find my college

Question Paper Name:	BTECH 8th Jan 2020 Shift 1
Subject Name:	BTECH
Creation Date:	2020-01-08 15:09:15
Duration:	180
Total Marks:	300
Display Marks:	Yes

BTECH

Group Number :	1
Group Id :	40503618
Group Maximum Duration :	0
Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Break time:	0
Group Marks:	300
Is this Group for Examiner?:	No

Physics

Section Id :	40503657
Section Number :	1
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	25
Number of Questions to be attempted:	25
Section Marks:	100

Sub-Section Number:	1
Sub-Section Id:	40503686
Question Shuffling Allowed :	Yes

Question Number : 1 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The dimension of stopping potential V_0 in photoelectric effect in units of Planck's constant 'h', speed of light 'c' and Gravitational constant 'G' and ampere A is :

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

Options :

find my college

1. $h^2 G^{3/2} c^{1/3} A^{-1}$

2. $h^{1/3} G^{2/3} c^{1/3} A^{-1}$

3. $h^{2/3} c^{5/3} G^{1/3} A^{-1}$

4. $h^{-2/3} c^{-1/3} G^{4/3} A^{-1}$

Question Number : 1 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

प्रकाश विद्युत प्रभाव में निरोधी विभव V_0 (stopping potential) की विमाएँ प्लांक स्थिरांक 'h', प्रकाश की गति 'c' और गुरुत्वाकर्षण स्थिरांक 'G', तथा एम्पीयर A में निम्न में से किससे व्यक्त होगा ?

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

Options :

1. $h^2 G^{3/2} c^{1/3} A^{-1}$

2. $h^{1/3} G^{2/3} c^{1/3} A^{-1}$

3. $h^{2/3} c^{5/3} G^{1/3} A^{-1}$

4. $h^{-2/3} c^{-1/3} G^{4/3} A^{-1}$

Question Number : 1 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

ફોટોઇલેક્ટ્રીક અસરમાં સ્ટોપિંગ પોટેન્શીયલ V_0 નું પરિમાણ પ્લાન્ક અચળાંક 'h', પ્રકાશની ઝડપ 'c' ગુરુત્વાકર્ષી અચળાંક 'G' અને એમ્પિયર A ના એકમમાં ________ હશે.

findmycollege

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

Options :

1. $h^2 G^{3/2} c^{1/3} A^{-1}$

2. $h^{1/3} G^{2/3} c^{1/3} A^{-1}$

3. $h^{2/3} c^{5/3} G^{1/3} A^{-1}$

4. $h^{-2/3} c^{-1/3} G^{4/3} A^{-1}$

Question Number : 2 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

A particle of mass m is fixed to one end of a light spring having force constant k and unstretched length l. The other end is fixed. The system is given an angular speed ω about the fixed end of the spring such that it rotates in a circle in gravity free space. Then the stretch in the spring is :

Options :

1. $\dfrac{ml\omega^2}{k+m\omega^2}$

2. $\dfrac{ml\omega^2}{k-m\omega^2}$

3. $\dfrac{ml\omega^2}{k+m\omega}$

4. $\dfrac{ml\omega^2}{k - \omega m}$

Question Number : 2 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

m द्रव्यमान का एक कण बल स्थिरांक k एवं अतानित लम्बाई l वाली एक हल्की कमानी (spring) के एक छोर से जुड़ा हुआ है। कमानी का दूसरा छोर बद्ध है। इस निकाय को कोणीय गति ω देकर कमानी के बद्धछोर के चारों ओर घुमाया जाता है और यह कण गुरुत्वाकर्षण मुक्त क्षेत्र में एक वृत्त में घूमने लगता है। इस स्थिति में कमानी में होने वाला खिंचाव है :

Options :

1. $\dfrac{ml\omega^2}{k + m\omega^2}$

2. $\dfrac{ml\omega^2}{k - m\omega^2}$

3. $\dfrac{ml\omega^2}{k + m\omega}$

4. $\dfrac{ml\omega^2}{k - \omega m}$

Question Number : 2 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

એક m દળ ધરાવતો કણ k જેટલો દળ અચળાંક અને l જેટલી ખેંચાણમુક્ત લંબાઈ ધરાવતી હલકી સ્પ્રિંગના એક છેડા આગળ જડવામાં આવેલ છે. બીજો છેડો જડિત છે. આ તંત્રને સ્પ્રિંગના બીજા છેડાને ફરતે એવી રીતે કોણીય ઝડપ ω આપવામાં આવે છે કે જેથી તે ગુરૂત્વાકર્ષણ થી મુક્ત અવકાશમાં વર્તુળાકાર ગતિ કરે, તો સ્પ્રિંગમાં ઉત્પન વિકૃતિ (ખેંચાણ) ________ થશે.

Options :

1. $\frac{ml\omega^2}{k+m\omega^2}$

2. $\frac{ml\omega^2}{k-m\omega^2}$

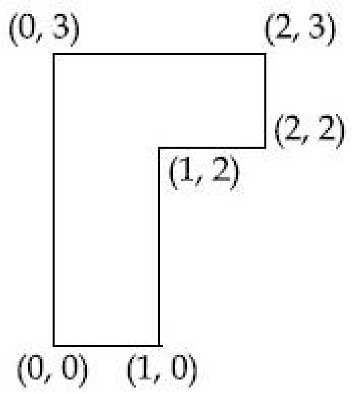
3. $\frac{ml\omega^2}{k+m\omega}$

4. $\frac{ml\omega^2}{k-\omega m}$

Question Number : 3 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

find my college

The coordinates of centre of mass of a uniform flag shaped lamina (thin flat plate) of mass 4 kg. (The coordinates of the same are shown in figure) are :



Options :

1. (0.75 m, 1.75 m)

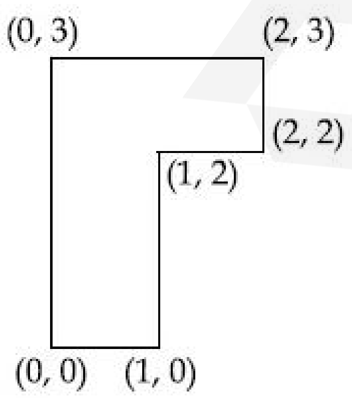
2. (0.75 m, 0.75 m)

3. (1 m, 1.75 m)

4. (1.25 m, 1.50 m)

Question Number : 3 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

चित्र में दिखाये गये झण्डे के आकार के 4 kg द्रव्यमान वाले एक समतल एकसमान प्लेट के संहति केन्द्र के निर्देशक बिन्दु होंगे :



Options :

find my college

1. (0.75 m, 1.75 m)

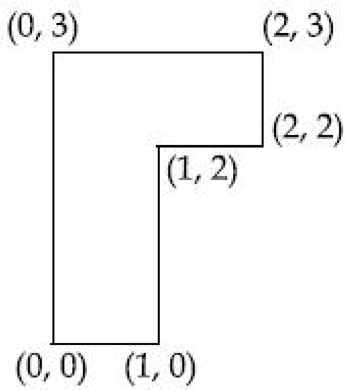
2. (0.75 m, 0.75 m)

3. (1 m, 1.75 m)

4. (1.25 m, 1.50 m)

Question Number : 3 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

એક સમાન, ઝંડા (flag) આકારના અને 4 kg દળના પટલ (પાતળી સપાટ તક્તિ) ના દ્રવ્યમાન કેન્દ્રના યામો __________ છે. (આકૃતિમાં પટલ ના પરિમાણ દર્શાવેલ છે)



Options :

1. (0.75 m, 1.75 m)

2. (0.75 m, 0.75 m)

3. (1 m, 1.75 m)

4. (1.25 m, 1.50 m)

Question Number : 4 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Consider a uniform rod of mass M=4m and length l pivoted about its centre. A mass m moving with velocity v making angle $\theta = \frac{\pi}{4}$ to the rod's long axis collides with one end of the rod and sticks to it. The angular speed of the rod-mass system just after the collision is :

Options :

1. $\frac{3}{7}\frac{v}{l}$

2. $\frac{3}{7\sqrt{2}}\frac{v}{l}$

3. $\frac{3\sqrt{2}}{7}\frac{v}{l}$

4. $\frac{4}{7}\frac{v}{l}$

Question Number : 4 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

द्रव्यमान M=4m तथा l लम्बाई की एकसमान छड़ के केन्द्र पर धुराग्रस्त (pivoted) है। v गति से चलता हुआ m द्रव्यमान का एक कण, छड़ के लम्बे अक्ष से $\theta = \frac{\pi}{4}$ कोण बनाता हुआ छड़ के एक सिरे से टकराता है और इससे चिपक जाता है। छड़-कण निकाय की टक्कर के बाद कोणीय गति होगी :

Options :

find my college

1. $\frac{3}{7}\frac{v}{l}$

2. $\frac{3}{7\sqrt{2}}\frac{v}{l}$

3. $\frac{3\sqrt{2}}{7}\frac{v}{l}$

4. $\frac{4}{7}\frac{v}{l}$

Question Number : 4 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

એક $M = 4m$ દળ ધરાવતા અને l લંબાઈના એકસમાન સળિયાને તેના કેન્દ્રથી કિલકિત (ટકેવલે) કરેલ છે. એક m દળનો અને v જેટલા વેગથી ગતિ કરતો કણ સળિયાની લંબાઈને અનુરૂપ અક્ષ સાથે $\theta = \frac{\pi}{4}$ નો કોણ બનાવે તે રીતે સળિયાના એક છેડા સાથે સંઘાત (અથડામણ) અનુભવે છે અને તેને ચોંટી જાય છે. આ અથડામણ બાદ તુરંત જ સળિયા-દળ સંયુક્ત તંત્રની કોણીય ઝડપ __________ છે.

Options :

1. $\frac{3}{7}\frac{v}{l}$

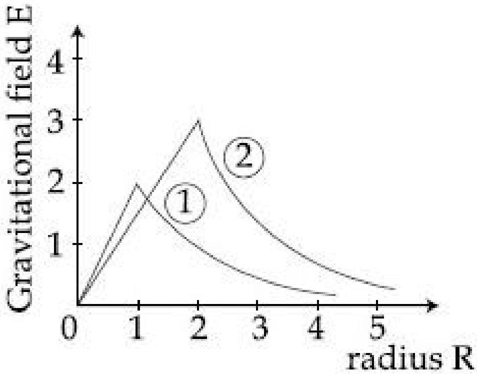
2. $\frac{3}{7\sqrt{2}}\frac{v}{l}$

3. $\frac{3\sqrt{2}}{7}\frac{v}{l}$

4. $\frac{4}{7}\frac{v}{l}$

Question Number : 5 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Consider two solid spheres of radii $R_1 = 1m$, $R_2 = 2m$ and masses M_1 and M_2, respectively. The gravitational field due to sphere (1) and (2) are shown. The value of $\frac{M_1}{M_2}$ is :



Options :

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

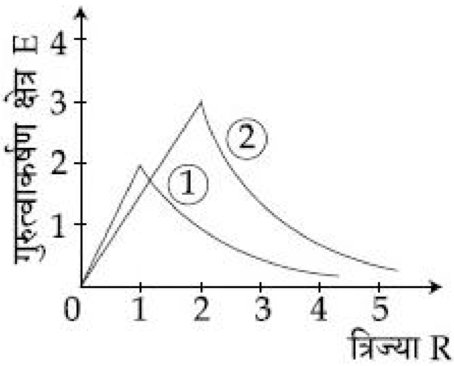
2. $\frac{1}{3}$

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

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

Question Number : 5 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

दो ठोस गोले जिनकी त्रिज्याएँ $R_1 = 1m$ और $R_2 = 2m$ है और जिनके द्रव्यमान क्रमशः M_1 और M_2 है, को संज्ञान में लें। गोले ① एवं ② द्वारा जनित गुरुत्वाकर्षण क्षेत्र चित्र में दिखाये गये हैं। तब $\frac{M_1}{M_2}$ का मान है :



Options :

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

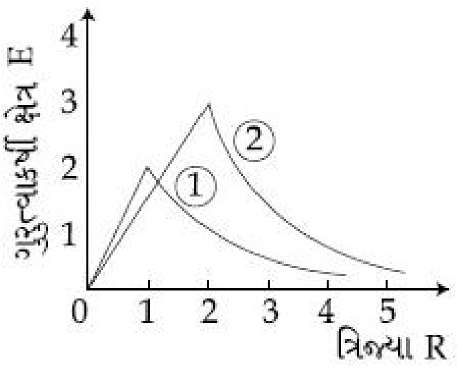
2. $\frac{1}{3}$

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

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

Question Number : 5 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

અનુક્રમે ત્રિજ્યાઓ $R_1 = 1m$ અને $R_2 = 2m$ અને દળો M_1 અને M_2 ધરાવતા બે ઘન ગોળાઓ ધ્યાનમાં લો. ગોળા (1) અને (2) ને કારણે મળતા ગુરુત્વાકર્ષી ક્ષેત્ર ને દર્શાવેલ છે. $\frac{M_1}{M_2}$ નું મૂલ્ય __________ છે.



Options :

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

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

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

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

Question Number : 6 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Consider a solid sphere of radius R and mass density $\rho(r) = \rho_0\left(1 - \frac{r^2}{R^2}\right)$, $0 < r \leq R$. The minimum density of a liquid in which it will float is :

Options :

find my college

1. $\frac{\rho_0}{5}$

2. $\frac{\rho_0}{3}$

3. $\frac{2\rho_0}{5}$

4. $\frac{2\rho_0}{3}$

Question Number : 6 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

एक ठोस गोले की त्रिज्या R है और इसका घनत्व $\rho(r) = \rho_0\left(1 - \frac{r^2}{R^2}\right), 0 < r \leq R$ है। जिस द्रव में यह प्लवन (तैर) कर सके उस द्रव का न्यूनतम घनत्व होगा :

Options :

1. $\frac{\rho_0}{5}$

2. $\frac{\rho_0}{3}$

3. $\frac{2\rho_0}{5}$

4. $\frac{2\rho_0}{3}$

find my college

Question Number : 6 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

R ત્રિજ્યાના અને $\rho(r) = \rho_0\left(1 - \frac{r^2}{R^2}\right), 0 < r \leq R,$

ઘનતા ધરાવતા એક ઘન ગોળાને ધ્યાનમાં લો. આ ગોળો તરી શકે તે માટે પ્રાવહીની લઘુત્તમ ઘનતા ________ છે.

Options :

1. $\frac{\rho_0}{5}$

2. $\frac{\rho_0}{3}$

3. $\frac{2\rho_0}{5}$

4. $\frac{2\rho_0}{3}$

Question Number : 7 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

A leak proof cylinder of length 1 m, made of a metal which has very low coefficient of expansion is floating vertically in water at 0°C such that its height above the water surface is 20 cm. When the temperature of water is increased to 4°C, the height of the cylinder above the water surface becomes 21 cm. The density of water at T = 4°C, relative to the density at T = 0°C is close to :

Options :

1. 1.04

find my college

2. 1.01

3. 1.26

4. 1.03

Question Number : 7 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

एक लीक प्रूफ 1 m लम्बा बेलनाकार बर्तन एक ऐसी धातु का बना हुआ है जिसका प्रसार गुणांक नगण्य है। यह सीधा होकर 0°C तापमान के पानी में तैर रहा है और इसकी लम्बाई का 20 cm भाग पानी के बाहर है। जब पानी का तापमान 4°C तक बढ़ा दिया जाता है तो इसके बाहर रहने वाले भाग की लम्बाई 21 cm हो जाती है। तब 0°C के सापेक्ष 4°C पर पानी का घनत्व निम्न में से किसके निकट है?

Options :

1. 1.04

2. 1.01

3. 1.26

4. 1.03

Question Number : 7 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

find my college

એક ખૂબ નાના પ્રસરણાંક ધરાવતી ધાતુમાંથી બનેલી અને ક્ષરણ-રહિત (leak proof) નળાકારની લંબાઈ 1 m છે, કે જે 0°C તાપમાને રહેલ પાણીમાં ઉભો એવી રીતે તરે છે કે જેથી તેનો, 20 cm ભાગ પાણીની સપાટીની ઉપર રહે. જ્યારે પાણીનું તાપમાન વધારીને 4°C કરવામાં આવે છે ત્યારે પાણીની સપાટીની બહાર રહેલા નળાકારનો ભાગ 21 cm થાય છે. $T = 0°C$ તાપમાનની સરખામણીમાં $T = 4°C$ તાપમાને પાણીની ઘનતા __________ ની નજીક હશે.

Options :

1. 1.04

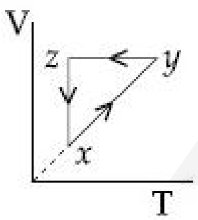
2. 1.01

3. 1.26

4. 1.03

Question Number : 8 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

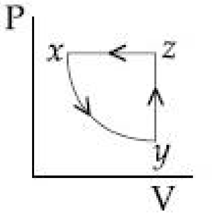
A thermodynamic cycle *xyzx* is shown on a V-T diagram.

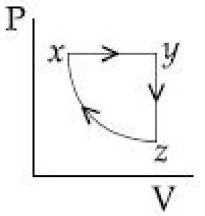


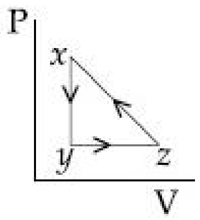
The P-V diagram that best describes this cycle is : (Diagrams are schematic and not to scale)

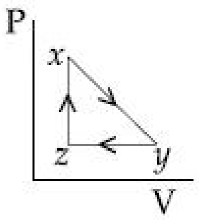
Options :

find my college

1. 

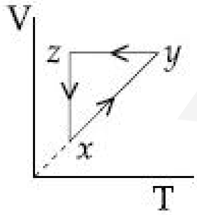
2. 

3. 

4. 

Question Number : 8 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

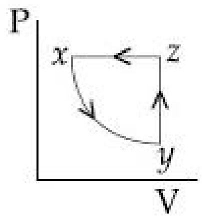
एक ऊष्मागतिज चक्र $xyzx$ का (V-T) ग्राफ चित्र में दिखाया गया है।

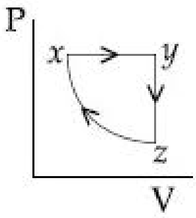


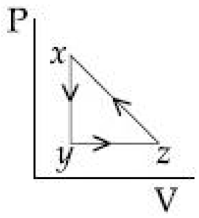
इस चक्र का सर्वोचित (P-V) ग्राफ निम्न में से कौन सा है? (चित्र सांकेतिक हैं)

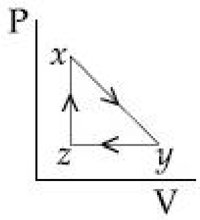
Options :

find my college

1. 

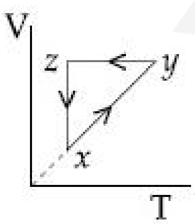
2. 

3. 

4. 

Question Number : 8 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

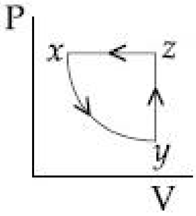
એક ઉષ્મીય ચક્રિય પ્રક્રિયા $xyzx$ ને (V-T) આલેખમાં દર્શાવેલ છે.

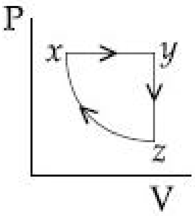


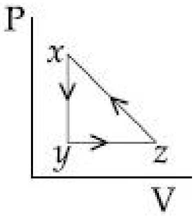
(P-V) રેખાકૃતિ કે જે આ ચક્રિય પ્રક્રિયાને સૌથી સારી રીતે દર્શાવી શકે તે ______________ છે. (આલેખ રેખાકૃત્તિ સૂચવે છે અને તે માપક્રમમાં નથી)

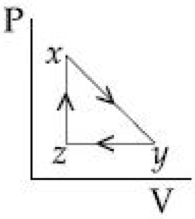
Options :

find my college

1. 

2. 

3. 

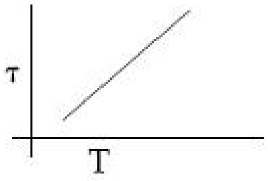
4. 

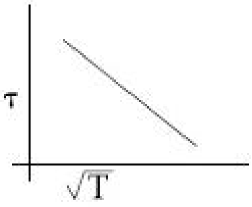
Question Number : 9 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

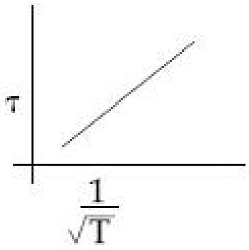
The plot that depicts the behavior of the mean free time τ (time between two successive collisions) for the molecules of an ideal gas, as a function of temperature (T), qualitatively, is : (Graphs are schematic and not drawn to scale)

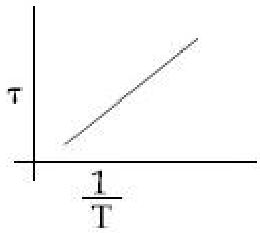
Options :

find my college

1. 

2. 

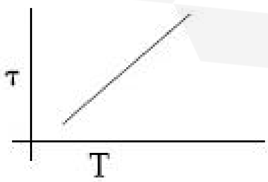
3. 

4. 

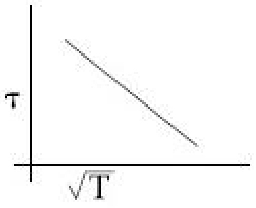
Question Number : 9 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

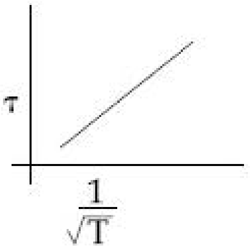
नीचे दिये गये चित्रों में से कौन सा चित्र आदर्श गैस के अणुओं का औसत मुक्त काल τ (दो उत्तरोत्तर टक्करों के बीच का समय) का तापमान (T) के साथ विचरण दिखाता है? (रेखाचित्र सांकेतिक है)

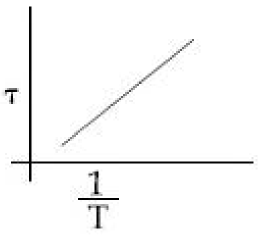
Options :

1. 

find my college

2. 

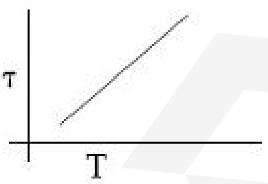
3. 

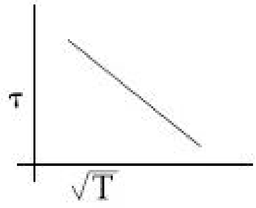
4. 

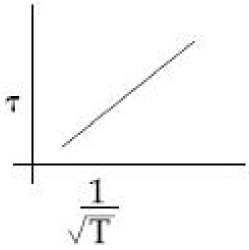
Question Number : 9 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

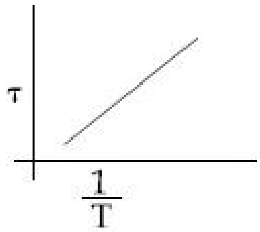
એક આદર્શવાયુ માટે સરેરાશ મુક્ત સમય (બે ક્રમિક અથડામણો વચ્ચેનો સમય) τ ની તાપમાન (T) ના વિધેય તરીકેની ગુણાત્મક રીતે સૌથી સારી રીતે વર્ણવી શકે તેવો આલેખ ________ છે. (આલેખ રેખાકૃતિ સૂચવે છે અને તે માપક્રમમાં નથી)

Options :

1. 

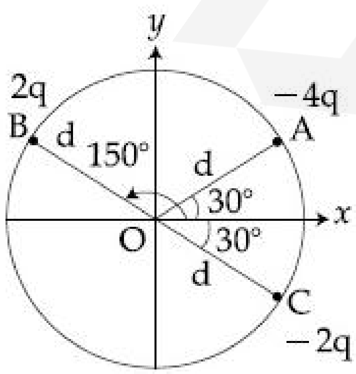
2. 

3. 

4. 

Question Number : 10 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Three charged particles A, B and C with charges $-4q$, $2q$ and $-2q$ are present on the circumference of a circle of radius d. The charged particles A, C and centre O of the circle formed an equilateral triangle as shown in figure. Electric field at O along x-direction is :



Options :

1. $\frac{\sqrt{3}q}{4\pi\epsilon_0 d^2}$

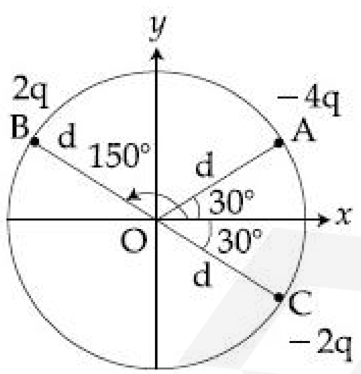
2. $\frac{3\sqrt{3}q}{4\pi\epsilon_0 d^2}$

3. $\frac{2\sqrt{3}q}{\pi\epsilon_0 d^2}$

4. $\frac{\sqrt{3}q}{\pi\epsilon_0 d^2}$

Question Number : 10 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

A, B और C आवेशित कण, जिन पर आवेश क्रमशः $-4q$, $2q$ और $-2q$ है, d त्रिज्या के एक वृत्त की परिधि पर रखे हुए है। कण A, C और वृत्त का केन्द्र O एक समबाहु त्रिभुज बनाते हैं। (चित्र देखें)। तब O पर x-दिशा में विद्युत क्षेत्र का मान है :



Options :

1. $\frac{\sqrt{3}q}{4\pi\epsilon_0 d^2}$

find my college

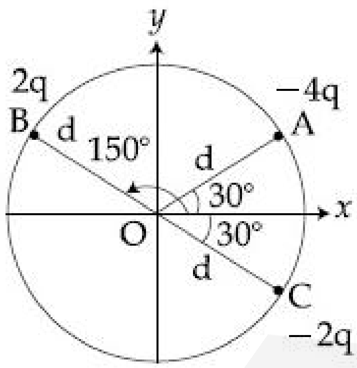
2. $\frac{3\sqrt{3}q}{4\pi\epsilon_0 d^2}$

3. $\frac{2\sqrt{3}q}{\pi\epsilon_0 d^2}$

4. $\frac{\sqrt{3}q}{\pi\epsilon_0 d^2}$

Question Number : 10 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

અનુક્રમે $-4q$, $2q$ અને $-2q$ જેટલો વિજભાર ધરાવતા ત્રણ વિદ્યુતભારિત કણો A, B અને C, d જેટલો વ્યાસ ધરાવતા વર્તુળના પરીઘ પર આવેલા છે. વિદ્યુતભારીત કણો A અને C , અને વર્તુળ O આકૃતિમાં દર્શાવ્યા અનુસાર સમબાજુ ત્રિકોણ રચે છે. O આગળ વિદ્યુતક્ષેત્ર x-દિશામાં ________ થશે.



Options :

1. $\frac{\sqrt{3}q}{4\pi\epsilon_0 d^2}$

2. $\frac{3\sqrt{3}q}{4\pi\epsilon_0 d^2}$

3. $\frac{2\sqrt{3}q}{\pi\epsilon_0 d^2}$

4. $\frac{\sqrt{3}q}{\pi\epsilon_0 d^2}$

Question Number : 11 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Effective capacitance of parallel combination of two capacitors C_1 and C_2 is 10 μF. When these capacitors are individually connected to a voltage source of 1 V, the energy stored in the capacitor C_2 is 4 times that of C_1. If these capacitors are connected in series, their effective capacitance will be :

Options :

1. 8.4 μF

2. 4.2 μF

3. 3.2 μF

4. 1.6 μF

Question Number : 11 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

पार्श्व संबंधन से जुड़े दो संधारित्रों C_1 और C_2 की प्रभावी धारिता 10 μF है। जब इन संधारित्रों को अलग-अलग 1 V के स्रोत से जोड़ा जाता है, तो C_2 में संचित ऊर्जा C_1 में संचित ऊर्जा के 4 गुना होती है। यदि इन संधारित्रों को श्रेणीबद्ध संबंधन में जोड़ा जाये, तो इनकी प्रभावी धारिता होगी :

Options :

1. 8.4 μF

2. 4.2 μF

3. 3.2 μF

4. 1.6 μF

Question Number : 11 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

બે સંધારકો C_1 અને C_2 ના સમાંતર જોડાણ ની અસરકારક સંધારકતા 10 μF છે. આ સંધારકોને 1 V ના વોલ્ટેજ ઉદ્‌ગમ સ્થાન સાથે જોડવામાં આવે જે ત્યારે C_2 માં સંગ્રહિત ઊર્જા C_1 કરતા 4 ગણી છે. જો સંધારકોને સમાંતરમાં જોડવામાં આવે તો તેમની અસરકારક સંધારકતા ________ થશે.

Options :

1. 8.4 μF

2. 4.2 μF

3. 3.2 μF

4. $1.6\ \mu F$

Question Number : 12 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Proton with kinetic energy of 1 MeV moves from south to north. It gets an acceleration of $10^{12}\ m/s^2$ by an applied magnetic field (west to east). The value of magnetic field : (Rest mass of proton is 1.6×10^{-27} kg)

Options :

1. 71 mT

2. 7.1 mT

3. 0.71 mT

4. 0.071 mT

Question Number : 12 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

1 MeV गतिज ऊर्जा वाला एक प्रोटॉन दक्षिण से उत्तर की ओर चल रहा है। पश्चिम से पूर्व की ओर दिशा के एक चुम्बकीय क्षेत्र से इस पर $10^{12}\ m/s^2$ का त्वरण पैदा होता है। चुम्बकीय क्षेत्र का परिमाण होगा : (प्रोटॉन का विराम द्रव्यमान $= 1.6 \times 10^{-27}$ kg)

Options :

1. 71 mT

2. 7.1 mT

3. 0.71 mT

4. 0.071 mT

Question Number : 12 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

1 MeV જેટલી ગતિઉર્જા ધરાવતો પ્રોટોન દક્ષિણથી ઉત્તર તરફ ગતિ કરે છે અને તે લગાવેલ ચુંબકીયક્ષેત્ર (પશ્ચિમ થી પૂર્વ) ને કારણે 10^{12} m/s^2 થી પ્રવેગિત થાય છે. ચુંબકીય ક્ષેત્રનું મૂલ્ય ________ થશે. (પ્રોટોનનું સ્થિર દળ $= 1.6 \times 10^{-27}$ kg)

Options :

1. 71 mT

2. 7.1 mT

3. 0.71 mT

4. 0.071 mT

Question Number : 13 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

In finding the electric field using Gauss law the formula $|\vec{E}| = \frac{q_{enc}}{\epsilon_0 |A|}$ is applicable. In the formula ϵ_0 is permittivity of free space, A is the area of Gaussian surface and q_{enc} is charge enclosed by the Gaussian surface. This equation can be used in which of the following situation ?

Options :

find my college

1. For any choice of Gaussian surface.

2. Only when the Gaussian surface is an equipotential surface.

3. Only when the Gaussian surface is an equipotential surface and $\left|\vec{E}\right|$ is constant on the surface.

4. Only when $\left|\vec{E}\right|$ = constant on the surface.

Question Number : 13 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

गॉस के नियम का प्रयोग कर विद्युत क्षेत्र का मान $\left|\vec{E}\right| = \frac{q_{enc}}{\epsilon_0 |A|}$ से दिया जाता है। यहाँ पर ϵ_0 निर्वात की विद्युत्शीलता है, A गॉस सतह का क्षेत्रफल है और q_{enc} गॉस सतह द्वारा घिरा हुआ आवेश है। इस समीकरण का प्रयोग निम्न में से किस परिस्थिति में किया जा सकता है?

Options :

1. किसी भी गॉस सतह के लिये।

2. केवल तब ही जब गॉस सतह समविभव सतह हो।

3. केवल तब ही जब गॉस सतह समविभव सतह हो और $\left|\vec{E}\right|$ का मान इस सतह पर अचर हो।

4. केवल तब ही जब $|\vec{E}|$ का मान इस सतह पर अचर हो।

Question Number : 13 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

ગોસના નિયમની મદદથી વિદ્યુતક્ષેત્ર શોધવા માટે સૂત્ર $|\vec{E}| = \frac{q_{enc}}{\epsilon_0 |A|}$ લાગુ પાડી શકાય છે. આ સૂત્રમાં ϵ_0 એક મુક્ત અવકાશની પરમિટિવીટી, A એ ગોસીયન સપાટીનું ક્ષેત્રફળ અને q_{enc} એ ગૉસીયન સપાટીની અંદર ઘેરાતો વિદ્યુતભાર છે. નીચેનાંમાંથી કયા કિસ્સામાં આ સમીકરણનો ઉપયોગ કરી શકાય?

Options :

1. કોઇપણ પ્રકારના ગૉસીયન પૃષ્ઠ માટે

2. ફક્ત જ્યારે ગૉસીયન પૃષ્ઠ સમસ્થિતિમાન પૃષ્ઠ હોય ત્યારે.

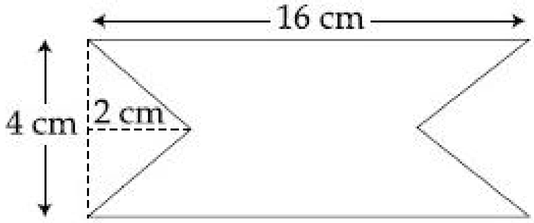
3. ફક્ત જ્યારે ગૉસીયન પૃષ્ઠ સમસ્થિતિમાન પૃષ્ઠ હોય અને પૃષ્ઠ ઉપર $|\vec{E}|$ અચળ હોય ત્યારે.

4. ફક્ત જ્યારે પૃષ્ઠ ઉપર $|\vec{E}|$ અચળ હોય.

Question Number : 14 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

find my college

At time $t=0$ magnetic field of 1000 Gauss is passing perpendicularly through the area defined by the closed loop shown in the figure. If the magnetic field reduces linearly to 500 Gauss, in the next 5 s, then induced EMF in the loop is :



Options :

1. 28 μV

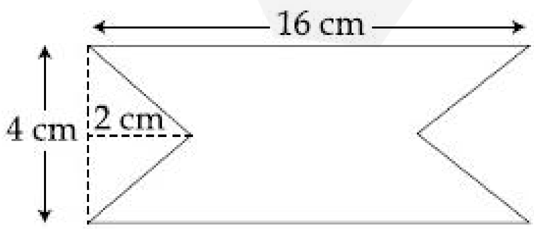
2. 36 μV

3. 48 μV

4. 56 μV

Question Number : 14 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

समय $t=0$ पर चित्र में दिखाये गये एक पूर्ण लूप से होकर 1000 गॉस मान का चुम्बकीय क्षेत्र इसके लम्बवत निकलता है। यदि अगले 5 s में चुम्बकीय क्षेत्र का मान रेखीय (linear) रूप से घटकर 500 गॉस हो जाता है, तो लूप में उत्प्रेरित विद्युत-वाहक बल का मान होगा :



Options :

1. 28 μV

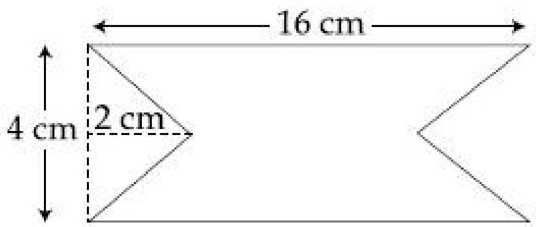
2. 36 μV

3. 48 μV

4. 56 μV

Question Number : 14 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

t=0 સમયે, 1000 ગૉસનું ચુંબકીય ક્ષેત્ર ગાળાના ક્ષેત્રફળમાંથી લંબરૂપે પસાર થાય છે, જુઓ આકૃતિ. જો બીજા 5 સેકન્ડમાં ચુંબકીય ક્ષેત્ર રેખીય રીતે ઘટીને 500 ગૉસ થાય તો ગાળામાં પ્રેરિત EMF કેટલું થશે?



Options :

1. 28 μV

2. 36 μV

3. 48 μV

4. 56 μV

Question Number : 15 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The critical angle of a medium for a specific wavelength, if the medium has relative permittivity 3 and relative permeability $\frac{4}{3}$ for this wavelength, will be :

Options :

1. 30°

2. 45°

3. 60°

4. 15°

Question Number : 15 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

एक माध्यम को, एक विशेष तरंगदैर्घ्य के लिये सापेक्ष विद्युतशीलता 3 है और सापेक्ष चुंबकशीलता $\frac{4}{3}$ है। इस तरंगदैर्घ्य के लिये माध्यम के क्रांतिक कोण का मान है :

Options :

1. 30°

2. 45°

3. 60°

4. 15°

Question Number : 15 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

જો ચોક્કસ તરંગલંબાઈ એ માધ્યમની સાપેક્ષ પરમીટીવીટી (પૈરાવૈદ્યુતાંક) 3 અને સાપેક્ષ પારગ્મયતા (પરમીઆબીલીટી) $\frac{4}{3}$ હોય તો માધ્યમ માટેના કાંતિકોણ __________ થશે.

Options :

1. 30°

2. 45°

3. 60°

4. 15°

Question Number : 16 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The magnifying power of a telescope with tube length 60 cm is 5. What is the focal length of its eye piece ?

Options :

1. 10 cm

2. 20 cm

3. 30 cm

4. 40 cm

find my college

Question Number : 16 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

यदि एक टेलीस्कोप की ट्यूब की लम्बाई 60 cm है
और इसका आवर्धन 5 हो तो इसके नेत्रिका (eye piece)
की फोकस दूरी है :

Options :

1. 10 cm

2. 20 cm

3. 30 cm

4. 40 cm

Question Number : 16 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

60 cm જેટલી ટ્યુબલંબાઈ ધરાવતા ટેલીસ્કોપની
મોટવણી 5 છે. નેત્રકાચ ની કેન્દ્રલંબાઈ કેટલી હશે?

Options :

1. 10 cm

2. 20 cm

3. 30 cm

4. 40 cm

Question Number : 17 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

When photon of energy 4.0 eV strikes the surface of a metal A, the ejected photoelectrons have maximum kinetic energy T_A eV and de-Broglie wavelength λ_A. The maximum kinetic energy of photoelectrons liberated from another metal B by photon of energy 4.50 eV is $T_B = (T_A - 1.5)$eV. If the de-Broglie wavelength of these photoelectrons $\lambda_B = 2\lambda_A$, then the work function of metal B is :

Options :

1. 1.5 eV

2. 4 eV

3. 3 eV

4. 2 eV

Question Number : 17 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

जब 4.0 eV ऊर्जा के फोटॉन धातु A की सतह पर पड़ते हैं, तो इससे उत्सर्जित इलैक्ट्रॉनों की अधिकतम गतिज ऊर्जा T_A eV है और इनका डी-ब्रोग्ली तरंगदैर्ध्य λ_A है। एक दूसरी धातु B पर 4.50 eV ऊर्जा के फोटॉनों के पड़ने पर उत्सर्जित इलैक्ट्रॉनों की अधिकतम गतिज ऊर्जा $T_B = (T_A - 1.5)$eV है। यदि इनका डी-ब्रोग्ली तरंगदैर्ध्य $\lambda_B = 2\lambda_A$ है, तो धातु B के कार्य फलन का मान है :

Options :

1. 1.5 eV

2. 4 eV

3. 3 eV

4. 2 eV

Question Number : 17 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

જ્યારે 4.0 eV ઊર્જા ધરાવતો ફોટોન ધાતુ A ની સપાટી ને અથડાય છે ત્યારે ઉત્સર્જાતા ફોટોઇલેક્ટ્રોન પાસે મહત્તમ ગતિઉર્જા T_A eV અને ડી-બ્રોગ્લી તરંગલંબાઈ λ_A છે. બીજી ધાતુ B દ્વારા 4.50 eV ઉર્જાવાળા ફોટોનથી ફોટોઇલેક્ટ્રોનની મહત્તમ ગતિઉર્જા $T_B = (T_A - 1.5)eV$ છે. જો આ ફોટોઇલેક્ટ્રોનની ડી-બ્રોગ્લી તરંગલંબાઈ $\lambda_B = 2\lambda_A$ હોય તો B નું વર્કફંકશન (કાર્યવિધેય) ___________ હશે.

Options :

1. 1.5 eV

2. 4 eV

3. 3 eV

4. 2 eV

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

find my college

Correct Marks : 4 Wrong Marks : 1

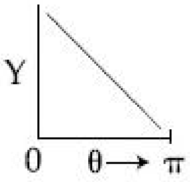
The graph which depicts the results of Rutherford gold foil experiment with α-particles is :

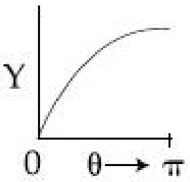
θ : Scattering angle

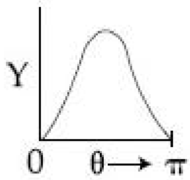
Y : Number of scattered α-particles detected

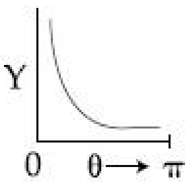
(Plots are schematic and not to scale)

Options :

1. 

2. 

3. 

4. 

Question Number : 18 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

नीचे दिये गये चित्रों में से कौन सा ग्राफ रदरफोर्ड के स्वर्ण पन्नी पर α-कणों द्वारा किये गये प्रयोग के परिणाम को दर्शाता ह? यहां पर

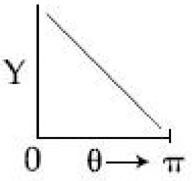
θ : प्रकीर्णन कोण (Scattering angle)

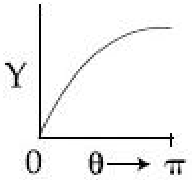
Y : प्रकीर्णित α-कणों की संख्या

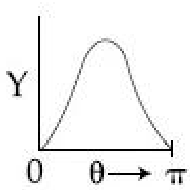
(चित्र सांकेतिक है)

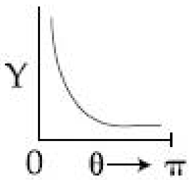
Options :

find my college

1. 

2. 

3. 

4. 

Question Number : 18 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

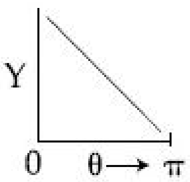
રૂથરફોર્ડ સોનાના વરખ માટે α- કણ નો પ્રયોગ ના પરિણામ વર્ણવી શકે તે આલેખ ________ છે.

θ : પ્રકિર્ણન કોણ

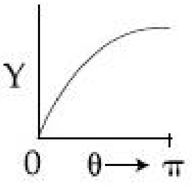
Y : નોંધાયેલા અને પ્રકિર્ણન પામેલા α-કણોની સંખ્યા

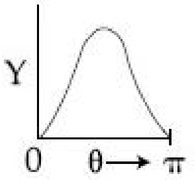
(અત્રે આલેખો ફક્ત રેખાકૃતિ સૂચવે છે, માપ-પ્રમાણે દોરલા નથી)

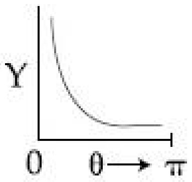
Options :

1. 

find my college

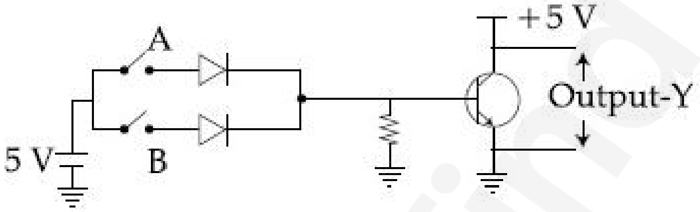
2. 

3. 

4. 

Question Number : 19 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Boolean relation at the output stage-Y for the following circuit is :



Options :

1. $A + B$

2. $A \cdot B$

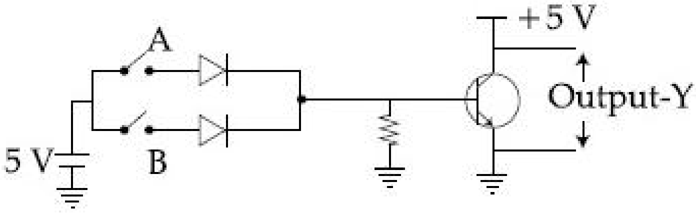
3. $\overline{A} + \overline{B}$

4. $\overline{A} \cdot \overline{B}$

find my college

Question Number : 19 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

नीचे दिये गये परिपथ के निर्गत Y के लिये बूलियन सम्बन्ध होगा :



Options :

1. $A + B$

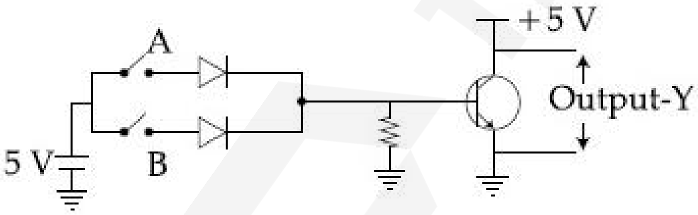
2. $A \cdot B$

3. $\overline{A} + \overline{B}$

4. $\overline{A} \cdot \overline{B}$

Question Number : 19 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

આપેલા પરિપથ માટે આઉટપુટ Y માટે બુલીયન સંબંધ ___________ થશે.



Options :

1. $A + B$

2. $A \cdot B$

find my college

3. $\overline{A} + \overline{B}$

4. $\overline{A} \cdot \overline{B}$

Question Number : 20 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The length of a potentiometer wire is 1200 cm and it carries a current of 60 mA. For a cell of emf 5 V and internal resistance of 20 Ω, the null point on it is found to be at 1000 cm. The resistance of whole wire is :

Options :

1. 60 Ω

2. 80 Ω

3. 100 Ω

4. 120 Ω

Question Number : 20 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

एक पोटेन्शियोमीटर के तार की लम्बाई 1200 cm है और इसमें 60 mA की विद्युत धारा प्रवाहित हो रही है। एक 5 V विद्युत-वाहक बल तथा 20 Ω आंतरिक प्रतिरोधक वाले सैल के लिये इस पर संतुलन बिन्दु 1000 cm पर आता है। तब पोटेन्शियोमीटर के तार का प्रतिरोध है :

Options :

1. 60 Ω

2. 80 Ω

3. 100 Ω

4. 120 Ω

Question Number : 20 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

પોટેન્શીયોમીટરની લંબાઈ 1200 cm છે અને તેમાંથી 60 mA નો પ્રવાહ પસાર થાય છે. 5 V જેટલો emf ધરાવતા અને 20 Ω આંતરિક અવરોધ ધરાવતા વિદ્યુતકોષ (cell) માટે તેના પર મળતુ સંતુલન બિંદુ 1000 cm આગળ મળે છે. આખાય તારનો અવરોધ __________ થશે.

Options :

1. 60 Ω

2. 80 Ω

3. 100 Ω

4. 120 Ω

Sub-Section Number:	2
Sub-Section Id:	40503687
Question Shuffling Allowed :	Yes

Question Number : 21 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

find my college

A particle is moving along the x-axis with its coordinate with time 't' given by $x(t) = 10 + 8t - 3t^2$. Another particle is moving along the y-axis with its coordinate as a function of time given by $y(t) = 5 - 8t^3$. At $t = 1$ s, the speed of the second particle as measured in the frame of the first particle is given as $\sqrt{v}$. Then v (in m/s) is ________.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
580.0 to 580.0

Question Number : 21 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

एक कण x-अक्ष पर इस प्रकार चल रहा है कि इसका समय t के साथ x निर्देशक (coordinate) का मान $x(t) = 10 + 8t - 3t^2$ है। एक दूसरा कण y-अक्ष पर चल रहा है और इसका y निर्देशक $y(t) = 5 - 8t^3$ द्वारा दिया जाता है। यदि $t = 1$ s पर पहले कण के सापेक्ष दूसरे कण की गति $\sqrt{v}$ हो, तो v का मान (m/s में) है ________.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
580.0 to 580.0

Question Number : 21 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

એક કણ x- અક્ષની દિશામાં સમય t સાથે તેનો યામ $x(t) = 10 + 8t - 3t^2$ વડે આપાય તેમ ગતિ કરે છે. બીજો કણ y-અક્ષની દિશામાં, સમયના વિધેય રૂપે યામ $y(t) = 5 - 8t^3$ થી આપવામાં આવે છે. $t = 1$ s પ્રથમ કણની સ્થિર નિર્દેશફ્રેમમાં બીજા કણની મપાતી ઝડપ $\sqrt{v}$ વડે આપવામાં આવે છે. તો v (m/s માં) ________ થશે.

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

580.0 to 580.0

find my college

Question Number : 22 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

A body A, of mass m=0.1 kg has an initial velocity of $3\hat{i}$ ms^{-1}. It collides elastically with another body, B of the same mass which has an initial velocity of $5\hat{j}$ ms^{-1}. After collision, A moves with a velocity $\vec{v} = 4(\hat{i} + \hat{j})$. The energy of B after collision is written as $\frac{x}{10}$ J. The value of x is ________.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
1.0 to 1.0

Question Number : 22 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

द्रव्यमान m=0.1 kg का एक पिण्ड A का आरम्भिक वेग $3\hat{i}$ ms^{-1} है। यह प्रत्यास्थ तरीके से समान द्रव्यमान के दूसरे पिण्ड B से टकराता है जिसका आरम्भिक वेग $5\hat{j}$ ms^{-1} है। टकराने के बाद, पिण्ड A $\vec{v} = 4(\hat{i} + \hat{j})$ वेग से चल रहा है और पिण्ड B की ऊर्जा $\frac{x}{10}$ J है। x का मान है ________ ।

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
1.0 to 1.0

Question Number : 22 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

એક વસ્તુ A નું દળ m=0.1 kg અને તેના પ્રારંભિક વેગ $3\hat{i}$ ms^{-1} છે. તે બીજા આટલું જ દળ ધરાવતા કણ B, કે જેનો પ્રારંભિક વેગ $5\hat{j}$ ms^{-1} છે તેની સાથે સ્થિતિસ્થાપક સંઘાત અનુભવે છે. સંઘાત બાદ A, $\vec{v} = 4(\hat{i} + \hat{j})$ જેટલા વેગથી ગતિ કરે છે. અથડામણ બાદ B ની ઉર્જા $\frac{x}{10}$ J વડે અપાય છે. x નું મૂલ્ય ________.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
1.0 to 1.0

Question Number : 23 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

A one metre long (both ends open) organ pipe is kept in a gas that has double the density of air at STP. Assuming the speed of sound in air at STP is 300 m/s, the frequency difference between the fundamental and second harmonic of this pipe is ________ Hz.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
106 to 107.2

Question Number : 23 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

एक मीटर लम्बे व दोनों छोरों पर खुले हुए एक ऑर्गन पाइप को एक ऐसी गैस में रखा गया है, जिसका घनत्व वायु के मानक ताप व दाब पर घनत्व से दो गुना है। यह मानते हुए कि मानक ताप व दाब पर वायु में ध्वनि की गति 300 m/s, गैस में रखे पाइप की मूल आवृत्ति और द्वितीय हारमोनिक की आवृत्ति में अन्तर होगा ________ Hz.

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

Possible Answers :
106 to 107.2

Question Number : 23 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

એક મીટર લાંબી (બંને છેડેથી ખુલ્લી) નળી (organ pipe) ને જેની ઘનતા STP એ હવાની ઘનતા કરતા બમણી હોય તેવા વાયુમાં રાખવામાં આવે છે. હવામાં STP એ ધ્વનિની ઝડપ 300 m/s ધારતાં, મૂળભૂત અને દ્વિતીય આવર્તની આવૃત્તિનો તફાવત __________ Hz થશે.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
106 to 107.2

Question Number : 24 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

Four resistances of 15 Ω, 12 Ω, 4 Ω and 10 Ω respectively in cyclic order to form Wheatstone's network. The resistance that is to be connected in parallel with the resistance of 10 Ω to balance the network is __________ Ω.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
10 to 10

Question Number : 24 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

15 Ω, 12 Ω, 4 Ω और 10 Ω के चार प्रतिरोधकों को क्रमबद्ध जोड़कर एक व्हीटस्टोन परिपथ बनाया जाता है। इस परिपथ को संतुलन में लाने के लिये 10 Ω के प्रतिरोधक पर कितने Ω का एक प्रतिरोधक पार्श्व संबंधन में जोड़ा जाना चाहिये __________ Ω।

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
10 to 10

Question Number : 24 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

find my college

ચાર અવરોધો, અનુક્રમે 15 Ω, 12 Ω, 4 Ω અને 10 Ω ને ક્રમિક (ચક્રીય રીતે) જોડીને વ્હીસ્ટોન બ્રિજ બનાવવામાં આવેલ છે. આ નેટવર્ક (જાળ તંત્ર) ને સમતોલન કરવા, 10 Ω અવરોધને સમાંતર જોડવો પડતો અવરોધ ________ Ω છે.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
10 to 10

Question Number : 25 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

A point object in air is in front of the curved surface of a *plano-convex* lens. The radius of curvature of the curved surface is 30 cm and the refractive index of the lens material is 1.5, then the focal length of the lens (in cm) is ________.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
60 to 60

Question Number : 25 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

एक बिन्दु के आकार की वस्तु एक समतल-उत्तल लैंस की उत्तल सतह के सामने रखा हुआ है। उत्तल सतह की त्रिज्या 30 cm है और लैंस जिससे बना है उस पदार्थ का अपवर्तनांक 1.5 है। लैन्स की फोकस दूरी का मान cm में कितना होगा ________.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
60 to 60

Question Number : 25 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

એક બિંદુવત્ પદાર્થ એક સમતલ-બહિર્ગોળ લેન્સની વક્રસપાટીની સામે હવામાં છે. વક્રસપાટીની વક્રતાત્રિજ્યા 30 cm છે અને લેન્સના દ્રવ્યનો વક્રીભવનાંક 1.5 હોય તો તેની કેન્દ્રલંબાઈ (cm માં) ________ હશે.

Response Type: Numeric

Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
60 to 60

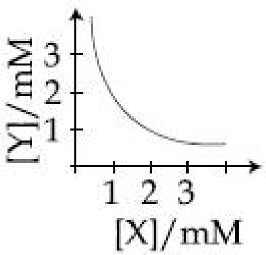
Chemistry

Section Id :	40503658
Section Number :	2
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	25
Number of Questions to be attempted:	25
Section Marks:	100

Sub-Section Number:	1
Sub-Section Id:	40503688
Question Shuffling Allowed :	Yes

Question Number : 26 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The stoichiometry and solubility product of a salt with the solubility curve given below is, respectively :



Options :

1. XY, 2×10^{-6} M^3

2. XY_2, 4×10^{-9} M^3

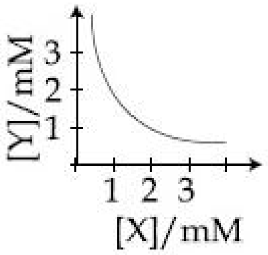
3. X_2Y, 2×10^{-9} M^3

4. XY_2, 1×10^{-9} M^3

find my college

Question Number : 26 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

नीचे दिये गये वक्र के आधार पर, एक लवण की स्टाइकियोमीट्री (रससमीकरणमिति) तथा विलेयता गुणनफल, क्रमशः है :



Options :

1. XY, 2×10^{-6} M^3

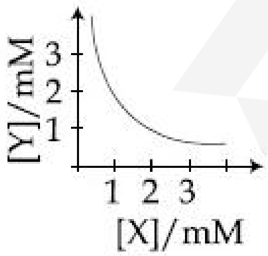
2. XY_2, 4×10^{-9} M^3

3. X_2Y, 2×10^{-9} M^3

4. XY_2, 1×10^{-9} M^3

Question Number : 26 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

એક ક્ષારનો દ્રાવ્યતા વક્ર નીચે આપેલો છે તો તેના તત્વયોગમીતીય અને દ્રાવ્યતા ગુણાકાર અનુક્રમે શોધો?



Options :

1. XY, 2×10^{-6} M^3

2. XY_2, 4×10^{-9} M^3

3. X_2Y, 2×10^{-9} M^3

4. XY_2, 1×10^{-9} M^3

Question Number : 27 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The rate of a certain biochemical reaction at physiological temperature (T) occurs 10^6 times faster with enzyme than without. The change in the activation energy upon adding enzyme is :

Options :

1. $-6RT$

2. $-6(2.303)RT$

3. $+6RT$

4. $+6(2.303)RT$

Question Number : 27 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

एक जैव-रासायनिक अभिक्रिया की दर शरीर क्रियात्मक ताप (T) पर बिना एन्जाइम की तुलना में एन्जाइम द्वारा 10^6 गुना तेज होता है। एन्जाइम के मिलाने पर सक्रियण ऊर्जा में परिवर्तन है :

Options :

find my college

1. $-6RT$

2. $-6(2.303)RT$

3. $+6RT$

4. $+6(2.303)RT$

Question Number : 27 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

કેટલીક જૈવરાસાયણીક પ્રક્રિયાઓનો દર શારીરિક તાપમાન (T) એ ઉત્સેચકોની હાજરીમાં તેઓની ગેરહાજરી કરતાં 10^6 મણી ઝડપી બને છે. તો ઉત્સેચક ઉમેરતા, સક્રિયકરણ શક્તિ માં થતો ફેરફાર શોધો?

Options :

1. $-6RT$

2. $-6(2.303)RT$

3. $+6RT$

4. $+6(2.303)RT$

Question Number : 28 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

As per Hardy-Schulze formulation, the flocculation values of the following for ferric hydroxide sol are in the order :

Options :

1. $K_3[Fe(CN)_6] > AlCl_3 > K_2CrO_4 > KBr > KNO_3$

2. $AlCl_3 > K_3[Fe(CN)_6] > K_2CrO_4 > KBr = KNO_3$

3. $K_3[Fe(CN)_6] < K_2CrO_4 < AlCl_3 < KBr < KNO_3$

4. $K_3[Fe(CN)_6] < K_2CrO_4 < KBr = KNO_3 = AlCl_3$

Question Number : 28 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

हार्डी–सुल्से संरूपण के अनुसार, फेरिक हाइड्राक्साइड सॉल के लिए निम्न का ऊर्णन मान इस क्रम में है :

Options :

1. $K_3[Fe(CN)_6] > AlCl_3 > K_2CrO_4 > KBr > KNO_3$

2. $AlCl_3 > K_3[Fe(CN)_6] > K_2CrO_4 > KBr = KNO_3$

3. $K_3[Fe(CN)_6] < K_2CrO_4 < AlCl_3 < KBr < KNO_3$

4. $K_3[Fe(CN)_6] < K_2CrO_4 < KBr = KNO_3 = AlCl_3$

Question Number : 28 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

હાર્ડીશુલ્જ બનાવટ પ્રમાણે, ફેરીક હાઈડ્રોક્સાઈડસોલનાં ઉર્ણન મુલ્યો નો ક્રમ શોધો :

find my college

Options :

1. $K_3[Fe(CN)_6] > AlCl_3 > K_2CrO_4 > KBr > KNO_3$

2. $AlCl_3 > K_3[Fe(CN)_6] > K_2CrO_4 > KBr = KNO_3$

3. $K_3[Fe(CN)_6] < K_2CrO_4 < AlCl_3 < KBr < KNO_3$

4. $K_3[Fe(CN)_6] < K_2CrO_4 < KBr = KNO_3 = AlCl_3$

Question Number : 29 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The predominant intermolecular forces present in ethyl acetate, a liquid, are :

Options :

1. hydrogen bonding and London dispersion

2. London dispersion, dipole-dipole and hydrogen bonding

3. Dipole-dipole and hydrogen bonding

4. London dispersion and dipole-dipole

Question Number : 29 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

द्रव एथिल ऐसीटेट में उपस्थित प्रमुख अंतराअणुक बल हैं :

Options :

1. हाइड्रोजन आबन्ध तथा लन्डन परिक्षेपण

2. लन्डन परिक्षेपण, द्विध्रुव-द्विध्रुव तथा हाइड्रोजन आबन्ध

3. द्विध्रुव-द्विध्रुव तथा हाइड्रोजन आबन्ध

4. लन्डन परिक्षेपण तथा द्विध्रुव-द्विध्रुव

Question Number : 29 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

પ્રવાહી, ઈથાઈલ એસિટેટમાં મુખ્ય આતરઆણ્વીય બળો હાજર હોય છે તે :

Options :

1. હાઈડ્રોજન બંધન અને લંડન ડીપ્રેશન

2. લંડન ડીપ્રેશન, દ્વિધ્રુવીય-દ્વિધ્રુવીય અને હાઇડ્રોજન બંધન

3. દ્વિધ્રુવીય-દ્વિધ્રુવીય અને હાઇડ્રોજન બંધન

4. લંડન ડીપ્રેશન અને દ્વિધ્રુવીય-દ્વિધ્રુવીય

Question Number : 30 Question Type : MCQ Option Shuffling : Yes

Correct Marks : 4 Wrong Marks : 1

find my college

For the Balmer series in the spectrum of H atom, $\bar{\nu} = R_H \left\{\frac{1}{n_1^2} - \frac{1}{n_2^2}\right\}$, the correct statements among (I) to (IV) are :

(I) As wavelength decreases, the lines in the series converge

(II) The integer n_1 is equal to 2

(III) The lines of longest wavelength corresponds to $n_2=3$

(IV) The ionization energy of hydrogen can be calculated from wave number of these lines

Options :

1. (I), (II), (III)

2. (II), (III), (IV)

3. (I), (III), (IV)

4. (I), (II), (IV)

Question Number : 30 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

हाइड्रोजन परमाणु के स्पेक्ट्रम में बामर श्रेणी के लिए : $\bar{\nu} = R_H \left\{\frac{1}{n_1^2} - \frac{1}{n_2^2}\right\}$, (I) - (IV) में सही कथन हैं :

(I) जैसे जैसे तरंगदैर्घ्य घटती है, श्रेणी में लाइनें अभिसरित करती हैं।

(II) पूर्णांक n_1 2 के बराबर है।

(III) दीर्घतम तरंगदैर्घ्य की लाइनें $n_2=3$ के अनुरूप होती हैं।

(IV) इन लाइनों की तरंग संख्या से हाइड्रोजन के आयनन ऊर्जा की गणना की जा सकती है।

Options :

1. (I), (II), (III)

2. (II), (III), (IV)

3. (I), (III), (IV)

4. (I), (II), (IV)

Question Number : 30 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

H પરમાણુના બામર-શ્રેણી વર્ણપટમાં

$$\bar{\nu} = R_H \left\{ \frac{1}{n_1^2} - \frac{1}{n_2^2} \right\}$$

(I) - (IV) માં સાચા વિધાનો છે.

(I) જો તરંગલંબાઈ ઘટે, તેમ રેખાઓ એકઠી થાય છે.

(II) પૂર્ણાંક n_1 તે 2 બરાબર છે.

(III) મહત્તમ તરંગલંબાઈ ધરાવતી રેખાઓ $n_2=3$ ને અનુરૂપ છે.

(IV) હાઇડ્રોજનની આયનીકરણ શક્તિ આ રેખાઓની તરંગસંખ્યા ઉપરથી ગણી શકાય છે.

Options :

1. (I), (II), (III)

2. (II), (III), (IV)

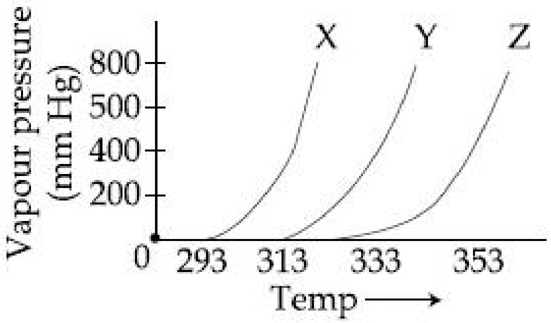
3. (I), (III), (IV)

4. (I), (II), (IV)

find my college

Question Number : 31 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

A graph of vapour pressure and temperature for three different liquids X, Y, and Z is shown below :



The following inferences are made :

(A) X has higher intermolecular interactions compared to Y.

(B) X has lower intermolecular interactions compared to Y.

(C) Z has lower intermolecular interactions compared to Y.

The correct inference(s) is/are :

Options :

1. (A)

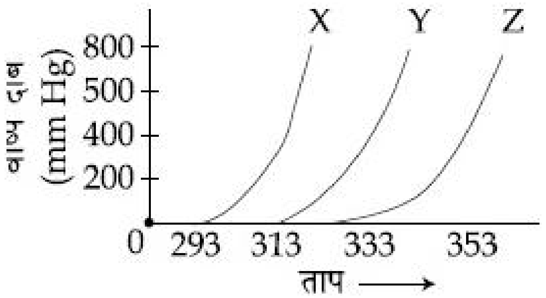
2. (B)

3. (C)

4. (A) and (C)

Question Number : 31 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

तीन अलग-अलग द्रवों X, Y एवं Z के लिए वाष्प दाब तथा ताप के बीच एक ग्राफ नीचे दिया गया है :



निम्न निष्कर्ष निकाले गये :

(A) Y की तुलना में X का अंतराअणुक अन्योन्य क्रिया उच्चतर है।

(B) Y की तुलना में X का अंतराअणुक अन्योन्य क्रिया निम्नतर है।

(C) Y की तुलना में Z का अंतराअणुक अन्योन्य क्रिया निम्नतर है।

सही निष्कर्ष/निष्कर्षें है/हैं :

Options :

1. (A)

2. (B)

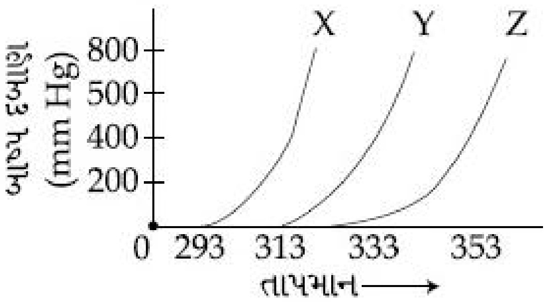
3. (C)

4. (A) तथा (C)

Question Number : 31 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

find my college

જુદા-જુદા ત્રણ પ્રવાહી X, Y અને Z માટે બાષ્પદબાણ અને તાપમાન નો આલેખ નીચે આપેલો છે :



નીચેના તારણો કાઢ્યા :

(A) X માં આંતર આણ્વીય, આંતરક્રિયા Y ની સરખામણીમાં વધુ છે.

(B) X માં આંતર આણ્વીય આંતરક્રિયા Y સરખામણીમાં ઓછી છે.

(C) Z માં આંતર આણ્વીય આંતરક્રિયા Y ની સરખામણીમાં ઓછી છે.

સચોટ તારણો શોધો :

Options :

1. (A)

2. (B)

3. (C)

4. (A) અને (C)

Question Number : 32 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The first ionization energy (in kJ/mol) of Na, Mg, Al and Si respectively, are :

Options :

1. 496, 577, 737, 786

2. 786, 737, 577, 496

3. 496, 737, 577, 786

4. 496, 577, 786, 737

Question Number : 32 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Na, Mg, Al तथा Si की प्रथम आयनन ऊर्जा
(kJ mol^{-1} में) क्रमशः हैं :

Options :

1. 496, 577, 737, 786

2. 786, 737, 577, 496

3. 496, 737, 577, 786

4. 496, 577, 786, 737

Question Number : 32 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Na, Mg, Al અને Si ની અનુક્રમે પ્રથમ આયનીકરણ
શક્તિ (kJ/mol^{-1} में) માં :

Options :

1. 496, 577, 737, 786

2. 786, 737, 577, 496

3. 496, 737, 577, 786

find my college

4. 496, 577, 786, 737

Question Number : 33 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The strength of an aqueous NaOH solution is *most accurately* determined by titrating :
(Note : consider that an appropriate indicator is used)

Options :

1. Aq. NaOH in a volumetric flask and concentrated H_2SO_4 in a conical flask

2. Aq. NaOH in a burette and concentrated H_2SO_4 in a conical flask

3. Aq. NaOH in a burette and aqueous oxalic acid in a conical flask

4. Aq. NaOH in a pipette and aqueous oxalic acid in a burette

Question Number : 33 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

जलीय NaOH विलयन की सामर्थ्य सर्वाधिक यथार्थता से इस तरह अनुमापन द्वारा निकाली जाती है :
(नोट : विचार कीजिए कि एक उपयुक्त संसूचक का उपयोग किया गया है।)

Options :

1. जलीय NaOH आयतनी फ्लास्क में तथा सान्द्र H_2SO_4 एक कॉनिकल फ्लास्क में

2. जलीय NaOH एक ब्यूरेट में तथा सान्द्र H_2SO_4 एक कॉनिकल फ्लास्क में

3. जलीय NaOH एक ब्यूरेट में तथा जलीय आक्सैलिक ऐसिड एक कॉनिकल फ्लास्क में

4. जलीय NaOH एक पिपेट में तथा जलीय आक्सैलिक ऐसिड एक ब्यूरेट में

Question Number : 33 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

જલીય NaOH ના દ્રાવણનું સાર્મથ્ય એકદમ ચોકસાઈ પૂર્વક શોધવા તેનું અનુમાન,
(નોંધ : ધ્યાન માં લો કે યોગ્ય સૂચક નો ઉપયોગ થયેલો છે.)

Options :

1. જલીય NaOH કદમાપક ફ્લાસ્ક માં અને H_2SO_4 કોનીકલ ફ્લાસ્કમાં

2. જલીય NaOH બ્યુરેટ માં અને સાંદ્ર H_2SO_4 કોનીકલ ફ્લાસ્કમાં

3. જલીય NaOH બ્યુટેટમાં અને જલીય ઓકઝલિક એસિડ કોનીકલ ફ્લાસ્કમાં

4. જલીય NaOH પિપેટમાં અને જલીય ઓકઝલિક એસિડ બ્યુટેટમાં

Question Number : 34 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

When gypsum is heated to 393 K, it forms :

Options :

1. Anhydrous $CaSO_4$

2. Dead burnt plaster

3. $CaSO_4 \cdot 0.5\ H_2O$

4. $CaSO_4 \cdot 5\ H_2O$

Question Number : 34 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

जब जिप्सम को 393 K तक गरम किया जाता है, तो बनता है :

Options :

1. निर्जल $CaSO_4$

2. मृत–तापित प्लास्टर

3. $CaSO_4 \cdot 0.5\ H_2O$

4. $CaSO_4 \cdot 5\ H_2O$

Question Number : 34 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

જ્યારે જીપ્સમને 393 K એ ગરમ કરવામાં આવે ત્યારે, તે નીચેનામાંથી શું બનાવે છે?

Options :

find my college

1. નિર્જળ $CaSO_4$

2. મૃતઃપાચ પ્લાસ્ટર

3. $CaSO_4 \cdot 0.5\ H_2O$

4. $CaSO_4 \cdot 5\ H_2O$

Question Number : 35 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The number of bonds between sulphur and oxygen atoms in $S_2O_8^{2-}$ and the number of bonds between sulphur and sulphur atoms in rhombic sulphur, respectively, are :

Options :

1. 4 and 6

2. 4 and 8

3. 8 and 6

4. 8 and 8

Question Number : 35 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

find my college

$S_2O_8^{2-}$ में सल्फर तथा ऑक्सीजन परमाणुओं के बीच आबन्धों की संख्या तथा विषमलंबाक्ष सल्फर में सल्फर परमाणुओं तथा सल्फर के बीच आबन्धों की संख्या क्रमश: हैं :

Options :

1. 4 तथा 6

2. 4 तथा 8

3. 8 तथा 6

4. 8 तथा 8

Question Number : 35 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

$S_2O_8^{2-}$ માં સલ્ફર અને ઑક્સિજન પરમાણુ વચ્ચે રહેલા બંધોની સંખ્યા અને રહોમ્બિક સલ્ફર માં રહેલા સલ્ફર અને સલ્ફર પરમાણુની વચ્ચે રહેલા બંધોની સંખ્યા અનુક્રમે :

Options :

1. 4 અને 6

2. 4 અને 8

3. 8 અને 6

4. 8 અને 8

find my college

find my college

Question Number : 36 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The third ionization enthalpy is minimum for :

Options :

1. Ni

2. Mn

3. Fe

4. Co

Question Number : 36 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

जिसके लिये तृतीय आयनन एन्थैल्पी न्यूनतम है, वह है :

Options :

1. Ni

2. Mn

3. Fe

4. Co

Question Number : 36 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

નીચે આપેલા પૈકી કોની તૃતીય આયનીકરણ એન્થાલ્પી સૌથી ઓછી છે ?

Options :

1. Ni

2. Mn

3. Fe

4. Co

Question Number : 37 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The complex that can show *fac*- and *mer*- isomers is :

Options :

1. $[Co(NH_3)_3(NO_2)_3]$

2. $[CoCl_2(en)_2]$

3. $[Co(NH_3)_4Cl_2]^+$

4. $[Pt(NH_3)_2Cl_2]$

Question Number : 37 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

वह संकर जो *fac*– तथा *mer*- समावयवी प्रदर्शित करता है, है :

Options :

1. $[Co(NH_3)_3(NO_2)_3]$

find my college

2. $[CoCl_2(en)_2]$

3. $[Co(NH_3)_4Cl_2]^+$

4. $[Pt(NH_3)_2Cl_2]$

Question Number : 37 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

સંકિર્ણ કે જે *fac*– અને *mer*- સમઘટકતા દર્શાવે છે તે,

Options :

1. $[Co(NH_3)_3(NO_2)_3]$

2. $[CoCl_2(en)_2]$

3. $[Co(NH_3)_4Cl_2]^+$

4. $[Pt(NH_3)_2Cl_2]$

Question Number : 38 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Among the gases (a) - (e), the gases that cause greenhouse effect are :

(a) CO_2
(b) H_2O
(c) CFCs
(d) O_2
(e) O_3

Options :

find my college

1. (a) and (d)

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

3. (a), (b), (c) and (e)

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

Question Number : 38 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

गैसों (a) से (e) में, गैसें जो ग्रीनहाउस प्रभाव पैदा करती हैं, होंगी :

(a) CO_2
(b) H_2O
(c) CFCs
(d) O_2
(e) O_3

Options :

1. (a) तथा (d)

2. (a), (c), (d) तथा (e)

3. (a), (b), (c) तथा (e)

4. (a), (b), (c) तथा (d)

Question Number : 38 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

find my college

નીચે આપેલા વાયુઓ (a) – (e) માંથી જે વાયુઓ ગ્રીનહાઉસ અસર ઉત્પન્ન કરે છે :

(a) CO_2

(b) H_2O

(c) CFCs

(d) O_2

(e) O_3

Options :

1. (a) અને (d)

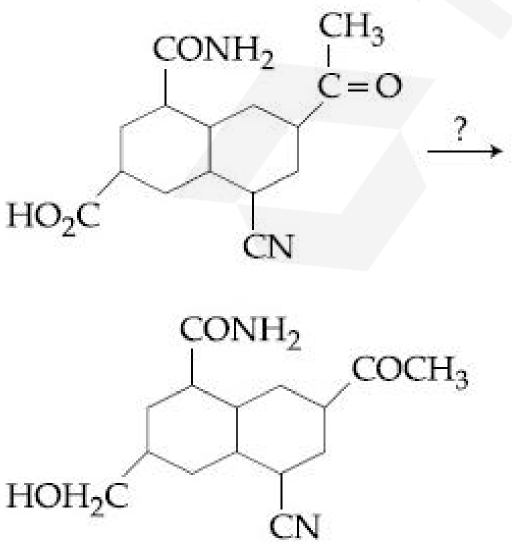
2. (a), (c), (d) અને (e)

3. (a), (b), (c) અને (e)

4. (a), (b), (c) અને (d)

Question Number : 39 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The most suitable reagent for the given conversion is :



Options :

find my college

1. $LiAlH_4$

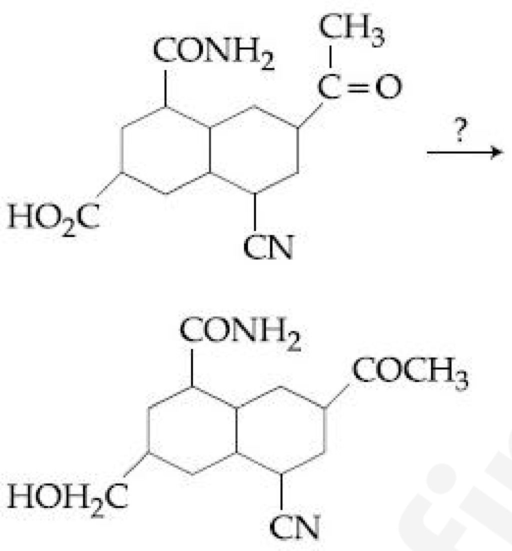
2. B_2H_6

3. H_2/Pd

4. $NaBH_4$

Question Number : 39 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

दिये गये रूपान्तरण के लिए सर्वाधिक उपयुक्त अभिकर्मक है :



Options :

1. $LiAlH_4$

2. B_2H_6

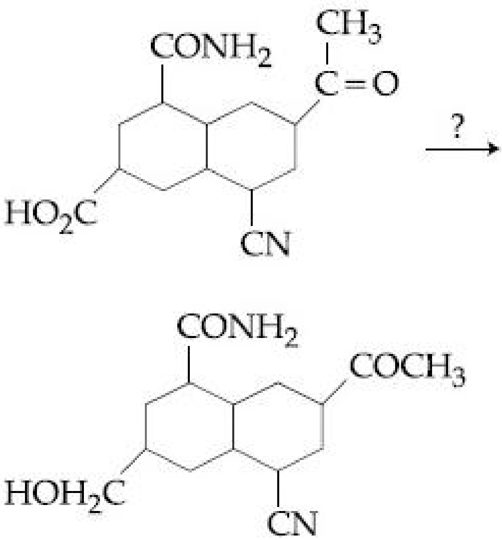
3. H_2/Pd

4. $NaBH_4$

find my college

Question Number : 39 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

સૌથી વધુ સુસંગત પ્રક્રિયક, આપેલ રૂપાંતર માટે,



Options :

1. $LiAlH_4$

2. B_2H_6

3. H_2/Pd

4. $NaBH_4$

Question Number : 40 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

A flask contains a mixture of isohexane and 3-methylpentane. One of the liquids boils at 63 °C while the other boils at 60 °C. What is the best way to separate the two liquids and which one will be distilled out first ?

Options :

1. fractional distillation, isohexane

2. fractional distillation, 3-methylpentane

3. simple distillation, isohexane

4. simple distillation, 3-methylpentane

Question Number : 40 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

एक फ्लास्क में आइसोहेक्सेन तथा 3-मेथिलपेन्टेन का मिश्रण है। इन द्रवों में एक 63 °C पर उबलता है जबकि दूसरा 60 °C पर उबलता है। इन दो द्रवों को पृथक करने का सबसे अच्छा उपाय क्या है तथा इनमें कौन सर्वप्रथम आसवित होगा ?

Options :

1. प्रभाजी आसवन, आइसोहेक्सेन

2. प्रभाजी आसवन, 3-मेथिलपेंटेन

3. साधारण आसवन, आइसोहेक्सेन

4. साधारण आसवन, 3-मेथिलपेंटेन

Question Number : 40 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

એક ફ્લાસ્કમાં આઈસોહેક્ઝેન અને 3-મિથાઈલપેન્ટેનનું મિશ્રણ છે. તેમાનુ એક પ્રવાહી 63 °C ઉકળે છે જ્યારે બીજુ પ્રવાહી 60 °C એ ઉકળે છે. તો સૌથી શ્રેષ્ઠ રસ્તો આ બન્ને પ્રવાહીને અલગીકરણ કરવાનો શોધો. અને સૌથી પહેલા કયું પ્રવાહી નિસ્યંદન પામશે ?

Options :

1. વિભાગીય નિસ્યંદન, આઈસોહેક્ઝેન

2. વિભાગીય નિસ્યંદન, 3-મિથાઈલ પેન્ટેન

3. સાદુ નિસ્યંદન, આઈસોહેક્ઝેન

4. સાદુ નિસ્યંદન, 3-મિથાઇલપેન્ટેન

Question Number : 41 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Arrange the following compounds in increasing order of C – OH bond length :

methanol, phenol, p-ethoxyphenol

Options :

1. methanol < phenol < p-ethoxyphenol

2. phenol < p-ethoxyphenol < methanol

3. phenol < methanol < p-ethoxyphenol

4. methanol < p-ethoxyphenol < phenol

find my college

find my college

Question Number : 41 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

निम्न यौगिकों को C – OH आबन्ध लम्बाई के बढ़ते क्रम में व्यवस्थित कीजिए :

मेथेनॉल, फीनॉल, p-एथाक्सीफीनॉल

Options :

1. मेथेनॉल < फीनॉल < p-एथाक्सीफीनॉल

2. फीनॉल < p-एथाक्सीफीनॉल < मेथेनॉल

3. फीनॉल < मेथेनॉल < p-एथाक्सीफीनॉल

4. मेथेनॉल < p-एथाक्सीफीनॉल < फीनॉल

Question Number : 41 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

નીચે આપેલા સંયોજનોને C – OH બંધલંબાઈના ચઢતા ક્રમમાં ગોઠવો :

મિથેનોલ, ફિનોલ, p-ઈથોક્સિ ફિનોલ

Options :

1. મિથેનોલ < ફિનોલ < p-ઈથોક્સિ ફિનોલ

2. ફિનોલ < p-ઈથોક્સિ ફિનોલ < મિથેનોલ

3. ફિનોલ < મિથેનોલ < p-ઈથોક્સિ ફિનોલ

4. મિથેનોલ < p-ઈથોક્સિ ફિનોલ < ફિનોલ

find my college

Question Number : 42 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Which of the following statement is not true for glucose ?

Options :

1. The pentaacetate of glucose does not react with hydroxylamine to give oxime

2. Glucose reacts with hydroxylamine to form oxime

3. Glucose gives Schiff's test for aldehyde

4. Glucose exists in two crystalline forms α and β

Question Number : 42 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

ग्लूकोस के लिए कौन सा कथन सत्य **नहीं** है ?

Options :

1. ग्लूकोस का पेन्टाऐसीटेट ऑक्साइम बनाने के लिए हाइड्राक्सिलऐमीन से अभिक्रिया नहीं करता।

2. ग्लूकोस, हाइड्राक्सिलऐमीन के साथ अभिक्रिया करके ऑक्साइम बनाता है।

3. ग्लूकोस, एल्डिहाइड के लिए शिफ़ परीक्षण देता है।

4. ग्लूकोस दो क्रिस्टलीय रूपों α तथा β में मिलता है।

find my college

Question Number : 42 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

નીચે આપેલા વિધાનો પૈકી કયુ એક ગ્લુકોઝ માટે સાચું નથી?

Options :

1. ગ્લુકોઝનો પેન્ટાએસિટેટ, હાઈડ્રોક્સીન એમાઈન સાથે પ્રક્રિયા કરી ઓક્સાઇમ આપતો નથી.

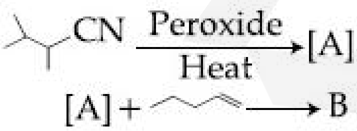
2. ગ્લુકોઝ, હાઈડ્રોક્સીન એમાઈન સાથે પ્રક્રિયા કરી ઓક્સાઈમ બનાવે છે.

3. ગ્લુકોઝ આલ્ડીહાઇડની સ્ફીફ કસૌટી આપે છે.

4. ગ્લુકોઝ બે સ્ફટિકમય α અને β માં અસ્તિત્વ ધરાવે છે.

Question Number : 43 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The major products A and B in the following reactions are :



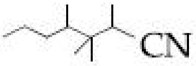
Options :

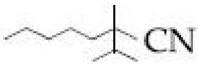
1. A =

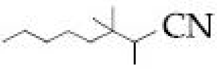
and B =

find my college

find my college

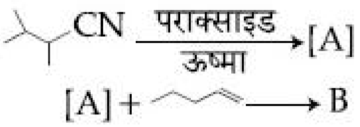
2. A = and B = 

3. A = and B = 

4. A = and B = 

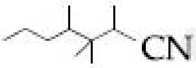
Question Number : 43 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

निम्न अभिक्रियाओं में मुख्य उत्पाद A तथा B हैं :

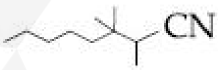


Options :

1. A = तथा B =

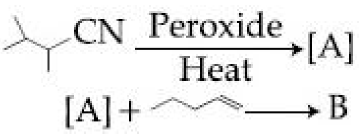
2. A = तथा B = 

3. A = तथा B =

4. A = तथा B = 

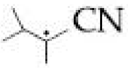
Question Number : 43 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

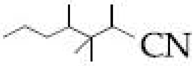
નીચે આપેલી પ્રક્રિયામાં મુખ્ય નીપજો A અને B શોધો :

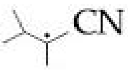
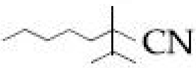


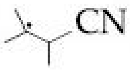
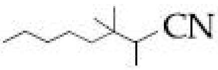
find my college

Options :

1. A =  અને B =

2. A = અને B = 

3. A =  અને B = 

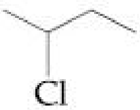
4. A =  અને B = 

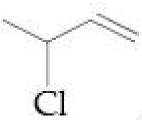
Question Number : 44 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The decreasing order of reactivity towards dehydrohalogenation (E_1) reaction of the following compounds is :

(A)

(B)

(C) 

(D) 

Options :

1. B > D > C > A

2. D > B > C > A

3. B > A > D > C

4. B > D > A > C

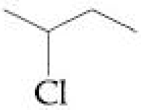
find my college

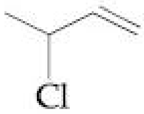
Question Number : 44 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

निम्न यौगिकों के डिहाइड्रोहैलोजेनेशन (E_1) अभिक्रिया के प्रति अभिक्रियाशीलता का घटता क्रम है :

(A)

(B)

(C) 

(D) 

Options :

1. B > D > C > A

2. D > B > C > A

3. B > A > D > C

4. B > D > A > C

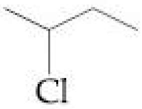
Question Number : 44 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

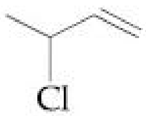
find my college

નીચે આપેલા સંયોજનોને ડીહાઈડ્રોહેલોજીનેશન (E_1) પ્રક્રિયા માટેની સક્રિયતાના ઘટતા ક્રમમાં ગોઠવો :

(A)

(B)

(C) 

(D) 

Options :

1. B > D > C > A

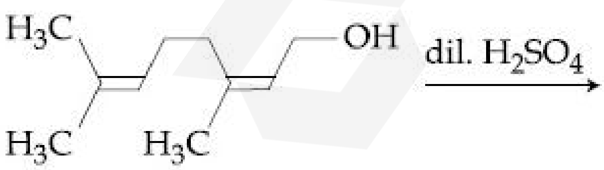
2. D > B > C > A

3. B > A > D > C

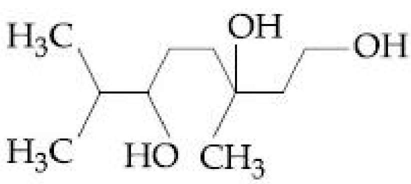
4. B > D > A > C

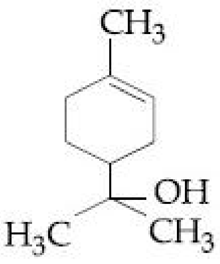
Question Number : 45 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The major product of the following reaction is :

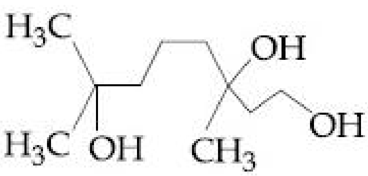


Options :

1. 

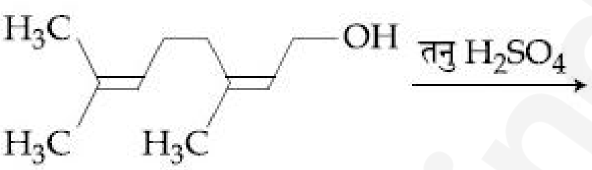
2. 

3.

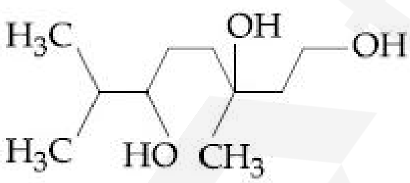
4. 

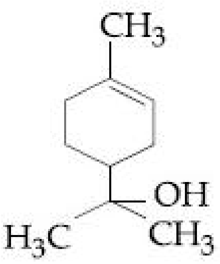
Question Number : 45 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया का मुख्य उत्पाद है :

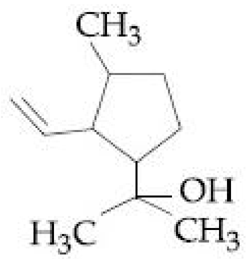


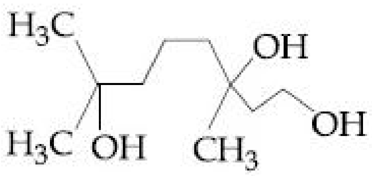
Options :

1. 

2. 

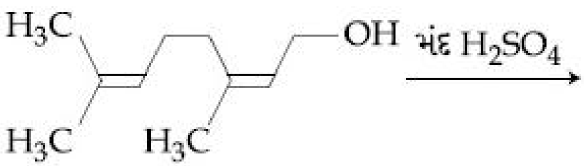
find my college

3. 

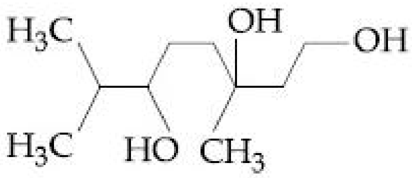
4. 

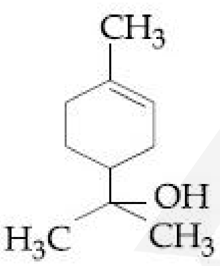
Question Number : 45 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

આપેલી પ્રક્રિયાની મુખ્ય નીપજ શોધો :



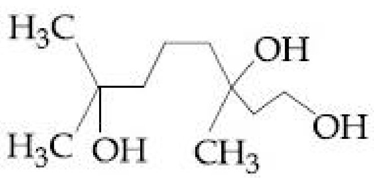
Options :

1. 

2. 

find my college

3.

4. 

Sub-Section Number: 2
Sub-Section Id: 40503689
Question Shuffling Allowed : Yes

Question Number : 46 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

ફેરસ સલ્ફેટ હેપ્ટાહાઈડ્રેટ નો ઉપયોગ ખોરાકમાં આયર્ન સાથે ઉમેરી શક્તિશાળી બનાવવામાં આવે છે. 100 kg ઘંઉમાં 10 ppm આયર્ન મેળવવા માટે આ ક્ષારનો જથ્થો (ગ્રામમાં) શોધો ________.

આણ્વીક દળ : Fe = 55.85; S = 32.00; O = 16.00

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
4.95 to 4.99

Question Number : 46 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

Ferrous sulphate heptahydrate is used to fortify foods with iron. The amount (in grams) of the salt required to achieve 10 ppm of iron in 100 kg of wheat is ________.

Atomic weight : Fe = 55.85; S = 32.00; O = 16.00

Response Type: Numeric
Evaluation Required For SA: Yes

findmycollege

find my college

Show Word Count: Yes
Answers Type: Range
Possible Answers :
4.95 to 4.99

Question Number : 46 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

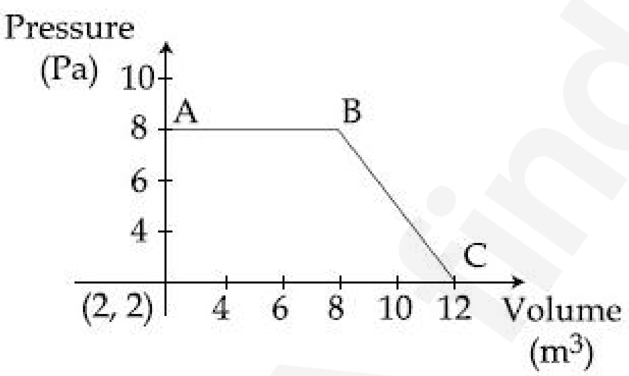
फेरस सल्फेट हेप्टाहाइड्रेट को आहार के पुष्टीकरण में आयरन के लिये प्रयोग किया जाता है। गेहूँ के 100 kg में आयरन का 10 ppm प्राप्त करने के लिए लवण की मात्रा (ग्राम में) होगी ________।

परमाणु द्रव्यमान : Fe = 55.85; S = 32.00; O = 16.00

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
4.95 to 4.99

Question Number : 47 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The magnitude of work done by a gas that undergoes a reversible expansion along the path ABC shown in the figure is ________.

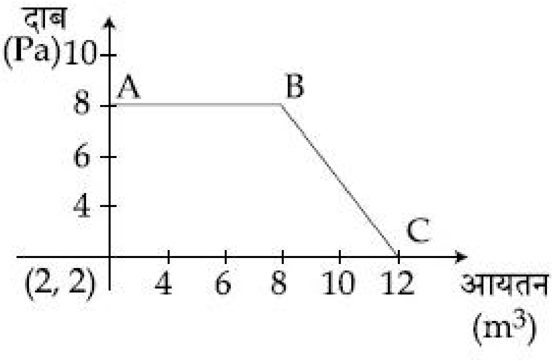


Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
48 to 48

Question Number : 47 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

find my college

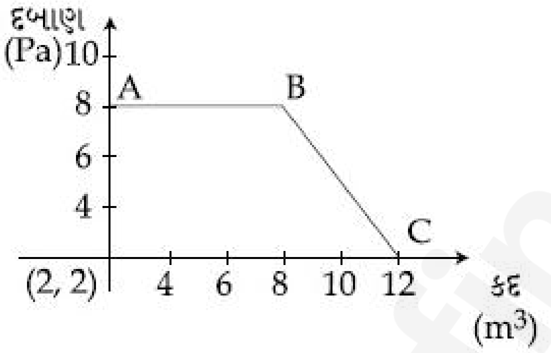
उस गैस के द्वारा, जो चित्र में दिखाये गये ABC पथ के अनुसार उत्क्रमणीय प्रसारण करती है, किये गये कार्य का परिमाण होगा ________.



Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
48 to 48

Question Number : 47 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

આકૃતિમાં દર્શાવેલ પથ ABC મુજબ એક વાયુનું પ્રતિવર્તી વિસ્તરણ થાય છે તો વાયુ દ્વારા થતું કાર્ય શું ________.



Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
48 to 48

Question Number : 48 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

What would be the electrode potential for the given half cell reaction at pH=5 ? ________.

$$2H_2O \rightarrow O_2 + 4H^{\oplus} + 4e^- ; E^0_{red} = 1.23\,V$$

($R = 8.314$ J mol^{-1} K^{-1}; Temp = 298 K; oxygen under std. atm. pressure of 1 bar)

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
-0.93 to -0.94

Question Number : 48 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

pH=5 पर, दी गई अर्द्ध सेल अभिक्रिया के लिए इलेक्ट्रोड विभव क्या होगा ?

$$2H_2O \rightarrow O_2 + 4H^{\oplus} + 4e^- ; E^0_{red} = 1.23\,V$$

($R = 8.314$ J mol^{-1} K^{-1}; Temp = 298 K; ऑक्सीजन मानक वायुमंडलीय दाब 1 bar पर)

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
-0.93 to -0.94

Question Number : 48 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

pH=5 પર, આપેલ અર્ધ કોષ પ્રક્રિયા,

$$2H_2O \rightarrow O_2 + 4H^{\oplus} + 4e^- ; E^0_{red} = 1.23\,V$$

માટે ઇલેક્ટ્રોડ પોટેન્શિયલ શોધો .

$R = 8.314$ J mol^{-1} K^{-1}; તાપમાન = 298 K; ઓક્સિજન પ્રમાણિત વાતાવરણ દબાણ 1 બાર પર

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
-0.93 to -0.94

Question Number : 49 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

find my college

The volume (in mL) of 0.125 M $AgNO_3$ required to quantitatively precipitate chloride ions in 0.3 g of $[Co(NH_3)_6]Cl_3$ is __________.

$^{M}[Co(NH_3)_6]Cl_3 = 267.46$ g/mol

$^{M}AgNO_3 = 169.87$ g/mol

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
26.60 to 27.0

Question Number : 49 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

$[Co(NH_3)_6]Cl_3$ के 0.3 g में क्लोराइड आयन को मात्रात्मक रूप से अवक्षेपित करने के लिए 0.125 M $AgNO_3$ का कितना आयतन (mL में) आवश्यक होगा __________.

$^{M}[Co(NH_3)_6]Cl_3 = 267.46$ g/mol

$^{M}AgNO_3 = 169.87$ g/mol

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
26.60 to 27.0

Question Number : 49 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

$[Co(NH_3)_6]Cl_3$ ના 0.3 g માં જથ્થાત્મક રીતે ક્લોરાઈડ આયનને અવક્ષેપીત કરવામાટે જરૂરી 0.125 M $AgNO_3$ નું કદ (mL માં) છે __________.

$^{M}[Co(NH_3)_6]Cl_3 = 267.46$ g/mol

$^{M}AgNO_3 = 169.87$ g/mol

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
26.60 to 27.0

Question Number : 50 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The number of chiral centres in penicillin is __________.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
3 to 3

Question Number : 50 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

पेनिसिलीन में काइरल केन्द्रों की संख्या है ________.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
3 to 3

Question Number : 50 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

પેનિસિલીનમાં રહેલા કિરાલ કાર્બનની સંખ્યા શોધો ________.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
3 to 3

Mathematics

Section Id :	40503659
Section Number :	3
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	25
Number of Questions to be attempted:	25
Section Marks:	100

Sub-Section Number:	1
Sub-Section Id:	40503690
Question Shuffling Allowed :	Yes

Question Number : 51 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

$f(x)=\frac{8^{2x}-8^{-2x}}{8^{2x}+8^{-2x}}, x \epsilon (-1,1)$ का व्युत्क्रम फलन है ________.

Options :

find my college

1. $\frac{1}{4}\log_e\left(\frac{1+x}{1-x}\right)$

2. $\frac{1}{4}(\log_8 e)\log_e\left(\frac{1-x}{1+x}\right)$

3. $\frac{1}{4}\log_e\left(\frac{1-x}{1+x}\right)$

4. $\frac{1}{4}(\log_8 e)\log_e\left(\frac{1+x}{1-x}\right)$

Question Number : 51 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

$f(x)=\frac{8^{2x}-8^{-2x}}{8^{2x}+8^{-2x}}, x\in(-1,1)$ નું વ્યસ્ત
વિધેય ________ છે.

Options :

1. $\frac{1}{4}\log_e\left(\frac{1+x}{1-x}\right)$

2. $\frac{1}{4}(\log_8 e)\log_e\left(\frac{1-x}{1+x}\right)$

3. $\frac{1}{4}\log_e\left(\frac{1-x}{1+x}\right)$

4. $\frac{1}{4}(\log_8 e)\log_e\left(\frac{1+x}{1-x}\right)$

find my college

Question Number : 51 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The inverse function of

$f(x)=\frac{8^{2x}-8^{-2x}}{8^{2x}+8^{-2x}}, x\epsilon(-1,1)$, is

__________.

Options :

1. $\frac{1}{4}\log_e\left(\frac{1+x}{1-x}\right)$

2. $\frac{1}{4}(\log_8 e)\log_e\left(\frac{1-x}{1+x}\right)$

3. $\frac{1}{4}\log_e\left(\frac{1-x}{1+x}\right)$

4. $\frac{1}{4}(\log_8 e)\log_e\left(\frac{1+x}{1-x}\right)$

Question Number : 52 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

If the equation, $x^2+bx+45=0$ $(b\epsilon R)$ has conjugate complex roots and they satisfy $|z+1|=2\sqrt{10}$, then :

Options :

1. $b^2+b=12$

2. $b^2-b=42$

3. $b^2 - b = 30$

4. $b^2 + b = 72$

Question Number : 52 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

यदि समीकरण $x^2 + bx + 45 = 0, (b \in R)$ के संयुग्मी सम्मिश्र मूल हैं, जो $|z+1| = 2\sqrt{10}$ को संतुष्ट करते हैं, तो :

Options :

1. $b^2 + b = 12$

2. $b^2 - b = 42$

3. $b^2 - b = 30$

4. $b^2 + b = 72$

Question Number : 52 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

જો સમીકરણ $x^2 + bx + 45 = 0$ $(b \in R)$ નાં બીજ, અનુબદ્ધ સંકર સંખ્યાઓ હોય અને તે $|z+1| = 2\sqrt{10}$ નું સમાધાન કરે તો :

Options :

1. $b^2 + b = 12$

2. $b^2 - b = 42$

3. $b^2 - b = 30$

4. $b^2 + b = 72$

Question Number : 53 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

For which of the following ordered pairs (μ, δ), the system of linear equations

$$x + 2y + 3z = 1$$
$$3x + 4y + 5z = \mu$$
$$4x + 4y + 4z = \delta$$

is inconsistent ?

Options :

1. $(1, 0)$

2. $(3, 4)$

3. $(4, 3)$

4. $(4, 6)$

Question Number : 53 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

निम्न में से किस क्रमित युग्म (μ, δ) के लिए रैखिक समीकरण निकाय

$$x + 2y + 3z = 1$$
$$3x + 4y + 5z = \mu$$
$$4x + 4y + 4z = \delta$$

असंगत (inconsistent) है ?

Options :

1. (1, 0)

2. (3, 4)

3. (4, 3)

4. (4, 6)

Question Number : 53 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

નીચેના માંથી કઈ ક્રમયુક્ત જોડ (μ, δ) માટે સુરેખ સમીકરણ સંહતિ

$x+2y+3z=1$

$3x+4y+5z=\mu$

$4x+4y+4z=\delta$

સુસંગત નથી?

Options :

1. (1, 0)

2. (3, 4)

3. (4, 3)

4. (4, 6)

Question Number : 54 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Let two points be $A(1, -1)$ and $B(0, 2)$. If a point $P(x', y')$ be such that the area of $\Delta PAB = 5$ sq. units and it lies on the line, $3x + y - 4\lambda = 0$, then a value of λ is :

Options :

1. 1

2. 4

3. −3

4. 3

Question Number : 54 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

माना $A(1, -1)$ तथा $B(0, 2)$ दो बिन्दु हैं। यदि एक बिंदु $P(x', y')$ इस प्रकार है कि ΔPAB का क्षेत्रफल $= 5$ वर्ग इकाई है तथा यह रेखा $3x + y - 4\lambda = 0$ पर स्थित है, तो λ का एक मान है :

Options :

1. 1

2. 4

3. −3

4. 3

Question Number : 54 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

ધારો કે બે બિંદુઓ $A(1, -1)$ અને $B(0, 2)$ છે. જો $P(x', y')$ એવું બિંદુ હોય કે જે રેખા $3x + y - 4\lambda = 0$ પર આવેલું હોય અને ΔPAB નું ક્ષેત્રફળ $= 5$ ચો. એકમ હોય, તો λ ની કિંમત ________ છે.

Options :

1. 1

2. 4

3. -3

4. 3

Question Number : 55 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

If a, b and c are the greatest values of ${}^{19}C_p$, ${}^{20}C_q$ and ${}^{21}C_r$ respectively, then :

Options :

1. $\frac{a}{11} = \frac{b}{22} = \frac{c}{21}$

2. $\frac{a}{10} = \frac{b}{11} = \frac{c}{42}$

3. $\frac{a}{10} = \frac{b}{11} = \frac{c}{21}$

4. $\frac{a}{11} = \frac{b}{22} = \frac{c}{42}$

Question Number : 55 Question Type : MCQ Option Shuffling : Yes

Correct Marks : 4 Wrong Marks : 1

यदि a, b तथा c क्रमशः $^{19}C_p$, $^{20}C_q$ तथा $^{21}C_r$ के अधिकतम मान हैं, तो :

Options :

1. $\frac{a}{11} = \frac{b}{22} = \frac{c}{21}$

2. $\frac{a}{10} = \frac{b}{11} = \frac{c}{42}$

3. $\frac{a}{10} = \frac{b}{11} = \frac{c}{21}$

4. $\frac{a}{11} = \frac{b}{22} = \frac{c}{42}$

Question Number : 55 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

જો a, b અને c એ અનુક્રમે $^{19}C_p$, $^{20}C_q$ અને $^{21}C_r$ ની મહત્તમ કિંમતો હોય, તો :

Options :

1. $\frac{a}{11} = \frac{b}{22} = \frac{c}{21}$

2. $\frac{a}{10} = \frac{b}{11} = \frac{c}{42}$

3. $\frac{a}{10} = \frac{b}{11} = \frac{c}{21}$

find my college

4. $\frac{a}{11} = \frac{b}{22} = \frac{c}{42}$

Question Number : 56 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Let $f : \mathbf{R} \to \mathbf{R}$ be such that for all $x \in \mathbf{R}$ $(2^{1+x} + 2^{1-x}), f(x)$ and $(3^x + 3^{-x})$ are in A.P., then the minimum value of $f(x)$ is :

Options :

1. 0

2. 2

3. 3

4. 4

Question Number : 56 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

माना $f : \mathbf{R} \to \mathbf{R}$ इस प्रकार है कि सभी $x \in \mathbf{R}$ के लिए $(2^{1+x} + 2^{1-x}), f(x)$ तथा $(3^x + 3^{-x})$ एक समांतर श्रेढ़ी में हैं, तो $f(x)$ का न्यूनतम मान है :

Options :

1. 0

2. 2

3. 3

findmycollege

4. 4

Question Number : 56 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

ધારો કે $f : \mathbf{R} \rightarrow \mathbf{R}$ એવું છે કે જેથી પ્રત્યેક $x \in \mathbf{R}$ માટે $(2^{1+x} + 2^{1-x})$, $f(x)$ અને $(3^x + 3^{-x})$ સમાંતર શ્રેણી (A.P.) માં હોય, તો $f(x)$ ની ન્યૂનતમ કિંમત ________ છે.

Options :

1. 0

2. 2

3. 3

4. 4

Question Number : 57 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

$\lim_{x \to 0} \left(\frac{3x^2 + 2}{7x^2 + 2}\right)^{1/x^2}$ is equal to :

Options :

1. e

2. e^2

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

4. $\frac{1}{e^2}$

Question Number : 57 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

$\lim\limits_{x \to 0} \left(\frac{3x^2 + 2}{7x^2 + 2}\right)^{1/x^2}$ बराबर है :

Options :

1. e

2. e^2

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

4. $\frac{1}{e^2}$

Question Number : 57 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

$\lim\limits_{x \to 0} \left(\frac{3x^2 + 2}{7x^2 + 2}\right)^{1/x^2} =$ ________ .

Options :

1. e

2. e^2

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

4. $\frac{1}{e^2}$

Question Number : 58 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Let $f(x) = x\cos^{-1}(-\sin|x|),\ x \in \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$,

then which of the following is true ?

Options :

1. f is not differentiable at $x = 0$

2. $f'(0) = -\frac{\pi}{2}$

3. f' is decreasing in $\left(-\frac{\pi}{2}, 0\right)$ and increasing in $\left(0, \frac{\pi}{2}\right)$

4. f' is increasing in $\left(-\frac{\pi}{2}, 0\right)$ and decreasing in $\left(0, \frac{\pi}{2}\right)$

Question Number : 58 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

माना $f(x) = x\cos^{-1}(-\sin|x|),\ x \in \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$

है, तो निम्न में से कौन सा सत्य है ?

Options :

1. f, $x=0$ पर अवकलनीय नहीं है।

2. $f'(0) = -\frac{\pi}{2}$

3. f', $\left(-\frac{\pi}{2}, 0\right)$ में ह्रासमान है तथा $\left(0, \frac{\pi}{2}\right)$ में वर्धमान है।

4. f', $\left(-\frac{\pi}{2}, 0\right)$ में वर्धमान है तथा $\left(0, \frac{\pi}{2}\right)$ में ह्रासमान है।

Question Number : 58 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

જો $f(x) = x\cos^{-1}(-\sin|x|)$, $x \in \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$,
તો નીચેનામાંથી કયું સાચું છે?

Options :

1. f, $x=0$ આગળ વિકલનીય નથી.

2. $f'(0) = -\frac{\pi}{2}$

3. f' એ $\left(-\frac{\pi}{2}, 0\right)$ માં ઘટતું અને $\left(0, \frac{\pi}{2}\right)$ માં વધતું છે.

f' એ $\left(-\frac{\pi}{2}, 0\right)$ માં વધતું અને $\left(0, \frac{\pi}{2}\right)$

4. માં ઘટતું છે.

find my college

Question Number : 59 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

If c is a point at which Rolle's theorem holds for the function, $f(x) = \log_e\left(\frac{x^2 + \alpha}{7x}\right)$ in the interval [3, 4], where $\alpha \in \mathbf{R}$, then $f''(c)$ is equal to :

Options :

1. $\frac{\sqrt{3}}{7}$

2. $\frac{1}{12}$

3. $-\frac{1}{24}$

4. $-\frac{1}{12}$

Question Number : 59 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

यदि c एक बिंदु है जिस पर, अंतराल [3, 4] में, फलन $f(x) = \log_e\left(\frac{x^2 + \alpha}{7x}\right)$ पर रोले प्रमेय लागू होता है, जहाँ $\alpha \in \mathbf{R}$ है, तो $f''(c)$ बराबर है :

Options :

1. $\frac{\sqrt{3}}{7}$

find my college

2. $\frac{1}{12}$

3. $-\frac{1}{24}$

4. $-\frac{1}{12}$

Question Number : 59 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

જો c એ એવું બિંદુ હોય કે જે વિધેય

$f(x) = \log_e\left(\frac{x^2+\alpha}{7x}\right)$ માટે અંતરાલ [3, 4] માં

રોલના પ્રમેયનું પાલન કરે, જ્યાં $\alpha \in \mathbf{R}$ તો

$f''(c) =$ ________ .

Options :

1. $\frac{\sqrt{3}}{7}$

2. $\frac{1}{12}$

3. $-\frac{1}{24}$

4. $-\frac{1}{12}$

Question Number : 60 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

If

$$\int \frac{\cos x \, dx}{\sin^3 x \ (1+\sin^6 x)^{2/3}} = f(x)\,(1+\sin^6 x)^{1/\lambda} + c$$

where c is a constant of integration, then $\lambda f\left(\frac{\pi}{3}\right)$ is equal to :

Options :

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

2. $-\frac{9}{8}$

3. 2

4. -2

Question Number : 60 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

यदि

$$\int \frac{\cos x \, dx}{\sin^3 x \ (1+\sin^6 x)^{2/3}} = f(x)\,(1+\sin^6 x)^{1/\lambda} + c$$

है, जहाँ c एक समाकलन अचर है, तो $\lambda f\left(\frac{\pi}{3}\right)$ का मान है :

Options :

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

2. $-\frac{9}{8}$

3. 2

4. -2

Question Number : 60 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

જો

$$\int \frac{\cos x \, dx}{\sin^3 x \, (1+\sin^6 x)^{2/3}} = f(x)\,(1+\sin^6 x)^{1/\lambda} + c,$$

જ્યાં c એ સંકલનનો અચળાંક હોય, તો

$\lambda f\left(\frac{\pi}{3}\right) =$ ________ .

Options :

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

2. $-\frac{9}{8}$

3. 2

4. -2

Question Number : 61 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

For $a > 0$, let the curves $C_1 : y^2 = ax$ and $C_2 : x^2 = ay$ intersect at origin O and a point P. Let the line $x = b$ $(0 < b < a)$ intersect the chord OP and the x-axis at points Q and R, respectively. If the line $x = b$ bisects the area bounded by the curves, C_1 and C_2, and the area of $\Delta OQR = \frac{1}{2}$, then 'a' satisfies the equation :

Options :

1. $x^6 + 6x^3 - 4 = 0$

2. $x^6 - 12x^3 + 4 = 0$

3. $x^6 - 12x^3 - 4 = 0$

4. $x^6 - 6x^3 + 4 = 0$

Question Number : 61 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

$a > 0$ के लिए, माना वक्र $C_1 : y^2 = ax$ तथा $C_2 : x^2 = ay$, मूलबिंदु O तथा एक बिंदु P पर काटते हैं। माना रेखा $x = b$, $(0 < b < a)$, जीवा OP तथा x- अक्ष को क्रमश: बिंदुओं Q तथा R पर काटती है। यदि रेखा $x = b$, वक्रों C_1 तथा C_2 द्वारा परिबद्ध क्षेत्र को समद्विभाजित करती है तथा ΔOQR का क्षेत्रफल $= \frac{1}{2}$ है, तो 'a' जिस समीकरण को संतुष्ट करता है, वह है :

Options :

1. $x^6 + 6x^3 - 4 = 0$

2. $x^6 - 12x^3 + 4 = 0$

find my college

3. $x^6 - 12x^3 - 4 = 0$

4. $x^6 - 6x^3 + 4 = 0$

Question Number : 61 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

ધારો કે $a > 0$ માટે વક્રો $C_1 : y^2 = ax$ અને $C_2 : x^2 = ay$ પરસ્પર ઉગમબિંદુ O અને બિંદુ P આગળ છેદે છે. ધારોકે રેખા $x = b$ $(0 < b < a)$ એ, જીવા OP અને x- અક્ષને અનુક્રમે બિંદુઓ Q અને R માં છેદે છે. જો રેખા $x = b$ એ વક્રો C_1 અને C_2 દ્વારા આવૃત્ત પ્રદેશના ક્ષેત્રફળને દુભાગે અને ΔOQR નું ક્ષેત્રફળ $= \frac{1}{2}$ હોય, તો 'a' એ ________ સમીકરણનું સમાધાન કરે.

Options :

1. $x^6 + 6x^3 - 4 = 0$

2. $x^6 - 12x^3 + 4 = 0$

3. $x^6 - 12x^3 - 4 = 0$

4. $x^6 - 6x^3 + 4 = 0$

Question Number : 62 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Let $y = y(x)$ be a solution of the differential equation,

$$\sqrt{1-x^2}\,\frac{dy}{dx} + \sqrt{1-y^2} = 0, |x| < 1.$$

If $y\left(\frac{1}{2}\right) = \frac{\sqrt{3}}{2}$, then $y\left(\frac{-1}{\sqrt{2}}\right)$ is equal to :

Options :

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

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

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

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

Question Number : 62 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

माना $y = y(x)$, अवकल समीकरण

$\sqrt{1-x^2}\,\frac{dy}{dx} + \sqrt{1-y^2} = 0, |x| < 1$ का एक

हल है। यदि $y\left(\frac{1}{2}\right) = \frac{\sqrt{3}}{2}$ है, तो $y\left(\frac{-1}{\sqrt{2}}\right)$ बराबर

है :

Options :

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

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

find my college

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

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

Question Number : 62 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

ધારો કે $y=y(x)$ એ વિકલ સમીકરણ

$\sqrt{1-x^2}\frac{dy}{dx}+\sqrt{1-y^2}=0, |x|<1$ નો ઉકેલ

છે. જો $y\left(\frac{1}{2}\right)=\frac{\sqrt{3}}{2}$, તો

$y\left(\frac{-1}{\sqrt{2}}\right)$ = ________.

Options :

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

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

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

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

Question Number : 63 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

find my college

The locus of a point which divides the line segment joining the point (0, −1) and a point on the parabola, $x^2=4y$, internally in the ratio 1 : 2, is :

Options :

1. $4x^2-3y=2$

2. $x^2-3y=2$

3. $9x^2-12y=8$

4. $9x^2-3y=2$

Question Number : 63 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

बिंदु (0, −1) तथा परवलय $x^2=4y$ पर स्थित एक बिंदु को मिलाने वाले रेखाखण्ड का 1 : 2 के अनुपात में अंत:विभाजन करने वाले बिंदु का बिंदुपथ है :

Options :

1. $4x^2-3y=2$

2. $x^2-3y=2$

3. $9x^2-12y=8$

4. $9x^2-3y=2$

Question Number : 63 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

બિંદુ (0, −1) અને પરવલય $x^2=4y$ પરના બિંદુને જોડતા રેખાખંડનું, 1 : 2 ગુણોત્તરમાં અંતઃ વિભાજન કરતા બિંદુનો બિંદુપથ ________ છે.

Options :

1. $4x^2-3y=2$

2. $x^2-3y=2$

3. $9x^2-12y=8$

4. $9x^2-3y=2$

Question Number : 64 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Let the line $y=mx$ and the ellipse $2x^2+y^2=1$ intersect at a point P in the first quadrant. If the normal to this ellipse at P meets the co-ordinate axes at $\left(-\frac{1}{3\sqrt{2}}, 0\right)$ and $(0, \beta)$, then β is equal to :

Options :

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

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

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

find my college

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

Question Number : 64 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

माना रेखा $y = mx$ तथा दीर्घवृत्त $2x^2 + y^2 = 1$, प्रथम चतुर्थांश में स्थित एक बिंदु P पर काटते हैं। यदि इस दीर्घवृत्त का P पर अभिलंब, निर्देशांक अक्षों को क्रमश: $\left(-\frac{1}{3\sqrt{2}}, 0\right)$ तथा $(0, \beta)$ पर मिलता है, तो β का मान है :

Options :

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

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

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

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

Question Number : 64 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

ધારો કે રેખા $y = mx$ અને ઉપવલય $2x^2 + y^2 = 1$, પ્રથમ ચરણમાં પરસ્પર P બિંદુએ છેદે છે. જો આ ઉપવલયનો બિંદુ P આગળ નો અભિલંબ, યામાક્ષોને $\left(-\frac{1}{3\sqrt{2}}, 0\right)$ અને $(0, \beta)$ બિંદુઓ એ મળે, તો $\beta =$ _________.

Options :

find my college

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

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

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

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

Question Number : 65 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The shortest distance between the lines

$\frac{x-3}{3} = \frac{y-8}{-1} = \frac{z-3}{1}$ and

$\frac{x+3}{-3} = \frac{y+7}{2} = \frac{z-6}{4}$ is :

Options :

1. $2\sqrt{30}$

2. $3\sqrt{30}$

3. 3

4. $\frac{7}{2}\sqrt{30}$

Question Number : 65 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

रेखाओं $\frac{x-3}{3}=\frac{y-8}{-1}=\frac{z-3}{1}$ तथा $\frac{x+3}{-3}=\frac{y+7}{2}=\frac{z-6}{4}$ के बीच की न्यूनतम दूरी है :

Options :

1. $2\sqrt{30}$

2. $3\sqrt{30}$

3. 3

4. $\frac{7}{2}\sqrt{30}$

Question Number : 65 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

રેખાઓ $\frac{x-3}{3}=\frac{y-8}{-1}=\frac{z-3}{1}$ અને $\frac{x+3}{-3}=\frac{y+7}{2}=\frac{z-6}{4}$ વચ્ચેનું લઘુત્તમ અંતર ________ છે.

Options :

1. $2\sqrt{30}$

2. $3\sqrt{30}$

3. 3

4. $\frac{7}{2}\sqrt{30}$

find my college

Question Number : 66 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Let the volume of a parallelopiped whose coterminous edges are given by $\vec{u} = \hat{i} + \hat{j} + \lambda\hat{k}$, $\vec{v} = \hat{i} + \hat{j} + 3\hat{k}$ and $\vec{w} = 2\hat{i} + \hat{j} + \hat{k}$ be 1 cu. unit. If θ be the angle between the edges $\vec{u}$ and $\vec{w}$, then cosθ can be :

Options :

1. $\frac{5}{7}$

2. $\frac{7}{6\sqrt{6}}$

3. $\frac{7}{6\sqrt{3}}$

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

Question Number : 66 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

find my college

माना एक समान्तर षट्फलक, जिसके एक ही शीर्ष से होकर जाने वाले किनारे $\vec{u} = \hat{i} + \hat{j} + \lambda\hat{k}$, $\vec{v} = \hat{i} + \hat{j} + 3\hat{k}$ तथा $\vec{w} = 2\hat{i} + \hat{j} + \hat{k}$ द्वारा प्रदत्त हैं, का आयतन 1 घन इकाई है। यदि किनारों $\vec{u}$ तथा $\vec{w}$ के बीच का कोण θ है, तो $\cos\theta$ हो सकता है :

Options :

1. $\frac{5}{7}$

2. $\frac{7}{6\sqrt{6}}$

3. $\frac{7}{6\sqrt{3}}$

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

Question Number : 66 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

જેની સંલગ્ન બાજુઓ (coterminous edges) $\vec{u} = \hat{i} + \hat{j} + \lambda\hat{k}$, $\vec{v} = \hat{i} + \hat{j} + 3\hat{k}$ અને $\vec{w} = 2\hat{i} + \hat{j} + \hat{k}$ હોય તેવા સમાંતર ફલકનું ઘનફળ 1 ઘન એકમ છે. જો θ એ બાજુઓ $\vec{u}$ અને $\vec{w}$ વચ્ચેનો ખૂણો હોય, તો $\cos\theta$ નું મૂલ્ય __________ હોઈ શકે.

Options :

find my college

1. $\frac{5}{7}$

2. $\frac{7}{6\sqrt{6}}$

3. $\frac{7}{6\sqrt{3}}$

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

Question Number : 67 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

The mean and the standard deviation (s.d.) of 10 observations are 20 and 2 respectively. Each of these 10 observations is multiplied by p and then reduced by q, where $p \neq 0$ and $q \neq 0$. If the new mean and new s.d. become half of their original values, then q is equal to :

Options :

1. -5

2. 10

3. -10

4. -20

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

Correct Marks : 4 Wrong Marks : 1

10 प्रेक्षणों के माध्य तथा मानक विचलन क्रमशः 20 तथा 2 हैं। इन 10 प्रेक्षणों में से प्रत्येक को p से गुणा करने के पश्चात प्रत्येक में से q कम किया गया, जहाँ $p \neq 0$ तथा $q \neq 0$ हैं। यदि नए माध्य तथा मानक विचलन के मान अपने मूल मानों के आधे हैं, तो q का मान है :

Options :

1. -5

2. 10

3. -10

4. -20

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

Correct Marks : 4 Wrong Marks : 1

10 અવલોકનો નો મધ્યક અને પ્રમાણિત વિચલન (s.d.) અનુક્રમે 20 અને 2 છે. આ 10 માંના પ્રત્યેક અવલોકનને p વડે ગુણીને q બાદ કરવામાં આવે છે, જ્યાં $p \neq 0$ અને $q \neq 0$. જો નવો મધ્યક અને નવું પ્રમાણિત વિચલન, તેમની મૂળ કિંમતો કરતાં અડધાં થાય, તો q=________.

Options :

1. -5

2. 10

find my college

3. -10

4. -20

Question Number : 68 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Let A and B be two independent events such that $P(A) = \frac{1}{3}$ and $P(B) = \frac{1}{6}$. Then, which of the following is TRUE ?

Options :

1. $P(A/(A \cup B)) = \frac{1}{4}$

2. $P(A/B) = \frac{2}{3}$

3. $P(A/B') = \frac{1}{3}$

4. $P(A'/B') = \frac{1}{3}$

Question Number : 68 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

माना A तथा B दो ऐसी स्वतंत्र घटनाएँ हैं कि $P(A) = \frac{1}{3}$ तथा $P(B) = \frac{1}{6}$ हैं, तो निम्न में से कौन सा सत्य है ?

Options :

1. $P(A/(A \cup B)) = \frac{1}{4}$

2. $P(A/B) = \frac{2}{3}$

3. $P(A/B') = \frac{1}{3}$

4. $P(A'/B') = \frac{1}{3}$

Question Number : 68 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

જો A અને B એ, બે એવી નિરપેક્ષ ઘટનાઓ છે કે

જેથી $P(A) = \frac{1}{3}$ અને $P(B) = \frac{1}{6}$ હોય, તો

નીચેનામાંથી ક્યું સાચું છે?

Options :

1. $P(A/(A \cup B)) = \frac{1}{4}$

2. $P(A/B) = \frac{2}{3}$

3. $P(A/B') = \frac{1}{3}$

4. $P(A'/B') = \frac{1}{3}$

Question Number : 69 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Let

$f(x) = \left(\sin(\tan^{-1}x) + \sin(\cot^{-1}x)\right)^2 - 1$,

$|x| > 1$. If $\frac{dy}{dx} = \frac{1}{2}\frac{d}{dx}\left(\sin^{-1}(f(x))\right)$ and

$y(\sqrt{3}) = \frac{\pi}{6}$, then $y(-\sqrt{3})$ is equal to :

Options :

1. $-\frac{\pi}{6}$

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

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

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

Question Number : 69 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

माना

$f(x) = \left(\sin(\tan^{-1}x) + \sin(\cot^{-1}x)\right)^2 - 1$,

$|x| > 1$ है। यदि $\frac{dy}{dx} = \frac{1}{2}\frac{d}{dx}\left(\sin^{-1}(f(x))\right)$

तथा $y(\sqrt{3}) = \frac{\pi}{6}$ हैं, तो $y(-\sqrt{3})$ का मान है :

Options :

1. $-\frac{\pi}{6}$

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

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

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

Question Number : 69 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

ધારો કે

$f(x) = \left(\sin(\tan^{-1}x) + \sin(\cot^{-1}x)\right)^2 - 1$,

$|x| > 1$. જો $\frac{dy}{dx} = \frac{1}{2}\frac{d}{dx}\left(\sin^{-1}(f(x))\right)$ અને

$y(\sqrt{3}) = \frac{\pi}{6}$, તો $y(-\sqrt{3}) =$_________.

Options :

1. $-\frac{\pi}{6}$

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

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

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

Question Number : 70 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

Which one of the following is a tautology ?

Options :

find my college

1. $P \wedge (P \vee Q)$

2. $P \vee (P \wedge Q)$

3. $(P \wedge (P \rightarrow Q)) \rightarrow Q$

4. $Q \rightarrow (P \wedge (P \rightarrow Q))$

Question Number : 70 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

निम्न में से कौन सा कथन एक पुनरुक्ति है?

Options :

1. $P \wedge (P \vee Q)$

2. $P \vee (P \wedge Q)$

3. $(P \wedge (P \rightarrow Q)) \rightarrow Q$

4. $Q \rightarrow (P \wedge (P \rightarrow Q))$

Question Number : 70 Question Type : MCQ Option Shuffling : Yes
Correct Marks : 4 Wrong Marks : 1

નીચેનામાંથી ક્યું નિત્યસત્ય છે?

Options :

1. $P \wedge (P \vee Q)$

2. $P \vee (P \wedge Q)$

3. $(P \wedge (P \rightarrow Q)) \rightarrow Q$

4. $Q \rightarrow (P \wedge (P \rightarrow Q))$

Sub-Section Number: 2
Sub-Section Id: 40503691
Question Shuffling Allowed : Yes

Question Number : 71 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The least positive value of 'a' for which the equation, $2x^2 + (a - 10)x + \frac{33}{2} = 2a$ has real roots is ________.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
8 to 8

Question Number : 71 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

'a' का वह न्यूनतम धनात्मक मान, जिसके लिए समीकरण $2x^2 + (a - 10)x + \frac{33}{2} = 2a$ के वास्तविक मूल हैं, है ________।

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
8 to 8

Question Number : 71 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

સમીકરણ $2x^2 + (a - 10)x + \frac{33}{2} = 2a$ ને વાસ્તવિક બીજો હોય તેવી 'a' ની લઘુત્તમ ધન કિંમત ________ છે.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
8 to 8

Question Number : 72 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The number of all 3×3 matrices A, with enteries from the set $\{-1, 0, 1\}$ such that the sum of the diagonal elements of AA^T is 3, is ________.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
672 to 672

Question Number : 72 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

ऐसे सभी 3×3 आव्यूहों A की संख्या, जिनके अवयव समुच्चय $\{-1, 0, 1\}$ से हैं तथा AA^T के विकर्ण के अवयवों का योगफल 3 है, है ________ ।

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
672 to 672

Question Number : 72 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

જેના ઘટકો ગણ $\{-1, 0, 1\}$ માંથી હોય અને AA^T ના વિકર્ણના ઘટકોનો સરવાળો 3 હોય તેવા તમામ 3×3 શ્રેણિકો A ની સંખ્યા ________ છે.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
672 to 672

Question Number : 73 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The sum $\sum_{k=1}^{20}(1+2+3+\ldots+k)$ is

________.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
1540 to 1540

Question Number : 73 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

योगफल $\sum_{k=1}^{20}(1+2+3+\ldots+k)$ है

________ ।

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
1540 to 1540

Question Number : 73 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

સરવાળો $\sum_{k=1}^{20}(1+2+3+\ldots+k)$

= ________.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
1540 to 1540

Question Number : 74 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

Let the normal at a point P on the curve $y^2-3x^2+y+10=0$ intersect the y-axis at $\left(0, \frac{3}{2}\right)$. If m is the slope of the tangent at P to the curve, then $|m|$ is equal to ________.

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

Answers Type: Range
Possible Answers :
4 to 4

Question Number : 74 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

माना वक्र $y^2-3x^2+y+10=0$ के बिंदु P पर खींचा गया अभिलंब, y- अक्ष को $\left(0, \frac{3}{2}\right)$ पर काटता है। यदि P पर वक्र की स्पर्श रेखा का ढाल m है, तो $|m|$ बराबर है __________ ।

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
4 to 4

Question Number : 74 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

ધારો કે વક્ર $y^2-3x^2+y+10=0$ ના બિંદુ P આગળનો અભિલંબ, y-અક્ષને $\left(0, \frac{3}{2}\right)$ આગળ છેદે છે. જો P આગળ વક્રના સ્પર્શકનો ઢાળ m હોય, તો $|m|=$__________.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
4 to 4

Question Number : 75 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

An urn contains 5 red marbles, 4 black marbles and 3 white marbles. Then the number of ways in which 4 marbles can be drawn so that at the most three of them are red is __________.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
490 to 490

Question Number : 75 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

एक कलश में 5 लाल मार्बल, 4 काले मार्बल तथा 3 सफेद मार्बल हैं, तो इसमें से 4 मार्बल इस प्रकार निकालने ताकि उनमें से अधिक से अधिक तीन लाल रंग के हों, के तरीकों की संख्या है ________।

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
490 to 490

Question Number : 75 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

એક ઘડા માં 5 લાલ લખોટીઓ, 4 કાળી લખોટીઓ અને 3 સફેદ લખોટીઓ છે. જેમાં વધુમાં વધુ ત્રણ લખોટીઓ લાલ હોય તે રીતે 4 લખોટીઓ પસંદ કરવાની રીતોની સંખ્યા ________છે.

Response Type: Numeric
Evaluation Required For SA: Yes
Show Word Count: Yes
Answers Type: Range
Possible Answers :
490 to 490