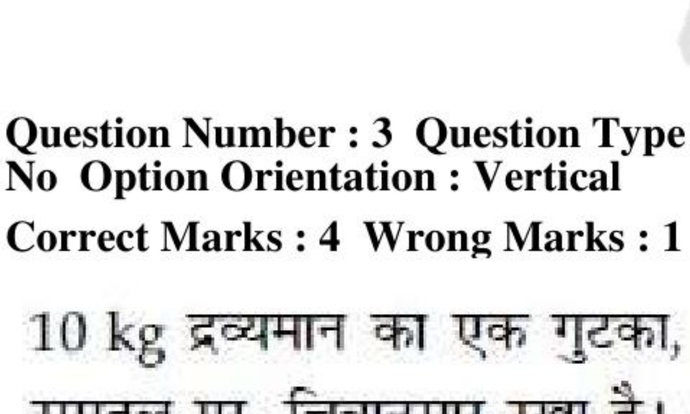
3. 23 N

4. 18 N

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

Correct Marks : 4 Wrong Marks : 1

10 kg द्रव्यमान का एक गुटका, एक खुरदुरे आनत समतल पर, चित्रानुसार रखा है। गुटके पर 3 N का बल लगाते हैं। गुटके तथा आनत-समतल के बीच स्थैतिक घर्षणांक 0.6 है। बल P का न्यूनतम मान क्या होगा जिससे कि गुटका नीचे की ओर गति नहीं करेगा ?
($g = 10\ ms^{-2}$ लीजिये)



Options :

1. 25 N

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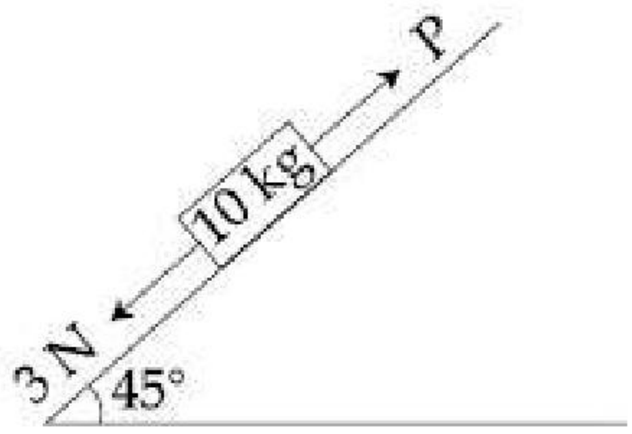
3. 23 N

4. 18 N

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

Correct Marks : 4 Wrong Marks : 1

આકૃતિમાં દર્શાવ્યા મુજબ 10 kg દર ધરાવતા ચોસલાને ખરબચડા ઢોળાવ પર રાખવામાં આવેલ છે. ચોસલા પર 3 N બળ લગાડવામાં આવે છે. સમતલ અને ચોસલા વચ્ચે સ્થિતઘર્ષણાંક 0.6 છે. ચોસલું નીચે તરફ ગતિ ના કરે તે માટે જરૂરી લઘુત્તમ બળ P નું મૂલ્ય કેટલું હશે? ($g = 10\ ms^{-2}$ લો.)



Options :

1. 25 N

2. 32 N

3. 23 N

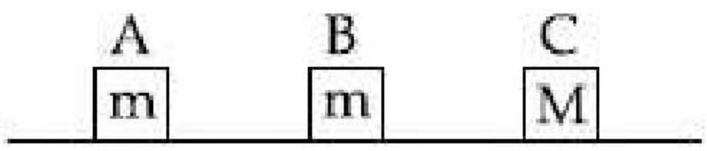
4. 18 N

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

Correct Marks : 4 Wrong Marks : 1

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Three blocks A, B and C are lying on a smooth horizontal surface, as shown in the figure. A and B have equal masses, m while C has mass M. Block A is given an inital speed v towards B due to which it collides with B perfectly inelastically. The combined mass collides with C, also perfectly inelastically $\frac{5}{6}$th of the initial kinetic energy is lost in whole process. What is value of M/m ?



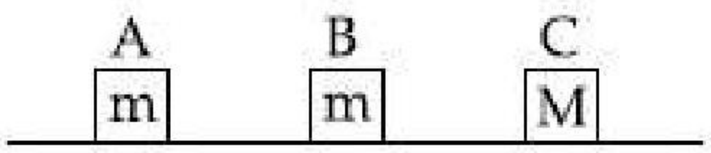
Options :

1. 3
2. 4
3. 2
4. 5

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

Correct Marks : 4 Wrong Marks : 1

चित्रानुसार एक चिकने क्षैतिज समतल पर तीन गुटके A, B एवं C रखे हैं। A एवं B का द्रव्यमान बराबर तथा m है, जबकि C का द्रव्यमान M है। गुटके A को एक आरम्भिक गति v, B की ओर दी जाती जिससे यह B से एक पूर्णतया अप्रत्यास्थ टक्कर करता है। यह संयुक्त द्रव्यमान गुटके C से भी एक पूर्णतया अप्रत्यास्थ टक्कर करता है। इन टक्करों में आरम्भिक गतिज ऊर्जा का $\frac{5}{6}$ भाग क्षयित हो जाता है। M/m का मान होगा :



Options :

1. 3
2. 4

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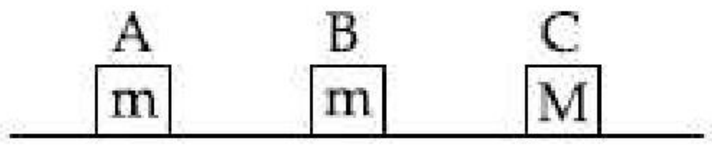
4. 5

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

Correct Marks : 4 Wrong Marks : 1

આકૃતિમાં બતાવ્યા પ્રમાણે ત્રણ ચોસલા A, B અને C ને લીસી સમક્ષિતિજ સપાટી પર મુકવામાં આવેલા છે. A અને B નું એકસરખુ દળ m છે જ્યારે C નું દળ M છે. ચોસલા A ને ચોસલા B તરફ પ્રારંભિક ઝડપ v, આપવામાં આવે છે જેને લીધે એ ચોસલા B જોડે સંપૂર્ણ અસ્થિસ્થાપક અથડામણ અનુભવે છે. આ સંયુક્ત દળ પણ ચોસલા C સાથે સંપૂર્ણ અસ્થિતિસ્થાપક અથડામણ અનુભવે છે.

અને આ આખી ઘટનામાં પ્રારંભિક ગતિ ઊર્જા $\frac{5}{6}$ ભાગ જેટલી ઊર્જાનો વ્યય થાય છે. M/m નું મૂલ્ય શું હશે?



Options :

1. 3

2. 4

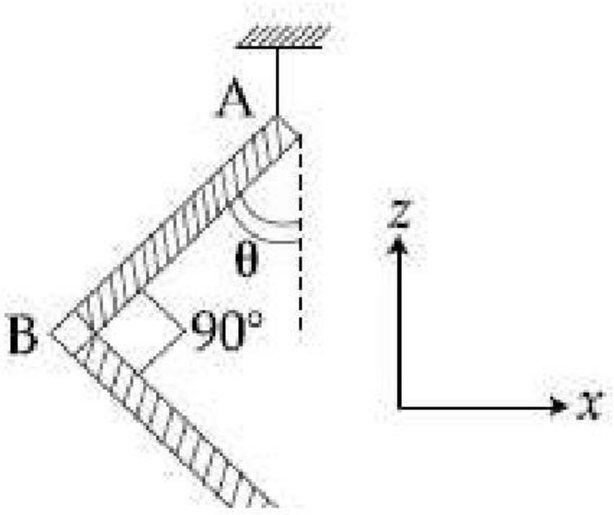
3. 2

4. 5

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

Correct Marks : 4 Wrong Marks : 1

An L-shaped object, made of thin rods of uniform mass density, is suspended with a string as shown in figure. If AB = BC, and the angle made by AB with downward vertical is θ, then :



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1. $\tan\theta = \frac{1}{2}$

2. $\tan\theta = \frac{1}{3}$

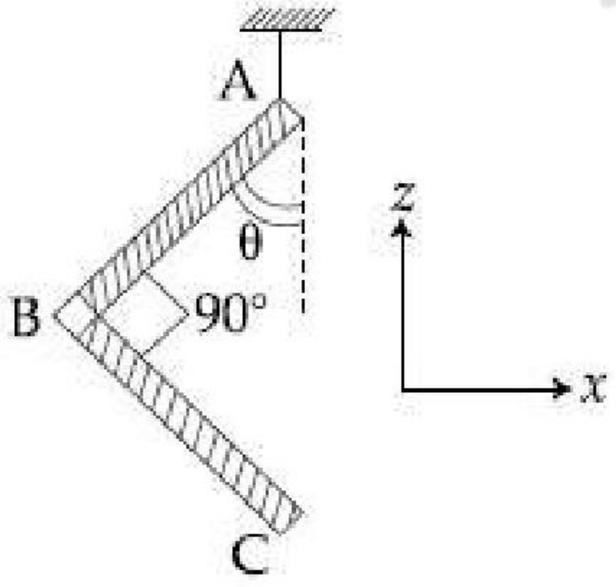
3. $\tan\theta = \frac{2}{\sqrt{3}}$

4. $\tan\theta = \frac{1}{2\sqrt{3}}$

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

Correct Marks : 4 Wrong Marks : 1

एकसमान द्रव्यमान घनत्व की छड़ों से बनायी हुई L-की आकृति के एक वस्तु को चित्रानुसार, एक डोरी से लटकाया गया है। यदि $AB = BC$, तथा AB द्वारा ऊर्ध्वाधर निम्न दिशा से बनाया कोण θ है, तो :



Options :

1. $\tan\theta = \frac{1}{2}$

2. $\tan\theta = \frac{1}{3}$

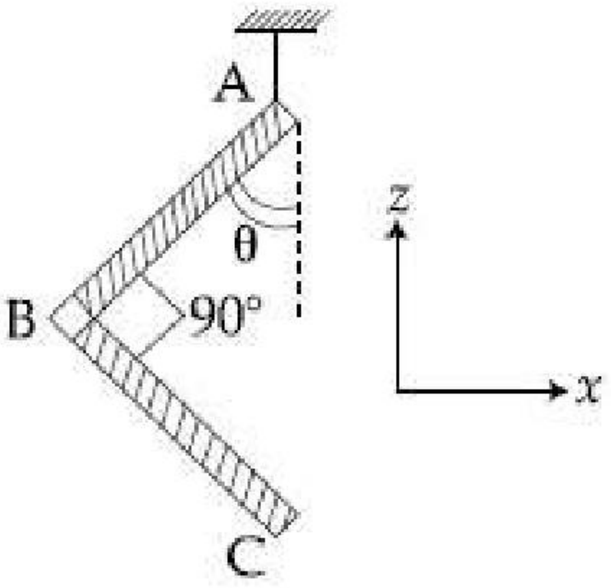
3. $\tan\theta = \frac{2}{\sqrt{3}}$

4. $\tan\theta = \frac{1}{2\sqrt{3}}$

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Correct Marks : 4 Wrong Marks : 1

એકસમાન દળ ઘનતા ધરાવતા પાતળા સળીયામાંથી L- આકારની એક વસ્તુ બનાવવામાં આવે છે જેને દોરી વડે આકૃતિમાં બતાવ્યા પ્રમાણે લટકાવવામાં આવી છે. જો $AB = BC$ હોય અને AB થી અધોદિશામાં બનતો કોણ θ હોય તો :



Options :

1. $\tan\theta = \frac{1}{2}$

2. $\tan\theta = \frac{1}{3}$

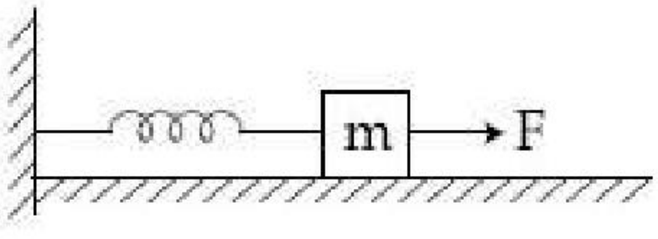
3. $\tan\theta = \frac{2}{\sqrt{3}}$

4. $\tan\theta = \frac{1}{2\sqrt{3}}$

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

Correct Marks : 4 Wrong Marks : 1

A block of mass m, lying on a smooth horizontal surface, is attached to a spring (of negligible mass) of spring constant k. The other end of the spring is fixed, as shown in the figure. The block is initally at rest in its equilibrium position. If now the block is pulled with a constant force F, the maximum speed of the block is :



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1. $\frac{2F}{\sqrt{mk}}$

2. $\frac{F}{\pi\sqrt{mk}}$

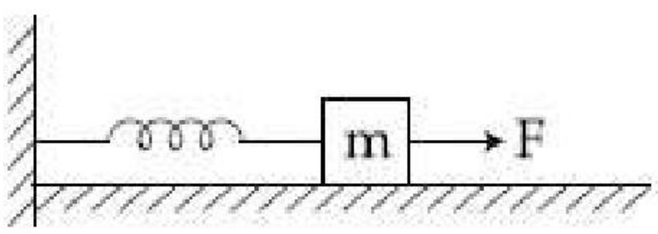
3. $\frac{F}{\sqrt{mk}}$

4. $\frac{\pi F}{\sqrt{mk}}$

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

Correct Marks : 4 Wrong Marks : 1

चिकनी सतह पर रखे m द्रव्यमान के एक गुटके को स्प्रिंग नियतांक k की एक कमानी (जिसका द्रव्यमान नगण्य है) से जोड़ा गया है। कमानी का दूसरा सिरा चित्रानुसार, अचल है। आरम्भ में गुटका अपनी साम्यावस्था में स्थायी है। यदि गुटके को एक नियत बल F से खींचा जाये तो गुटके की अधिकतम चाल होगी :



Options :

1. $\frac{2F}{\sqrt{mk}}$

2. $\frac{F}{\pi\sqrt{mk}}$

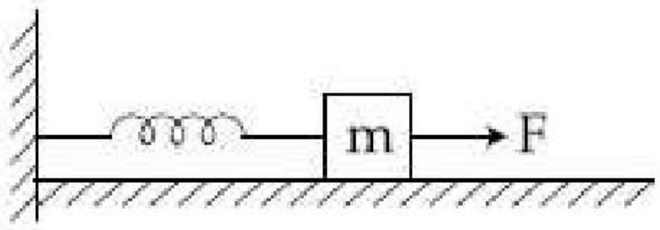
3. $\frac{F}{\sqrt{mk}}$

4. $\frac{\pi F}{\sqrt{mk}}$

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

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m દળ ધરાવતા એક ચોસલાને k સ્પ્રિંગ અચળાંક ધરાવતી એક દળરહિત સ્પ્રિંગ વડે જોડવામાં આવેલ છે. આ ચોસલાને લીસી સમક્ષિતિજ સપાટી પર મુકવામાં આવે છે અને સ્પ્રિંગના બીજા છેડાને આકૃતિમાં બતાવ્યા પ્રમાણે જડવામાં આવેલ છે. જો અચળ બળથી ચોસલાને ખેંચવામાં આવે તો ચોસલા દ્વારા ધારણ કરવામાં આવતી મહત્તમ ઝડપ _____ છે.



Options :

1. $\frac{2F}{\sqrt{mk}}$

2. $\frac{F}{\pi\sqrt{mk}}$

3. $\frac{F}{\sqrt{mk}}$

4. $\frac{\pi F}{\sqrt{mk}}$

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

Correct Marks : 4 Wrong Marks : 1

If the angular momentum of a planet of mass m, moving around the Sun in a circular orbit is L, about the center of the Sun, its areal velocity is :

Options :

1. $\frac{L}{m}$

2. $\frac{2L}{m}$

3. $\frac{L}{2m}$

4. $4L$

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

Correct Marks : 4 Wrong Marks : 1

यदि सूर्य के परितः वृत्तीय कक्ष में घूमते हुए द्रव्यमान m के एक ग्रह का, सूर्य के केन्द्र के सापेक्ष, कोणीय संवेग L है तो, इसकी क्षेत्रीय गति होगी :

Options :

1. $\frac{L}{m}$

2. $\frac{2L}{m}$

3. $\frac{L}{2m}$

4. $\frac{4L}{m}$

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

Correct Marks : 4 Wrong Marks : 1

m દળ ધરાવતો એક ગ્રહ સૂર્યની ફરતે વર્તુળાકાર કક્ષામાં ભ્રમણ કરે છે. જો સૂર્યના કેન્દ્રની સાપેક્ષે તેનું કોણીય વેગમાન L હોય તો તેનો વેગ _____ છે.

Options :

1. $\frac{L}{m}$

2. $\frac{2L}{m}$

3. $\frac{L}{2m}$

4. $\frac{4L}{m}$

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

Correct Marks : 4 Wrong Marks : 1

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A rod, of length L at room temperature and uniform area of cross section A, is made of a metal having coefficient of linear expansion $\alpha/°C$. It is observed that an external compressive force F, is applied on each of its ends, prevents any change in the length of the rod, when its temperature rises by ΔT K. Young's modulus, Y, for this metal is :

Options :

1. $\frac{F}{A\alpha(\Delta T - 273)}$

2. $\frac{F}{A\alpha\Delta T}$

3. $\frac{F}{2A\alpha\Delta T}$

4. $\frac{2F}{A\alpha\Delta T}$

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

Correct Marks : 4 Wrong Marks : 1

रेखीय प्रसार गुणांक $\alpha/°C$ वाली धातु से बनी लम्बाई L, तथा एक समान अनुप्रस्थ काट के क्षेत्रफल A की एक छड़ को कक्ष तापमान पर रखा गया है। जब एक बाह्य संदाबी बल F को इसके प्रत्येक सिरों पर लगाते हैं, तो ΔT K की तापमान वृद्धि होने पर, छड़ की लम्बाई में कोई परिवर्तन नहीं पाया जाता है। इस धातु का यंग प्रत्यास्थता गुणांक, Y होगा :

Options :

1. $\frac{F}{A\alpha(\Delta T - 273)}$

2. $\frac{F}{A\alpha\Delta T}$

3. $\frac{F}{2A\alpha\Delta T}$

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4. $\frac{2F}{A\alpha\Delta T}$

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

Correct Marks : 4 Wrong Marks : 1

$\alpha/^{\circ}C$ રેખીય પ્રસરણાંક ધરાવતી ધાતુમાંથી L લંબાઈ અને A આડછેદ ધરાવતા એક ધાતુના સળીયાને ઓરડાના તાપમાને બનાવવામાં આવે છે. એવું જોવા મળ્યુ કે જ્યારે સળીયાના બન્ને છેડા પર બાહ્ય દબનીય બળ F લગાવી તેનું તાપમાન ΔT K કેલ્વિન જેટલું વધારવામાં આવે તો પણ સળીયાની લંબાઇમાં કોઇ ફેરફાર થતો નથી. આ ધાતુ માટે યંગ મોડ્યુલસ Y હશે :

Options :

1. $\frac{F}{A\alpha(\Delta T - 273)}$

2. $\frac{F}{A\alpha\Delta T}$

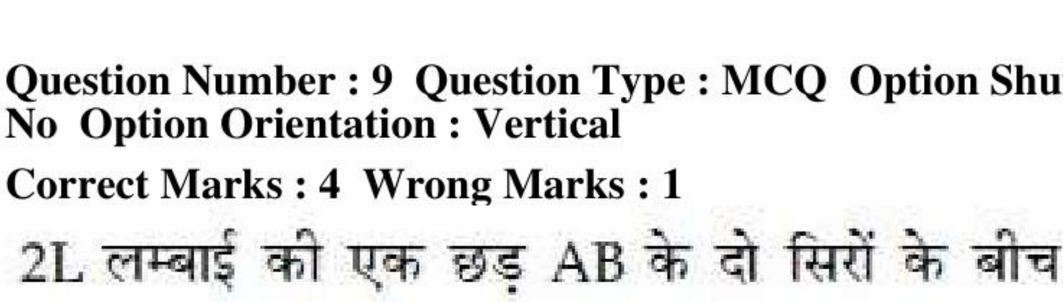
3. $\frac{F}{2A\alpha\Delta T}$

4. $\frac{2F}{A\alpha\Delta T}$

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

Correct Marks : 4 Wrong Marks : 1

2L लम्बाई की एक छड़ AB के दो सिरों के बीच तापान्तर 120°C रखा गया है। एक और इसी अनुप्रस्थ काट की $\frac{3L}{2}$ लम्बाई की मुड़ी हुयी छड़ PQ को चित्रानुसार AB से जोड़ा गया है। स्थिरावस्था में P तथा Q के बीच तापमान के अन्तर का सन्निकट मान होगा :



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1. 60 ℃

2. 75 ℃

3. 35 ℃

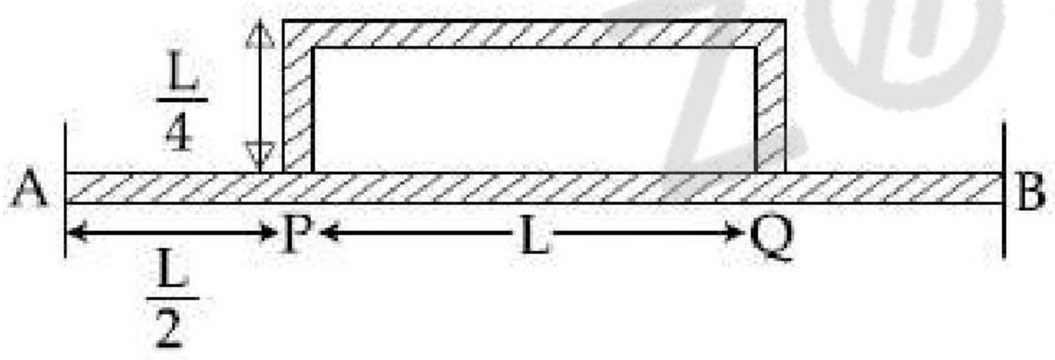
4. 45 ℃

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

Correct Marks : 4 Wrong Marks : 1

2L લંબાઇના એક સમાન સળીયા AB ના બન્ને છેડા વચ્ચે તાપમાનનો તફાવત 120°C રાખવામાં આવે છે.

AB સળીયા જેટલોજ આડછેદ ધરાવતો અને $\frac{3L}{2}$ લંબાઇનો એક બીજા વાંકા સળીયા PQ ને આકૃતિમાં બતાવ્યા પ્રમાણે સળીયા AB સાથે જોડવામાં આવે છે. સ્થાયી અવસ્થામાં P અને Q વચ્ચે તાપમાનનો તફાવત _____ ની નજીકનો હશે.



Options :

1. 60 ℃

2. 75 ℃

3. 35 ℃

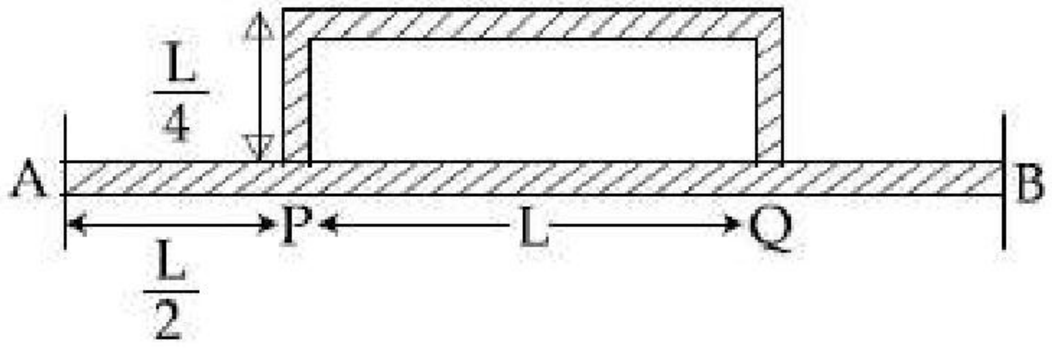
4. 45 ℃

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

Correct Marks : 4 Wrong Marks : 1

ZOLLEGE.in

Temperature difference of 120°C is maintained between two ends of a uniform rod AB of length 2L. Another bent rod PQ, of same cross-section as AB and length $\frac{3L}{2}$, is connected across AB (See figure). In steady state, temperature difference between P and Q will be close to :



Options :

1. 60 ℃

2. 75 ℃

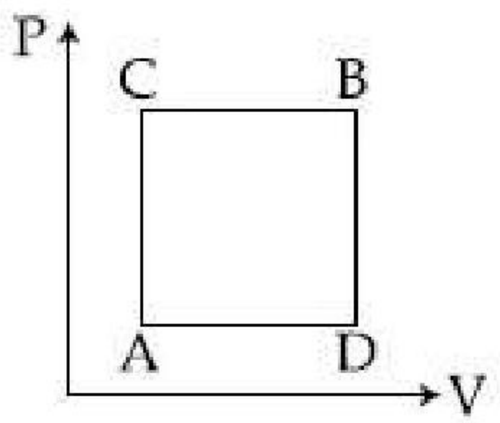
3. 35 ℃

4. 45 ℃

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

Correct Marks : 4 Wrong Marks : 1

A gas can be taken from A to B via two different processes ACB and ADB.



When path ACB is used 60 J of heat flows into the system and 30 J of work is done by the system. If path ADB is used work done by the system is 10 J. The heat Flow into the system in path ADB is :

Options :

1. 100 J

2. 20 J

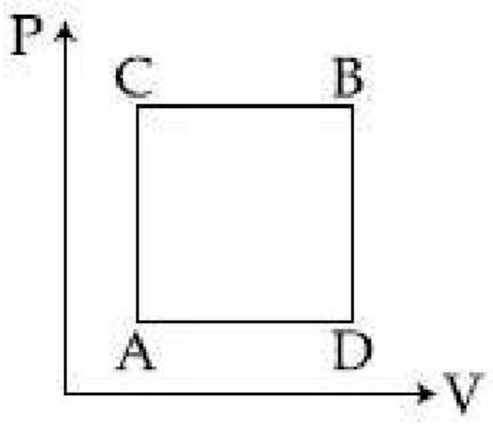
ZOLLEGE.in

4. 40 J

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

Correct Marks : 4 Wrong Marks : 1

एक गैस को अवस्था A से B में दो भिन्न प्रक्रमों ACB तथा ADB द्वारा ले जा सकते हैं। प्रक्रम ACB में 60 J ऊष्मा निकाय में जाती है तथा निकाय द्वारा 30 J कार्य किया जाता है। यदि प्रक्रम ADB में निकाय द्वारा 10 J कार्य किया जाता है तो इसमें, निकाय में ऊष्मा प्रवाह का मान होगा :



Options :

1. 100 J

2. 20 J

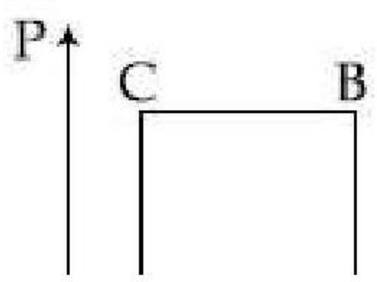
3. 80 J

4. 40 J

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

Correct Marks : 4 Wrong Marks : 1

બે જુદા પથ (ACB અને ADB) પરથી એક વાયુને A થી B સુધી લઇ જઇ શકાય છે. જ્યારે પથ ACB અનુસરવામાં આવે ત્યારે પ્રણાલીમાં પ્રવેશતી ઊષ્મા 60 J છે અને પ્રણાલી દ્વારા થતું કાર્ય 30 J છે. જ્યારે પથ ADB અનુસરવામાં આવે છે ત્યારે પ્રણાલી દ્વારા થતું કાર્ય 10 J હોય તો આ પથ અનુસાર પ્રણાલીમાં પ્રવેશતી ઊષ્મા _____ છે.



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1. 100 J

2. 20 J

3. 80 J

4. 40 J

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

Correct Marks : 4 Wrong Marks : 1

एक पात्र में 2 मोल हीलियम (परमाणु द्रव्यमान = 4 u) तथा 1 मोल आर्गन (परमाणु द्रव्यमान = 40 u) गैसों का मिश्रण 300 K पर रखा गया है। परमाणुओं के वर्ग माध्य मूल वेगों के अनुपात, $\left[\frac{V_{rms}(\text{हीलियम})}{V_{rms}(\text{आर्गन})}\right]$, का निकट मान होगा :

Options :

1. 0.32

2. 0.45

3. 2.24

4. 3.16

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

Correct Marks : 4 Wrong Marks : 1

A mixture of 2 moles of helium gas (atomic mass = 4 u), and 1 mole of argon gas (atomic mass = 40 u) is kept at 300 K in a container. The ratio of their rms speeds $\left[\frac{V_{rms}(\text{helium})}{V_{rms}(\text{argon})}\right]$, is close to :

Options :

1. 0.32

2. 0.45

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4. 3.16

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

Correct Marks : 4 Wrong Marks : 1

2 મોલ હીલિયમ વાયુ (પરમાણુ દળ $=4\ u$) અને એક મોલ આર્ગન વાયુ (પરમાણુ દળ $=40\ u$) ના મિશ્રણને એક પાત્રમાં $300\ K$ એ રાખવામાં આવે છે. તેની rms ઝડપનો ગુણોત્તર $\left[\frac{V_{rms}(helium)}{V_{rms}(argon)}\right]$ ———— ની નજીક છે.

Options :

1. 0.32

2. 0.45

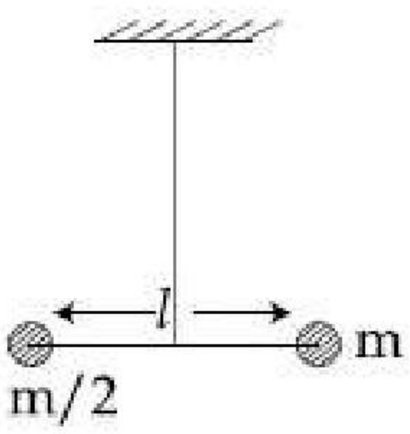
3. 2.24

4. 3.16

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

Correct Marks : 4 Wrong Marks : 1

Two masses m and $\frac{m}{2}$ are connected at the two ends of a massless rigid rod of length l. The rod is suspended by a thin wire of torsional constant k at the centre of mass of the rod-mass system(see figure). Because of torsional constant k, the restoring torque is $\tau = k\theta$ for angular displacement θ. If the rod is rotated by θ_0 and released, the tension in it when it passes through its mean position will be :



Options :

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2. $\frac{k\theta_0^2}{l}$

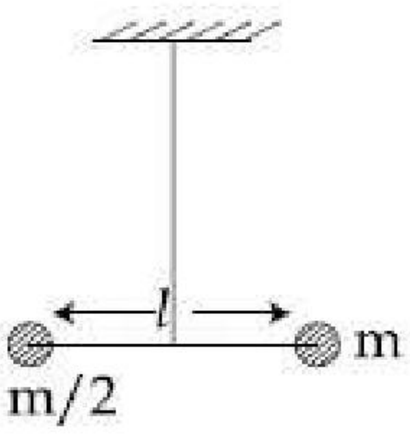
3. $\frac{2k\theta_0^2}{l}$

4. $\frac{3k\theta_0^2}{l}$

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

Correct Marks : 4 Wrong Marks : 1

द्रव्यमान m तथा $\frac{m}{2}$ के दो पिण्डों को एक लम्बाई 'l' की द्रव्यमानरहित छड़ के सिरों पर जोड़ा गया है। इस छड़ को एक मरोड़ांक k के तार से, छड़-द्रव्यमान संयोजन के द्रव्यमान केन्द्र से, चित्रानुसार, लटकाया गया है। मरोड़ांक k के कारण छड़ के कोणीय विस्थापन θ से, उस पर बल आघूर्ण $\tau = k\theta$ लगता है। यदि छड़ को θ_0 कोण से घुमा कर छोड़ देते हैं तो, इसमें तनाव का मान, जब छड़ अपनी माध्य अवस्था से गुजरती है, होगा :



Options :

1. $\frac{k\theta_0^2}{2l}$

2. $\frac{k\theta_0^2}{l}$

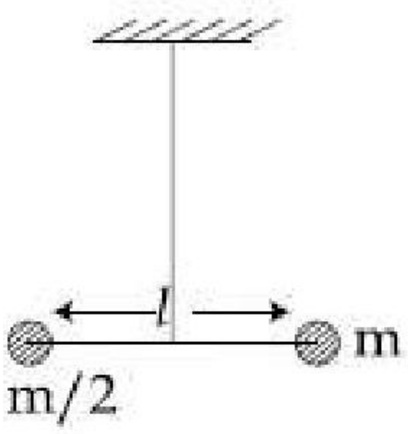
3. $\frac{2k\theta_0^2}{l}$

4. $\frac{3k\theta_0^2}{l}$

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Correct Marks : 4 Wrong Marks : 1

'l' લંબાઇના દળરહિત દૃઢ સળીયાના બન્ને છેડા પર બે દળો m અને $\frac{m}{2}$ લગાવવમાં આવ્યા છે. જેને આકૃતિમાં બતાવ્યા પ્રમાણે k વિમોટાંક (torsional constant) વાળા પાતળા તારથી આ સળીયા -દળ તંત્રના દ્રવ્યમાન કેન્દ્રથી લટકાવવામાં આવે છે. (આકૃતિ જુઓ) વિમોટાંક k ના કારણે θ જેટલા કોણીય સ્થાનાંતર માટે પુનઃ સ્થાપિત ટાર્ક $\tau = k\theta$ છે. જ્યારે સળીયાને θ_0 જેટલું ભ્રમણ કરાવી મુક્ત કરવામાં આવે છે ત્યારે તે તેની મધ્ય અવસ્થામાંથી પાસ થાય છે તે વખતે તારમાં ઉદ્‌ભવતું તણાવ _____ હશે.



Options :

1. $\frac{k\theta_0^2}{2l}$

2. $\frac{k\theta_0^2}{l}$

3. $\frac{2k\theta_0^2}{l}$

4. $\frac{3k\theta_0^2}{l}$

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

Correct Marks : 4 Wrong Marks : 1

A heavy ball of mass M is suspended from the ceiling of a car by a light string of mass m (m<<M). When the car is at rest, the speed of transverse waves in the string is 60 ms^{-1}. When the car has acceleration a, the wave-speed increases to 60.5 ms^{-1}. The value of a, in terms of gravitational

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1. $\frac{g}{10}$

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

3. $\frac{g}{20}$

4. $\frac{g}{30}$

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

Correct Marks : 4 Wrong Marks : 1

द्रव्यमान M की एक भारी गेंद को एक कार की छत से एक द्रव्यमान m की हल्की डोरी ($m<<M$) से लटकाया गया है। जब कार स्थिरावस्था में है तो डोरी में अनुप्रस्थ तरंगों की गति $60\ ms^{-1}$ है। जब कार का त्वरण a है, तरंग गति $60.5\ ms^{-1}$ हो जाती है। a का, गुरुत्वीय त्वरण g के रूप में, सन्निकट मान होगा :

Options :

1. $\frac{g}{10}$

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

3. $\frac{g}{20}$

4. $\frac{g}{30}$

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

Correct Marks : 4 Wrong Marks : 1

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કારની છત પરથી m દળવાળી હલકી દોરી વડે એક M દળવાળા ભારે દડાને લટકાવવામાં આવે છે (m<<M). જ્યારે કાર સ્થિર હોય ત્યારે દોરી પર રચાતા લંબગત તરંગોની ઝડપ 60 ms^{-1} છે. જ્યારે કાર 'a' જેટલા પ્રવેગથી પ્રવેગીત થાય છે ત્યારે તરંગ ઝડપ વધીને 60.5 ms^{-1} થાય છે. ગુરુત્વીય પ્રવેગ g ના પદમાં 'a' નું મૂલ્ય _____ ની નજીકનું હશે.

Options :

1. $\frac{g}{10}$

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

3. $\frac{g}{20}$

4. $\frac{g}{30}$

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

Correct Marks : 4 Wrong Marks : 1

Three charges +Q, q, +Q are placed respectively, at distance, 0, d/2 and d from the origin, on the x-axis. If the net force experienced by +Q, placed at $x = 0$, is zero, then value of q is :

Options :

1. $+Q/4$

2. $-Q/4$

3. $+Q/2$

4. $-Q/2$

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

Correct Marks : 4 Wrong Marks : 1

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$+Q$, q तथा $+Q$ के तीन आवेशों को x-अक्ष पर मूलबिन्दु से क्रमशः दूरी $0, d/2$ तथा d पर रखा गया है। यदि $x=0$ पर रखे $+Q$ आवेश पर कुल बल शून्य है, तो q का मान होगा :

Options :

1. $+Q/4$

2. $-Q/4$

3. $+Q/2$

4. $-Q/2$

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

Correct Marks : 4 Wrong Marks : 1

ઉગમ બિંદુથી x- અક્ષ પર ત્રણ વિદ્યુતભારો $+Q$, q અને $+Q$ અનુક્રમે $0, d/2$ અને d આગળ મુકેલ છે. જો $x=0$ આગળ મુકેલ $+Q$ દ્વારા અનુભવાતું કુલ બળ શૂન્ય હોય તો q નું મૂલ્ય હશે :

Options :

1. $+Q/4$

2. $-Q/4$

3. $+Q/2$

4. $-Q/2$

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

Correct Marks : 4 Wrong Marks : 1

For a uniformly charged ring of radius R, the electric field on its axis has the largest magnitude at a distance h from its centre. Then value of h is :

Options :

1. R

2. $R\sqrt{2}$

ZOLLEGE.in

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

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

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

Correct Marks : 4 Wrong Marks : 1

त्रिज्या R के एक एकसमान आवेशित वलय के विद्युत क्षेत्र का मान उसके अक्ष पर केन्द्र से h दूरी पर अधिकतम है। h का मान होगा :

Options :

1. R

2. $R\sqrt{2}$

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

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

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

Correct Marks : 4 Wrong Marks : 1

R ત્રિજ્યા વાળી એક સમાન રીતે વિદ્યુતભારિત થયેલી રિંગની અક્ષ પર લાગતું વિદ્યુતક્ષેત્રનું મહત્તમ મૂલ્ય તેના કેન્દ્રથી h અંતર આગળ છે. h નું મૂલ્ય હશે :

Options :

1. R

2. $R\sqrt{2}$

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

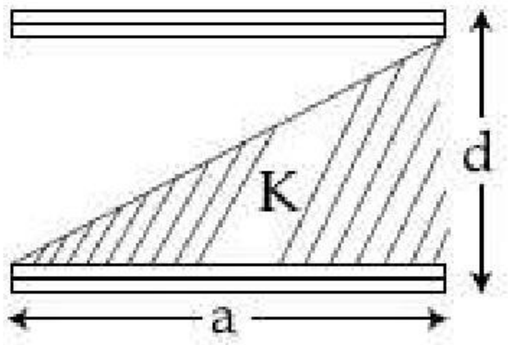
4. $\frac{R}{\sqrt{5}}$

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

Correct Marks : 4 Wrong Marks : 1

A parallel plate capacitor is made of two square plates of side 'a', separated by a distance d (d<<a). The lower triangular portion is filled with a dielectric of dielectric constant K, as shown in the figure. Capacitance of this capacitor is :



Options :

1. $\frac{1}{2}\frac{K\epsilon_0 a^2}{d}$

2. $\frac{K\epsilon_0 a^2}{d}\ln K$

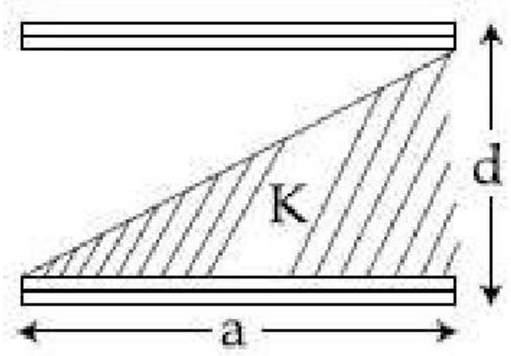
3. $\frac{K\epsilon_0 a^2}{2d(K+1)}$

4. $\frac{K\epsilon_0 a^2}{d(K-1)}\ln K$

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

Correct Marks : 4 Wrong Marks : 1

भुजा a वाली दो वर्गाकार प्लेटों को दूरी d पर रखकर एक समान्तर प्लेट संधारित्र बनाया जाता है। दिया है (d<<a)। इसमें परावैद्युतांक K के परावैद्युत को चित्रानुसार लगाते हैं जिससे इसके निचले त्रिभुजाकार भाग में परावैद्युत पदार्थ रहता है। इस संधारित्र की धारिता होगी :



Options :

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1. $\frac{1}{2}\frac{K\epsilon_0 a^2}{d}$

2. $\frac{K\epsilon_0 a^2}{d}\ln K$

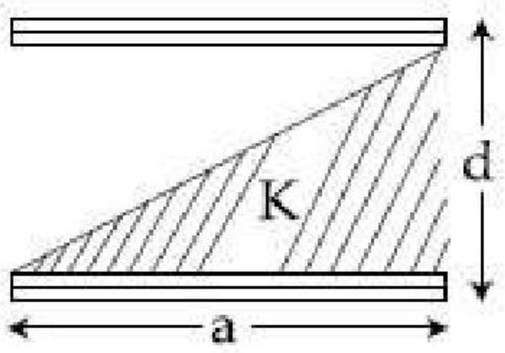
3. $\frac{K\epsilon_0 a^2}{2d(K+1)}$

4. $\frac{K\epsilon_0 a^2}{d(K-1)}\ln K$

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

Correct Marks : 4 Wrong Marks : 1

'a' બાજુવાળી ચોરસ પ્લેટોને d અંતરે રાખી એક સમાંતર પ્લેટ કેપેસિટર બનાવવામાં આવે છે (d<<a) અને આકૃતિમાં બતાવ્યા પ્રમાણે અવાહક એવી રીતે ભરવામાં આવે છે કે જેથી નીચેનો ત્રિકોણ K જેટલા પરાવૈદ્યુતાંક (dielectric) ધરાવતા અવાહકથી ભરેલો છે. આ કેપેસિટરનું કેપેસિટન્સ _____ છે.



Options :

1. $\frac{1}{2}\frac{K\epsilon_0 a^2}{d}$

2. $\frac{K\epsilon_0 a^2}{d}\ln K$

3. $\frac{K\epsilon_0 a^2}{2d(K+1)}$

4. $\frac{K\epsilon_0 a^2}{d(K-1)}\ln K$

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Drift speed of electrons, when 1.5 A of current flows in a copper wire of cross section 5 mm^2, is v. If the electron density in copper is $9 \times 10^{28}/m^3$ the value of v in mm/s is close to (Take charge of electron to be $= 1.6 \times 10^{-19}$ C)

Options :

1. 3

2. 2

3. 0.2

4. 0.02

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

Correct Marks : 4 Wrong Marks : 1

ताँबे के 5 mm^2 अनुप्रस्थ काट के क्षेत्रफल के एक तार से जब 1.5 A की धारा बहती है तो इलेक्ट्रॉनों का अपवाह वेग (drift velocity) v है। यदि ताँबे में इलेक्ट्रॉनों की संख्या का घनत्व $9 \times 10^{28}/m^3$ है, तो v का, mm/s में, सन्निकट मान होगा, (दिया है : इलेक्ट्रॉन का आवेश $= 1.6 \times 10^{-19}$ C)

Options :

1. 3

2. 2

3. 0.2

4. 0.02

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

Correct Marks : 4 Wrong Marks : 1

જ્યારે 5 mm^2 આડછેદ ધરાવતા એક તાંબાના તારમાંથી 1.5 A પ્રવાહ વહે છે ત્યારે ઇલેક્ટ્રોનની ડ્રીફ્ટ ઝડપ (drift speed) v છે. તાંબાની ઇલેક્ટ્રોન ઘનતા $9 \times 10^{28}/m^3$ હોય તો v નું મૂલ્ય _____ mm/s ની નજીકનું છે.

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1. 3

2. 2

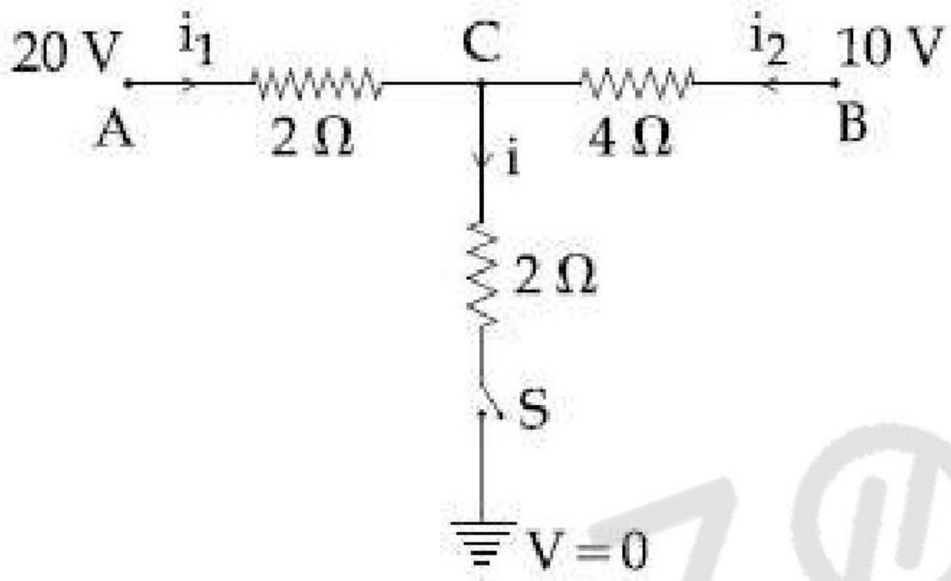
3. 0.2

4. 0.02

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

Correct Marks : 4 Wrong Marks : 1

When the switch S, in the circuit shown, is closed, then the value of current i will be :



Options :

1. 2 A

2. 3 A

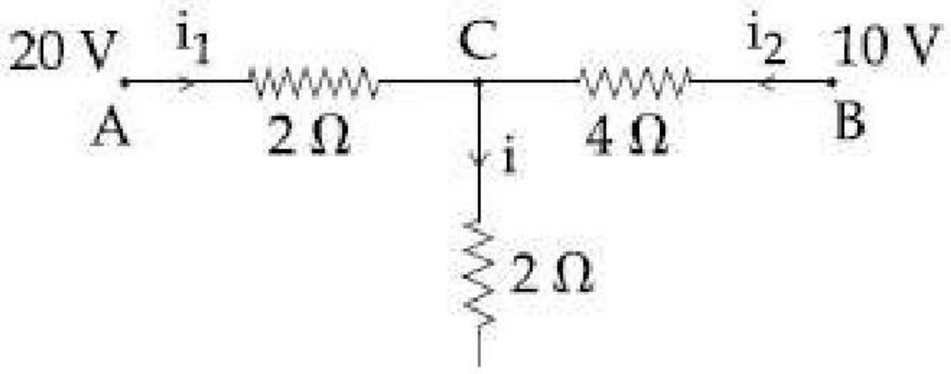
3. 4 A

4. 5 A

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

Correct Marks : 4 Wrong Marks : 1

दिये गये परिपथ में जब स्विच S को बन्द करते हैं, तो धारा i का मान होगा :



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Options :

1. 2 A

2. 3 A

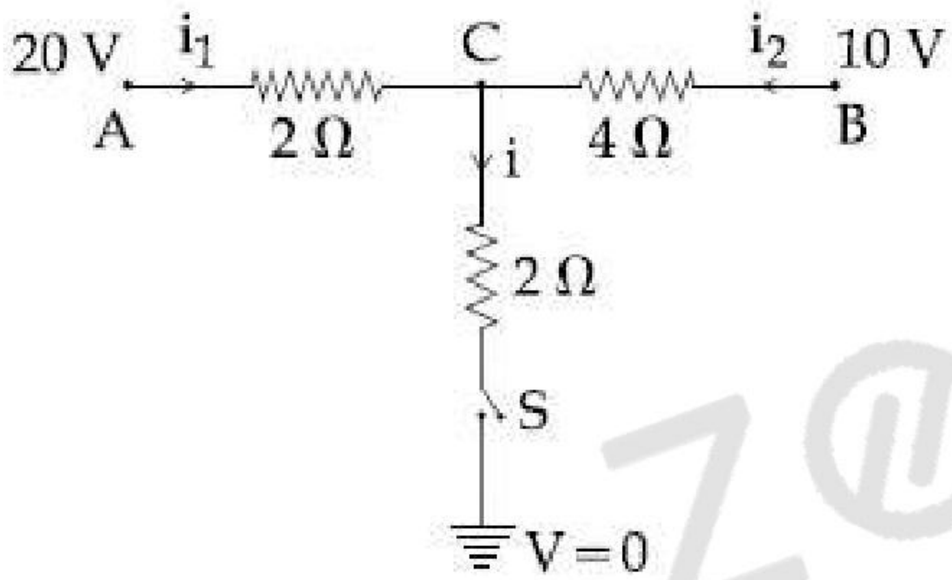
3. 4 A

4. 5 A

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

Correct Marks : 4 Wrong Marks : 1

પરિપથમાં બતાવેલ કળ S જ્યારે બંધ કરવામાં આવે છે ત્યારે પ્રવાહ i નું મૂલ્ય _____ હશે.



Options :

1. 2 A

2. 3 A

3. 4 A

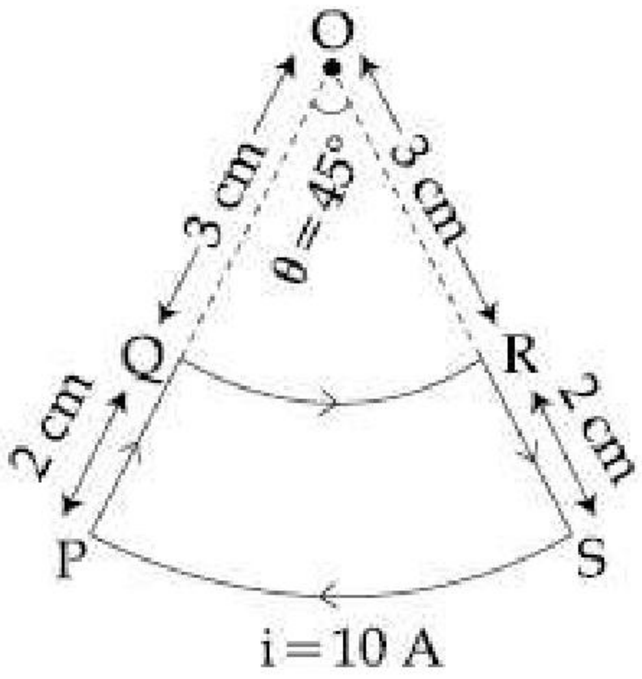
4. 5 A

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

Correct Marks : 4 Wrong Marks : 1

ZOLLEGE.in

A current loop, having two circular arcs joined by two radial lines is shown in the figure. It carries a current of 10 A. The magnetic field at point O will be close to :



Options :

1. 1.5×10^{-5} T

2. 1.5×10^{-7} T

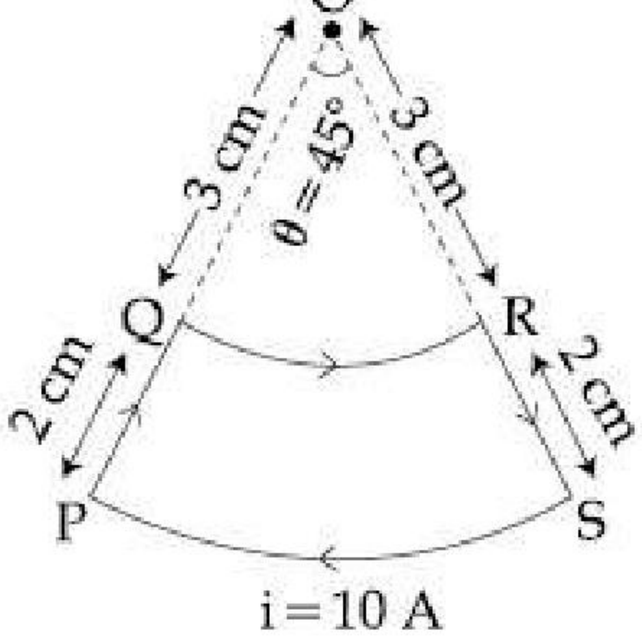
3. 1.0×10^{-5} T

4. 1.0×10^{-7} T

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

Correct Marks : 4 Wrong Marks : 1

दो वृत्ताकार चापों तथा त्रिज्यक रेखाओं से बना एक धारा पाश, चित्र में दिखाया है। पाश में 10 A की धारा प्रवाहित हो रही है। बिन्दु O पर चुम्बकीय क्षेत्र का सन्निकट मान होगा :



Options :

1. 1.5×10^{-5} T

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2. 1.5×10^{-7} T

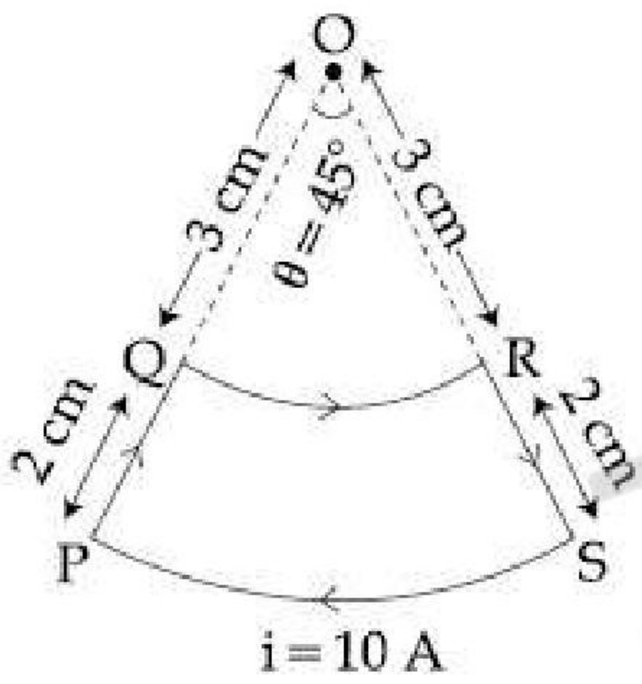
3. 1.0×10^{-5} T

4. 1.0×10^{-7} T

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

Correct Marks : 4 Wrong Marks : 1

આકૃતિમાં બે ત્રિજ્યાવર્તી રેખાથી જોડેલ બે વર્તુળાકાર ચાપ ધરાવતો એક પ્રવાહ ગાળો દર્શાવેલ છે. તેમાંથી 10 A પ્રવાહ પસાર થાય છે. બિંદુ O આગળ ચુંબકીયક્ષેત્ર _____ ની નજીક હશે.



Options :

1. 1.5×10^{-5} T

2. 1.5×10^{-7} T

3. 1.0×10^{-5} T

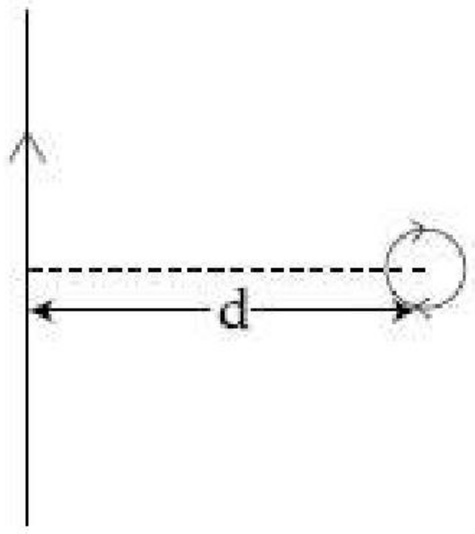
4. 1.0×10^{-7} T

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

Correct Marks : 4 Wrong Marks : 1

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An infinitely long current carrying wire and a small current carrying loop are in the plane of the paper as shown. The radius of the loop is a and distance of its centre from the wire is d (d>>a). If the loop applies a force F on the wire then :



Options :

1. $F=0$

2. $F \propto \left(\frac{a}{d}\right)$

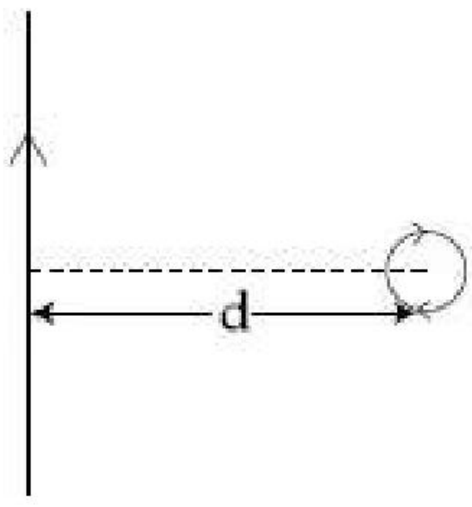
3. $F \propto \left(\frac{a}{d}\right)^2$

4. $F \propto \left(\frac{a^2}{d^3}\right)$

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

Correct Marks : 4 Wrong Marks : 1

एक अनन्त लंबाई का धारावाहक तार तथा एक छोटा सा धारावाहक पाश कागज के समतल में चित्रानुसार रखे हैं। पाश की त्रिज्या a तथा तार से इसके केन्द्र की दूरी d है (d>>a)। यदि पाश द्वारा तार पर बल F है तो :



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1. $F=0$

2. $F \propto \left(\frac{a}{d}\right)$

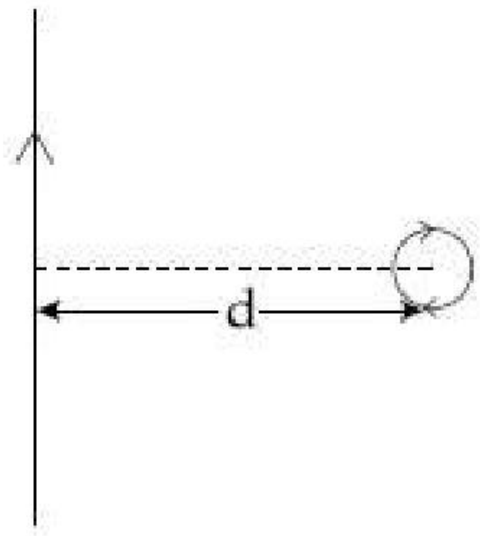
3. $F \propto \left(\frac{a}{d}\right)^2$

4. $F \propto \left(\frac{a^2}{d^3}\right)$

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

Correct Marks : 4 Wrong Marks : 1

આકૃતિમાં બતાવ્યા પ્રમાણે પેપરના સમતલમાં એક અનંત લંબાઇના વિદ્યુત પ્રવાહ ધારીત તાર અને નાનો પ્રવાહ ધારિત ગાળો આપેલ છે. ગાળાની ત્રિજ્યા a છે અને તેના કેન્દ્રથી તાર સુધીનું અંતર d, (d>>a) છે. જો ગાળો તાર પર F બળ લગાવે તો :



Options :

1. $F=0$

2. $F \propto \left(\frac{a}{d}\right)$

3. $F \propto \left(\frac{a}{d}\right)^2$

4. $F \propto \left(\frac{a^2}{d^3}\right)$

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Correct Marks : 4 Wrong Marks : 1

0.2 m લંબાઈ, 100 આંટા અને 5.2 A પ્રવાહ ધરાવતા એક સોલેનોઇડમાં એક ગજિયા ચુંબકને મુકતા તે વિચુંબકીય થાયે છે. આ ગજિયા ચુંબકની નીગ્રાહિતા (coericivity) _____ છે.

Options :

1. 1200 A/m

2. 520 A/m

3. 285 A/m

4. 2600 A/m

Question Number : 21 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A bar magnet is demagnetized by inserting it inside a solenoid of length 0.2 m, 100 turns, and carrying a current of 5.2 A. The coercivity of the bar magnet is :

Options :

1. 1200 A/m

2. 520 A/m

3. 285 A/m

4. 2600 A/m

Question Number : 21 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

एक छड़ चुम्बक को 0.2 मी. लम्बी तथा 100 फेरों वाली एक परिनालिका के अन्दर रखकर विचुम्बकित करते हैं। परिनालिका में 5.2 A धारा प्रवाहित हो रही है। छड़ चुम्बक की निग्राहिता है :

Options :

1. 1200 A/m

2. 520 A/m

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3. 285 A/m

4. 2600 A/m

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

Correct Marks : 4 Wrong Marks : 1

A conducting circular loop made of a thin wire, has area 3.5×10^{-3} m^2 and resistance 10 Ω. It is placed perpendicular to a time dependent magnetic field $B(t) = (0.4T)\sin(50\pi t)$. The field is uniform in space. Then the net charge flowing through the loop during t = 0 s and t = 10 ms is close to :

Note: For this question, discrepancy is found in question/answer. Full Marks is being awarded to all candidates.

Options :

1. 6 mC

2. 7 mC

3. 14 mC

4. 21 mC

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

Correct Marks : 4 Wrong Marks : 1

एक पतले चालक तार से बने हुए वृत्ताकार पाश का क्षेत्रफल 3.5×10^{-3} m^2 तथा प्रतिरोध 10 Ω है। इसे एक लम्बवत् चुम्बकीय क्षेत्र, जो कि समय पर निर्भर किंतु एकसमान है, $B(t) = (0.4T)\sin(50\pi t)$ में रखा गया है। समय t = 0 s से t = 10 ms तक पाश में बहने वाले नेट आवेश का मान होगा :

Note: For this question, discrepancy is found in question/answer. Full Marks is being awarded to all candidates.

Options :

1. 6 mC

2. 7 mC

ZOLLEGE.in

4. 21 mC

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

Correct Marks : 4 Wrong Marks : 1

આડછેદ $3.5 \times 10^{-3}\,m^2$ અને અવરોધ $10\,\Omega$ ધરાવતા એક પાતળા તારમાંથી એક વાહક વર્તુળાકાર ગાળો બનાવવામાં આવે છે. જેને સમય સાથે બદલાતા ચુંબકીયક્ષેત્ર $B(t) = (0.4T)\sin(50\pi t)$ ને લંબ મુકવામાં આવે છે. આ ક્ષેત્ર અવકાશમાં એક સમાન છે. સમય $t = 0\,s$ થી $t = 10\,ms$ વચ્ચે ગાળામાંથી પસાર થતો કુલ વિદ્યુતભાર _____ ની નજીક છે.

Note: For this question, discrepancy is found in question/answer. Full Marks is being awarded to all candidates.

Options :

1. 6 mC

2. 7 mC

3. 14 mC

4. 21 mC

Question Number : 23 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

A plane electromagnetic wave of frequency 50 MHz travels in free space along the positive x-direction. At a particular point in space and time, $\vec{E} = 6.3\,\hat{j}$ V/m. The corresponding magnetic field $\vec{B}$, at that point will be :

Options :

1. $6.3 \times 10^{-8}\,\hat{k}\,T$

2. $2.1 \times 10^{-8}\,\hat{k}\,T$

3. $18.9 \times 10^{8}\,\hat{i}\,T$

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4. $18.9 \times 10^{-8}\ \hat{k}\,T$

Question Number : 23 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

आवृत्ति 50 MHz की समतल विद्युत चुम्बकीय तरंग धनात्मक x दिशा की दिशा में, मुक्त आकाश में जा रही है। आकाश में एक निश्चित समय तथा बिन्दु पर $\vec{E} = 6.3\,\hat{j}\ V/m$ है। तो इसके संगत चुम्बकीय क्षेत्र $\vec{B}$ होगा :

Options :

1. $6.3 \times 10^{-8}\ \hat{k}\,T$

2. $2.1 \times 10^{-8}\ \hat{k}\,T$

3. $18.9 \times 10^{8}\ \hat{k}\,T$

4. $18.9 \times 10^{-8}\ \hat{k}\,T$

Question Number : 23 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

50 MHz આવૃત્તિ ધરાવતા સમતલ વિદ્યુતચુંબકીય તરંગ મુક્ત અવકાશમાં x- અક્ષને સમાંતર ગતિ કરે છે. કોઈ ચોક્કસ બિંદુ અને સમયે અવકાશમાં $\vec{E} = 6.3\,\hat{j}\ V/m$ છે. તો આ ચોક્કસ બિંદુએ આનુષાંગિક ચુબંકીય ક્ષેત્ર $\vec{B}$ _____ હશે.

Options :

1. $6.3 \times 10^{-8}\ \hat{k}\,T$

2. $2.1 \times 10^{-8}\ \hat{k}\,T$

3. $18.9 \times 10^{8}\ \hat{k}\,T$

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4. $18.9 \times 10^{-8}\ \hat{k}T$

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

Correct Marks : 4 Wrong Marks : 1

A convex lens is put 10 cm from a light source and it makes a sharp image on a screen, kept 10 cm from the lens. Now a glass block (refractive index 1.5) of 1.5 cm thickness is placed in contact with the light source. To get the sharp image again, the screen is shifted by a distance d. Then d is :

Options :

1. 0

2. 0.55 cm towards the lens

3. 0.55 cm away from the lens

4. 1.1 cm away from the lens

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

Correct Marks : 4 Wrong Marks : 1

एक उत्तल लेंस को एक प्रकाश स्रोत से 10 cm दूरी पर रखने से उसका स्पष्ट प्रतिबिंब लेंस से 10 cm दूरी पर रखी स्क्रीन पर बनता है। जब एक काँच (अपवर्तनांक 1.5) के 1.5 cm मोटे गुटके को प्रकाश स्रोत के बिलकुल सटाकर रखते हैं तो, पुनः स्पष्ट प्रतिबिम्ब को पाने के लिये स्क्रीन को d दूरी से खिसकाना पड़ता है। तो d का मान होगा :

Options :

1. शून्य

2. 0.55 cm लेंस की तरफ

3. 0.55 cm लेंस से दूर

4. 1.1 cm लेंस से दूर

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તેજસ્વી પ્રકાશ ઉદ્‌ગમથી 10 cm દુર રાખેલ બહિર્ગોળ લેન્સ તેનાથી 10 cm દુર રાખેલ પડદા પર તીવ્ર (સ્પષ્ટ) પ્રતિબિંબ બનાવે છે. 1.5 cm જાડઇવાળા એક કાચના ચોસલા (જેનો વક્રીભવનાંક 1.5 છે)ને પ્રકાશ ઉદ્‌ગમની ઊપર મુકવવામાં આવે છે. ફરી તીવ્ર (સ્પષ્ટ) પ્રતિબિંબ મેળવવા માટે પડદાને d અંતરે ખસેડવામાં આવે છે. તો d હશે :

Options :

1. શૂન્ય
2. 0.55 cm લેન્સ તરફ
3. 0.55 cm લેન્સથી દૂર
4. 1.1 cm લેન્સથી દૂર

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

Correct Marks : 4 Wrong Marks : 1

Two coherent sources produce waves of different intensities which interfere. After interference, the ratio of the maximum intensity to the minimum intensity is 16. The intensity of the waves are in the ratio :

Options :

1. 4 : 1
2. 16 : 9
3. 25 : 9
4. 5 : 3

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

Correct Marks : 4 Wrong Marks : 1

दो कलासम्बद्ध तरंग स्त्रोतों से उत्पन्न विभिन्न तीव्रताओं की तरंगों का व्यतिकरण होता है। व्यतिकरण के बाद अधिकतम तथा न्यूनतम तीव्रताओं का अनुपात 16 है, तो तरंगों की तीव्रताओं का अनुपात होगा :

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1. 4 : 1

2. 16 : 9

3. 25 : 9

4. 5 : 3

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

Correct Marks : 4 Wrong Marks : 1

જુદી તીવ્રતાવાળા બે સુસંબંદ્ધ (coherent) ઉદ્ગમો તરંગો મોકલે છે કે જેઓ વ્યતીકરણ અનુભવે છે. મહત્તમ તીવ્રતા અને લઘુત્તમ તીવ્રતાનો ગુણોત્તર 16 છે. ઉદ્ગમોની તીવ્રતા ગુણોત્તરમાં _____ છે.

Options :

1. 4 : 1

2. 16 : 9

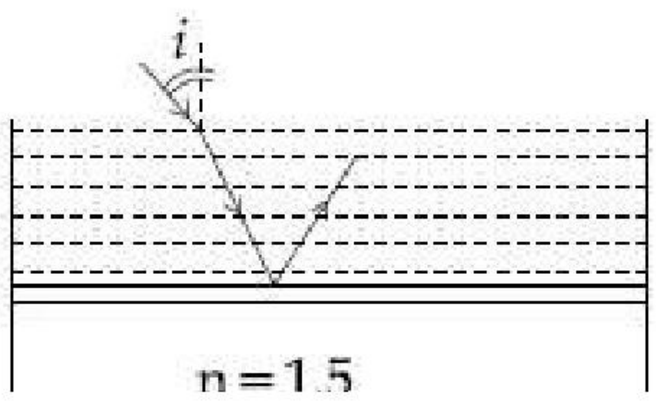
3. 25 : 9

4. 5 : 3

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

Correct Marks : 4 Wrong Marks : 1

Consider a tank made of glass(refractive index 1.5) with a thick bottom. It is filled with a liquid of refractive index μ. A student finds that, irrespective of what the incident angle i (see figure) is for a beam of light entering the liquid, the light reflected from the liquid glass interface is never completely polarized. For this to happen, the minimum value of μ is :



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

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

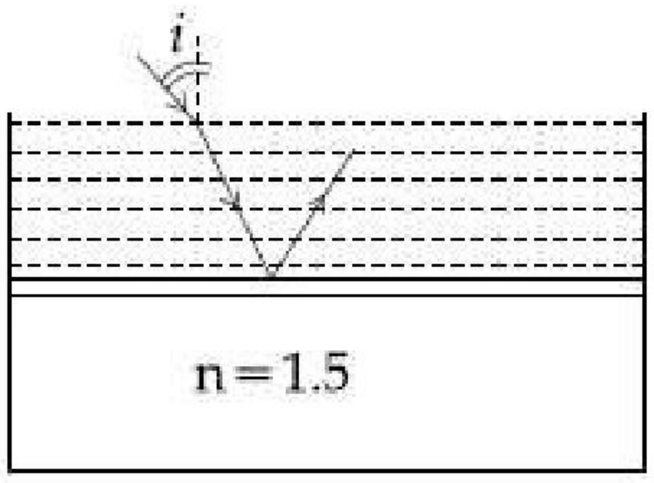
3. $\frac{5}{\sqrt{3}}$

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

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

Correct Marks : 4 Wrong Marks : 1

काँच (अपवर्तनांक $= 1.5$) से बने एक टैंक की तली मोटी है। इसमें अपवर्तनांक μ का एक द्रव भरा है। एक छात्र पाता है कि किसी भी आपतन कोण i (चित्र देखिये) पर द्रव में आपतित प्रकाश की किरण के लिये द्रव-काँच अन्तर्पृष्ठ से परावर्तित किरण, कभी भी पूर्णतया ध्रुवित नहीं होती है। ऐसा होने के लिये, μ का न्यूनतम मान होगा :



Options :

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

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

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

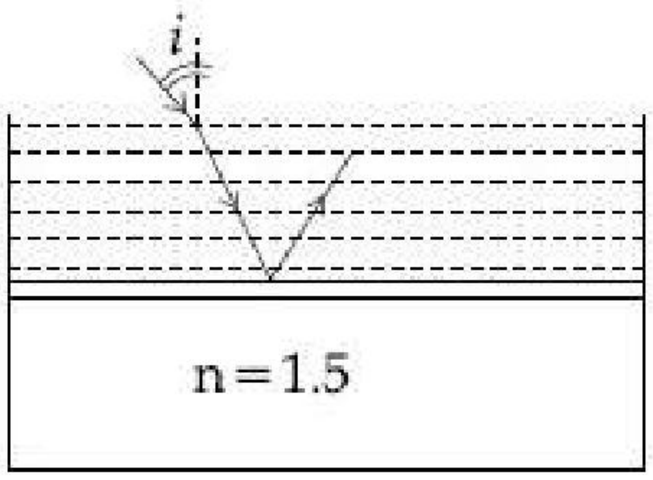
4. $\sqrt{5}$

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

Correct Marks : 4 Wrong Marks : 1

1.5 વક્રીભવનાંક વાળા કાચમાંથી બનાવેલી ટાંકી લો કે જેનો નીચેનો ભાગ જાડો હોય. જેને μ વક્રીભવનાંક વાળા પ્રવાહીથી ભરી દો. વિદ્યાર્થિએ એવું નોંધ્યુ કે કોઇપણ આપાતકોણ i થી આપાત થતું પ્રકાશનું કિરણ જ્યારે પ્રવાહીમાં પ્રવેશે છે ત્યારે પ્રવાહી-કાચના આંતરપૃષ્ઠ પરથી પરાવર્તન પામતુ પ્રકાશનું કિરણ કદાપી સંપૂર્ણ ધ્રુવીભુત હશે નહીં (આકૃતિ જુઓ). આ થવા માટે μ નું લઘુત્તમ મૂલ્ય _____ છે.



Options :

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

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

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

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

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

Correct Marks : 4 Wrong Marks : 1

Surface of certain metal is first illuminated with light of wavelength $\lambda_1 = 350$ nm and then, by light of wavelength $\lambda_2 = 540$ nm. It is found that the maximum speed of the photo electrons in the two cases differ by a factor of 2. The work function of the metal (in eV) is close to :

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1. 1.8

2. 5.6

3. 1.4

4. 2.5

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

Correct Marks : 4 Wrong Marks : 1

एक धातु के पृष्ठ को, पहले $\lambda_1 = 350$ nm तरंगदैर्ध्य के प्रकाश और फिर $\lambda_2 = 540$ nm तरंगदैर्ध्य के प्रकाश से, प्रकाशित करते हैं। इससे उत्सर्जित फोटोइलेक्ट्रॉनों की अधिकतम चालों में 2 का अनुपात पाया जाता है। धातु के कार्यफलन का, eV में, मान होगा :

(फोटॉन की ऊर्जा $= \frac{1240}{\lambda(\text{in nm})}\text{eV}$)

Options :

1. 1.8

2. 5.6

3. 1.4

4. 2.5

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

Correct Marks : 4 Wrong Marks : 1

ચોક્કસ ધાતુની સપાટી ને પહેલા પ્રકાશની તરંગ લંબાઈ $\lambda_1 = 350$ nm દ્વારા અને પછીથી $\lambda_2 = 540$ nm ના પ્રકાશથી પ્રકાશિત કરવામાં આવે છે. એવું માલુમ પડે છે કે આ બન્ને કિસ્સામાં ફોટોઇલેક્ટ્રોન્સનો મહત્તમ વેગ એક બીજાથી 2 ના ગુણાંકથી જુદો પડે છે. ધાતુનું કાર્યવિધેય (work function) eV માં _____ ની નજીક છે.

(ફોટોનની ઊર્જા $= \frac{1240}{\lambda(\text{in nm})}\text{eV}$)

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2. 5.6

3. 1.4

4. 2.5

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

Correct Marks : 4 Wrong Marks : 1

રેડિઓએક્ટિવ પદાર્થના નમૂના A ની એક્ટિવિટી 10 mCi ($1\ Ci = 3.7 \times 10^{10}$ વિખંડન/સેકન્ડ) છે કે જેના ન્યૂક્લિયસની સંખ્યા બીજા રેડિયોએક્ટિવ પદાર્થના નમૂના B કે જેની એક્ટિવિટી 20 mCi છે તેના કરતા બમણી છે. A અને B ના અર્ધઆયુ માટે સાચી પસંદગી _____ હશે.

Options :

1. 20 દિવસ અને 10 દિવસ

2. 20 દિવસ અને 5 દિવસ

3. 5 દિવસ અને 10 દિવસ

4. 10 દિવસ અને 40 દિવસ

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

Correct Marks : 4 Wrong Marks : 1

A sample of radioactive material A, that has an activity of 10 mCi($1\ Ci = 3.7 \times 10^{10}$ decays/s), has twice the number of nuclei as another sample of a different radioactive material B which has an activity of 20 mCi. The correct choices for half-lives of A and B would then be respectively :

Options :

1. 20 days and 10 days

2. 20 days and 5 days

3. 5 days and 10 days

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

Correct Marks : 4 Wrong Marks : 1

रेडियोधर्मी पदार्थ A के एक नमूने की एक्टिवता 10 mCi($1\ \text{Ci} = 3.7 \times 10^{10}$ decays/s) है। इस नमूने में नाभिकों की संख्या दूसरे रेडियोधर्मी पदार्थ B के नमूने के नाभिकों की संख्या की दुगुनी है। दूसरे नमूने की एक्टिवता 20 mCi है। A और B की, क्रमशः, अर्धआयु के बारे में कौन-सा कथन **सत्य** है?

Options :

1. 20 दिन एवं 10 दिन

2. 20 दिन एवं 5 दिन

3. 5 दिन एवं 10 दिन

4. 10 दिन एवं 40 दिन

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

Correct Marks : 4 Wrong Marks : 1

Mobility of electrons in a semiconductor is defined as the ratio of their drift velocity to the applied electric field. If, for an n-type semiconductor, the density of electrons is $10^{19}\ \text{m}^{-3}$ and their mobility is $1.6\ \text{m}^2/(\text{V.s})$ then the resistivity of the semiconductor (since it is an n-type semiconductor contribution of holes is ignored) is close to :

Options :

1. $0.2\ \Omega\text{m}$

2. $2\ \Omega\text{m}$

3. $4\ \Omega\text{m}$

4. $0.4\ \Omega\text{m}$

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

Correct Marks : 4 Wrong Marks : 1

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इलेक्ट्रॉनों की गतिशीलता उनके अपवाह वेग तथा लगाए हुये विद्युत क्षेत्र के अनुपात से परिभाषित होती है। यदि एक n-टाइप के अर्धचालक में इलेक्ट्रॉनों का संख्या घनत्व $10^{19}\ m^{-3}$ तथा उनकी गतिशीलता $1.6\ m^2/(V.s)$ है तो, इसकी प्रतिरोधकता का सन्निकट मान होगा, (n-टाइप अर्धचालक में होलों का योगदान उपेक्षणीय है) :

Options :

1. $0.2\ \Omega m$

2. $2\ \Omega m$

3. $4\ \Omega m$

4. $0.4\ \Omega m$

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

Correct Marks : 4 Wrong Marks : 1

અર્ધવાહક (semiconductor) માં ઇલેક્ટ્રોન્સ ની મોબીલિટીને ડ્રીફ્ટ વેગ અને આપવવામાં આવેલ વિદ્યુતક્ષેત્રના ગુણોત્તર દ્વારા વ્યાખ્યાયિત કરવામાં આવે છે. જો n-ટાઇપ અર્ધવાહક માટે ઇલેક્ટ્રોનની ઘનતા $10^{19}\ m^{-3}$ અને તેની મોબીલિટી $1.6\ m^2/(V.s)$ હોય તો અર્ધવાહકની અવરોધકતા _____ ની નજીક હશે.

(n-ટાઇપ અર્ધવાહક હોવાથી હોલ્સનું પ્રદાન અવગણવામાં આવે છે.)

Options :

1. $0.2\ \Omega m$

2. $2\ \Omega m$

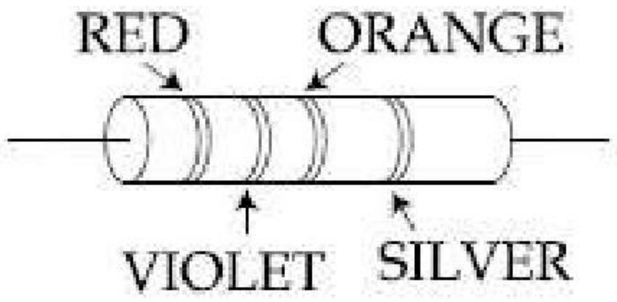
3. $4\ \Omega m$

4. $0.4\ \Omega m$

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

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A resistance is shown in the figure. Its value and tolerance are given respectively by :



Options :

1. 270 Ω, 5 %

2. 27 kΩ, 10 %

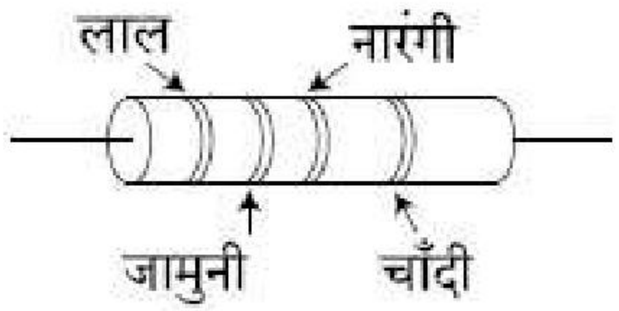
3. 27 kΩ, 20 %

4. 270 Ω, 10 %

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

Correct Marks : 4 Wrong Marks : 1

एक प्रतिरोध को चित्र में दर्शाया गया है। इसका मान तथा सह्यता क्रमशः, होंगे :



Options :

1. 270 Ω, 5 %

2. 27 kΩ, 10 %

3. 27 kΩ, 20 %

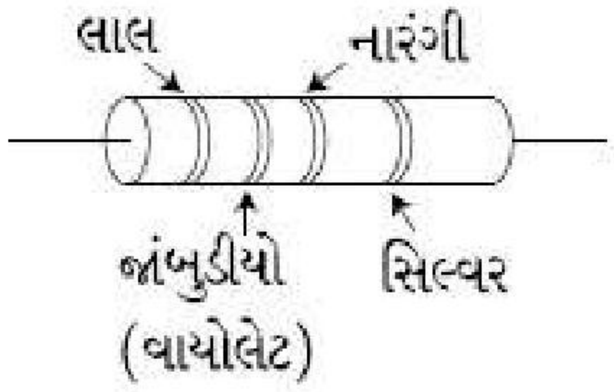
4. 270 Ω, 10 %

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

Correct Marks : 4 Wrong Marks : 1

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આકૃતિમાં એક અવરોધ બતાવેલ છે. તેનું મૂલ્ય અને ટોલરન્સ અનુક્રમે _____ છે.



Options :

1. 270 Ω, 5 %

2. 27 kΩ, 10 %

3. 27 kΩ, 20 %

4. 270 Ω, 10 %

ZOLLEGE.in

Chemistry

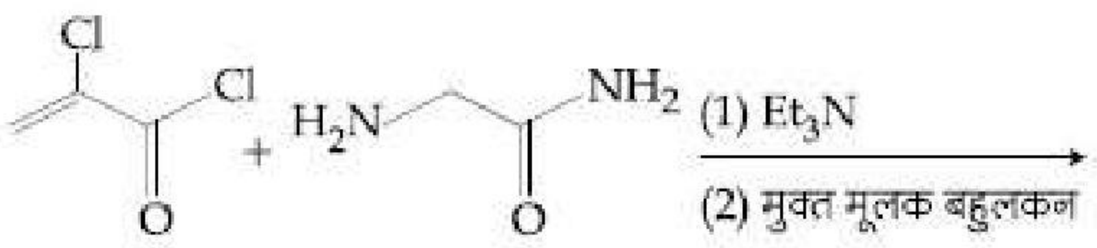
Section Id : 416529161
Section Number : 2
Section type : Online
Mandatory or Optional: Mandatory
Number of Questions: 30
Number of Questions to be attempted: 30
Section Marks: 120
Display Number Panel: Yes
Group All Questions: No

Sub-Section Number: 1
Sub-Section Id: 416529170
Question Shuffling Allowed : Yes

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

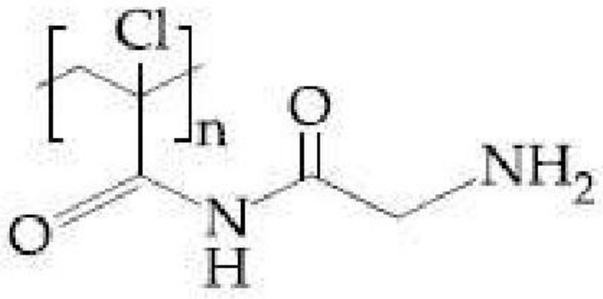
Correct Marks : 4 Wrong Marks : 1

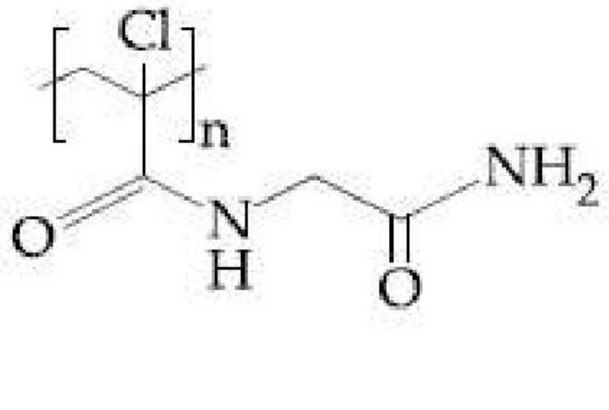
निम्नलिखित अभिक्रिया का मुख्य उत्पाद है :

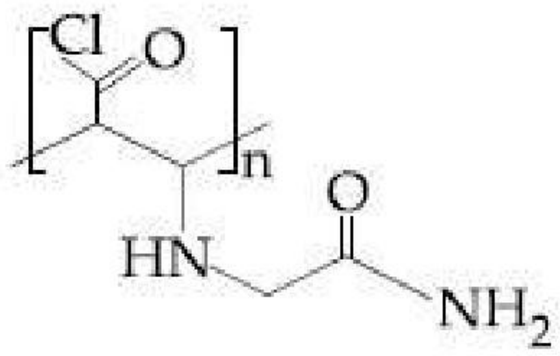


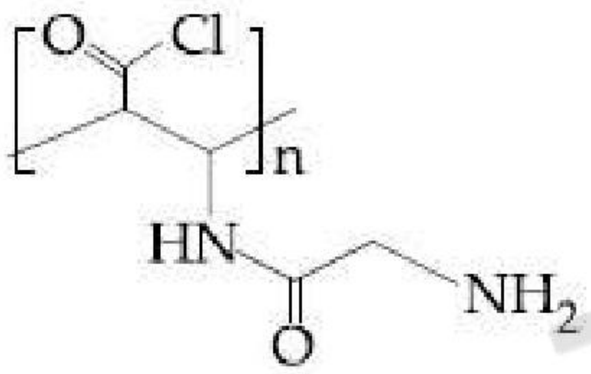
Options :

ZOLLEGE.in

1. 

2. 

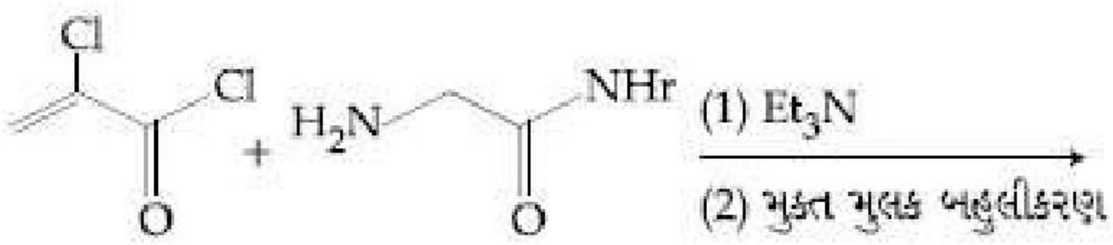
3. 

4. 

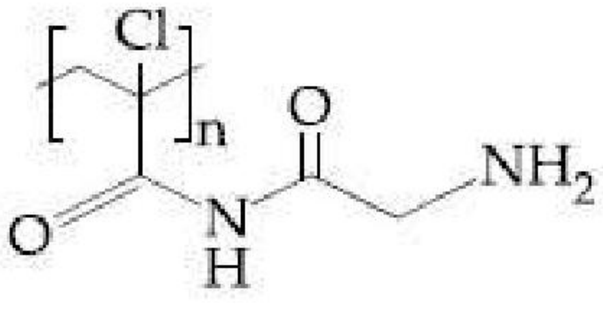
Question Number : 31 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

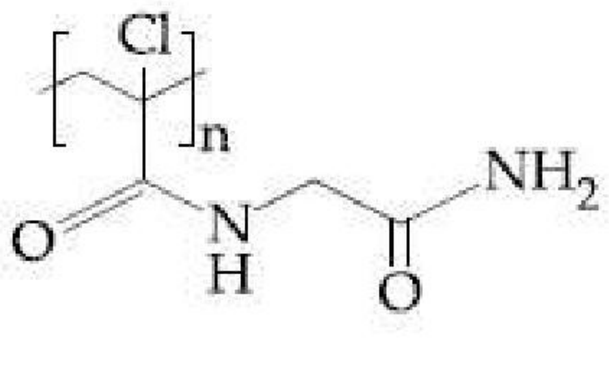
Correct Marks : 4 Wrong Marks : 1

નીચે આપેલી પ્રક્રિયાની મુખ્ય નીપજ શોધો?

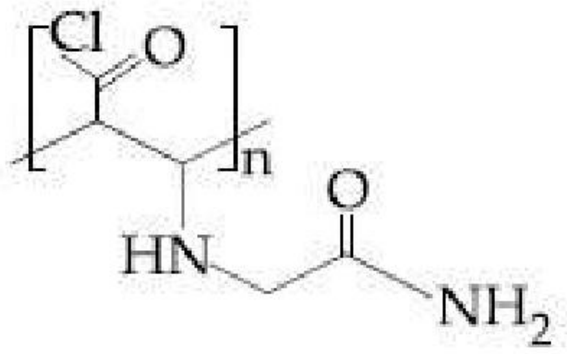


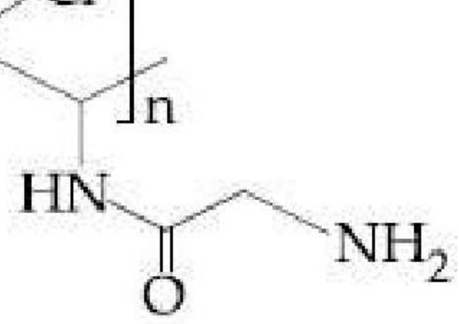
Options :

1. 

2. 

ZOLLEGE.in

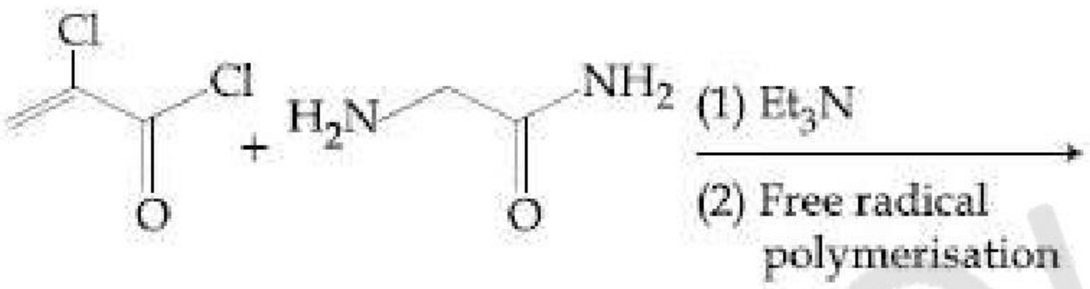
3. 

4. 

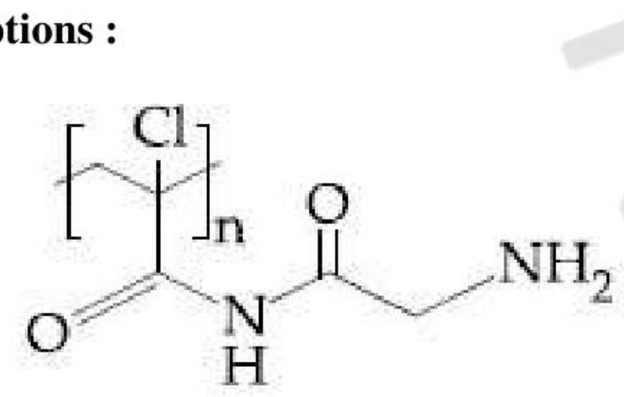
Question Number : 31 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

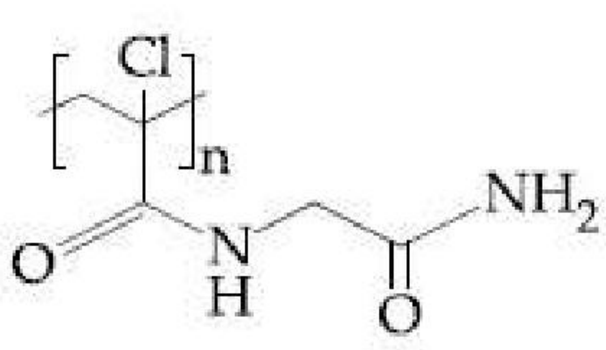
Correct Marks : 4 Wrong Marks : 1

Major product of the following reaction is :

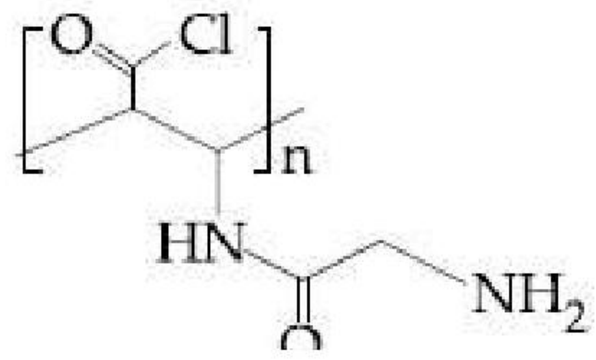


Options :

1. 

2. 

3.

4. 

ZOLLEGE.in

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

Correct Marks : 4 Wrong Marks : 1

The increasing order of pKa of the following amino acids in aqueous solution is :

Gly Asp Lys Arg

Options :

1. Gly < Asp < Arg < Lys

2. Asp < Gly < Lys < Arg

3. Arg < Lys < Gly < Asp

4. Asp < Gly < Arg < Lys

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

Correct Marks : 4 Wrong Marks : 1

जलीय विलयन में निम्नलिखित ऐमीनों अम्लों के pKa का बढ़ता क्रम है :

Gly Asp Lys Arg

Options :

1. Gly < Asp < Arg < Lys

2. Asp < Gly < Lys < Arg

3. Arg < Lys < Gly < Asp

4. Asp < Gly < Arg < Lys

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

Correct Marks : 4 Wrong Marks : 1

નીચે આપેલા એમિનો એસિડોના જલીય દ્રાવણ માટે pKa નો ચઢતો ક્રમ શોધો ?

Gly Asp Lys Arg

Options :

1. Gly < Asp < Arg < Lys

2. Asp < Gly < Lys < Arg

ZOLLEGE.in

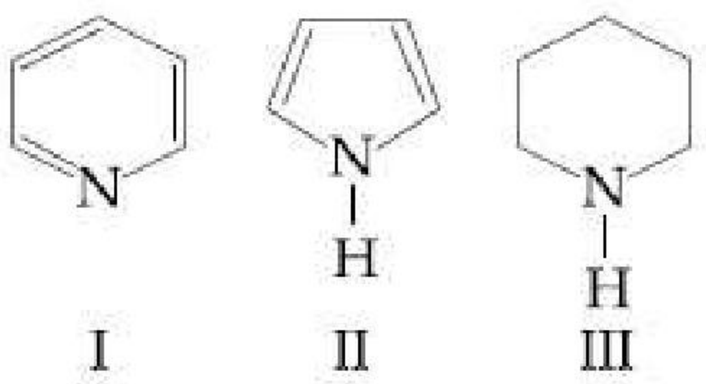
3. Arg < Lys < Gly < Asp

4. Asp < Gly < Arg < Lys

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

Correct Marks : 4 Wrong Marks : 1

Arrange the following amines in the decreasing order of basicity :



I II III

Options :

1. III > II > I

2. III > I > II

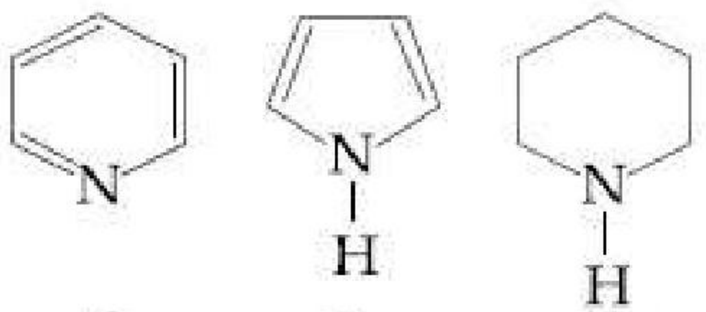
3. I > III > II

4. I > II > III

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

Correct Marks : 4 Wrong Marks : 1

क्षारकता के घटते क्रम में निम्न ऐमीनों को व्यवस्थत कीजिए :



I II III

Options :

1. III > II > I

2. III > I > II

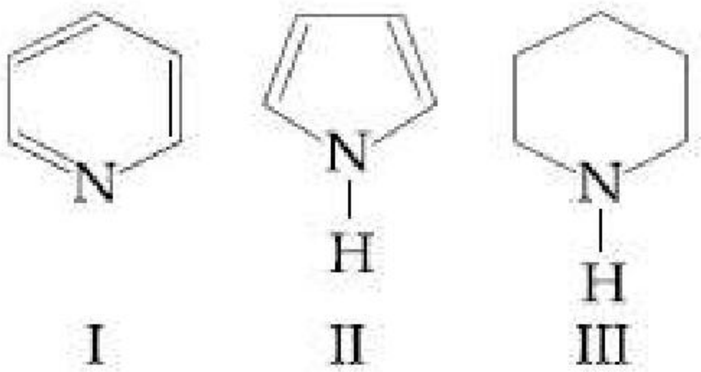
3. I > III > II

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

Correct Marks : 4 Wrong Marks : 1

નીચે આપેલા એમાઈન્સને તેની બેઝિકતાના ઘટતા ક્રમમાં ગોઠવો :



I II III

Options :

1. III > II > I

2. III > I > II

3. I > III > II

4. I > II > III

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

Correct Marks : 4 Wrong Marks : 1

The major product of following reaction is :

$$R-C\equiv N \xrightarrow[(2)\ H_2O]{(1)\ AlH(i\text{-}Bu)_2} ?$$

Options :

1. RCH_2NH_2

2. $RCONH_2$

3. RCOOH

4. RCHO

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

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया का मुख्य उत्पाद है :

(1) $AlH(i\text{-}Bu)_2$

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1. RCH_2NH_2

2. $RCONH_2$

3. RCOOH

4. RCHO

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

Correct Marks : 4 Wrong Marks : 1

નીચે આપેલી પ્રક્રિયાની મુખ્ય નીપજ આપો?

$$R-C\equiv N \xrightarrow[(2)\ H_2O]{(1)\ AlH(i\text{-}Bu)_2} ?$$

Options :

1. RCH_2NH_2

2. $RCONH_2$

3. RCOOH

4. RCHO

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

Correct Marks : 4 Wrong Marks : 1

The correct decreasing order for acid strength is :

Options :

1. $NO_2CH_2COOH > NCCH_2COOH > FCH_2COOH > ClCH_2COOH$

2. $CNCH_2COOH > O_2NCH_2COOH > FCH_2COOH > ClCH_2COOH$

3. $NO_2CH_2COOH > FCH_2COOH > CNCH_2COOH > ClCH_2COOH$

4. $FCH_2COOH > NCCH_2COOH > NO_2CH_2COOH > ClCH_2COOH$

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

Correct Marks : 4 Wrong Marks : 1

अम्ल सामर्थ्य के लिए सही घटता क्रम है :

Options :

1. $NO_2CH_2COOH > NCCH_2COOH > FCH_2COOH > ClCH_2COOH$

2. $CNCH_2COOH > O_2NCH_2COOH > FCH_2COOH > ClCH_2COOH$

3. $NO_2CH_2COOH > FCH_2COOH > CNCH_2COOH > ClCH_2COOH$

4. $FCH_2COOH > NCCH_2COOH > NO_2CH_2COOH > ClCH_2COOH$

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

Correct Marks : 4 Wrong Marks : 1

એસિડ સામર્થ્યનો ઘટતો સાચો ક્રમ શોધો?

Options :

1. $NO_2CH_2COOH > NCCH_2COOH > FCH_2COOH > ClCH_2COOH$

2. $CNCH_2COOH > O_2NCH_2COOH > FCH_2COOH > ClCH_2COOH$

3. $NO_2CH_2COOH > FCH_2COOH > CNCH_2COOH > ClCH_2COOH$

4. $FCH_2COOH > NCCH_2COOH > NO_2CH_2COOH > ClCH_2COOH$

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

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया में यौगिक A तथा B क्रमश:

हैं :



$$\xrightarrow{HCHO + HCl} A \xrightarrow{AgCN} B$$

Options :

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A = बेन्ज़िल क्लोराइड, B = बेन्ज़िल आइसोसायनाइड

2.

3. A = बेन्ज़िल क्लोराइड, B = बेन्ज़िल सायनाइड

4. A = बेन्ज़िल ऐल्कोहाल, B = बेन्ज़िल सायनाइड

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

Correct Marks : 4 Wrong Marks : 1

સંયોજનો A અને B નીચેની પ્રક્રિયા માટે અનુક્રમે શોધો?



$$\xrightarrow{HCHO + HCl} A \xrightarrow{AgCN} B$$

Options :

A = બેન્ઝાયલ આલ્કોહોલ, B = બેન્ઝાયલ આઈસોસાયનાઈડ

1.

A = બેન્ઝાયલ કલોરાઇડ, B = બેન્ઝાયલ આઈસોસાયનાઈડ

2.

A = બેન્ઝાયલ કલોરાઇડ, B = બેન્ઝાયલ સાયનાઈડ

3.

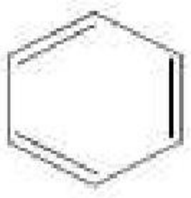
A = બેન્ઝાયલ આલ્કોહોલ, B = બેન્ઝાયલ સાયનાઈડ

4.

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

Correct Marks : 4 Wrong Marks : 1

The compounds A and B in the following reaction are, respectively :



$$\xrightarrow{HCHO + HCl} A \xrightarrow{AgCN} B$$

Options :

A = Benzyl alcohol, B = Benzyl isocyanide

1.

A = Benzyl chloride, B = Benzyl isocyanide

2.

ZOLLEGE.in

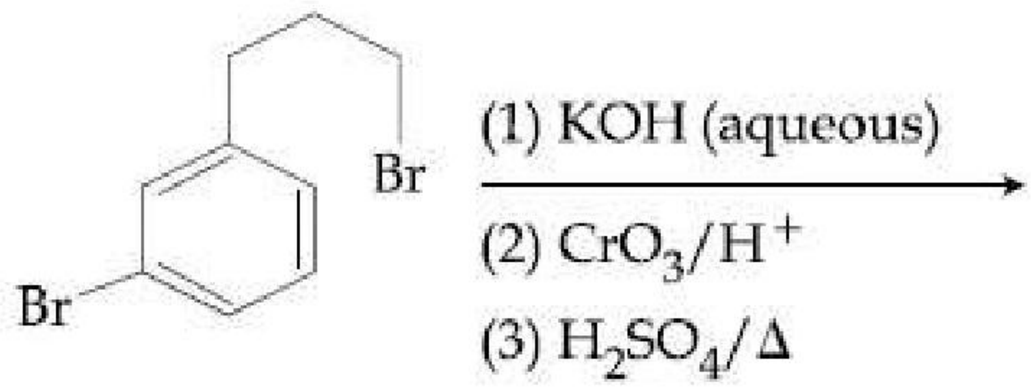
3. A = Benzyl chloride, B = Benzyl cyanide

4. A = Benzyl alcohol, B = Benzyl cyanide

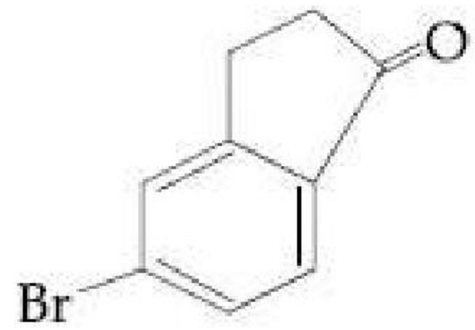
Question Number : 37 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

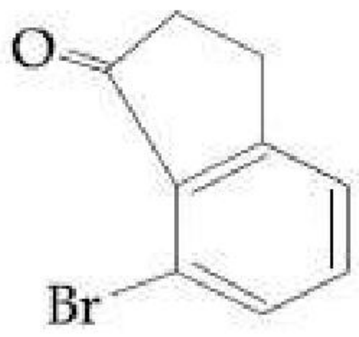
Correct Marks : 4 Wrong Marks : 1

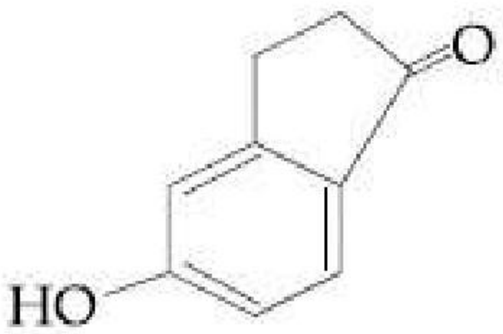
The major product of the following reaction is :

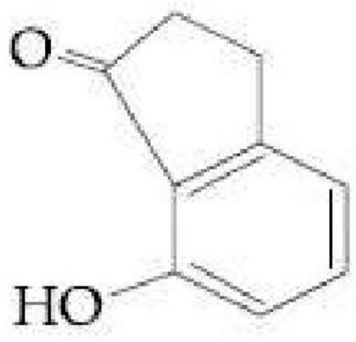


Options :

1. 

2. 

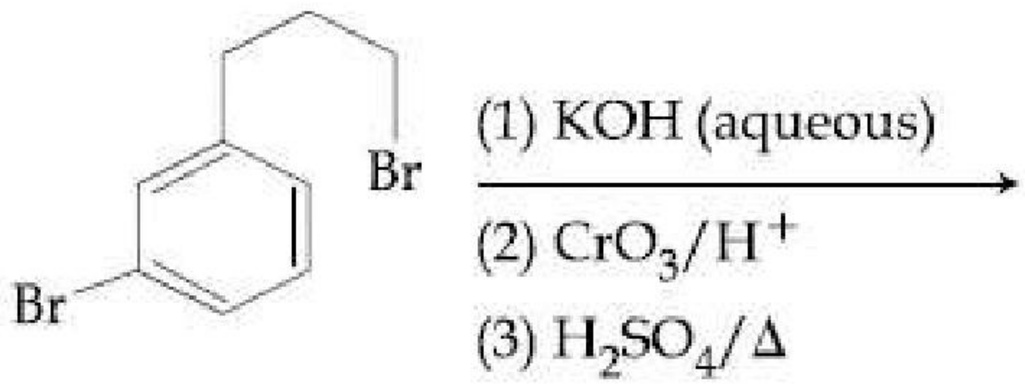
3. 

4. 

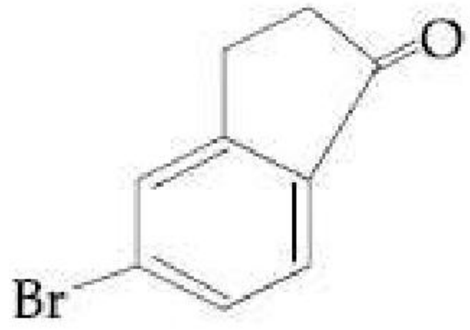
Question Number : 37 Question Type : MCQ Option Shuffling : Yes Display Question Number No Option Orientation : Vertical

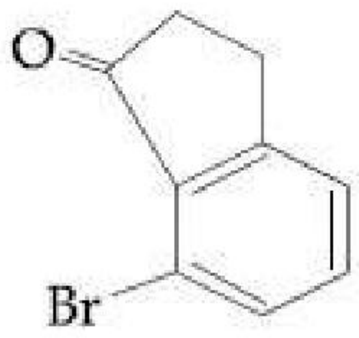
ZOLLEGE.in

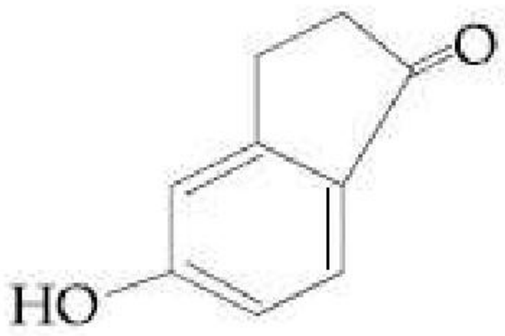
निम्नलिखित अभिक्रिया का मुख्य उत्पाद है :

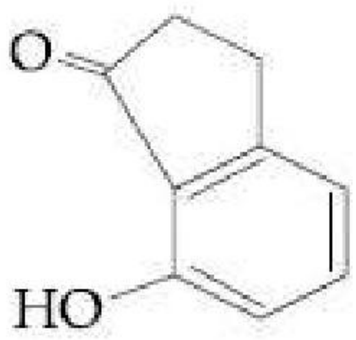


Options :

1. 

2. 

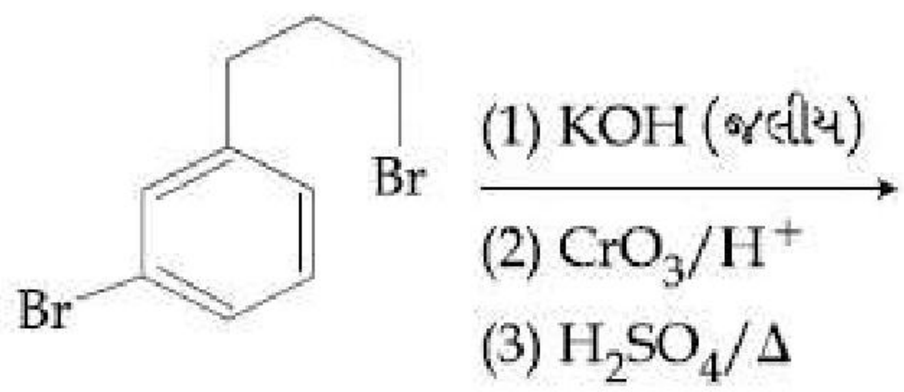
3. 

4. 

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

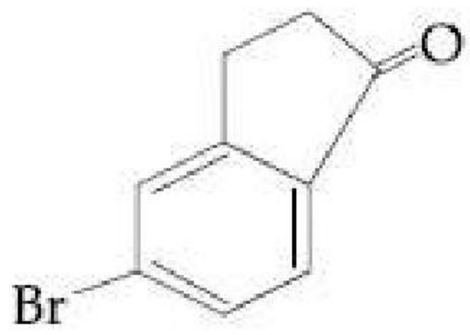
Correct Marks : 4 Wrong Marks : 1

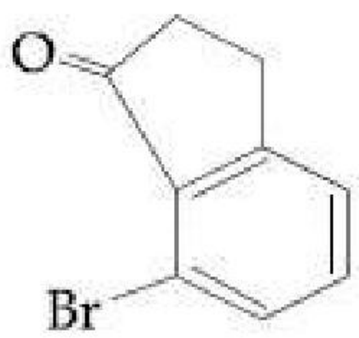
નીચે આપેલી પ્રક્રિયાની મુખ્ય નીપજ શોધો?

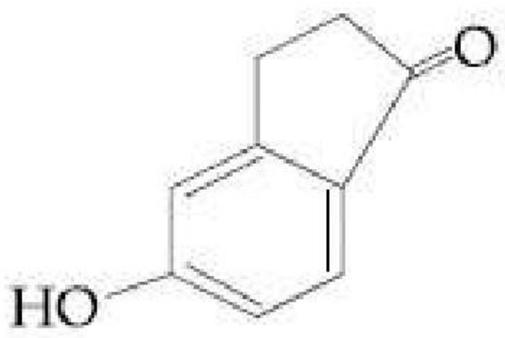


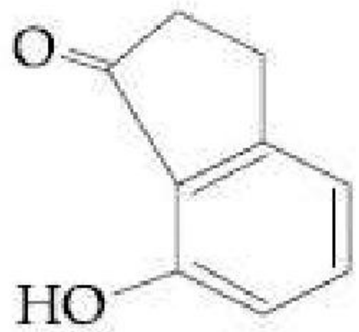
Options :

ZOLLEGE.in

1. 

2. 

3. 

4. 

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

Correct Marks : 4 Wrong Marks : 1

Which amongst the following is the strongest acid ?

Options :

1. $CHCl_3$

2. $CHBr_3$

3. CHI_3

4. $CH(CN)_3$

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

Correct Marks : 4 Wrong Marks : 1

निम्न में से कौन प्रबलतम अम्ल है?

Options :

ZOLLEGE.in

2. $CHBr_3$

3. CHI_3

4. $CH(CN)_3$

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

Correct Marks : 4 Wrong Marks : 1

નીચેના પૈકી કયો સૌથી પ્રબળ એસિડ છે ?

Options :

1. $CHCl_3$

2. $CHBr_3$

3. CHI_3

4. $CH(CN)_3$

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

Correct Marks : 4 Wrong Marks : 1

The correct match between Item-I and Item-II is :

	Item-I (drug)		Item-II (test)
A	Chloroxylenol	P	Carbylamine test
B	Norethindrone	Q	Sodium hydrogen-carbonate test
C	Sulphapyridine	R	Ferric chloride test
D	Penicillin	S	Bayer's test

Options :

1. A→R ; B→P ; C→S ; D→Q

2. A→Q ; B→P ; C→S ; D→R

3. A→Q ; B→S ; C→P ; D→R

ZOLLEGE.in

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

Correct Marks : 4 Wrong Marks : 1

मदों-I तथा II के मध्य सही सुमेल है :

	मद-I (औषधि)		मद-II (परीक्षण)
A	क्लोरोज़इलिनाल	P	कार्बिलऐमीन परीक्षण
B	नारएथिनड्रान	Q	सोडियम हाइड्रोजन कार्बोनेट परीक्षण
C	सल्फापिरिडीन	R	फेरिक क्लोराइड परीक्षण
D	पेनिसिलिन	S	बेअर परीक्षण

Options :

1. A→R ; B→P ; C→S ; D→Q

2. A→Q ; B→P ; C→S ; D→R

3. A→Q ; B→S ; C→P ; D→R

4. A→R ; B→S ; C→P ; D→Q

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

Correct Marks : 4 Wrong Marks : 1

સુચી -I અને સુચી II સાથે સાચી રીતે જોડો :

	સુચી-I (ઔષધો)		સુચી-II (કસોટી)
A	ક્લોરોઝાઇલિનોલ	P	કાર્બાયલ એમાઈન કસોટી
B	નોરઈથિનડ્રોન	Q	સોડિયમ હાઇડ્રોજન કાર્બોનેટ કસોટી
C	સલ્ફાપિરિડીન	R	ફેરિક ક્લોરાઇડ કસોટી
D	પેનિસિલિન	S	બેયર્સ કસોટી

Options :

ZOLLEGE.in

2. A→Q ; B→P ; C→S ; D→R

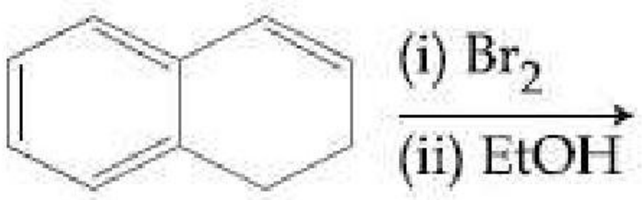
3. A→Q ; B→S ; C→P ; D→R

4. A→R ; B→S ; C→P ; D→Q

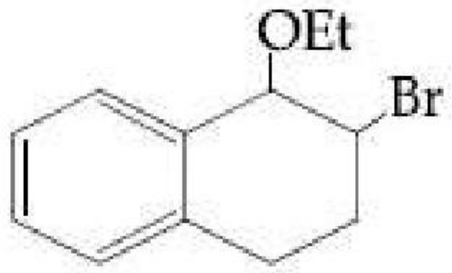
Question Number : 40 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

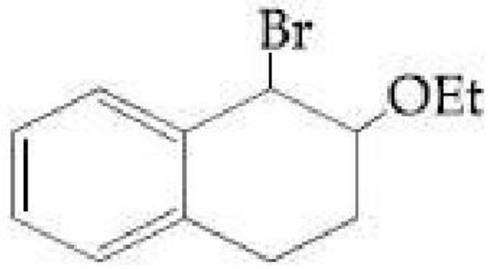
Correct Marks : 4 Wrong Marks : 1

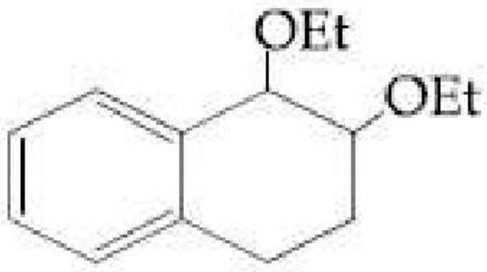
The major product of the following reaction is :

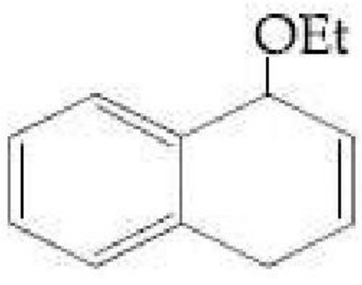


Options :

1. 

2. 

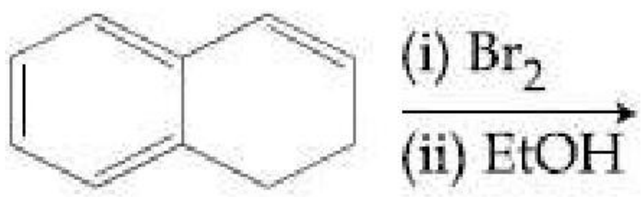
3. 

4. 

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

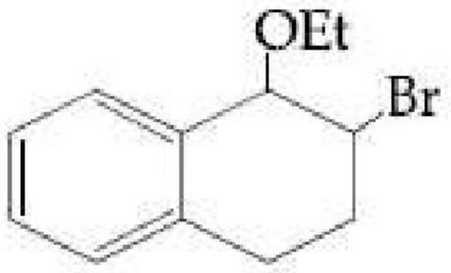
Correct Marks : 4 Wrong Marks : 1

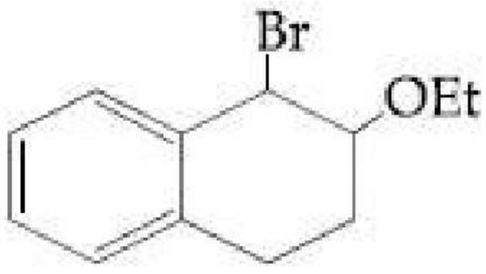
निम्नलिखित अभिक्रिया का मुख्य उत्पाद है :

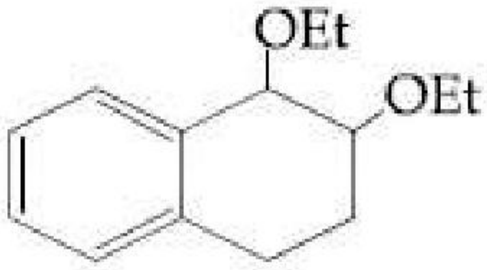


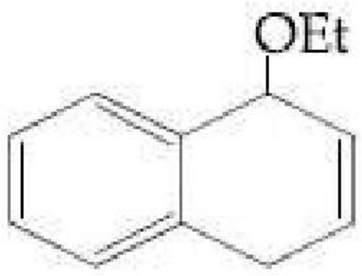
Options :

ZOLLEGE.in

1. 

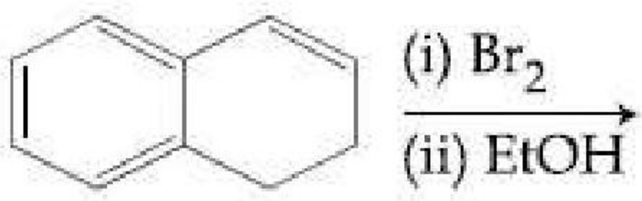
2. 

3. 

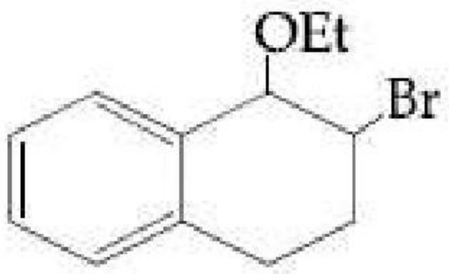
4. 

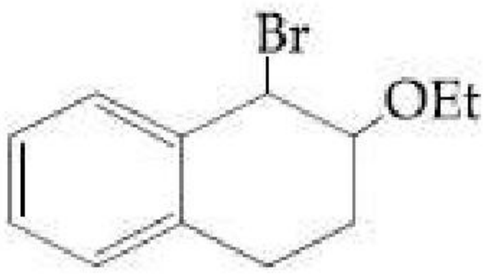
Question Number : 40 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

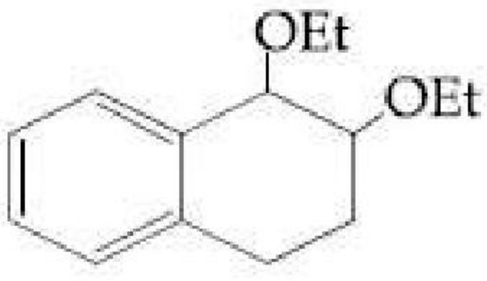
નીચે આપેલી પ્રક્રિયાની મુખ્ય નીપજ શોધો ?



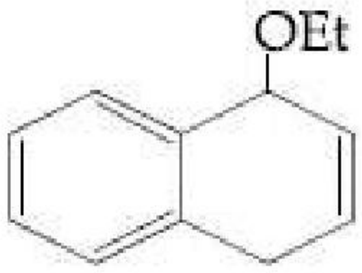
Options :

1. 

2. 

3. 

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4. 

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

Correct Marks : 4 Wrong Marks : 1

In general, the properties that decrease and increase down a group in the periodic table, respectively, are :

Options :

1. electronegativity and atomic radius.

2. electronegativity and electron gain enthalpy.

3. atomic radius and electronegativity.

4. electron gain enthalpy and electronegativity.

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

Correct Marks : 4 Wrong Marks : 1

सामान्यत:, आवर्त्त सारणी के वर्ग में नीचे जाने पर घटने तथा बढ़ने वाले गुणधर्म क्रमश: हैं :

Options :

1. विद्युत-ऋणात्मकता तथा परमाणु त्रिज्या

2. विद्युत-ऋणात्मकता तथा इलेक्ट्रॉन लब्धि एंथैल्पी

3. परमाणु त्रिज्या तथा विद्युत-ऋणात्मकता

4. इलेक्ट्रॉन लब्धि एंथैल्पी तथा विद्युत ऋणात्मकता

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

Correct Marks : 4 Wrong Marks : 1

સામાન્ય રીતે, આવર્ત કોષ્ટકમાં સમુહમાં જેમ નીચે જઈએ ત્યારે અનુક્રમે ઘટતા અને વધતા ગુણધર્મો કયા છે?

ZOLLEGE.in

1. વિદ્યુતઋણતા અને પરમાણ્વિય ત્રિજ્યા

2. વિદ્યુતઋણતા અને ઇલેક્ટ્રોન ગ્રાહ્ય એન્થાલ્પી

3. પરમાણુ ત્રિજ્યા અને વિદ્યુતઋણતા

4. ઇલેક્ટ્રોન ગ્રાહ્ય એન્થાલ્પી અને વિદ્યુતઋણતા

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

Correct Marks : 4 Wrong Marks : 1

The ore that contains both iron and copper is :

Options :

1. malachite

2. azurite

3. dolomite

4. copper pyrites

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

Correct Marks : 4 Wrong Marks : 1

आयरन तथा कापर दोनों जिस अयस्क में उपस्थित हैं वह है :

Options :

1. मैलेकाइट

2. ऐजुराइट

3. डोलोमाइट

4. कॉपर पाइराइट

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

Correct Marks : 4 Wrong Marks : 1

અયસ્ક કે જે આર્યન અને કોપર બન્ને ધરાવે છે તે શોધો?

ZOLLEGE.in

1. મેલેચાઇટ

2. એઝ્યુરાઇટ

3. ડોલોમાઇટ

4. કોપર પાઈરાઇટસ્

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

Correct Marks : 4 Wrong Marks : 1

The isotopes of hydrogen are :

Options :

1. Protium and deuterium only

2. Tritium and protium only

3. Protium, deuterium and tritium

4. Deuterium and tritium only

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

Correct Marks : 4 Wrong Marks : 1

हाइड्रोजन के समस्थानिक हैं :

Options :

1. प्रोटियम तथा ड्यूटीरियम मात्र

2. ट्राइटियम तथा प्रोटियम मात्र

3. प्रोटियम, ड्यूटीरियम तथा ट्राइटियम

4. ड्यूटीरियम तथा ट्राइटियम मात्र

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

Correct Marks : 4 Wrong Marks : 1

હાઇડ્રોજનના સમસ્થાનિકો કયા છે?

Options :

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2. ફક્ત ટ્રિટિયમ અને પ્રોટિયમ

3. પ્રોટિયમ, ડ્યુટેરિયમ અને ટ્રિટિયમ

4. ફક્ત ડ્યુટેરિયમ અને ટ્રિટિયમ

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

Correct Marks : 4 Wrong Marks : 1

The alkaline earth metal nitrate that does not crystallise with water molecules, is :

Options :

1. $Mg(NO_3)_2$

2. $Ca(NO_3)_2$

3. $Sr(NO_3)_2$

4. $Ba(NO_3)_2$

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

Correct Marks : 4 Wrong Marks : 1

क्षारीय मृदा धातु नाइट्रेट जिसका जल के अणुओं के साथ क्रिस्टलीकरण नहीं होता है, वह है :

Options :

1. $Mg(NO_3)_2$

2. $Ca(NO_3)_2$

3. $Sr(NO_3)_2$

4. $Ba(NO_3)_2$

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

Correct Marks : 4 Wrong Marks : 1

આલ્કલાઇન અર્થ ધાતુ નાઇટ્રેટ જે પાણી અણુઓ વડે સ્ફટિકીકરણ પામતી નથી તે શોધો

Options :

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2. $Ca(NO_3)_2$

3. $Sr(NO_3)_2$

4. $Ba(NO_3)_2$

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

Correct Marks : 4 Wrong Marks : 1

The one that is extensively used as a piezoelectric material is :

Options :

1. quartz

2. tridymite

3. mica

4. amorphous silica

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

Correct Marks : 4 Wrong Marks : 1

दाब-विद्युत पदार्थ की तरह विस्तीर्ण उपयोग में आने वाला अयस्क है :

Options :

1. क्वार्ट्ज

2. ट्राइडाइमाइट

3. माइका

4. अक्रिस्टलीय सिलिका

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

Correct Marks : 4 Wrong Marks : 1

નીચેના માંથી કયો પદાર્થ બહોળા પ્રમાણમાં પાયઝોઇલેક્ટ્રિક તરીકે વપરાય છે?

Options :

1. ક્વાર્ટઝ

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2. ટ્રાઇડાયમાઇટ

3. માઇકા

4. અસ્ફટિકમય સિલિકા

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

Correct Marks : 4 Wrong Marks : 1

Aluminium is usually found in +3 oxidation state. In contrast, thallium exists in +1 and +3 oxidation states. This is due to :

Options :

1. lanthanoid contraction

2. diagonal relationship

3. lattice effect

4. inert pair effect

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

Correct Marks : 4 Wrong Marks : 1

ऐलुमीनियम सामान्यतया +3 ऑक्सीकरण अवस्था में पाया जाता है। इसके विपरीत, थैलियम +1 तथा +3 ऑक्सीकरण अवस्थाओं में रहता है। इसका कारण है :

Options :

1. लैन्थेनॉयड आकुंचन

2. विकर्ण संबंध

3. लैटिस प्रभाव

4. अक्रिय युग्म प्रभाव

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

Correct Marks : 4 Wrong Marks : 1

ZOLLEGE.in

એલ્યુમિનિયમ સામાન્ય રીતે તેની +3 ઓક્સિડેશન અવસ્થામાં હોય છે. આથી વિપરીત થેલિયમ તેની +1 અને +3 ઓક્સિડેશન અવસ્થામાં જોવા મળે છે આ નું કારણ શોધો :

Options :

1. લેન્થેનાઇડ સંકોચન

2. કર્ણીય સંબંધ

3. લેટાઇસ અસર

4. નિષ્ક્રિય જોડી અસર

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

Correct Marks : 4 Wrong Marks : 1

Correct statements among a to d regarding silicones are :

(a) They are polymers with hydrophobic character.

(b) They are biocompatible.

(c) In general, they have high thermal stability and low dielectric strength.

(d) Usually, they are resistant to oxidation and used as greases.

Options :

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

2. (a), (b), (c) and (d)

3. (a) and (b) only

4. (a), (b) and (d) only

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

Correct Marks : 4 Wrong Marks : 1

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a से d में से सिलिकॉन के संबंध में सही कथन हैं :

(a) ये बहुलक जल-विरागी प्रकृति के होते हैं।

(b) इनकी जैवसंगतिता होती है।

(c) साधारणतया, इनका उच्च ऊष्मा स्थायित्व तथा निम्न परावैद्युत सामर्थ्य होता है।

(d) सामान्यतया, ये ऑक्सीकरण प्रतिरोधी होते हैं तथा ग्रीज की तरह उपयोग में लाये जाते हैं।

Options :

1. केवल (a), (b) तथा (c)

2. (a), (b), (c) तथा (d)

3. केवल (a) तथा (b)

4. केवल (a), (b) तथा (d)

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

Correct Marks : 4 Wrong Marks : 1

સિલિકોન ના સંદર્ભમાં વિધાનો a થી d પૈકી સાચા વિધાનો શોધો?

(a) તેઓ બહુલકો છે જે જલવિરાગી ગુણધર્મો ધરાવે છે.

(b) તેઓ જૈવિક સુસંગત છે.

(c) સામાન્યતઃ તેઓ ઊંચી ઊષ્મીય સ્થિરતા અને ઓછી પરાવૈદ્યુત તાકત ધરાવે છે.

(d) સામાન્યતઃ તેઓ ઓક્સિડેશનનો પ્રતિકાર કરે છે. અને ગ્રીસ તરીકે વપરાય છે.

Options :

1. ફકત (a), (b) અને (c)

2. (a), (b), (c) અને (d)

3. ફકત (a) અને (b)

4. ફકત (a), (b) અને (d)

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The highest value of the calculated spin-only magnetic moment (in BM) among all the transition metal complexes is :

Options :

1. 5.92

2. 4.90

3. 6.93

4. 3.87

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

Correct Marks : 4 Wrong Marks : 1

सभी संक्रमण धातु संकुलों में सर्वाधिक परिकलित प्रचक्रण मात्र चुंबकीय आघूर्ण (BM में) है :

Options :

1. 5.92

2. 4.90

3. 6.93

4. 3.87

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

Correct Marks : 4 Wrong Marks : 1

બધા સંક્રાંતિ ધાતુ સંકિર્ણોમાં ગણેલી મહત્તમ મુલ્ય ધરાવતી ફક્ત સ્પિન ચુંબકીય ચાકમાત્રા (BM માં) શોધો?

Options :

1. 5.92

2. 4.90

3. 6.93

4. 3.87

Question Number : 49 Question Type : MCQ Option Shuffling : Yes Display Question Number :

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Two complexes $[Cr(H_2O)_6]Cl_3$ (A) and $[Cr(NH_3)_6]Cl_3$ (B) are violet and yellow coloured, respectively. The incorrect statement regarding them is :

Options :

1. both are paramagnetic with three unpaired electrons.

2. Δ_0 value for (A) is less than that of (B).

3. both absorb energies corresponding to their complementary colors.

4. Δ_0 values of (A) and (B) are calculated from the energies of violet and yellow light, respectively.

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

Correct Marks : 4 Wrong Marks : 1

दो संकुल $[Cr(H_2O)_6]Cl_3$ (A) तथा $[Cr(NH_3)_6]Cl_3$ (B) क्रमशः बैंगनी तथा पीले रंग के हैं। इनके संबंध में गलत कथन है :

Options :

1. दोनों तीन अयुग्मित इलेक्ट्रॉनों के साथ अनुचुंबकीय हैं।

2. (A) के लिए Δ_0 का मान (B) की तुलना में कम है।

3. दोनों अपने पूरक रंगों के अनुकूल ऊर्जा का अवशोषण करते हैं।

4. (A) तथा (B) के Δ_0 मानों का परिकलन क्रमशः बैंगनी तथा पीले प्रकाश की ऊर्जाओं के द्वारा किया जाता है।

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

Correct Marks : 4 Wrong Marks : 1

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Options :

1. બન્ને અનુચુંબકીય છે અને ત્રણ અયુગ્મીત ઇલેક્ટ્રોન ધરાવે છે.

2. (A) માટે Δ_0 નું મુલ્ય (B) કરતા ઓછુ છે.

3. બન્ને તેઓના પુરક રંગોને અનુરૂપ શક્તિનું શોષણ કરે છે.

4. (A) અને (B) નાં Δ_0 મુલ્યોની ગણત્તરી અનુક્રમે જાંબળી અને પીળા પ્રકાશમાંથી મળતી શક્તિ ઉપરથી થાય છે.

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

Correct Marks : 4 Wrong Marks : 1

A water sample has ppm level concentration of the following metals : Fe = 0.2 ; Mn = 5.0 ; Cu = 3.0 ; Zn = 5.0. The metal that makes the water sample unsuitable for drinking is :

Options :

1. Fe

2. Mn

3. Cu

4. Zn

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

Correct Marks : 4 Wrong Marks : 1

एक जल के प्रतिदर्श में निम्नलिखित धातुओं के ppm सान्द्रता का स्तर है :

Fe = 0.2 ; Mn = 5.0 ; Cu = 3.0 ; Zn = 5.0.

धातु जिसके कारण जल प्रतिदर्श पीने योग्य नहीं है वह है :

Options :

1. Fe

Mn

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3. Cu

4. Zn

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

Correct Marks : 4 Wrong Marks : 1

પાણીના એક નમૂનામાં નીચે આપેલી ધાતુવોની સાંદ્રતા ppm માત્રામાં છે.

$Fe = 0.2$; $Mn = 5.0$; $Cu = 3.0$; $Zn = 5.0$.

ધાતુ કે જે પાણીના નમૂનાને પીવા લાયક અયોગ્ય બનાવે છે તે :

Options :

1. Fe

2. Mn

3. Cu

4. Zn

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

Correct Marks : 4 Wrong Marks : 1

A solution of sodium sulfate contains 92 g of Na^+ ions per kilogram of water. The molality of Na^+ ions in that solution in mol kg^{-1} is :

Options :

1. 4

2. 8

3. 12

4. 16

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

Correct Marks : 4 Wrong Marks : 1

सोडियम सल्फेट के एक विलयन में प्रति किलोग्राम जल में 92 g Na^+ आयन हैं। Na^+ आयन की उस

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1. 4

2. 8

3. 12

4. 16

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

Correct Marks : 4 Wrong Marks : 1

સોડિયમ સલ્ફેટનું દ્રાવણ પાણીના પ્રતિકિલોગ્રામે 92 g Na^+ આયનો ધરાવે છે. આ દ્રાવણમાં Na^+ આયનોની મોલાલિટી mol kg^{-1}માં :

Options :

1. 4

2. 8

3. 12

4. 16

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

Correct Marks : 4 Wrong Marks : 1

0.5 moles of gas A and x moles of gas B exert a pressure of 200 Pa in a container of volume 10 m^3 at 1000 K. Given R is the gas constant in $JK^{-1}mol^{-1}$, x is :

Options :

1. $\frac{4 - R}{2R}$

2. $\frac{4 + R}{2R}$

3. $\frac{2R}{4 - R}$

4. $\frac{2R}{4 + R}$

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

Correct Marks : 4 Wrong Marks : 1

1000 K पर 10 m^3 आयतन के एक पात्र में 0.5 mol गैस A तथा x mol गैस B, 200 Pa का दाब बनाते हैं। यदि R गैस स्थिरांक ($JK^{-1}mol^{-1}$ में) हो तो x है :

Options :

1. $\frac{4 - R}{2R}$

2. $\frac{4 + R}{2R}$

3. $\frac{2R}{4 - R}$

4. $\frac{2R}{4 + R}$

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

Correct Marks : 4 Wrong Marks : 1

1000 K એ 10 m^3 કદ ધરાવતા પાત્રમાં 0.5 mol વાયુ A અને x mol વાયુ B છે જેઓ 200 Pa દબાણ કરે છે આપેલ R વાયુ અચળાંક $JK^{-1}mol^{-1}$ માં હોય તો x શોધો :

Options :

1. $\frac{4 - R}{2R}$

2. $\frac{4 + R}{2R}$

3. $\frac{2R}{4 - R}$

4. $\frac{2R}{4 + R}$

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

Correct Marks : 4 Wrong Marks : 1

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For emission line of atomic hydrogen from $n_i = 8$ to $n_f = n$, the plot of wave number $(\bar{\nu})$ against $\left(\frac{1}{n^2}\right)$ will be (The Rydberg constant, R_H is in wave number unit)

Options :

1. Linear with intercept $-R_H$
2. Linear with slope $-R_H$
3. Non linear
4. Linear with slope R_H

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

Correct Marks : 4 Wrong Marks : 1

परमाणु हाइड्रोजन के $n_i = 8$ से $n_f = n$ तक की उत्सर्जन लाइन के लिए $\frac{1}{n^2}$ के विरुद्ध तरंग संख्या $(\bar{\nu})$ का प्लाट होगा, (रिडबर्ग स्थिरांक, R_H तरंग संख्या के मात्रक में)

Options :

1. $-R_H$ अन्त:खण्ड के साथ रैखिक
2. $-R_H$ स्लोप के साथ रैखिक
3. अरैखिक
4. R_H स्लोप के साथ रैखिक

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

Correct Marks : 4 Wrong Marks : 1

પરમાણ્વિય હાઇડ્રોજન માટે $n_i = 8$ થી $n_f = n$ માટે ઉત્સર્જન રેખાનો, તરંગ સંખ્યા $(\bar{\nu})$ વિરૂધ્ધ $\frac{1}{n^2}$ નો આલેખ :

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1. $-R_H$ आंतरछेद साथे रेखीय

2. $-R_H$ ढाळ साथे रेखीय

3. બિનરેખીય

4. R_H ઢાળ સાથે રેખીય

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

Correct Marks : 4 Wrong Marks : 1

According to molecular orbital theory, which of the following is true with respect to Li_2^+ and Li_2^- ?

Options :

1. Both are unstable

2. Li_2^+ is stable and Li_2^- is unstable

3. Li_2^+ is unstable and Li_2^- is stable

4. Both are stable

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

Correct Marks : 4 Wrong Marks : 1

आण्विक कक्षक सिद्धान्त के अनुसार Li_2^+ तथा Li_2^- के संबंध में निम्नलिखित में से कौन सत्य है?

Options :

1. दोनों अस्थायी हैं

2. Li_2^+ स्थायी है तथा Li_2^- अस्थायी है

3. Li_2^+ अस्थायी है तथा Li_2^- स्थायी है

4. दोनों स्थायी हैं

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

Correct Marks : 4 Wrong Marks : 1

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Options :

1. બન્ને અસ્થાયી છે.

2. Li_2^+ સ્થાયી છે અને Li_2^- અસ્થાયી છે.

3. Li_2^+ અસ્થાયી છે અને Li_2^- સ્થાયી છે.

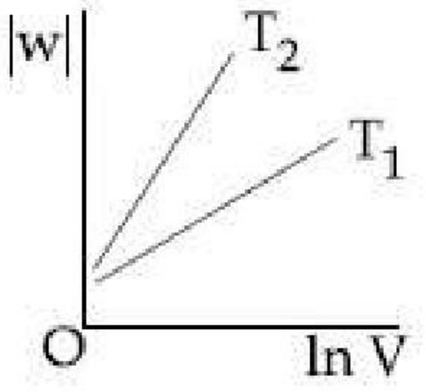
4. બન્ને સ્થાયી છે.

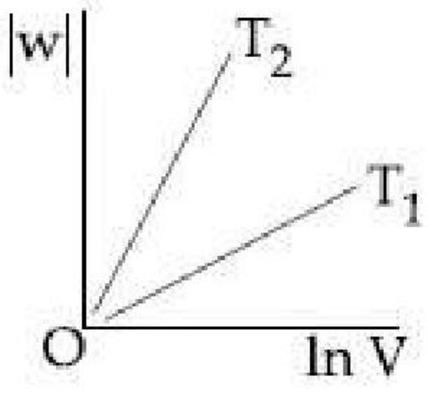
Question Number : 55 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

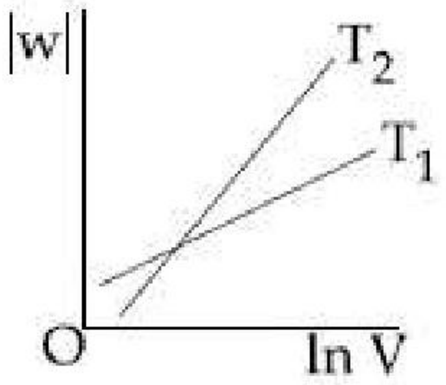
Correct Marks : 4 Wrong Marks : 1

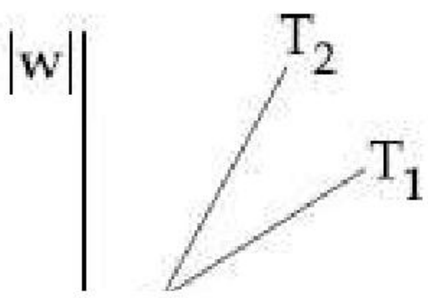
Consider the reversible isothermal expansion of an ideal gas in a closed system at two different temperatures T_1 and T_2 ($T_1 < T_2$). The correct graphical depiction of the dependence of work done (w) on the final volume (V) is :

Options :

1. 

2. 

3. 

4. 

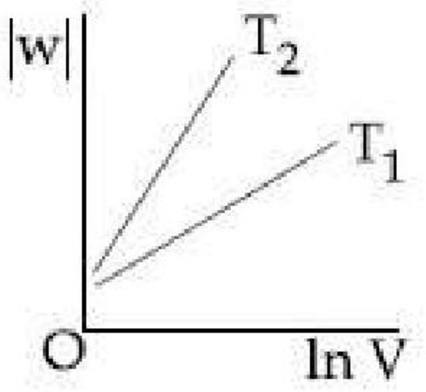
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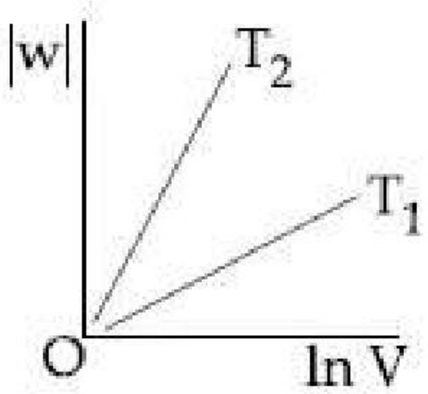
Question Number : 55 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

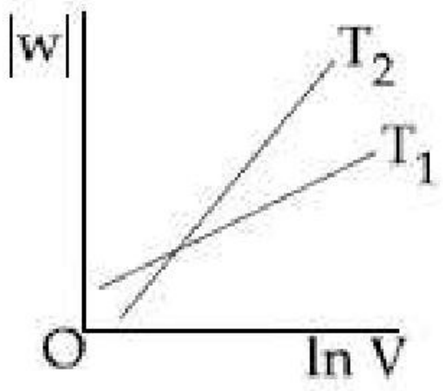
Correct Marks : 4 Wrong Marks : 1

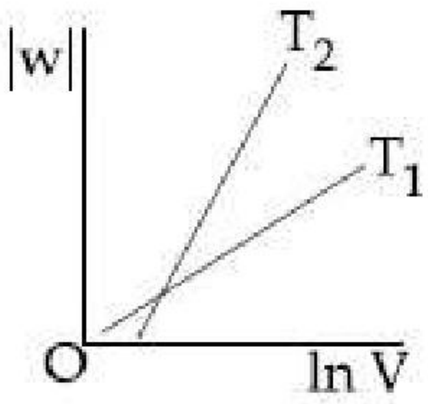
दो भिन्न तापों T_1 तथा T_2 ($T_1 < T_2$) पर एक बंद निकाय में एक आदर्श गैस के उत्क्रमणीय समतापी प्रसार पर विचार कीजिए। किये गये कार्य (w) की अंतिम आयतन (V) पर निर्भरता का सही आलेखिक चित्रण है :

Options :

1. 

2. 

3. 

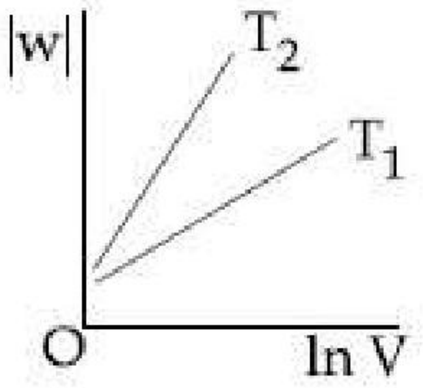
4. 

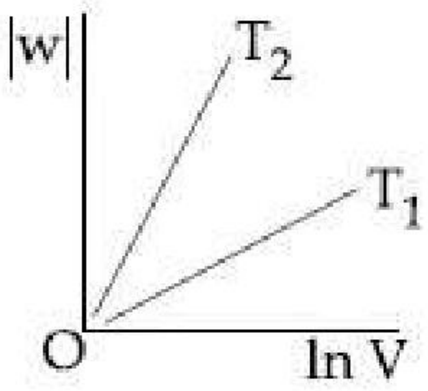
Question Number : 55 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

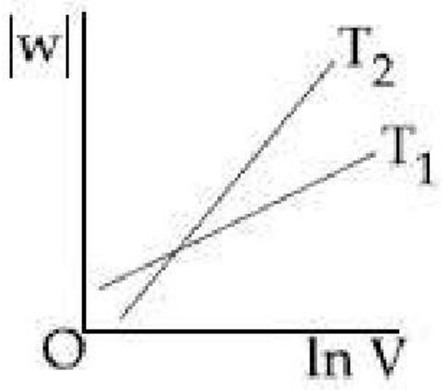
Correct Marks : 4 Wrong Marks : 1

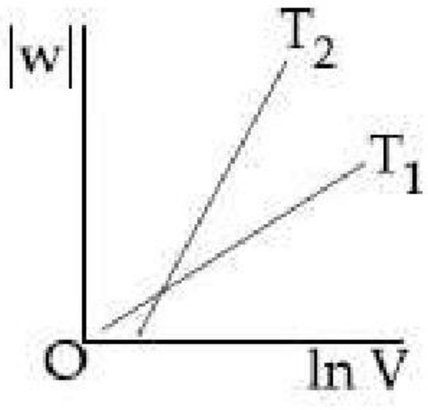
બે જુદા-જુદા તાપમાન T_1 અને T_2 એ એક બંધ પ્રણાલીમાં આદર્શ વાયુનું પ્રતિવર્તી સમતાપી વિસ્તરણ ધ્યાનમાં લો ($T_1 < T_2$). અંતિમ કદ (V) પર આધારિત

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1. 

2. 

3. 

4. 

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

Correct Marks : 4 Wrong Marks : 1

Which one of the following statements regarding Henry's law is not correct ?

Options :

1. The partial pressure of the gas in vapour phase is proportional to the mole fraction of the gas in the solution.

2. Different gases have different K_H (Henry's law constant) values at the same temperature.

Higher the value of K_H at a given pressure, higher is the solubility of the gas in the liquids

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4. The value of K_H increases with increase of temperature and K_H is function of the nature of the gas

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

Correct Marks : 4 Wrong Marks : 1

हेनरी नियम के संबंध में निम्नलिखित कथनों में से कौन सा एक सही **नहीं** है?

Options :

1. वाष्प प्रावस्था में गैस का आंशिक दाब विलयन में गैस के मोलांश के समानुपाती होता है।

2. एक ही ताप पर, विभिन्न गैसों के K_H (हेनरी नियम स्थिरांक) भिन्न होते हैं।

3. एक दिये गये दाब पर, द्रव में गैस की विलेयता अधिक होने पर K_H का मान अधिक होता है।

4. K_H का मान ताप के बढ़ने पर बढ़ता है तथा K_H गैस की प्रकृति का फलन है।

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

Correct Marks : 4 Wrong Marks : 1

હેન્રીના નિયમ મુજબ નીચેનામાંથી કયું એક વિધાન સાચું નથી?

Options :

1. બાષ્પ અવસ્થામાં રહેલા વાયુનું આંશિક દબાણ, દ્રાવણમાં રહેલા વાયુના મોલ અંશના સમપ્રમાણમાં ચલે છે.

2. જુદા-જુદા વાયુઓ માટે એજ તાપમાને K_H (હેન્રી નીયમ અચળાંક) ના જુદા-જુદા મુલ્ય હોય છે.

3. આપેલા દબાણે જેમ K_H મુલ્ય વધુ તેમ વાયુની પ્રવાહીમાં દ્રાવ્યતા વધારે

4. K_H નું મુલ્ય તામપાન વધવાની સાથે વધેછે અને K_H એ વાયના સ્વભાવનં વિધેય છે.

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

Correct Marks : 4 Wrong Marks : 1

20 mL of 0.1 M H_2SO_4 solution is added to 30 mL of 0.2 M NH_4OH solution. The pH of the resultant mixture is : [pk_b of $NH_4OH = 4.7$].

Options :

1. 5.0

2. 5.2

3. 9.0

4. 9.4

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

Correct Marks : 4 Wrong Marks : 1

20 mL 0.1 M H_2SO_4 के वलयन को 30 mL 0.2 M NH_4OH के विलय में मिलाने पर प्राप्त मिश्रण के pH का मान है : [NH_4OH का $pk_b = 4.7$].

Options :

1. 5.0

2. 5.2

3. 9.0

4. 9.4

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

Correct Marks : 4 Wrong Marks : 1

20 mL 0.1 M H_2SO_4 ના દ્રાવણને 30 mL 0.2 M NH_4OH દ્રાવણમાં ઉમેરમાં આવે છે તો આ પરિણામી મિશ્રણની pH શોધો : [NH_4OH નો $pk_b = 4.7$].

Options :

1. 5.0

2. 5.2

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4. 9.4

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

Correct Marks : 4 Wrong Marks : 1

The anodic half-cell of lead-acid battery is recharged using electricity of 0.05 Faraday. The amount of $PbSO_4$ electrolyzed in g during the process is : (Molar mass of $PbSO_4 = 303\ g\ mol^{-1}$)

Options :

1. 15.2

2. 7.6

3. 22.8

4. 11.4

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

Correct Marks : 4 Wrong Marks : 1

एक लेड-अम्ल बैटरी के एनोडी अर्द्ध-सेल को 0.05 फैराडे विद्युत का उपयोग करके पुन: आवेशित किया जाता है। इस प्रक्रम में विद्युत अपघटित $PbSO_4$ की मात्रा (g में) है : ($PbSO_4$ का मोलर द्रव्यमान $= 303\ g\ mol^{-1}$)

Options :

1. 15.2

2. 7.6

3. 22.8

4. 11.4

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

Correct Marks : 4 Wrong Marks : 1

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લેડ એસિડ બેટરીના એનોડિક અર્ધકોષ ને 0.05 ફેરાડે વિજપ્રવાહનું ઉપયોગ કરી ડિસ્ચાર્જ કરવામાં આવે છે. તો આ પ્રક્રિયામાં દરમ્યાન $PbSO_4$ ના કેટલા ગ્રામ વિદ્યુત વિભાજીત થશે તે શોધો :

($PbSO_4$ નું મોલર દળ $= 303\ g\ mol^{-1}$)

Options :

1. 15.2

2. 7.6

3. 22.8

4. 11.4

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

Correct Marks : 4 Wrong Marks : 1

The following results were obtained during kinetic studies of the reaction ;

$2A + B \rightarrow$ Products

Experiment	[A] (in mol L^{-1})	[B] (in mol L^{-1})	Initial Rate of reaction (in mol L^{-1} min^{-1})
I	0.10	0.20	6.93×10^{-3}
II	0.10	0.25	6.93×10^{-3}
III	0.20	0.30	1.386×10^{-2}

The time (in minutes) required to consume half of A is :

Options :

1. 1

2. 5

3. 100

4. 10

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

Correct Marks : 4 Wrong Marks : 1

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निम्नलिखित अभिक्रिया के गतिक अध्ययनों के दौरान निम्नलिखित परिणाम प्राप्त हुए :

$2A + B \rightarrow$ उत्पाद

प्रयोग	[A] (mol L^{-1} में)	[B] (mol L^{-1} में)	आरंभिक अभिक्रिया दर (mol L^{-1} min^{-1} में)
I	0.10	0.20	6.93×10^{-3}
II	0.10	0.25	6.93×10^{-3}
III	0.20	0.30	1.386×10^{-2}

A के आधे भाग को समाप्त करने के लिए आवश्यक समय (मिनट में) होगा :

Options :

1. 1
2. 5
3. 100
4. 10

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

Correct Marks : 4 Wrong Marks : 1

એક પ્રક્રિયા

$2A + B \rightarrow$ નીપજ, ની ગતિકી અભ્યાસ દરમ્યાન નીચેના પરિણામો મળ્યા :

પ્રયોગ	[A] (mol L^{-1}માં)	[B] (mol L^{-1}માં)	પ્રક્રિયાનો રૂઢઆતનો દર (mol L^{-1} min^{-1}માં)
I	0.10	0.20	6.93×10^{-3}
II	0.10	0.25	6.93×10^{-3}
III	0.20	0.30	1.386×10^{-2}

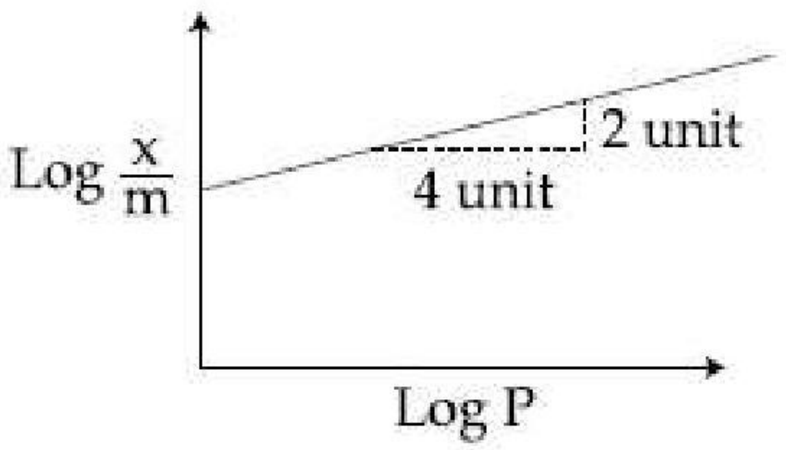
A અડધો વપરાય તે માટેનો સમય મિનિટમાં શોધો.

Options :

1. 1
2. 5
3. 100
4. 10

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Adsorption of a gas follows Freundlich adsorption isotherm. In the given plot, x is the mass of the gas adsorbed on mass m of the adsorbent at pressure p. $\frac{x}{m}$ is proportional to :



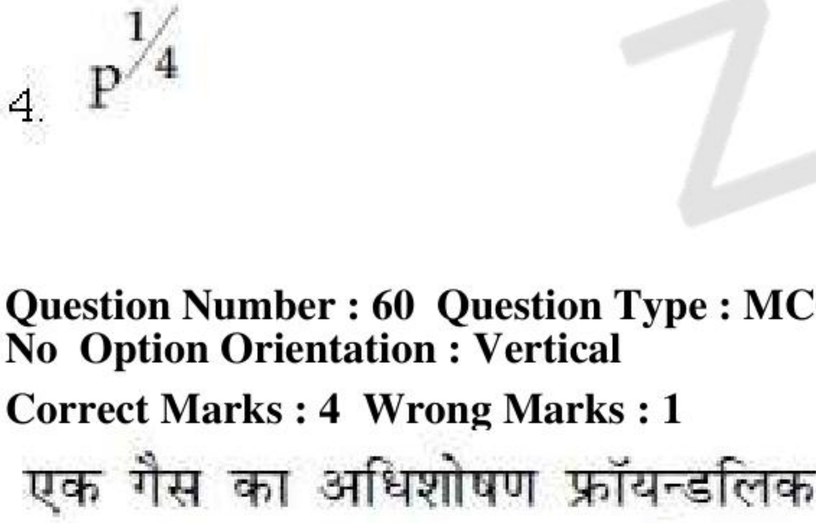
Options :

1. $P^{1/2}$
2. P^2
3. P
4. $P^{1/4}$

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

Correct Marks : 4 Wrong Marks : 1

एक गैस का अधिशोषण फ्रॉयन्डलिक अधिशोषण समताप वक्र का अनुसरण करता है। दिये गये प्लाट में, p दाब पर अधिशोषण के m द्रव्यमान पर अवशोषित गैस का द्रव्यमान m है। $\frac{x}{m}$ समानुपातिक है :



Options :

1. $P^{1/2}$ के

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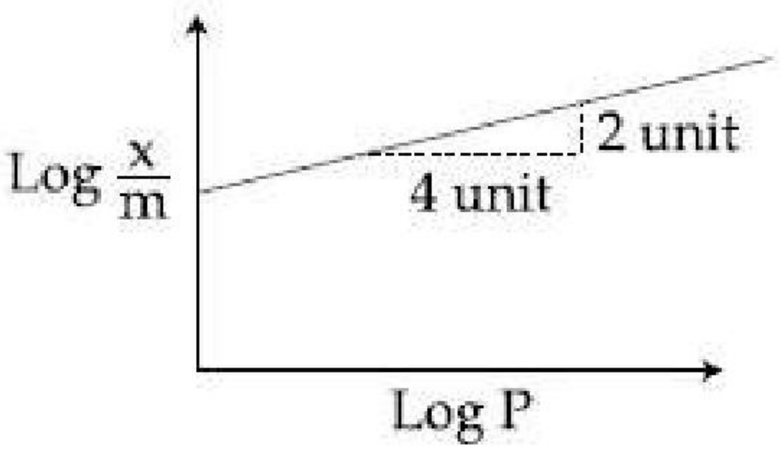
3. $p^{\text{के}}$

4. $p^{1/4}$ के

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

Correct Marks : 4 Wrong Marks : 1

વાયુનું અધિશોષણ ફ્રુન્ડલીચ અધિશોષણ સમતાપીને અનુસરે છે. આપેલ આલેખમાં દબાણ p એ x દળ ધરાવતો વાયુ m દળ ધરાવતા અધિશોષક પર અધિશોષિત થાય છે. તો $\frac{x}{m}$ કોને ચલે છે ?



Options :

1. $P^{1/2}$

2. P^{2}

3. P

4. $P^{1/4}$

Mathematics

Section Id :	416529162
Section Number :	3
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	30
Number of Questions to be attempted:	30
Section Marks:	120
Display Number Panel:	Yes
Group All Questions:	No

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

Correct Marks : 4 Wrong Marks : 1

For $x \in \mathbf{R} - \{0, 1\}$, let $f_1(x) = \frac{1}{x}, f_2(x) = 1 - x$ and $f_3(x) = \frac{1}{1-x}$ be three given functions. If a function, $J(x)$ satisfies $(f_2 \circ J \circ f_1)(x) = f_3(x)$ then $J(x)$ is equal to :

Options :

1. $f_1(x)$
2. $f_2(x)$
3. $f_3(x)$
4. $\frac{1}{x} f_3(x)$

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

Correct Marks : 4 Wrong Marks : 1

$x \in \mathbf{R} - \{0, 1\}$ के लिए, तीन फलन $f_1(x) = \frac{1}{x}$, $f_2(x) = 1 - x$ तथा $f_3(x) = \frac{1}{1-x}$ दिये गये हैं। यदि एक फलन $J(x)$, $(f_2 \circ J \circ f_1)(x) = f_3(x)$ को सन्तुष्ट करता है, तो $J(x)$ बराबर है :

Options :

1. $f_1(x)$
2. $f_2(x)$
3. $f_3(x)$
4. $\frac{1}{x} f_3(x)$

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

Correct Marks : 4 Wrong Marks : 1

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$x \in \mathbf{R} - \{0, 1\}$ માટે, ધારો કે $f_1(x) = \frac{1}{x}, f_2(x) = 1 - x$

અને $f_3(x) = \frac{1}{1-x}$ એ ત્રણ આપેલા વિધેયો છે.

જો કોઈ એક વિધેય $J(x)$ એ $(f_2 \circ J \circ f_1)(x) = f_3(x)$ ને સંતોષે તો $J(x)$ બરાબર _____ છે.

Options :

1. $f_1(x)$

2. $f_2(x)$

3. $f_3(x)$

4. $\frac{1}{x} f_3(x)$

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

Correct Marks : 4 Wrong Marks : 1

Let $A = \left\{ 0 \in \left(-\frac{\pi}{2}, \pi \right) : \frac{3 + 2i \sin\theta}{1 - 2i \sin\theta} \right.$ is

$\left.$ purely imaginary $\right\}$. Then the sum of the

elements in A is :

Options :

1. π

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

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

4. $\frac{5\pi}{6}$

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

Correct Marks : 4 Wrong Marks : 1

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माना $A = \left\{\theta \in \left(-\frac{\pi}{2}, \pi\right) : \frac{3 + 2i\sin\theta}{1 - 2i\sin\theta}\right.$ मात्र

काल्पनिक है $\left.\right\}$, तो A के अवयवों का योग है :

Options :

1. π

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

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

4. $\frac{5\pi}{6}$

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

Correct Marks : 4 Wrong Marks : 1

ધારો કે $A = \left\{\theta \in \left(-\frac{\pi}{2}, \pi\right) : \frac{3 + 2i\sin\theta}{1 - 2i\sin\theta}\right.$ એ

શુધ્ધ કાલ્પનિક છે $\left.\right\}$. તો A ના ઘટકોનો સરવાળો

_____ છે.

Options :

1. π

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

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

4. $\frac{5\pi}{6}$

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

Correct Marks : 4 Wrong Marks : 1

Let α and β be two roots of the equation
$x^2 + 2x + 2 = 0$, then $\alpha^{15} + \beta^{15}$ is equal to :

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1. 256

2. -256

3. 512

4. -512

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

Correct Marks : 4 Wrong Marks : 1

यदि α तथा β समीकरण $x^2+2x+2=0$ के दो मूल हैं, तो $\alpha^{15}+\beta^{15}$ बराबर है :

Options :

1. 256

2. -256

3. 512

4. -512

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

Correct Marks : 4 Wrong Marks : 1

ધારો કે α અને β એ સમીકરણ $x^2+2x+2=0$ નાં બે બીજ હોય, તો $\alpha^{15}+\beta^{15}$ બરાબર _____ થાય.

Options :

1. 256

2. -256

3. 512

4. -512

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

Correct Marks : 4 Wrong Marks : 1

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If $A = \begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$, then the matrix

A^{-50} when $\theta = \frac{\pi}{12}$, is equal to :

Options :

1. $\begin{bmatrix} \frac{\sqrt{3}}{2} & \frac{1}{2} \\ -\frac{1}{2} & \frac{\sqrt{3}}{2} \end{bmatrix}$

2. $\begin{bmatrix} \frac{\sqrt{3}}{2} & -\frac{1}{2} \\ \frac{1}{2} & \frac{\sqrt{3}}{2} \end{bmatrix}$

3. $\begin{bmatrix} \frac{1}{2} & \frac{\sqrt{3}}{2} \\ -\frac{\sqrt{3}}{2} & \frac{1}{2} \end{bmatrix}$

4. $\begin{bmatrix} \frac{1}{2} & -\frac{\sqrt{3}}{2} \\ \frac{\sqrt{3}}{2} & \frac{1}{2} \end{bmatrix}$

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

Correct Marks : 4 Wrong Marks : 1

यदि $A = \begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$, तो आव्यूह A^{-50} जब

$\theta = \frac{\pi}{12}$, बराबर है :

Options :

1. $\begin{bmatrix} \frac{\sqrt{3}}{2} & \frac{1}{2} \\ -\frac{1}{2} & \frac{\sqrt{3}}{2} \end{bmatrix}$

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2. $\begin{bmatrix} \frac{\sqrt{3}}{2} & -\frac{1}{2} \\ \frac{1}{2} & \frac{\sqrt{3}}{2} \end{bmatrix}$

3. $\begin{bmatrix} \frac{1}{2} & \frac{\sqrt{3}}{2} \\ -\frac{\sqrt{3}}{2} & \frac{1}{2} \end{bmatrix}$

4. $\begin{bmatrix} \frac{1}{2} & -\frac{\sqrt{3}}{2} \\ \frac{\sqrt{3}}{2} & \frac{1}{2} \end{bmatrix}$

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

Correct Marks : 4 Wrong Marks : 1

જો $A = \begin{bmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$, તો જ્યારે $\theta = \frac{\pi}{12}$ હોય

ત્યારે શ્રેણિક A^{-50} બરાબર _____ થાય.

Options :

1. $\begin{bmatrix} \frac{\sqrt{3}}{2} & \frac{1}{2} \\ -\frac{1}{2} & \frac{\sqrt{3}}{2} \end{bmatrix}$

2. $\begin{bmatrix} \frac{\sqrt{3}}{2} & -\frac{1}{2} \\ \frac{1}{2} & \frac{\sqrt{3}}{2} \end{bmatrix}$

3. $\begin{bmatrix} \frac{1}{2} & \frac{\sqrt{3}}{2} \\ -\frac{\sqrt{3}}{2} & \frac{1}{2} \end{bmatrix}$

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4. $\begin{bmatrix} \frac{1}{2} & -\frac{\sqrt{3}}{2} \\ \frac{\sqrt{3}}{2} & \frac{1}{2} \end{bmatrix}$

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

Correct Marks : 4 Wrong Marks : 1

The system of linear equations

$$x+y+z=2$$
$$2x+3y+2z=5$$
$$2x+3y+(a^2-1)z=a+1$$

Options :

1. is inconsistent when $|a|=\sqrt{3}$

2. has infinitely many solutions for $a=4$

3. is inconsistent when $a=4$

4. has a unique solution for $|a|=\sqrt{3}$

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

Correct Marks : 4 Wrong Marks : 1

रैखिक समीकरण निकाय

$$x+y+z=2$$
$$2x+3y+2z=5$$
$$2x+3y+(a^2-1)z=a+1$$

Options :

1. असंगत है जब $|a|=\sqrt{3}$

2. के $a=4$ के लिए अनन्त हल हैं।

3. असंगत है जब $a=4$

4. का $|a|=\sqrt{3}$ के लिए मात्र एक हल है।

Question Number : 65 Question Type : MCQ Option Shuffling : Yes Display Question Number No Option Orientation : Vertical

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સુરેખ સમીકરણ સંહતિ

$$x+y+z=2$$
$$2x+3y+2z=5$$
$$2x+3y+(a^2-1)z=a+1$$

Options :

1. એ જ્યારે $|a|=\sqrt{3}$ હોય ત્યારે સુસંગત નથી.

2. ને $a=4$ માટે અનંત ઉકેલો છે.

3. એ જ્યારે $a=4$ હોય ત્યારે સુસંગત નથી.

4. ને $|a|=\sqrt{3}$ માટે અનન્ય ઉકેલ છે.

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

Correct Marks : 4 Wrong Marks : 1

Consider a class of 5 girls and 7 boys. The number of different teams consisting of 2 girls and 3 boys that can be formed from this class, if there are two specific boys A and B, who refuse to be the members of the same team, is :

Options :

1. 200

2. 300

3. 350

4. 500

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

Correct Marks : 4 Wrong Marks : 1

5 लड़कियों तथा 7 लड़कों की एक कक्षा का विचार कीजिए। इस कक्षा की 2 लड़कियों तथा 3 लड़कों को लेकर बन सकने वाली भिन्न टीमों (teams), यदि दो विशेष लड़के A तथा B एक ही टीम के सदस्य बनने से मना करते हैं, की संख्या है :

Options :

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2. 300

3. 350

4. 500

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

Correct Marks : 4 Wrong Marks : 1

5 છોકરીઓ અને 7 છોકરાઓના એક વર્ગમાંથી 2 છોકરીઓ અને 3 છોકરાઓ ધરાવતી ભિન્ન ટુકડીઓ બનાવવાની છે. જો કોઈ બે નિશ્ચિત છોકરાઓ A અને B એકજ ટુકડીના સભ્યો બનવાનું ના પાડે તો આવી કેટલી ટુકડીઓ બનાવી શકાય ?

Options :

1. 200

2. 300

3. 350

4. 500

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

Correct Marks : 4 Wrong Marks : 1

If the fractional part of the number $\frac{2^{403}}{15}$ is

$\frac{k}{15}$, then k is equal to :

Options :

1. 4

2. 8

3. 14

4. 6

Question Number : 67 Question Type : MCQ Option Shuffling : Yes Display Question Number

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यदि संख्या $\frac{2^{403}}{15}$ का भिन्नात्मक भाग (fractional part) $\frac{k}{15}$ है, तो k बराबर है :

Options :

1. 4

2. 8

3. 14

4. 6

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

Correct Marks : 4 Wrong Marks : 1

જો $\frac{2^{403}}{15}$ નો અપૂર્ણાંક ભાગ $\frac{k}{15}$ હોય , તો k બરાબર _____ છે.

Options :

1. 4

2. 8

3. 14

4. 6

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

Correct Marks : 4 Wrong Marks : 1

Let $a_1, a_2, \ldots\ldots, a_{30}$ be an A.P., $S = \sum_{i=1}^{30} a_i$ and

$T = \sum_{i=1}^{15} a_{(2i-1)}$. If $a_5 = 27$ and $S - 2T = 75$, then a_{10} is equal to :

Options :

1. 42

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3. 57

4. 52

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

Correct Marks : 4 Wrong Marks : 1

माना $a_1, a_2, \ldots\ldots, a_{30}$ एक समान्तर श्रेढ़ी है,

$S = \sum_{i=1}^{30} a_i$ तथा $T = \sum_{i=1}^{15} a_{(2i-1)}$ यदि $a_5 = 27$

तथा $S - 2T = 75$, तो a_{10} बराबर है :

Options :

1. 42

2. 47

3. 57

4. 52

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

Correct Marks : 4 Wrong Marks : 1

ધારો કે $a_1, a_2, \ldots\ldots, a_{30}$ એક સમાંતર શ્રેણી (A.P)

છે, $S = \sum_{i=1}^{30} a_i$ અને જો $a_5 = 27$ અને $S - 2T = 75$,

તો a_{10} બરાબર _____ છે.

Options :

1. 42

2. 47

3. 57

4. 52

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

Correct Marks : 4 Wrong Marks : 1

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1. -2

2. -3

3. 2

4. 4

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

Correct Marks : 4 Wrong Marks : 1

यदि तीन भिन्न वास्तविक संख्यायें a, b तथा c एक गुणोत्तर श्रेढ़ी में हैं तथा $a+b+c=xb$, तो x निम्न में से कौन-सा नहीं हो सकता?

Options :

1. -2

2. -3

3. 2

4. 4

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

Correct Marks : 4 Wrong Marks : 1

જો ત્રણ ભિન્ન વાસ્તવિક સંખ્યાઓ a, b અને c સમગુણોત્તર શ્રેણી (G.P.) માં છે તથા $a+b+c=xb$, તો x એ _____ ન હોઈ શકે.

Options :

1. -2

2. -3

3. 2

4. 4

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

Correct Marks : 4 Wrong Marks : 1

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$$\lim_{y\to 0}\frac{\sqrt{1+\sqrt{1+y^4}}-\sqrt{2}}{y^4}$$

Options :

1. does not exist

2. exists and equals $\frac{1}{2\sqrt{2}}$

3. exists and equals $\frac{1}{4\sqrt{2}}$

4. exists and equals $\frac{1}{2\sqrt{2}\,(\sqrt{2}+1)}$

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

Correct Marks : 4 Wrong Marks : 1

$\lim_{y\to 0}\frac{\sqrt{1+\sqrt{1+y^4}}-\sqrt{2}}{y^4}$ का

Options :

1. अस्तित्व नहीं है।

2. अस्तित्व है तथा $\frac{1}{2\sqrt{2}}$ के बराबर है।

3. अस्तित्व है तथा $\frac{1}{4\sqrt{2}}$ के बराबर है।

4. अस्तित्व है तथा $\frac{1}{2\sqrt{2}\,(\sqrt{2}+1)}$ के बराबर है।

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

Correct Marks : 4 Wrong Marks : 1

$$\lim_{y\to 0}\frac{\sqrt{1+\sqrt{1+y^4}}-\sqrt{2}}{y^4}$$

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1. નું અસ્તિત્વ નથી

2. નું અસ્તિત્વ છે અને તે $\frac{1}{2\sqrt{2}}$ થાય.

3. નું અસ્તિત્વ છે અને તે $\frac{1}{4\sqrt{2}}$ થાય.

4. નું અસ્તિત્વ છે અને તે $\frac{1}{2\sqrt{2}\,(\sqrt{2}+1)}$ થાય.

Question Number : 71 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

माना फलन $f: \mathbf{R} \to \mathbf{R}$

$$f(x) = \begin{cases} 5, & \text{यदि } x \leq 1 \\ a + bx, & \text{यदि } 1 < x < 3 \\ b + 5x, & \text{यदि } 3 \leq x < 5 \\ 30, & \text{यदि } x \geqslant 5 \end{cases}$$

द्वारा परिभाषित है, तो f :

Options :

1. संतत है यदि $a = -5$ तथा $b = 10$.

2. संतत है यदि $a = 5$ तथा $b = 5$.

3. संतत है यदि $a = 0$ तथा $b = 5$.

4. a तथा b के किसी भी मान के लिए संतत नहीं है।

Question Number : 71 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

ધારો કે વિધેય $f: \mathbf{R} \to \mathbf{R}$

$$f(x) = \begin{cases} 5, & \text{જો } x \leq 1 \\ a + bx, & \text{જો } 1 < x < 3 \\ b + 5x, & \text{જો } 3 \leq x < 5 \end{cases}$$

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Options :

1. જો $a=-5$ અને $b=10$ હોય, તો સતત છે.

2. જો $a=5$ અને $b=5$ હોય, તો સતત છે.

3. જો $a=0$ અને $b=5$ હોય, તો સતત છે.

4. a અને b ની કોઈપણ કિંમતો માટે સતત નથી.

Question Number : 71 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

Let $f : \mathbf{R} \to \mathbf{R}$ be a function defined as

$$f(x) = \begin{cases} 5, & \text{if } x \leq 1 \\ a + bx, & \text{if } 1 < x < 3 \\ b + 5x, & \text{if } 3 \leq x < 5 \\ 30, & \text{if } x \geqslant 5 \end{cases}$$

Then, f is :

Options :

1. continuous if $a=-5$ and $b=10$

2. continuous if $a=5$ and $b=5$

3. continuous if $a=0$ and $b=5$

4. not continuous for any values of a and b

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

Correct Marks : 4 Wrong Marks : 1

If θ denotes the acute angle between the curves, $y=10-x^2$ and $y=2+x^2$ at a point of their intersection, then $|\tan\theta|$ is equal to :

Options :

1. $\frac{8}{17}$

2. 8

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

4. $\frac{7}{17}$

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

Correct Marks : 4 Wrong Marks : 1

यदि वक्रों $y = 10 - x^2$ तथा $y = 2 + x^2$ के बीच एक प्रतिच्छेद बिन्दु पर न्यून कोण θ है, तो $|\tan\theta|$ बराबर है :

Options :

1. $\frac{8}{17}$

2. $\frac{8}{15}$

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

4. $\frac{7}{17}$

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

Correct Marks : 4 Wrong Marks : 1

વક્રો $y = 10 - x^2$ અને $y = 2 + x^2$ વચ્ચે તેમના છેદબિંદુ આગળનો લઘુકોણ જો θ વડે દર્શાવાય, તો $|\tan\theta|$ બરાબર _____ છે.

Options :

1. $\frac{8}{17}$

2. $\frac{8}{15}$

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

4. $\frac{7}{17}$

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

Correct Marks : 4 Wrong Marks : 1

The maximum volume (in cu.m) of the right circular cone having slant height 3 m is :

Options :

1. 6π

2. $3\sqrt{3}\ \pi$

3. $2\sqrt{3}\ \pi$

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

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

Correct Marks : 4 Wrong Marks : 1

3 m તિર્યક ઊંચાઈવાળા લંબવૃત્તીય શંકુનું મહત્તમ ઘનફળ (ઘન મીટરમાં) _____ થાય.

Options :

1. 6π

2. $3\sqrt{3}\ \pi$

3. $2\sqrt{3}\ \pi$

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

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

Correct Marks : 4 Wrong Marks : 1

3 मी. तिर्यक (slant) ऊँचाई वाले लंबवृत्तीय शंकु का अधिकतम आयतन (घन मी. में) है :

Options :

1. 6π

2. $3\sqrt{3}\ \pi$

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

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

Correct Marks : 4 Wrong Marks : 1

For $x^2 \neq n\pi + 1$, $n \in N$ (the set of natural numbers), the integral

$$\int x \sqrt{\frac{2\sin(x^2-1) - \sin 2(x^2-1)}{2\sin(x^2-1) + \sin 2(x^2-1)}}\, dx \text{ is}$$

equal to :

(where c is a constant of integration)

Options :

1. $\frac{1}{2}\log_e|\sec(x^2-1)| + c$

2. $\log_e\left|\sec\left(\frac{x^2-1}{2}\right)\right| + c$

3. $\log_e\left|\frac{1}{2}\sec^2(x^2-1)\right| + c$

4. $\frac{1}{2}\log_e\left|\sec^2\left(\frac{x^2-1}{2}\right)\right| + c$

Note: For this question, ambiguity is found in question/answer. Candidate will get full marks for this question if any of the correct options are chosen.

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

Correct Marks : 4 Wrong Marks : 1

$x^2 \neq n\pi + 1$, $n \in N$ (प्राकृत संख्याओं का समुच्चय), के लिए, समाकल

$$\int x \sqrt{\frac{2\sin(x^2-1) - \sin 2(x^2-1)}{2\sin(x^2-1) + \sin 2(x^2-1)}}\, dx$$

बराबर है :

(जहाँ c एक समाकलन अचर है)

Options :

1

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2. $\log_e\left|\sec\left(\frac{x^2-1}{2}\right)\right|+c$

3. $\log_e\left|\frac{1}{2}\sec^2(x^2-1)\right|+c$

4. $\frac{1}{2}\log_e\left|\sec^2\left(\frac{x^2-1}{2}\right)\right|+c$

Note: For this question, ambiguity is found in question/answer. Candidate will get full marks for this question if any of the correct options are chosen.

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

Correct Marks : 4 Wrong Marks : 1

$x^2 \neq n\pi + 1$ માટે, $n \in N$ (પ્રાકૃતિક સંખ્યાઓનો ગણ),

સંકલિત

$$\int x\sqrt{\frac{2\sin(x^2-1)-\sin 2(x^2-1)}{2\sin(x^2-1)+\sin 2(x^2-1)}}\,dx$$

બરાબર _____ છે.

(જ્યાં c સંકલનનો અચળાંક છે)

Options :

1. $\frac{1}{2}\log_e|\sec(x^2-1)|+c$

2. $\log_e\left|\sec\left(\frac{x^2-1}{2}\right)\right|+c$

3. $\log_e\left|\frac{1}{2}\sec^2(x^2-1)\right|+c$

4. $\frac{1}{2}\log_e\left|\sec^2\left(\frac{x^2-1}{2}\right)\right|+c$

Note: For this question, ambiguity is found in question/answer. Candidate will get full marks for this question if any of the correct options are chosen.

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

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The value of $\int_0^{\pi} |\cos x|^3 \, dx$ is :

Options :

1. 0
2. $\frac{2}{3}$
3. $\frac{4}{3}$
4. $-\frac{4}{3}$

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

Correct Marks : 4 Wrong Marks : 1

$\int_0^{\pi} |\cos x|^3 \, dx$ का मान है :

Options :

1. 0
2. $\frac{2}{3}$
3. $\frac{4}{3}$
4. $-\frac{4}{3}$

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

Correct Marks : 4 Wrong Marks : 1

$\int_0^{\pi} |\cos x|^3 \, dx$ ની કિંમત _____ છે.

Options :

1. 0
2. $\frac{2}{3}$

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

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

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

Correct Marks : 4 Wrong Marks : 1

The area (in sq. units) bounded by the parabola $y = x^2 - 1$, the tangent at the point (2, 3) to it and the y-axis is :

Options :

1. $\frac{8}{3}$

2. $\frac{14}{3}$

3. $\frac{56}{3}$

4. $\frac{32}{3}$

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

Correct Marks : 4 Wrong Marks : 1

परवलय $y = x^2 - 1$, इस परवलय पर स्थित एक बिंदु (2, 3) पर खींची गई स्पर्श रेखा तथा y-अक्ष से घिरे क्षेत्र का क्षेत्रफल (वर्ग इकाइयों में) है :

Options :

1. $\frac{8}{3}$

2. $\frac{14}{3}$

3. $\frac{56}{3}$

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4. $\frac{32}{3}$

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

Correct Marks : 4 Wrong Marks : 1

પરવલય $y=x^2-1$, બિન્દુ (2, 3) આગળનો તેનો સ્પર્શક, અને y- અક્ષ દ્વારા આવૃત પ્રદેશનું ક્ષેત્રફળ (ચો. એકમમાં) _____ છે.

Options :

1. $\frac{8}{3}$

2. $\frac{14}{3}$

3. $\frac{56}{3}$

4. $\frac{32}{3}$

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

Correct Marks : 4 Wrong Marks : 1

If $y=y(x)$ is the solution of the differential equation, $x\frac{dy}{dx}+2y=x^2$ satisfying $y(1)=1$, then $y\left(\frac{1}{2}\right)$ is equal to :

Options :

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

2. $\frac{7}{64}$

3. $\frac{13}{16}$

4. 49

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

Correct Marks : 4 Wrong Marks : 1

यदि $y = y(x)$, अवकल समीकरण $x\frac{dy}{dx} + 2y = x^2$

का हल है जो $y(1) = 1$ को संतुष्ट करता है, तो $y\left(\frac{1}{2}\right)$

बराबर है :

Options :

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

2. $\frac{7}{64}$

3. $\frac{13}{16}$

4. $\frac{49}{16}$

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

Correct Marks : 4 Wrong Marks : 1

વિકલ સમીકરણ $x\frac{dy}{dx} + 2y = x^2$ નો ઉકેલ $y = y(x)$

જો $y(1) = 1$ ને સંતોષે તો $y\left(\frac{1}{2}\right)$ બરાબર

_____ છે.

Options :

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

2. $\frac{7}{64}$

3. $\frac{13}{16}$

4. $\frac{49}{16}$

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

Correct Marks : 4 Wrong Marks : 1

Consider the set of all lines $px+qy+r=0$ such that $3p+2q+4r=0$. Which one of the following statements is true ?

Options :

1. The lines are all parallel.

2. The lines are concurrent at the point $\left(\frac{3}{4}, \frac{1}{2}\right)$.

3. The lines are not concurrent.

4. Each line passes through the origin.

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

Correct Marks : 4 Wrong Marks : 1

ऐसी सभी रेखाओं $px+qy+r=0$ के समुच्चय पर विचार कीजिए जिनके लिए $3p+2q+4r=0$ है, तो निम्न में से कौन-सा एक कथन **सत्य** है?

Options :

1. सभी रेखाएँ समांतर हैं।

2. रेखाएँ बिंदु $\left(\frac{3}{4}, \frac{1}{2}\right)$ पर संगामी हैं।

3. रेखाएँ संगामी नहीं हैं।

4. प्रत्येक रेखा मूल बिंदु से हो कर जाती है।

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

Correct Marks : 4 Wrong Marks : 1

$3p+2q+4r=0$ થાય તેવી તમામ રેખાઓ $px+qy+r=0$ નો ગણ વિચારો. નીચેના પૈકી કયું વિધાન સાચું છે?

Options :

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2. રેખાઓ બિંદુ $\left(\frac{3}{4}, \frac{1}{2}\right)$ આગળ સંગામી છે.

3. રેખાઓ સંગામી નથી.

4. દરેક રેખા ઊગમબિંદુમાંથી પસાર થાય છે.

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

Correct Marks : 4 Wrong Marks : 1

Equation of a common tangent to the circle, $x^2+y^2-6x=0$ and the parabola, $y^2=4x$, is :

Options :

1. $2\sqrt{3}y = -x - 12$

2. $2\sqrt{3}y = 12x + 1$

3. $\sqrt{3}y = 3x + 1$

4. $\sqrt{3}y = x + 3$

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

Correct Marks : 4 Wrong Marks : 1

वृत्त $x^2+y^2-6x=0$ तथा परवलय $y^2=4x$, की एक उभयनिष्ठ स्पर्श रेखा का समीकरण है :

Options :

1. $2\sqrt{3}y = -x - 12$

2. $2\sqrt{3}y = 12x + 1$

3. $\sqrt{3}y = 3x + 1$

4. $\sqrt{3}y = x + 3$

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

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વર્તુળ, $x^2+y^2-6x=0$ અને પરવલય, $y^2=4x$ ના સામાન્ય સ્પર્શકનું સમીકરણ _____ છે.

Options :

1. $2\sqrt{3}y = -x - 12$

2. $2\sqrt{3}y = 12x + 1$

3. $\sqrt{3}y = 3x + 1$

4. $\sqrt{3}y = x + 3$

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

Correct Marks : 4 Wrong Marks : 1

Three circles of radii a, b, c (a < b < c) touch each other externally. If they have x-axis as a common tangent, then :

Options :

1. a, b, c are in A.P.

2. $\sqrt{a}, \sqrt{b}, \sqrt{c}$ are in A.P.

3. $\frac{1}{\sqrt{a}} = \frac{1}{\sqrt{b}} + \frac{1}{\sqrt{c}}$

4. $\frac{1}{\sqrt{b}} = \frac{1}{\sqrt{a}} + \frac{1}{\sqrt{c}}$

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

Correct Marks : 4 Wrong Marks : 1

a, b, c (a < b < c) त्रिज्याओं वाले तीन वृत्त परस्पर बाह्य स्पर्श करते हैं। यदि x-अक्ष उनकी एक उभयनिष्ठ स्पर्श रेखा है, तो :

Options :

1. a, b, c एक समांतर श्रेढ़ी में हैं।

2. $\sqrt{a}, \sqrt{b}, \sqrt{c}$ एक समांतर श्रेढ़ी में हैं।

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4. $\frac{1}{\sqrt{b}} = \frac{1}{\sqrt{a}} + \frac{1}{\sqrt{c}}$

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

Correct Marks : 4 Wrong Marks : 1

a, b, c (a < b < c) ત્રિજ્યાઓવાળા ત્રણ વર્તુળો એકબીજાને બહારથી સ્પર્શે છે. જો તેઓના સામાન્ય સ્પર્શક તરીકે x-અક્ષ હોય, તો :

Options :

1. a, b, c સમાંતર શ્રેણી (A.P.) માં છે.

2. $\sqrt{a}, \sqrt{b}, \sqrt{c}$ સમાંતર શ્રેણી (A.P.) માં છે.

3. $\frac{1}{\sqrt{a}} = \frac{1}{\sqrt{b}} + \frac{1}{\sqrt{c}}$

4. $\frac{1}{\sqrt{b}} = \frac{1}{\sqrt{a}} + \frac{1}{\sqrt{c}}$

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

Correct Marks : 4 Wrong Marks : 1

Axis of a parabola lies along x-axis. If its vertex and focus are at distances 2 and 4 respectively from the origin, on the positive x-axis then which of the following points does not lie on it ?

Options :

1. $(4, -4)$

2. $(6, 4\sqrt{2})$

3. $(5, 2\sqrt{6})$

4. $(8, 6)$

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

Correct Marks : 4 Wrong Marks : 1

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एक परवलय का अक्ष, x-अक्ष के अनुदिश है। यदि इसके शीर्ष तथा नाभि, x-अक्ष की धनात्मक दिशा में मूलबिंदु से क्रमशः 2 तथा 4 की दूरी पर हैं, तो इनमें से कौन-सा बिंदु इस परवलय पर **स्थित नहीं** है?

Options :

1. $(4, -4)$

2. $(6, 4\sqrt{2})$

3. $(5, 2\sqrt{6})$

4. $(8, 6)$

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

Correct Marks : 4 Wrong Marks : 1

કોઈ એક પરવલયનો અક્ષ, x-અક્ષ પર આવેલો છે. જો તેનાં શિરોબિંદુ અને નાભિ ઊગમબિંદુથી અક્ષની ધન દિશા પર અનુક્રમે 2 અને 4 અંતરે આવેલા હોય તો, નીચેના પૈકી કયું બિંદુ તેના પર આવેલું નથી?

Options :

1. $(4, -4)$

2. $(6, 4\sqrt{2})$

3. $(5, 2\sqrt{6})$

4. $(8, 6)$

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

Correct Marks : 4 Wrong Marks : 1

Let $0 < \theta < \frac{\pi}{2}$. If the eccentricity of the hyperbola $\frac{x^2}{\cos^2\theta} - \frac{y^2}{\sin^2\theta} = 1$ is greater than 2, then the length of its latus rectum lies in the interval :

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2. $(3/2, 2]$

3. $(2, 3]$

4. $(3, \infty)$

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

Correct Marks : 4 Wrong Marks : 1

माना $0 < \theta < \frac{\pi}{2}$ है। यदि अतिपरवलय

$\frac{x^2}{\cos^2\theta} - \frac{y^2}{\sin^2\theta} = 1$ की उत्केंद्रता 2 से अधिक है, तो इसके नाभिलंब की लंबाई जिस अन्तराल में है, वह है :

Options :

1. $(1, 3/2]$

2. $(3/2, 2]$

3. $(2, 3]$

4. $(3, \infty)$

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

Correct Marks : 4 Wrong Marks : 1

ધારો કે $0 < \theta < \frac{\pi}{2}$. જો અતિવલય

$\frac{x^2}{\cos^2\theta} - \frac{y^2}{\sin^2\theta} = 1$ ની ઉત્કેન્દ્રતા 2 કરતાં મોટી હોય, તો તેના નાભિલંબ ની લંબાઈ _____ અંતરાલમમાં આવેલી છે.

Options :

1. $(1, 3/2]$

2. $(3/2, 2]$

3. $(2, 3]$

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

Correct Marks : 4 Wrong Marks : 1

The plane through the intersection of the planes $x+y+z=1$ and $2x+3y-z+4=0$ and parallel to y - axis also passes through the point :

Options :

1. $(-3, 0, -1)$

2. $(-3, 1, 1)$

3. $(3, 2, 1)$

4. $(3, 3, -1)$

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

Correct Marks : 4 Wrong Marks : 1

સમતલો $x+y+z=1$ અને $2x+3y-z+4=0$ ના છેદમાંથી પસાર થતું તથા y-અક્ષને સમાંતર હોય તેવું સમતલ _____ બિંદુમાંથી પણ પસાર થાય છે.

Options :

1. $(-3, 0, -1)$

2. $(-3, 1, 1)$

3. $(3, 2, 1)$

4. $(3, 3, -1)$

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

Correct Marks : 4 Wrong Marks : 1

y-अक्ष के समांतर तथा समतलों $x+y+z=1$ और $2x+3y-z+4=0$ के प्रतिच्छेदन से होकर जाने वाला समतल निम्न में से किस बिंदु से भी हो कर जाता है?

Options :

1. $(-3, 0, -1)$

$(-3, 1, 1)$

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3. $(3, 2, 1)$

4. $(3, 3, -1)$

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

Correct Marks : 4 Wrong Marks : 1

The equation of the line passing through $(-4, 3, 1)$, parallel to the plane $x+2y-z-5=0$ and intersecting the line $\frac{x+1}{-3}=\frac{y-3}{2}=\frac{z-2}{-1}$ is :

Options :

1. $\frac{x+4}{-1}=\frac{y-3}{1}=\frac{z-1}{1}$

2. $\frac{x+4}{1}=\frac{y-3}{1}=\frac{z-1}{3}$

3. $\frac{x+4}{3}=\frac{y-3}{-1}=\frac{z-1}{1}$

4. $\frac{x-4}{2}=\frac{y+3}{1}=\frac{z+1}{4}$

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

Correct Marks : 4 Wrong Marks : 1

बिंदु $(-4, 3, 1)$ से हो कर जाने वाली रेखा, जो समतल $x+2y-z-5=0$ के समांतर है तथा रेखा $\frac{x+1}{-3}=\frac{y-3}{2}=\frac{z-2}{-1}$ को काटती है, का समीकरण है :

Options :

1. $\frac{x+4}{-1}=\frac{y-3}{1}=\frac{z-1}{1}$

2. $\frac{x+4}{1}=\frac{y-3}{1}=\frac{z-1}{3}$

3. $\frac{x+4}{\quad}=\frac{y-3}{\quad}=\frac{z-1}{\quad}$

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4. $\frac{x-4}{2}=\frac{y+3}{1}=\frac{z+1}{4}$

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

Correct Marks : 4 Wrong Marks : 1

$(-4, 3, 1)$ માંથી પસાર થતી, સમતલ $x+2y-z-5=0$ ને સમાંતર અને રેખા $\frac{x+1}{-3}=\frac{y-3}{2}=\frac{z-2}{-1}$ ને છેદતી રેખાનું સમીકરણ _____ છે.

Options :

1. $\frac{x+4}{-1}=\frac{y-3}{1}=\frac{z-1}{1}$

2. $\frac{x+4}{1}=\frac{y-3}{1}=\frac{z-1}{3}$

3. $\frac{x+4}{3}=\frac{y-3}{-1}=\frac{z-1}{1}$

4. $\frac{x-4}{2}=\frac{y+3}{1}=\frac{z+1}{4}$

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

Correct Marks : 4 Wrong Marks : 1

Let $\vec{a}=\hat{i}-\hat{j}$, $\vec{b}=\hat{i}+\hat{j}+\hat{k}$ and $\vec{c}$ be a vector such that $\vec{a}\times\vec{c}+\vec{b}=\vec{0}$ and $\vec{a}\cdot\vec{c}=4$, then $\left|\vec{c}\right|^2$ is equal to :

Options :

1. $\frac{19}{2}$

2. $\frac{17}{2}$

3. 9

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

Correct Marks : 4 Wrong Marks : 1

माना $\vec{a} = \hat{i} - \hat{j}$, $\vec{b} = \hat{i} + \hat{j} + \hat{k}$ तथा $\vec{c}$

ऐसे सदिश हैं कि $\vec{a} \times \vec{c} + \vec{b} = \vec{0}$ तथा

$\vec{a} \cdot \vec{c} = 4$ है, तो $\left|\vec{c}\right|^2$ बराबर है :

Options :

1. $\frac{19}{2}$

2. $\frac{17}{2}$

3. 9

4. 8

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

Correct Marks : 4 Wrong Marks : 1

ધારો કે $\vec{a} = \hat{i} - \hat{j}$, $\vec{b} = \hat{i} + \hat{j} + \hat{k}$ અને $\vec{c}$

એવા સદિશો છે કે જેથી $\vec{a} \times \vec{c} + \vec{b} = \vec{0}$ અને

$\vec{a} \cdot \vec{c} = 4$ થાય, તો $\left|\vec{c}\right|^2$ બરાબર _____

છે.

Options :

1. $\frac{19}{2}$

2. $\frac{17}{2}$

3. 9

4. 8

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5 students of a class have an average height 150 cm and variance 18 cm^2. A new student, whose height is 156 cm, joined them. The variance (in cm^2) of the height of these six students is :

Options :

1. 20

2. 16

3. 18

4. 22

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

Correct Marks : 4 Wrong Marks : 1

एक कक्षा के 5 विद्यार्थियों की ऊँचाइयों का माध्य 150 से.मी. तथा प्रसरण 18 वर्ग से.मी. है। 156 से.मी. ऊँचाई वाला एक नए विद्यार्थी उनसे आ मिला। इन छः विद्यार्थियों की ऊँचाइयों का प्रसरण (वर्ग से.मी. में) है :

Options :

1. 20

2. 16

3. 18

4. 22

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

Correct Marks : 4 Wrong Marks : 1

એક વર્ગના 5 વિદ્યાર્થીઓની સરેરાશ ઊંચાઈ 150 cm અને વિચરણ 18 cm^2 છે. જેની ઊંચાઈ 156 cm છે એવો એક નવો વિદ્યાર્થી તેઓની સાથે જોડાય છે. આ છ વિદ્યાર્થીઓની ઊંચાઈનું વિચરણ (cm^2 માં) _____ છે.

Options :

1. 20

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3. 18

4. 22

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

Correct Marks : 4 Wrong Marks : 1

Two cards are drawn successively with replacement from a well-shuffled deck of 52 cards. Let X denote the random variable of number of aces obtained in the two drawn cards. Then $P(X=1)+P(X=2)$ equals :

Options :

1. 24/169

2. 25/169

3. 49/169

4. 52/169

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

Correct Marks : 4 Wrong Marks : 1

52 पत्तों की एक अच्छी प्रकार से फेंटी गई ताश की गड्डी में से, एक के बाद एक, दो पत्ते प्रतिस्थापना सहित निकाले गए। माना X, दोनों बार में प्राप्त इक्कों की संख्या को दर्शाने वाला यादृच्छिक चर है, तो $P(X=1)+P(X=2)$ बराबर है :

Options :

1. 24/169

2. 25/169

3. 49/169

4. 52/169

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

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સરખી રીતે ચીપેલાં 52 પત્તાંની થોકડીમાંથી બે પત્તા પુરવણી સહિત એક પછી એક પસંદ કરવામાં આવે છે. ધારો કે X એ આ બે પસંદગીઓમાં એક્કા મળ્યાની સંખ્યાનો યાદચ્છિક ચલ દર્શાવે છે. તો $P(X=1)+P(X=2)$ બરાબર _____ છે.

Options :

1. 24/169

2. 25/169

3. 49/169

4. 52/169

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

Correct Marks : 4 Wrong Marks : 1

For any $\theta \in \left(\frac{\pi}{4}, \frac{\pi}{2}\right)$, the expression

$3(\sin\theta-\cos\theta)^4+6(\sin\theta+\cos\theta)^2+4\sin^6\theta$

equals :

Options :

1. $13-4\cos^2\theta+6\sin^2\theta\cos^2\theta$

2. $13-4\cos^2\theta+6\cos^4\theta$

3. $13-4\cos^4\theta+2\sin^2\theta\cos^2\theta$

4. $13-4\cos^6\theta$

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

Correct Marks : 4 Wrong Marks : 1

किसी $\theta \in \left(\frac{\pi}{4}, \frac{\pi}{2}\right)$ के लिए व्यंजक

$3(\sin\theta-\cos\theta)^4+6(\sin\theta+\cos\theta)^2+4\sin^6\theta$

बराबर है :

Options :

1. $13-4\cos^2\theta+6\sin^2\theta\cos^2\theta$

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3. $13-4\cos^4\theta+2\sin^2\theta\cos^2\theta$

4. $13-4\cos^6\theta$

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

Correct Marks : 4 Wrong Marks : 1

કોઈપણ $\theta \in \left(\frac{\pi}{4}, \frac{\pi}{2}\right)$ માટે, નિરૂપણ

$3(\sin\theta-\cos\theta)^4+6(\sin\theta+\cos\theta)^2+4\sin^6\theta$

બરાબર _____ છે.

Options :

1. $13-4\cos^2\theta+6\sin^2\theta\cos^2\theta$

2. $13-4\cos^2\theta+6\cos^4\theta$

3. $13-4\cos^4\theta+2\sin^2\theta\cos^2\theta$

4. $13-4\cos^6\theta$

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

Correct Marks : 4 Wrong Marks : 1

If $\cos^{-1}\left(\frac{2}{3x}\right)+\cos^{-1}\left(\frac{3}{4x}\right)=\frac{\pi}{2}\left(x>\frac{3}{4}\right)$,

then x is equal to :

Options :

1. $\frac{\sqrt{145}}{12}$

2. $\frac{\sqrt{146}}{12}$

3. $\frac{\sqrt{145}}{11}$

4. $\frac{\sqrt{145}}{10}$

Question Number : 89 Question Type : MCQ Option Shuffling : Yes Display Question Number

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यदि

$\cos^{-1}\left(\frac{2}{3x}\right)+\cos^{-1}\left(\frac{3}{4x}\right)=\frac{\pi}{2}\left(x>\frac{3}{4}\right)$, तो

x बराबर है :

Options :

1. $\frac{\sqrt{145}}{12}$

2. $\frac{\sqrt{146}}{12}$

3. $\frac{\sqrt{145}}{11}$

4. $\frac{\sqrt{145}}{10}$

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

Correct Marks : 4 Wrong Marks : 1

જો $\cos^{-1}\left(\frac{2}{3x}\right)+\cos^{-1}\left(\frac{3}{4x}\right)=\frac{\pi}{2}\left(x>\frac{3}{4}\right)$

તો x બરાબર _____ છે.

Options :

1. $\frac{\sqrt{145}}{12}$

2. $\frac{\sqrt{146}}{12}$

3. $\frac{\sqrt{145}}{11}$

4. $\frac{\sqrt{145}}{10}$

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

Correct Marks : 4 Wrong Marks : 1

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If the Boolean expression
$(p \oplus q) \wedge (\sim p \odot q)$ is equivalent to
$p \wedge q$, where $\oplus, \odot \in \{\wedge, \vee\}$, then the ordered pair $(\oplus, \odot)$ is:

Options :

1. $(\wedge, \wedge)$

2. $(\wedge, \vee)$

3. $(\vee, \vee)$

4. $(\vee, \wedge)$

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

Correct Marks : 4 Wrong Marks : 1

यदि बूलीय व्यंजक $(p \oplus q) \wedge (\sim p \odot q)$, $p \wedge q$ के तुल्य है, जहाँ $\oplus, \odot \in \{\wedge, \vee\}$ है, तो क्रमित युग्म $(\oplus, \odot)$ है :

Options :

1. $(\wedge, \wedge)$

2. $(\wedge, \vee)$

3. $(\vee, \vee)$

4. $(\vee, \wedge)$

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

Correct Marks : 4 Wrong Marks : 1

જો બુલીયન નિરૂપણ (Boolean expression)
$(p \oplus q) \wedge (\sim p \odot q)$ એ $p \wedge q$ ને સમકક્ષ હોય, જ્યાં $\oplus, \odot \in \{\wedge, \vee\}$, તો ક્રમયુક્ત જોડ $(\oplus, \odot)$ એ _____ છે.

Options :

1. $(\wedge, \wedge)$

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2. $(\wedge, \vee)$

3. $(\vee, \vee)$

4. $(\vee, \wedge)$

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