Question Paper Name:	Paper I EHG 11th Jan 2019 Shift 2
Subject Name:	Paper I EHG
Creation Date:	2019-01-11 21:10:49
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Display Marks:	Yes

Paper I

Group Number :	1
Group Id :	416529120
Group Maximum Duration :	0
Group Minimum Duration :	180
Revisit allowed for view? :	No
Revisit allowed for edit? :	No
Break time:	0
Group Marks:	360

Physics

Section Id :	416529142
Section Number :	1
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	30
Number of Questions to be attempted:	30
Section Marks:	120
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	416529151
Question Shuffling Allowed :	Yes

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

Correct Marks : 4 Wrong Marks : 1

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

Options :

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

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

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

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

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

Correct Marks : 4 Wrong Marks : 1

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

Options :

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

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

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

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

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

Correct Marks : 4 Wrong Marks : 1

જો ઝડપ (V), પ્રવેગ (A) અને બળ (F) ને મૂળભૂત એકમો તરીકે લેવામાં આવે તો યંગ મોડ્યૂલસનું પરિમાણ _____ હશે.

Options :

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

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

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

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

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

Correct Marks : 4 Wrong Marks : 1

A particle moves from the point $\left(2.0\hat{i} + 4.0\hat{j}\right)$ m, at t = 0, with an initial velocity $\left(5.0\hat{i} + 4.0\hat{j}\right)$ ms^{-1}. It is acted upon by a constant force which produces a constant acceleration $\left(4.0\hat{i} + 4.0\hat{j}\right)$ ms^{-2}. What is the distance of the particle from the origin at time 2 s ?

Options :

1. $20\sqrt{2}$ m

2. 15 m

3. $10\sqrt{2}$ m

4. 5 m

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

Correct Marks : 4 Wrong Marks : 1

समय t = 0 पर एक कण बिन्दु $\left(2.0\hat{i} + 4.0\hat{j}\right)$ m से, आरम्भिक वेग $\left(5.0\hat{i} + 4.0\hat{j}\right)$ ms^{-1} से, गतिशील है। यह एक स्थिर त्वरण $\left(4.0\hat{i} + 4.0\hat{j}\right)ms^{-2}$ उत्पन्न करने वाले एक स्थिर बल के प्रभाव में चलता है। समय 2 s पर कण की मूल बिन्दु से दूरी क्या होगी ?

Options :

1. $20\sqrt{2}$ m

2. 15 m

3. $10\sqrt{2}$ m

4. 5 m

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

Correct Marks : 4 Wrong Marks : 1

એક કણ $t=0$ સમયે બિંદુ $\left(2.0\hat{i}+4.0\hat{j}\right)$ m થી પ્રારંભિક $\left(5.0\hat{i}+4.0\hat{j}\right)$ ms^{-1} ના વેગથી ગતિ કરે છે. તેની ઉપર અચળ બળ લગાડતા તે અચળ પ્રવેગ $\left(4.0\hat{i}+4.0\hat{j}\right)ms^{-2}$ ઉત્પન્ન કરે છે. 2 s પછી ઉગમ બિંદુથી કણનું અંતર કેટલું હશે?

Options :

1. $20\sqrt{2}$ m

2. 15 m

3. $10\sqrt{2}$ m

4. 5 m

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

Correct Marks : 4 Wrong Marks : 1

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

Options :

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

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

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

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

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

Correct Marks : 4 Wrong Marks : 1

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

Options :

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

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

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

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

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

Correct Marks : 4 Wrong Marks : 1

1 kg દળવાળા કણ પર ઉદ્‌ગમને સાપેક્ષ બળયુગ્મ (ટોર્ક) નું મૂલ્ય 2.5 Nm છે. જો તેની ઊપર લાગતું બળ 1 N અને ઉદ્‌ગમથી કણનું અંતર 5 m હોય તો બળ અને સ્થાન સદિશ વચ્ચેના ખુણાનુ માપ (રેડિયનમાં) _____ છે.

Options :

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

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

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

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

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

Correct Marks : 4 Wrong Marks : 1

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

Options :

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

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

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

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

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

Correct Marks : 4 Wrong Marks : 1

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

Options :

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

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

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

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

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

Correct Marks : 4 Wrong Marks : 1

m દળ ધરાવતો એક કણ સીધી લીટીમાં p જેટલા વેગમાનથી ગતિ કરે છે. પ્રારંભમાં $t=0$ સમયે ગતિ કરતા પદાર્થ પર બળ $F=kt$ એ જ દિશામાં T સમય ગાળામાટે એવી રીતે લાગે છે કે જેથી તેનું વેગમાન p માંથી બદલાયને 3p થાયે છે. અહીં k એક અચળાંક છે. T નું મૂલ્ય :

Options :

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

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

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

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

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

Correct Marks : 4 Wrong Marks : 1

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

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

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

Options :

1. 5q

2. $(2.5)q$

3. $(0.15)q$

4. $(0.35)q$

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

Correct Marks : 4 Wrong Marks : 1

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

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

Options :

1. $5q$

2. $(2.5)q$

3. $(0.15)q$

4. $(0.35)q$

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

Correct Marks : 4 Wrong Marks : 1

વિદ્યુતક્ષેત્ર $\vec{E}=2\hat{i}+3\hat{j}$ અને ચુંબકીય ક્ષેત્ર $\vec{B}=4\hat{j}+6\hat{k}$ માં m દળ અને q વિજભાર ધરાવતો એક કણ રહેલ છે. આ વિજભારીત કણને ઉદ્‌ગમથી બિંદુ $P(x=1;y=1)$ આગળ સીધા પથ પર ખસેડવામાં આવે છે. કુલ કાર્યનું મૂલ્ય :

Options :

1. $5q$

2. $(2.5)q$

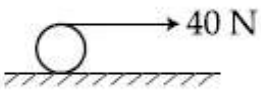
3. $(0.15)q$

4. $(0.35)q$

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

Correct Marks : 4 Wrong Marks : 1

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



Options :

1. $10\ rad/s^2$

2. $12\ rad/s^2$

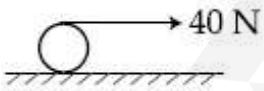
3. $16\ rad/s^2$

4. $20\ rad/s^2$

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

Correct Marks : 4 Wrong Marks : 1

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



Options :

1. $10\ rad/s^2$

2. $12\ rad/s^2$

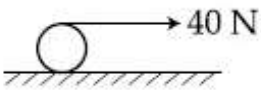
3. $16\ rad/s^2$

4. $20\ rad/s^2$

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

Correct Marks : 4 Wrong Marks : 1

5 kg દળ ધરાવતા અને 0.5 m ની ત્રિજ્યા ધરાવતા એક પોલા નળાકાર ઉપર દોરી વીંટાડવામાં આવેલ છે. હવે જો દોરીને 40 N જેટલું સમક્ષિતિજ બળ લગાડીને ખેંચવામાં આવે છે અને નળાકાર સમક્ષિતિજ સપાટીપર સરક્યા સિવાય ગબડે છે (આકૃતિ જુઓ), તો નળાકારનો કોણીય પ્રવેગ _____ થશે. (દોરીનું વજન અને ત્રિજ્યા અવગણો.)



Options :

1. $10\ rad/s^2$

2. $12\ rad/s^2$

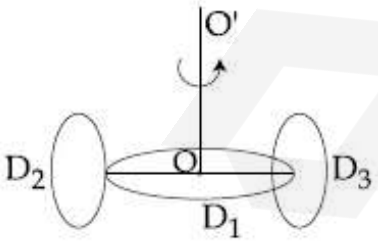
3. $16\ rad/s^2$

4. $20\ rad/s^2$

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

Correct Marks : 4 Wrong Marks : 1

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



Options :

1. MR^2

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

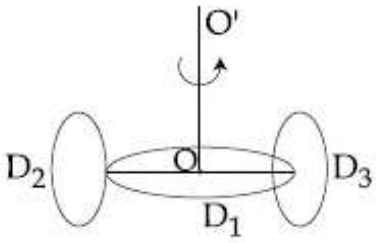
3. $3MR^2$

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

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

Correct Marks : 4 Wrong Marks : 1

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



Options :

1. MR^2

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

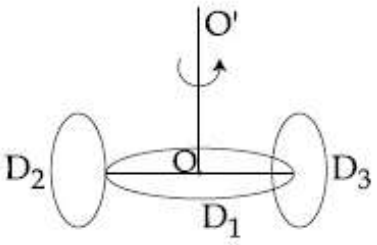
3. $3MR^2$

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

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

Correct Marks : 4 Wrong Marks : 1

M દળ અને R ત્રિજ્યાવાળી એક વર્તુળાકાર તકતી D_1 ના વિરૂદ્ધ છેડા આગળ M દળ અને R ત્રિજ્યાવાળી બે એકસરખી તકતીઓ D_2 અને D_3 ને દૃઢ રીતે જોડેલી છે (આકૃતિ જુઓ). આકૃતિમાં બતાવ્યા પ્રમાણે તકતી D_1ના કેન્દ્રમાંથી પસાર થતી અક્ષ OO′ ને સાપેક્ષે તંત્રની જડત્વની ચાકમાત્રા :



Options :

1. MR^2

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

3. $3MR^2$

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

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

Correct Marks : 4 Wrong Marks : 1

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

Options :

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

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

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

4. $2\sqrt{3}$ s

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

Correct Marks : 4 Wrong Marks : 1

કોઇ એક ગ્રહનું દળ અને વ્યાસ એ પૃથ્વીની આનુષાંગિક રાશિઓ કરતા ત્રણ ગણા છે. પૃથ્વીપર સાદા લોલકનો આવર્તકાળ 2 s છે. આજ લોલકનો ગ્રહ ઊપર આવર્તકાળ હશે :

Options :

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

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

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

4. $2\sqrt{3}$ s

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

Correct Marks : 4 Wrong Marks : 1

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

Options :

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

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

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

4. $2\sqrt{3}$ s

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

Correct Marks : 4 Wrong Marks : 1

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

Options :

1. 60°C

2. 70°C

3. 80°C

4. 85°C

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

Correct Marks : 4 Wrong Marks : 1

જ્યારે 100°C તાપમાને રાખેલ 100 g પ્રવાહી A ને 75°C તાપમાને રાખેલ 50 g પ્રવાહી B માં ઉમેરવામાં આવે છે ત્યારે મિશ્રણનું તાપમાન 90°C થાય છે. હવે જ્યારે 100°C તાપમાને રાખેલ 100 g પ્રવાહી A ને 50°C તાપમાને રાખેલ 50 g પ્રવાહી B માં ઉમેરવામાં આવે છે ત્યારે મિશ્રણનું તાપમાન :

Options :

1. 60°C

2. 70°C

3. 80°C

4. 85°C

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

Correct Marks : 4 Wrong Marks : 1

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

Options :

1. 60°C

2. 70°C

3. 80°C

4. 85°C

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

Correct Marks : 4 Wrong Marks : 1

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

Options :

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

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

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

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

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

Correct Marks : 4 Wrong Marks : 1

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

Options :

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

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

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

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

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

Correct Marks : 4 Wrong Marks : 1

કોઈ એક પ્રક્રિયામાં એક મોલ એક પરમાણ્વીક આદર્શ વાયુના કદ અને તાપમાનમાં $VT = K$ ના સબંધ અનુસાર બદલાય છે. જ્યાં K એ અચળાંક છે. આ પ્રક્રિયામાં વાયુના તાપમાનને ΔT જેટલું વધારવામાં આવે છે. વાયુ દ્વારા શોષાતી ઊષ્માનો જથ્થો : (R વાયુ અચળાંક છે).

Options :

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

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

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

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

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

Correct Marks : 4 Wrong Marks : 1

A metal ball of mass 0.1 kg is heated upto 500°C and dropped into a vessel of heat capacity 800 JK^{-1} and containing 0.5 kg water. The initial temperature of water and vessel is 30°C. What is the approximate percentage increment in the temperature of the water ? [Specific Heat Capacities of water and metal are, respectively, 4200 $Jkg^{-1}K^{-1}$ and 400 $Jkg^{-1}K^{-1}$]

Options :

1. 30 %

2. 25 %

3. 15 %

4. 20 %

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

Correct Marks : 4 Wrong Marks : 1

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

Options :

1. 30 %

2. 25 %

3. 15 %

4. 20 %

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

Correct Marks : 4 Wrong Marks : 1

0.1 kg દળ ધરાવતા એક ધાતુનાં ગોળાને 500°C સુધી ગરમ કરવામાં આવે છે અને ત્યાર બાદ તેને 0.5 kg પાણી ભરેલા પાત્રમાં કે જેની ઉષ્માધારિતા 800 JK^{-1} છે તેમાં નાખવામાં આવે છે. પાણી અને પાત્રનું પ્રારંભિક તાપમાન 30°C હતુ. પાણીના તાપમાનમાં થતો વધારો અંદાજીત પ્રતિશત કેટલો હશે ?

(પાણી અને ધાતુની વિશિષ્ટ ઉષ્માધારિતા અનુક્રમે 4200 $Jkg^{-1}K^{-1}$ અને 400 $Jkg^{-1}K^{-1}$ છે.)

Options :

1. 30 %

2. 25 %

3. 15 %

4. 20 %

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

Correct Marks : 4 Wrong Marks : 1

A pendulum is executing simple harmonic motion and its maximum kinetic energy is K_1. If the length of the pendulum is doubled and it performs simple harmonic motion with the same amplitude as in the first case, its maximum kinetic energy is K_2. Then :

Options :

1. $K_2 = K_1$

2. $K_2 = 2K_1$

3. $K_2 = \frac{K_1}{2}$

4. $K_2 = \frac{K_1}{4}$

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

Correct Marks : 4 Wrong Marks : 1

एक लोलक सरल आवर्त गति कर रहा है और इसकी अधिकतम गतिज ऊर्जा K_1 है। यदि लोलक की लम्बाई दोगुनी कर दें और यह पहले के समान आयाम से ही सरल आवर्त गति करता है तो इसकी अधिकतम गतिज ऊर्जा K_2 है। तब :

Options :

1. $K_2 = K_1$

2. $K_2 = 2K_1$

3. $K_2 = \frac{K_1}{2}$

4. $K_2 = \frac{K_1}{4}$

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

Correct Marks : 4 Wrong Marks : 1

એક લોલક સરળ આવર્ત ગતિ કરે છે અને મહત્તમ ગતિ ઊર્જા K_1 છે. જો લોલકની લંબાઈ બમણી કરવામાં આવે તો તે પ્રથમ કિસ્સામાં જેટલો કંપવિસ્તાર હતો તેટલાજ કંપવિસ્તારથી સરળ આવર્ત ગતિ કરે છે. અને તેની મહત્તમ ગતિ ઊર્જા K_2 છે. તો :

Options :

1. $K_2 = K_1$

2. $K_2 = 2K_1$

3. $K_2 = \frac{K_1}{2}$

4. $K_2 = \frac{K_1}{4}$

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

Correct Marks : 4 Wrong Marks : 1

A simple pendulum of length 1 m is oscillating with an angular frequency 10 rad/s. The support of the pendulum starts oscillating up and down with a small angular frequency of 1 rad/s and an amplitude of 10^{-2} m. The relative change in the angular frequency of the pendulum is best given by :

Options :

1. 10^{-1} rad/s

2. 10^{-3} rad/s

3. 10^{-5} rad/s

4. 1 rad/s

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

Correct Marks : 4 Wrong Marks : 1

1 m लम्बाई का एक सरल लोलक कोणीय आवृत्ति 10 rad/s से दोलन कर रहा है। लोलक का आधार ऊपर तथा नीचे एक अल्प कोणीय आवृत्ति 1 rad/s से, तथा 10^{-2} m आयाम से, दोलन आरम्भ करता है। लोलक की कोणीय आवृत्ति में आपेक्षिक परिवर्तन सबसे अच्छा दिया जाता है :

Options :

1. 10^{-1} rad/s

2. 10^{-3} rad/s

3. 10^{-5} rad/s

4. 1 rad/s

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

Correct Marks : 4 Wrong Marks : 1

1 m લંબાઈવાળું એક સાદુ લોલક 10 rad/s કોણીય આવૃત્તિથી દોલન કરે છે. લોલકનો આધાર 1 rad/s જેટલી નાની કોણીય આવૃત્તિ અને 10^{-2} m જેટલા કંપવિસ્તારથી ઉપરનીચે દોલન કરવાનું શરૂ કરે છે. લોલકની કોણીય આવૃત્તિમાં થતા સાપેક્ષ ફેરફારને _____ દ્વારા સચોટ રીતે દર્શાવી શકાય.

Options :

1. $10^{-1}\,\text{rad/s}$

2. $10^{-3}\,\text{rad/s}$

3. $10^{-5}\,\text{rad/s}$

4. $1\,\text{rad/s}$

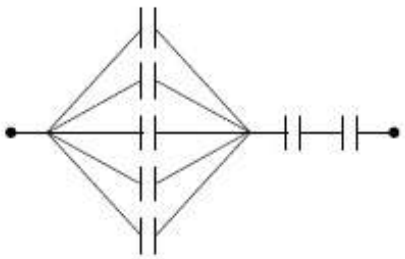
Question Number : 14 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

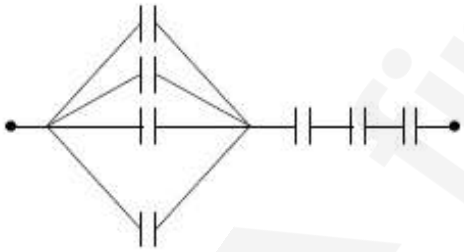
Correct Marks : 4 Wrong Marks : 1

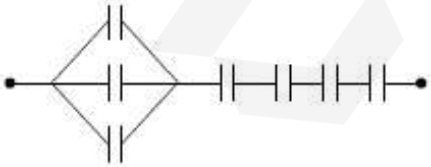
Seven capacitors, each of capacitance 2 μF, are to be connected in a configuration to obtain an effective capacitance of $\left(\frac{6}{13}\right)$ μF.

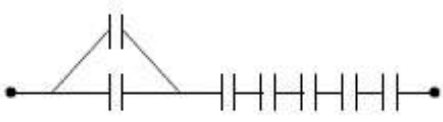
Which of the combinations, shown in figures below, will achieve the desired value ?

Options :

1. 

2. 

3. 

4. 

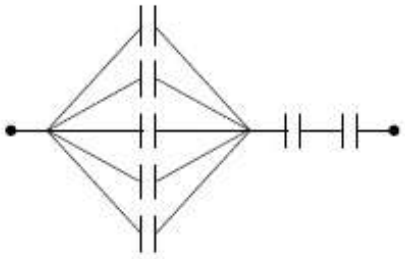
Question Number : 14 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 4 Wrong Marks : 1

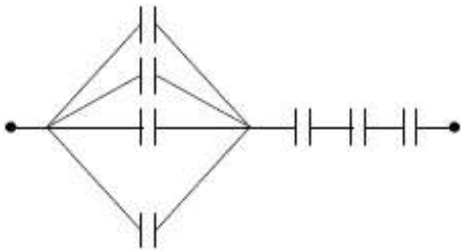
$2\,\mu F$ धारिता के 7 संधारित्रों को एक संयोजन में जोड़ने पर प्रभावी धारिता $\left(\frac{6}{13}\right)\mu F$ प्राप्त होती है। दिखाये गये चित्रों में से कौन सा संयोजन इच्छित मान देगा?

Options :

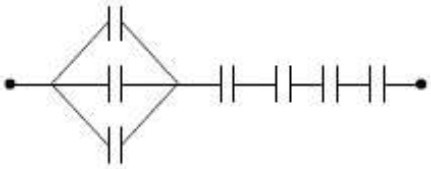
1.



2.



3.



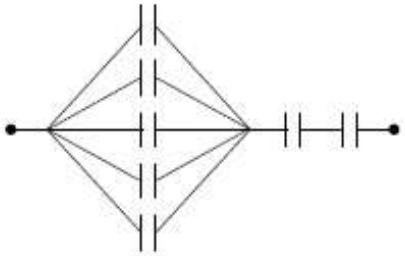
4.

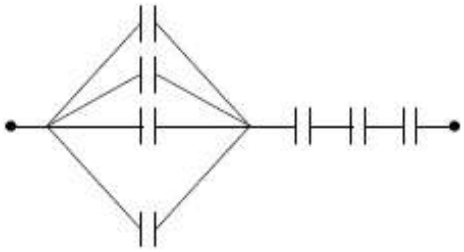
Question Number : 14 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

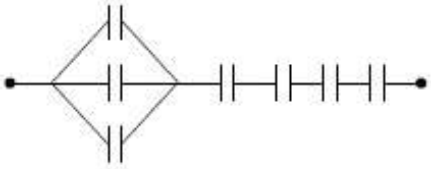
Correct Marks : 4 Wrong Marks : 1

$2\,\mu F$ કેપેસિટેન્સ ધરાવતા સાત કેપેસિટરોને એવી સંરચના વડે જોડવામાં આવે છે કે જેથી તેનો અસરકારક કેપેસિટન્સ $\left(\frac{6}{13}\right)\mu F$ મળે. નીચેની આકૃતીમાંથી કયું સંયોજન જરૂરી મૂલ્ય આપે છે ?

Options :

1. 

2. 

3. 

4. 

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

Correct Marks : 4 Wrong Marks : 1

An electric field of 1000 V/m is applied to an electric dipole at angle of 45°. The value of electric dipole moment is 10^{-29} C.m. What is the potential energy of the electric dipole ?

Options :

1. -7×10^{-27} J

2. -10×10^{-29} J

3. -9×10^{-20} J

4. -20×10^{-18} J

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

Correct Marks : 4 Wrong Marks : 1

1000 V/m के एक विद्युत क्षेत्र को 45° कोण पर एक विद्युत द्विध्रुव पर लगाते हैं। विद्युत द्विध्रुव आघूर्ण का मान 10^{-29} C.m है। विद्युत द्विध्रुव की स्थितिज ऊर्जा क्या है?

Options :

1. -7×10^{-27} J

2. -10×10^{-29} J

3. -9×10^{-20} J

4. -20×10^{-18} J

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

Correct Marks : 4 Wrong Marks : 1

એક વિદ્યુત દ્વિધ્રુવીને 1000 V/m વિદ્યુતક્ષેત્ર 45° ના ખુણે આપવામાં આવે છે. વિદ્યુત દ્વિધ્રુવી ચાકમાત્રા 10^{-29} C.m છે. આપવામાં આવેલ વિદ્યુતક્ષેત્રની અસર હેઠળ વિદ્યુત દ્વિધ્રુવી ની સ્થિતિઊર્જા કેટલી હશે?

Options :

1. -7×10^{-27} J

2. -10×10^{-29} J

3. -9×10^{-20} J

4. -20×10^{-18} J

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

Correct Marks : 4 Wrong Marks : 1

Two rods A and B of identical dimensions are at temperature 30°C. If A is heated upto 180°C and B upto T°C, then the new lengths are the same. If the ratio of the coefficients of linear expansion of A and B is 4 : 3, then the value of T is :

Options :

1. 200°C

2. 230°C

3. 250°C

4. 270°C

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

Correct Marks : 4 Wrong Marks : 1

एकसमान आकार की दो छड़ A तथा B, 30°C तापमान पर हैं। यदि A को 180°C तक तथा B को T°C तक गर्म करते हैं तो इनकी नई लम्बाइयाँ समान हैं। यदि A तथा B के रेखीय प्रसार गुणांकों का अनुपात 4 : 3 है तो, T का मान है :

Options :

1. 200°C

2. 230°C

3. 250°C

4. 270°C

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

Correct Marks : 4 Wrong Marks : 1

એક સરખુ પરિમાણ ધરાવતા બે સળિયા A અને B ને 30°C તાપમાને રાખેલ છે. જ્યારે સળિયા A ને 180°C સુધી અને B ને T°C સુધી ગરમ કરવામાં આવે ત્યારે બન્નેની નવી મળતી લંબાઈ સરખી હોય છે. A અને B નાં રેખીય પ્રસરણાંક નો ગુણોત્તર 4 : 3 તો T નું મૂલ્ય :

Options :

1. 200°C

2. 230°C

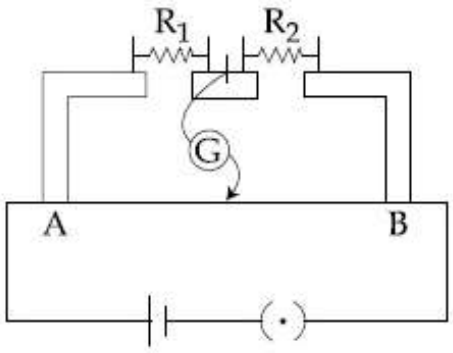
3. 250°C

4. 270°C

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

Correct Marks : 4 Wrong Marks : 1

In the experimental set up of metre bridge shown in the figure, the null point is obtained at a distance of 40 cm from A. If a 10 Ω resistor is connected in series with R_1, the null point shifts by 10 cm. The resistance that should be connected in parallel with $(R_1 + 10)$ Ω such that the null point shifts back to its initial position is :



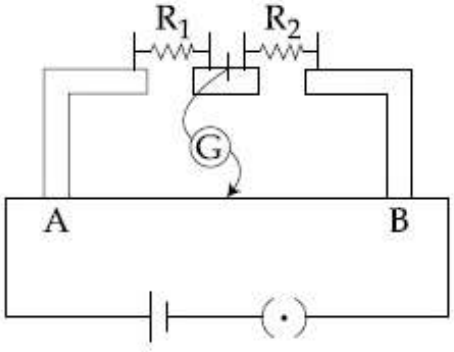
Options :

1. 60 Ω
2. 40 Ω
3. 30 Ω
4. 20 Ω

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

Correct Marks : 4 Wrong Marks : 1

दिखाये गये चित्रानुसार मीटर सेतु के एक प्रयोग में A से 40 cm दूरी पर शून्य बिन्दु प्राप्त होता है। यदि 10 Ω के एक प्रतिरोध को R_1 के साथ श्रेणी क्रम में लगाते हैं, तो शून्य बिन्दु 10 cm विस्थापित हो जाता है। वह प्रतिरोध, जिसको $(R_1 + 10)$ Ω के साथ समान्तर क्रम में लगाने से शून्य बिन्दु पुनः अपनी आरम्भिक स्थिति में आ जाता है, होना चाहिये :



Options :

1. $60\ \Omega$

2. $40\ \Omega$

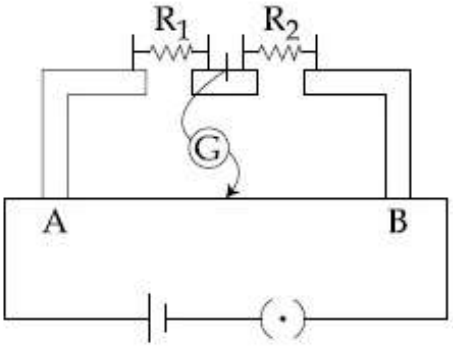
3. $30\ \Omega$

4. $20\ \Omega$

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

Correct Marks : 4 Wrong Marks : 1

આકૃતિમાં બતાવેલ મીટરબ્રીજનાં પ્રયોગની ગોઠવણમાં બિંદુ A થી 40 cm ના અંતરે તટસ્થ બિંદુ મળે છે. હવે જો $10\ \Omega$ ના અવરોધને R_1 સાથે શ્રેણીમાં જોડવામાં આવે, તો તટસ્થ બિંદુ 10 cm જેટલું ખસે છે. હવે જો તટસ્થ બિંદુને પાછું તેની પ્રારંભિક સ્થિતિમાં લાવવુ હોય તો અવરોધ $(R_1 + 10)\ \Omega$ ને સમાંતર કેટલો અવરોધ જોડવો પડે ?



Options :

1. $60\ \Omega$

2. $40\ \Omega$

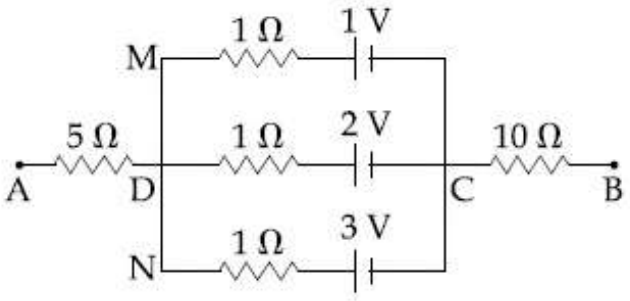
3. $30\ \Omega$

4. $20\ \Omega$

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

Correct Marks : 4 Wrong Marks : 1

In the circuit shown, the potential difference between A and B is :



Options :

1. 2 V

2. 3 V

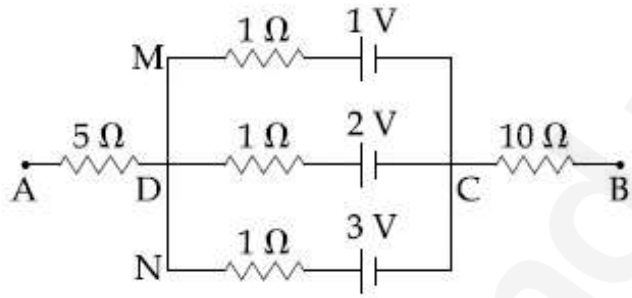
3. 6 V

4. 1 V

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

Correct Marks : 4 Wrong Marks : 1

दिये गये परिपथ में A तथा B के बीच विभवान्तर है :



Options :

1. 2 V

2. 3 V

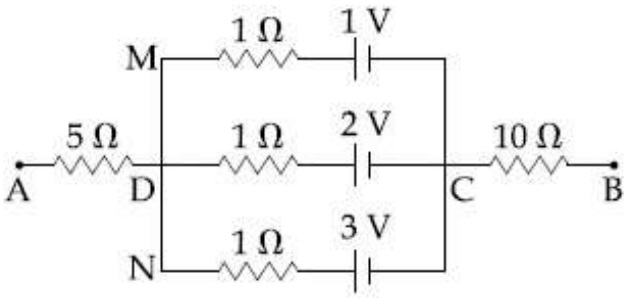
3. 6 V

4. 1 V

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

Correct Marks : 4 Wrong Marks : 1

આપેલ પરિપથમાં A અને B વચ્ચેનો સ્થિતિમાનનો તફાવત :



Options :

1. 2 V

2. 3 V

3. 6 V

4. 1 V

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

Correct Marks : 4 Wrong Marks : 1

A paramagnetic substance in the form of a cube with sides 1 cm has a magnetic dipole moment of 20×10^{-6} J/T when a magnetic intensity of 60×10^{3} A/m is applied. Its magnetic susceptibility is :

Options :

1. 3.3×10^{-2}

2. 4.3×10^{-2}

3. 2.3×10^{-2}

4. 3.3×10^{-4}

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

Correct Marks : 4 Wrong Marks : 1

1 cm भुजा के घनरूपी अनुचुम्बकीय पदार्थ पर, चुम्बकीय तीव्रता 60×10^{3} A/m लगाने पर उसका चुम्बकीय द्विध्रुव आघूर्ण 20×10^{-6} J/T होता है। इसकी चुम्बकीय प्रवृत्ति है :

Options :

1. 3.3×10^{-2}

2. 4.3×10^{-2}

3. 2.3×10^{-2}

4. 3.3×10^{-4}

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

Correct Marks : 4 Wrong Marks : 1

એક અનુચુંબકીય પદાર્થને 1 cm બાજુ ધરાવતા એક ઘન સ્વરૂપે લેવામાં આવે છે. જ્યારે ચુંબકીય તીવ્રતા 60×10^{3} A/m આપવામાં આવે ત્યારે તેની ચુંબકીય દ્વિધ્રુવી ચાકમાત્રા 20×10^{-6} J/T થાય છે. તેની ચુંબકીય સસેપ્ટીબિલીટી હશે :

Options :

1. 3.3×10^{-2}

2. 4.3×10^{-2}

3. 2.3×10^{-2}

4. 3.3×10^{-4}

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

Correct Marks : 4 Wrong Marks : 1

The region between $y=0$ and $y=d$ contains a magnetic field $\vec{B}=B\hat{z}$. A particle of mass m and charge q enters the region with a velocity $\vec{v}=v\hat{i}$. If $d=\frac{mv}{2qB}$, the acceleration of the charged particle at the point of its emergence at the other side is :

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

Options :

1. $\frac{qvB}{m}\left(\frac{\sqrt{3}}{2}\hat{i}+\frac{1}{2}\hat{j}\right)$

2. $\frac{qvB}{m}\left(\frac{1}{2}\hat{i}-\frac{\sqrt{3}}{2}\hat{j}\right)$

3. $\frac{qvB}{m}\left(\frac{\hat{i}+\hat{j}}{\sqrt{2}}\right)$

4. $\frac{qvB}{m}\left(\frac{-\hat{j}+\hat{i}}{\sqrt{2}}\right)$

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

Correct Marks : 4 Wrong Marks : 1

$y=0$ तथा $y=d$ के बीच के क्षेत्र में एक समान चुम्बकीय क्षेत्र $\vec{B} = B\hat{z}$ विद्यमान है। द्रव्यमान m तथा आवेश q का एक कण, वेग $\vec{v}=v\hat{i}$ से इस क्षेत्र में प्रवेश करता है। यदि $d = \frac{mv}{2qB}$ है, तो दूसरी ओर से बाहर निकलने वाले बिन्दु पर, आवेशित कण का त्वरण होगा :

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

Options :

1. $\frac{qvB}{m}\left(\frac{\sqrt{3}}{2}\hat{i}+\frac{1}{2}\hat{j}\right)$

2. $\frac{qvB}{m}\left(\frac{1}{2}\hat{i}-\frac{\sqrt{3}}{2}\hat{j}\right)$

3. $\frac{qvB}{m}\left(\frac{\hat{i}+\hat{j}}{\sqrt{2}}\right)$

4. $\frac{qvB}{m}\left(\frac{-\hat{j}+\hat{i}}{\sqrt{2}}\right)$

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

Correct Marks : 4 Wrong Marks : 1

$y=0$ અને $y=d$ વચ્ચેનો વિસ્તાર ચુંબકીય ક્ષેત્ર $\vec{B} = B\hat{z}$ ધરાવે છે. m દળ અને q વિજભાર ધરાવતો એક કણ $\vec{v}=v\hat{i}$ વેગથી આ વિસ્તારમાં પ્રવેશે છે. જો $d = \frac{mv}{2qB}$, હોય તો આ વિસ્તારની બીજી બાજુએ નિર્ગમન બિંદુએ વિજભારીત કણનો પ્રવેગ હશે :

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

Options :

1. $\frac{qvB}{m}\left(\frac{\sqrt{3}}{2}\hat{i}+\frac{1}{2}\hat{j}\right)$

2. $\frac{qvB}{m}\left(\frac{1}{2}\hat{i}-\frac{\sqrt{3}}{2}\hat{j}\right)$

3. $\frac{qvB}{m}\left(\frac{\hat{i}+\hat{j}}{\sqrt{2}}\right)$

4. $\frac{qvB}{m}\left(\frac{-\hat{j}+\hat{i}}{\sqrt{2}}\right)$

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

Correct Marks : 4 Wrong Marks : 1

A copper wire is wound on a wooden frame, whose shape is that of an equilateral triangle. If the linear dimension of each side of the frame is increased by a factor of 3, keeping the number of turns of the coil per unit length of the frame the same, then the self inductance of the coil :

Options :

1. increases by a factor of 3

2. decreases by a factor of 9

3. increases by a factor of 27

4. decreases by a factor of $9\sqrt{3}$

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

Correct Marks : 4 Wrong Marks : 1

ताँबे के तार को एक लकड़ी के खाँचे, जिसका आकार एक समबाहु त्रिभुज है, पर लपेटा गया है। खाँचे की प्रति लम्बाई के फेरों की संख्या समान रखते हुए, यदि खाँचे की प्रत्येक भुजा की रेखीय विमायें 3 के गुणांक से बढ़ा दी जायें तो कुण्डली में स्वप्रेरण :

Options :

1. 3 के गुणांक से बढ़ेगा

2. 9 के गुणांक से घटेगा

3. 27 के गुणांक से बढ़ेगा

4. $9\sqrt{3}$ के गुणांक से घटेगा

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

Correct Marks : 4 Wrong Marks : 1

સમબાજુ ત્રિકોણ ધરાવતા એક લાકડાના ચોખઠા પર તાંબાના તારને વીંટાળવામાં આવે છે. હવે જો આ ચોખઠાની દરેક બાજુનું રેખીય પરીમાણ, ચોખઠાની એકમ લંબાઈ દીઠ ગુંચળાના આંટાની સંખ્યા અચળ રાખી, ત્રણ ગણું વધારવામાં આવે તો ગુંચળાનું આત્મપ્રેરણ :

Options :

1. 3 ગણુ વધશે.

2. 9 ગણુ ઘટશે

3. 27 ગણુ વધશે

4. $9\sqrt{3}$ ગણુ ઘટશે

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

Correct Marks : 4 Wrong Marks : 1

A 27 mW laser beam has a cross-sectional area of 10 mm^2. The magnitude of the maximum electric field in this electromagnetic wave is given by :
[Given permittivity of space $\epsilon_0 = 9 \times 10^{-12}$ SI units, Speed of light $c = 3 \times 10^8$ m/s]

Options :

1. 1.4 kV/m

2. 1 kV/m

3. 2 kV/m

4. 0.7 kV/m

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

Correct Marks : 4 Wrong Marks : 1

27 mW के एक लेसर किरणपुँज के अनुप्रस्थ काट का क्षेत्रफल 10 mm^2 है। इस विद्युत चुम्बकीय तरंग के महत्तम वैद्युत क्षेत्र का परिमाण होगा (दिया है निर्वात की विद्युतशीलता $\epsilon_0 = 9 \times 10^{-12}$ SI मात्रक में प्रकाश की चाल, $c = 3 \times 10^8$ m/s)

Options :

1. 1.4 kV/m

2. 1 kV/m

3. 2 kV/m

4. 0.7 kV/m

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

Correct Marks : 4 Wrong Marks : 1

27 mW ધરાવતા લેસર બીમનો આડછેદ 10 mm^2 છે. આ વિદ્યુતચુંબકીય તરંગમાં રહેલ વિદ્યુતક્ષેત્રનું મહત્તમ મૂલ્ય :
(અહીં $\epsilon_0 = 9 \times 10^{-12}$ SI એકમ એ અવકાશનો પરાવૈદ્યુતાંક અને $c = 3 \times 10^8$ m/s એ પ્રકાશની ઝડપ છે.)

Options :

1. $1.4\ \text{kV/m}$

2. $1\ \text{kV/m}$

3. $2\ \text{kV/m}$

4. $0.7\ \text{kV/m}$

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

Correct Marks : 4 Wrong Marks : 1

A monochromatic light is incident at a certain angle on an equilateral triangular prism and suffers minimum deviation. If the refractive index of the material of the prism is $\sqrt{3}$, then the angle of incidence is :

Options :

1. $45°$

2. $30°$

3. $60°$

4. $90°$

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

Correct Marks : 4 Wrong Marks : 1

एक एकवर्णीय प्रकाश किसी समबाहु त्रिभुजीय प्रिज्म पर एक निश्चित कोण पर आपतित होता है और उसका न्यूनतम विचलन होता है। यदि प्रिज्म के पदार्थ का अपवर्तनांक $\sqrt{3}$ हो, तो आपतन कोण है :

Options :

1. $45°$

2. $30°$

3. $60°$

4. $90°$

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

Correct Marks : 4 Wrong Marks : 1

સમબાજુ ત્રિકોણીય પ્રિઝમ પર એકરંગી પ્રકાશને કોઇ ચોક્કસ ખૂણે આપાત કરવામાં આવે છે. અને તેનું લઘુત્તમ વિચલન થાય છે. જો પ્રિઝમના દ્રવ્યનો વક્રિભવનાંક $\sqrt{3}$ હોય તો આપાત કોણ :

Options :

1. $45°$

2. $30°$

3. $60°$

4. $90°$

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

Correct Marks : 4 Wrong Marks : 1

एक द्वि-झिरी प्रयोग में, हरा प्रकाश (5303Å) द्वि-झिरी पर पड़ता है। झिरियों के बीच की दूरी 19.44 μm तथा इनकी चौड़ाई 4.05 μm है। प्रथम तथा द्वितीय विवर्तन निम्निष्ठ के बीच में कितनी दीप्त फ्रिन्जें हैं?

Options :

1. 10

2. 09

3. 05

4. 04

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

Correct Marks : 4 Wrong Marks : 1

ડબલ સ્લિટના એક પ્રયોગમાં બે સ્લિટ વચ્ચેનું અંતર 19.44 μm અને તેની પહોળાઈ 4.05 μm છે જેના પર લીલા (5303Å) પ્રકાશને આપાત કરવામાં આવે છે. પ્રથમ અને દ્વિતીય વ્યતિકરણ ન્યૂનતમ વચ્ચે રહેલ પ્રકાશિત શલાકાઓની સંખ્યા :

Options :

1. 10

2. 09

3. 05

4. 04

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

Correct Marks : 4 Wrong Marks : 1

In a double-slit experiment, green light (5303Å) falls on a double slit having a separation of 19.44 μm and a width of 4.05 μm. The number of bright fringes between the first and the second diffraction minima is :

Options :

1. 10

2. 09

3. 05

4. 04

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

Correct Marks : 4 Wrong Marks : 1

In a photoelectric experiment, the wavelength of the light incident on a metal is changed from 300 nm to 400 nm. The decrease in the stopping potential is close to : $(\frac{hc}{e} = 1240 \text{ nm-V})$

Options :

1. 1.0 V

2. 2.0 V

3. 0.5 V

4. 1.5 V

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

Correct Marks : 4 Wrong Marks : 1

प्रकाश-विद्युत प्रभाव के एक प्रयोग में धातु पर आपतित प्रकाश की तरंगदैर्ध्य 300 nm से बदलकर 400 nm करते हैं। निरोधी विभव में कमी होगी, लगभग (दिया है : $\frac{hc}{e} = 1240 \text{ nm-V}$)

Options :

1. 1.0 V
2. 2.0 V
3. 0.5 V
4. 1.5 V

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

Correct Marks : 4 Wrong Marks : 1

એક ફોટોઇલેક્ટ્રિક પ્રયોગમાં ધાતુ પર આપાત થતા પ્રકાશની તરંગલંબાઈ 300 nm થી 400 nm જેટલી બદલાય છે. સ્ટોપિંગ પોટેન્શિયલમાં થતો ઘટાડો _____ ની નજીકનો થશે. ($\frac{hc}{e} = 1240 \text{ nm-V}$ આપેલ છે.)

Options :

1. 1.0 V
2. 2.0 V
3. 0.5 V
4. 1.5 V

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

Correct Marks : 4 Wrong Marks : 1

In a hydrogen like atom, when an electron jumps from the M - shell to the L - shell, the wavelength of emitted radiation is λ. If an electron jumps from N-shell to the L-shell, the wavelength of emitted radiation will be :

Options :

1. $\frac{16}{25}\lambda$

2. $\frac{25}{16}\lambda$

3. $\frac{20}{27}\lambda$

4. $\frac{27}{20}\lambda$

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

Correct Marks : 4 Wrong Marks : 1

एक हाइड्रोजन समान परमाणु में, जब इलेक्ट्रॉन M - कक्षा से L - कक्षा में संक्रमण करता है, तो उत्सर्जित विकिरण की तरंगदैर्घ्य λ है। यदि इलेक्ट्रॉन N-कक्षा से L-कक्षा में संक्रमण करे तो उत्सर्जित विकिरण की तरंगदैर्ध्य होगी :

Options :

1. $\frac{16}{25}\lambda$

2. $\frac{25}{16}\lambda$

3. $\frac{20}{27}\lambda$

4. $\frac{27}{20}\lambda$

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

Correct Marks : 4 Wrong Marks : 1

હાઇડ્રોજન જેવા પરમાણુમાં ઇલેક્ટ્રોન M - શેલ (કક્ષા) માંથી L - શેલ (કક્ષા) માં જાય છે. ઉત્સર્જતા વિકિરણની તરંગલંબાઈ λ છે. જો ઇલેક્ટ્રોન N- શેલ (કક્ષા) માંથી L-શેલ (કક્ષા) માં જાય તો ઉત્સર્જતા વિકિરણની તરંગલંબાઈ હશે :

Options :

1. $\frac{16}{25}\lambda$

2. $\frac{25}{16}\lambda$

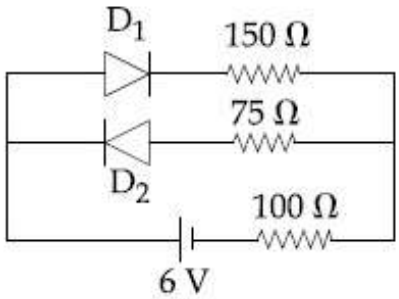
3. $\frac{20}{27}\lambda$

4. $\frac{27}{20}\lambda$

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

Correct Marks : 4 Wrong Marks : 1

The circuit shown below contains two ideal diodes, each with a forward resistance of 50 Ω. If the battery voltage is 6 V, the current through the 100 Ω resistance(in Amperes) is :



Options :

1. 0.020

2. 0.027

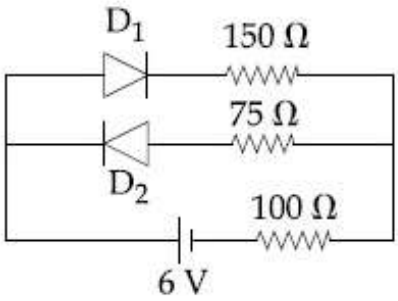
3. 0.030

4. 0.036

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

Correct Marks : 4 Wrong Marks : 1

दिखाये गये परिपथ में दो आदर्श डायोड हैं, जिनमें प्रत्येक का अग्रदिशिक प्रतिरोध 50 Ω है। यदि बैटरी की वोल्टता 6 V है, तो 100 Ω के प्रतिरोध में धारा (एम्पियर में) होगी :

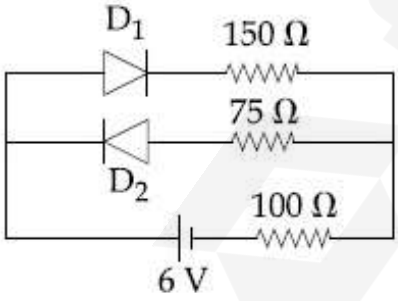


Options :

1. 0.020
2. 0.027
3. 0.030
4. 0.036

Question Number : 27 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 4 Wrong Marks : 1

નીચે આપેલ પરિપથ બે આદર્શ ડાયોડ ધરાવે છે. જે દરેકનો ફોરવર્ડ અવરોધ 50 Ω છે. જો બેટરીનો વોલ્ટેજ 6 V હોય તો 100 Ω ના અવરોધમાંથી પસાર થતો પ્રવાહ (એમ્પિયરમાં) હશે :



Options :

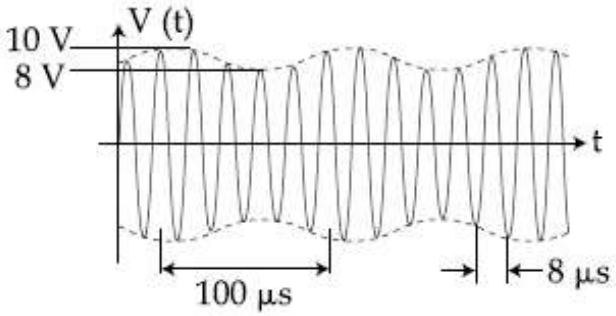
1. 0.020
2. 0.027
3. 0.030

4. 0.036

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

Correct Marks : 4 Wrong Marks : 1

An amplitude modulated signal is plotted below :



Which one of the following best describes the above signal ?

Options :

1. $(9+\sin(2.5\pi\times10^5\ t))\sin(2\pi\times10^4 t)$ V

2. $(1+9\sin(2\pi\times10^4\ t))\sin(2.5\pi\times10^5 t)$ V

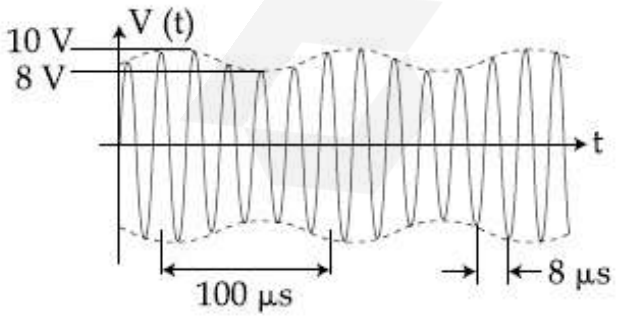
3. $(9+\sin(4\pi\times10^4\ t))\sin(5\pi\times10^5 t)$ V

4. $(9+\sin(2\pi\times10^4\ t))\sin(2.5\pi\times10^5 t)$ V

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

Correct Marks : 4 Wrong Marks : 1

एक आयाम-माडुलित सिग्नल को चित्र में दिखाया गया है :



निम्न में से कौन उपरोक्त सिग्नल को सबसे अच्छा दर्शाता है ?

Options :

1. $(9+\sin(2.5\pi\times10^5\ t))\sin(2\pi\times10^4 t)$ V

2. $(1+9\sin(2\pi\times10^4\,t))\sin(2.5\pi\times10^5 t)\,V$

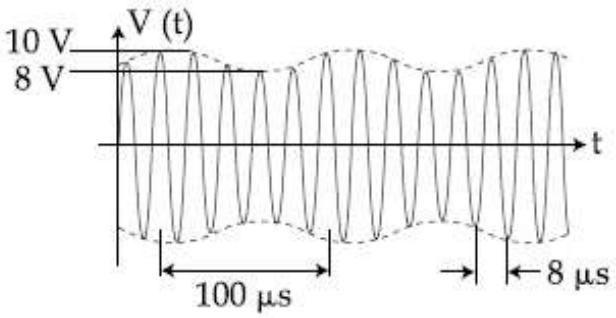
3. $(9+\sin(4\pi\times10^4\,t))\sin(5\pi\times10^5 t)\,V$

4. $(9+\sin(2\pi\times10^4\,t))\sin(2.5\pi\times10^5 t)\,V$

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

Correct Marks : 4 Wrong Marks : 1

એમ્પલીટચ્યુડ મોડ્યુલેટેડ સિગ્નલને નીચે દોરેલ છે.



નીચે આપેલ પૈકીમાંથી કયુ સૌથી યોગ્ય રીતે ઊપરનું સિગ્નલ દર્શાવેલ છે?

Options :

1. $(9+\sin(2.5\pi\times10^5\,t))\sin(2\pi\times10^4 t)\,V$

2. $(1+9\sin(2\pi\times10^4\,t))\sin(2.5\pi\times10^5 t)\,V$

3. $(9+\sin(4\pi\times10^4\,t))\sin(5\pi\times10^5 t)\,V$

4. $(9+\sin(2\pi\times10^4\,t))\sin(2.5\pi\times10^5 t)\,V$

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

Correct Marks : 4 Wrong Marks : 1

A galvanometer having a resistance of 20 Ω and 30 divisions on both sides has figure of merit 0.005 ampere/division. The resistance that should be connected in series such that it can be used as a voltmeter upto 15 volt, is :

Options :

1. 80 Ω

2. 100 Ω

3. 120 Ω

4. 125 Ω

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

Correct Marks : 4 Wrong Marks : 1

एक धारामापी जिसका प्रतिरोध 20 Ω है तथा दोनों और 30 भाग हैं, की धारा सुग्रागिता 0.005 एम्पियर/भाग है। कितना प्रतिरोध श्रेणीबद्ध क्रम में लगाये कि, इसको 15 V तक के एक वोल्टमीटर के रूप में प्रयोग किया जा सके?

Options :

1. 80 Ω

2. 100 Ω

3. 120 Ω

4. 125 Ω

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

Correct Marks : 4 Wrong Marks : 1

20 Ω અવરોધ ધરાવતા અને બન્ને બાજુ 30 કાપા ધરાવતા એક ગેલ્વેનોમીટરનો દક્ષતાંક 0.005 એમ્પિયર/કાપા છે. તેને 15 V સુધીના વોલ્ટમીટર તરીકે વાપરી શકાય તે માટે શ્રેણીમાં જોડવો પડતો અવરોધ _____ છે.

Options :

1. 80 Ω

2. 100 Ω

3. 120 Ω

4. 125 Ω

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

Correct Marks : 4 Wrong Marks : 1

रेखीय स्केल के अनुसार मापांकित एक तापमापी (thermometer) का पाठ्यांक उबलते हुए पानी के सम्पर्क में x_0, तथा बर्फ के सम्पर्क में $x_0/3$ आता है। इस तापमापी को किसी वस्तु के सम्पर्क में रखने पर इसका पाठ्यांक $x_0/2$ आता है तो, वस्तु का तापमान °C में क्या है?

Options :

1. 60
2. 25
3. 35
4. 40

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

Correct Marks : 4 Wrong Marks : 1

કોઈ એક અંકીત કરેલ થર્મોમીટર જ્યારે ઉકળતા પાણીના સંપર્કમાં આવે ત્યારે માપક્રમ પ્રમાણે તે x_0 વાંચે છે, અને જ્યારે તે બરફના સંપર્કમાં હોય ત્યારે $x_0/3$ છે. પદાર્થના સંપર્કમાં જો આ થર્મોમીટર $x_0/2$ અવલોકન વાંચે તો પદાર્થનું તાપમાન °C માં કેટલું હશે?

Options :

1. 60
2. 25
3. 35
4. 40

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

Correct Marks : 4 Wrong Marks : 1

A thermometer graduated according to a linear scale reads a value x_0 when in contact with boiling water, and $x_0/3$ when in contact with ice. What is the temperature of an object in °C, if this thermometer in the contact with the object reads $x_0/2$?

Options :

1. 60

2. 25

3. 35

4. 40

Chemistry

Section Id :	416529143
Section Number :	2
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	30
Number of Questions to be attempted:	30
Section Marks:	120
Display Number Panel:	Yes
Group All Questions:	No

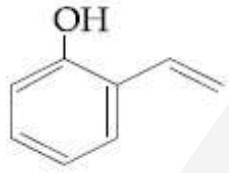
Sub-Section Number:	1
Sub-Section Id:	416529152
Question Shuffling Allowed :	Yes

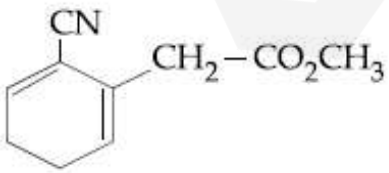
Question Number : 31 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

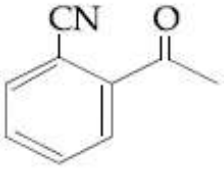
Correct Marks : 4 Wrong Marks : 1

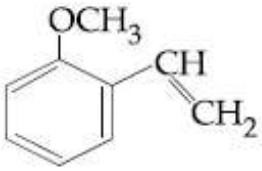
Which of the following compounds reacts with ethylmagnesium bromide and also decolourizes bromine water solution :

Options :

1. 

2. 

3. 

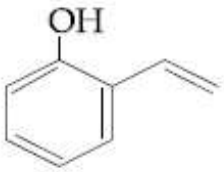
4. 

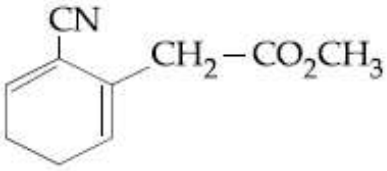
Question Number : 31 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

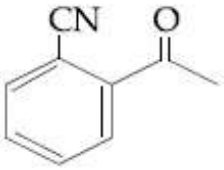
Correct Marks : 4 Wrong Marks : 1

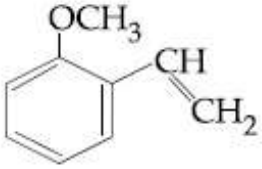
निम्नलिखित में से कौन-सा यौगिक एथिल मैग्नीशियम ब्रोमाइड से अभिक्रिया करता है तथा ब्रोमीन जल को रंगहीन भी करता है?

Options :

1. 

2. 

3. 

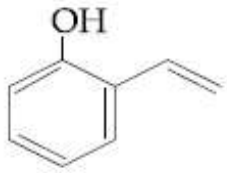
4. 

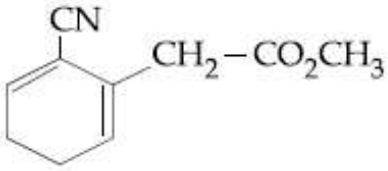
Question Number : 31 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

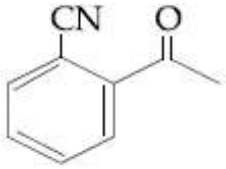
Correct Marks : 4 Wrong Marks : 1

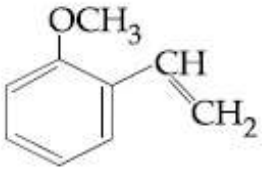
નીચે આપેલા માંથી કયુ સંયોજન ઇથાઇલ મેગ્નેશિયમ બ્રોમાઇડ સાથે પ્રક્રિયા કરે છે અને બ્રોમીનના પાણીનો રંગ પણ દુર કરે છે.

Options :

1. 

2. 

3. 

4. 

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

Correct Marks : 4 Wrong Marks : 1

मद I तथा **मद II** के बीच सही सुमेल है :

	मद I		**मद II**
(A)	एस्टर परीक्षण	(P)	Tyr
(B)	कार्बीलऐमीन जांच	(Q)	Asp
(C)	थैलीन डाइ टेस्ट	(R)	Ser
		(S)	Lys

Options :

1. (A)→(Q); (B)→(S); (C)→(R)

2. (A)→(Q); (B)→(S); (C)→(P)

3. (A)→(R); (B)→(Q); (C)→(P)

4. (A)→(R); (B)→(S); (C)→(Q)

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

Correct Marks : 4 Wrong Marks : 1

સુચી I અને સુચી II ને યોગ્ય રીતે જોડો

	સુચી I		સુચી II
(A)	એસ્ટર કસોટી	(P)	Tyr
(B)	કાર્બાઇલ એમાઇન કસોટી	(Q)	Asp
(C)	ફ્થેલીન કસોટી	(R)	Ser
		(S)	Lys

Options :

1. (A)→(Q); (B)→(S); (C)→(R)
2. (A)→(Q); (B)→(S); (C)→(P)
3. (A)→(R); (B)→(Q); (C)→(P)
4. (A)→(R); (B)→(S); (C)→(Q)

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

Correct Marks : 4 Wrong Marks : 1

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

	Item I		Item II
(A)	Ester test	(P)	Tyr
(B)	Carbylamine test	(Q)	Asp
(C)	Phthalein dye test	(R)	Ser
		(S)	Lys

Options :

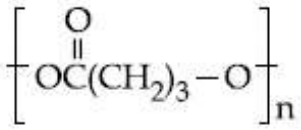
1. (A)→(Q); (B)→(S); (C)→(R)
2. (A)→(Q); (B)→(S); (C)→(P)
3. (A)→(R); (B)→(Q); (C)→(P)
4. (A)→(R); (B)→(S); (C)→(Q)

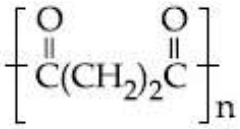
Question Number : 33 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

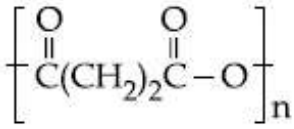
Correct Marks : 4 Wrong Marks : 1

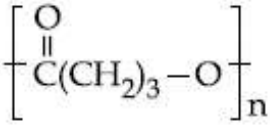
The homopolymer formed from 4-hydroxy-butanoic acid is :

Options :

1. 

2. 

3. 

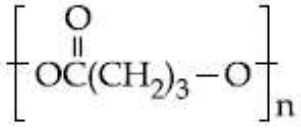
4. 

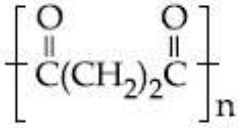
Question Number : 33 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

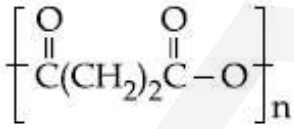
Correct Marks : 4 Wrong Marks : 1

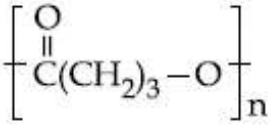
4-हाइड्राक्सी ब्यूटेनोइक अयन से बनने वाला समबहुलक है :

Options :

1. 

2. 

3. 

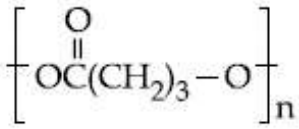
4. 

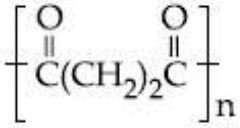
Question Number : 33 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

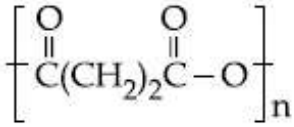
Correct Marks : 4 Wrong Marks : 1

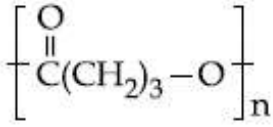
4-હાઇડ્રોક્સી બ્યૂટેનોઇક એસિડનું જળ વિભાજન બાદ મળતો હોમોપોલીમર શોધો?

Options :

1. 

2. 

3. 

4. 

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

Correct Marks : 4 Wrong Marks : 1

In the following compound,

the favourable site/s for protonation is/are :

Options :

1. (a)

2. (a) and (e)

3. (b), (c) and (d)

4. (a) and (d)

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

Correct Marks : 4 Wrong Marks : 1

निम्न यौगिक में

प्रोटनीकरण के लिए अनुकूल स्थल है/हैं :

Options :

1. (a)

2. (a) तथा (e)

3. (b), (c) तथा (d)

4. (a) तथा (d)

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

Correct Marks : 4 Wrong Marks : 1

આપેલ સંયોજન :

પ્રોટોનેશનમાટે અનુકૂળ સ્થાન(નો) શોધો ?

Options :

1. (a)

2. (a) અને (e)

3. (b), (c) અને (d)

4. (a) અને (d)

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

Correct Marks : 4 Wrong Marks : 1

A compound 'X' on treatment with $Br_2/NaOH$, provided C_3H_9N, which gives positive carbylamine test. Compound 'X' is :

Options :

1. $CH_3CH_2COCH_2NH_2$

2. $CH_3CH_2CH_2CONH_2$

3. $CH_3CON(CH_3)_2$

4. $CH_3COCH_2NHCH_3$

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

Correct Marks : 4 Wrong Marks : 1

एक यौगिक 'X' को $Br_2/NaOH$ के साथ अभिकृत करने पर C_3H_9N दिया जो धनात्मक कार्बिलएमीन जाँच देता है। यौगिक 'X' की संरचना है :

Options :

1. $CH_3CH_2COCH_2NH_2$

2. $CH_3CH_2CH_2CONH_2$

3. $CH_3CON(CH_3)_2$

4. $CH_3COCH_2NHCH_3$

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

Correct Marks : 4 Wrong Marks : 1

સંયોજન 'X' ને $Br_2/NaOH$ સાથે પ્રક્રિયા કરતા C_3H_9N મળે છે જે હકારાત્મક કાર્બાઇલ એમાઇન કસોટી આપે છે. તો 'X' નું બંધારણ શોધો ?

Options :

1. $CH_3CH_2COCH_2NH_2$

2. $CH_3CH_2CH_2CONH_2$

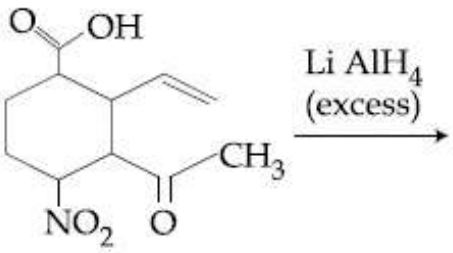
3. $CH_3CON(CH_3)_2$

4. $CH_3COCH_2NHCH_3$

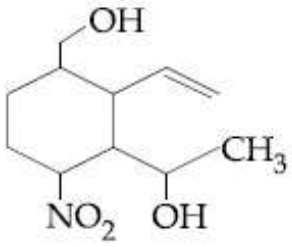
Question Number : 36 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

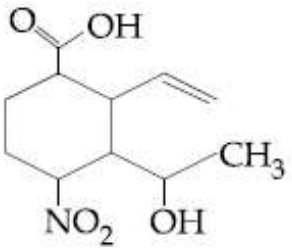
Correct Marks : 4 Wrong Marks : 1

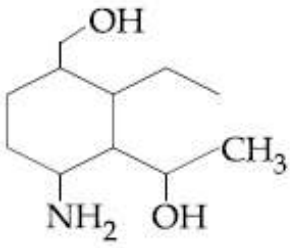
The major product obtained in the following reaction is :

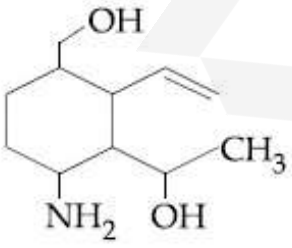


Options :

1.


2.


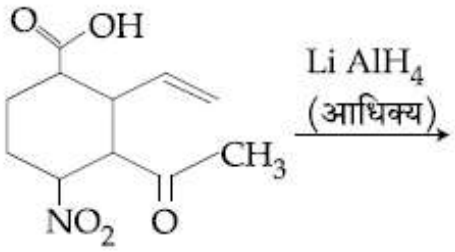
3.


4.


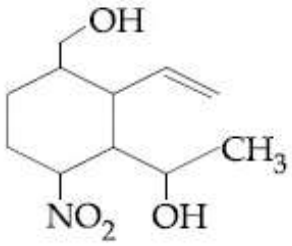
Question Number : 36 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

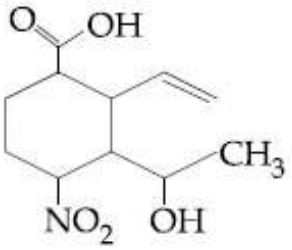
Correct Marks : 4 Wrong Marks : 1

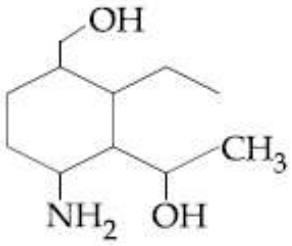
निम्न अभिक्रिया में प्राप्त मुख्य उत्पाद है :

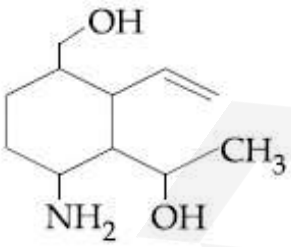


Options :

1.


2.


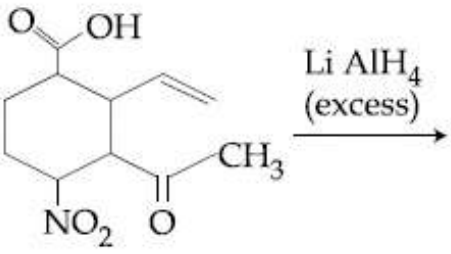
3.


4.


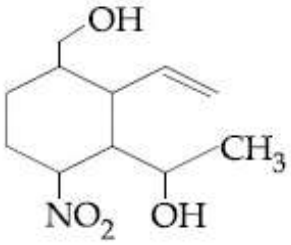
Question Number : 36 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

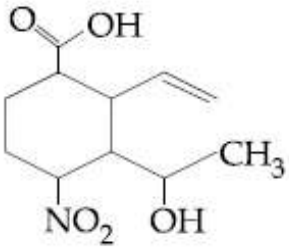
Correct Marks : 4 Wrong Marks : 1

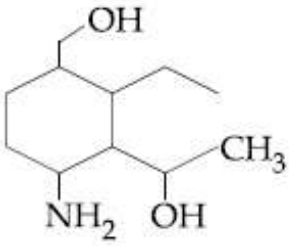
નીચે આપેલી પ્રક્રિયાની મુખ્ય નીપજ શોધો ?

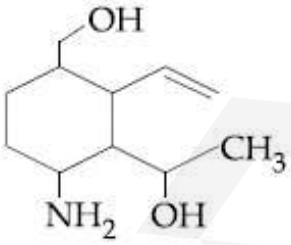


Options :

1.


2.


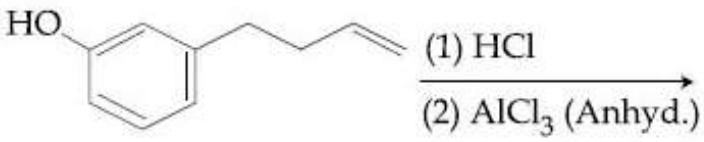
3.


4.


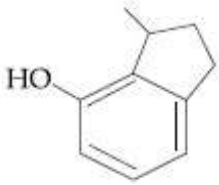
Question Number : 37 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

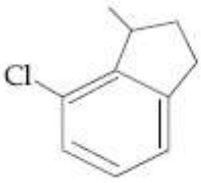
Correct Marks : 4 Wrong Marks : 1

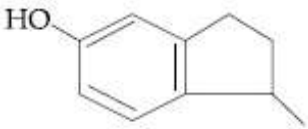
The major product of the following reaction is :

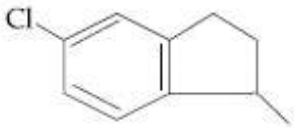


Options :

1. 

2. 

3. 

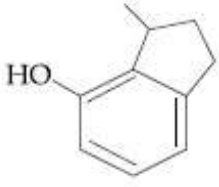
4. 

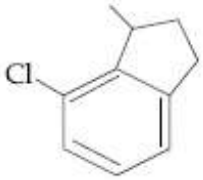
Question Number : 37 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

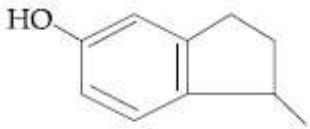
Correct Marks : 4 Wrong Marks : 1

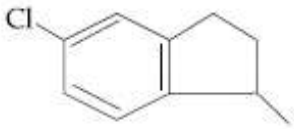
निम्न अभिक्रिया का मुख्य उत्पाद है :

Options :

1. 

2. 

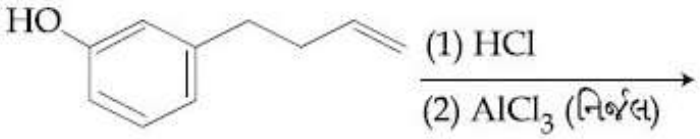
3. 

4. 

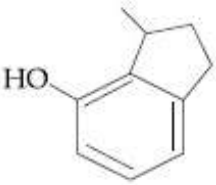
Question Number : 37 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

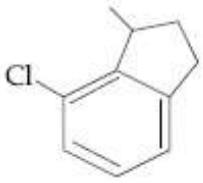
Correct Marks : 4 Wrong Marks : 1

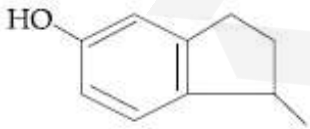
નીચે આપેલી પ્રક્રિયાની મુખ્ય નીપજ શોધો ?

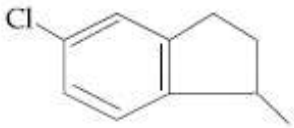


Options :

1. 

2. 

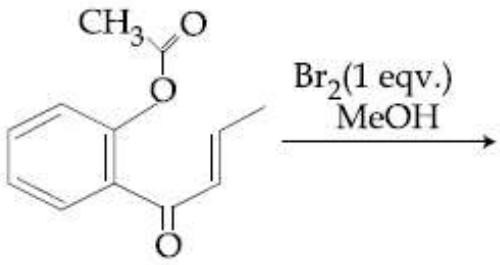
3. 

4. 

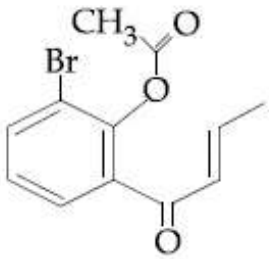
Question Number : 38 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

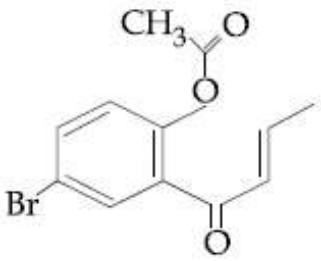
Correct Marks : 4 Wrong Marks : 1

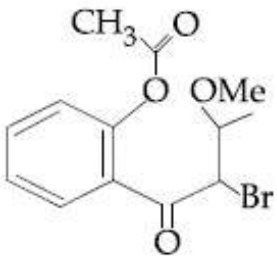
The major product obtained in the following conversion is :

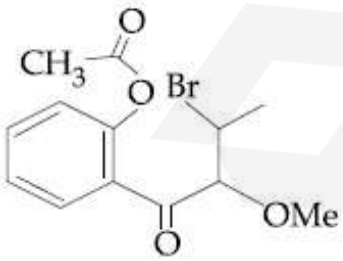


Options :

1. 

2. 

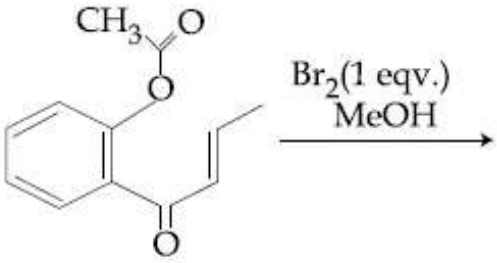
3. 

4. 

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

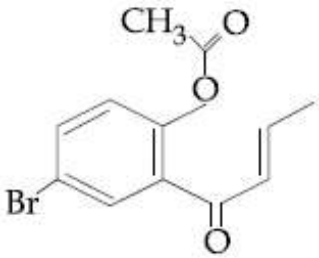
Correct Marks : 4 Wrong Marks : 1

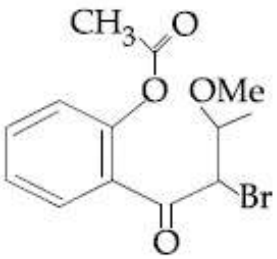
निम्न रूपान्तरण में प्राप्त होने वाला मुख्य उत्पाद है :

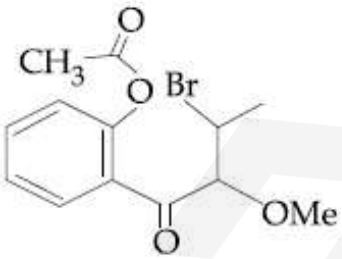


Options :

1.


2.


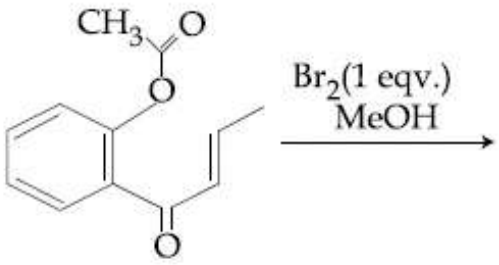
3.


4.


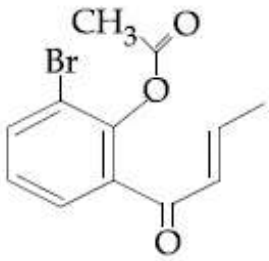
Question Number : 38 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

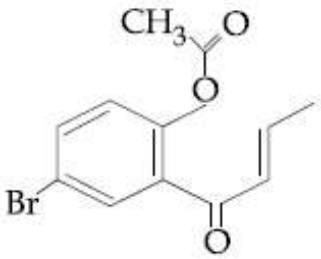
Correct Marks : 4 Wrong Marks : 1

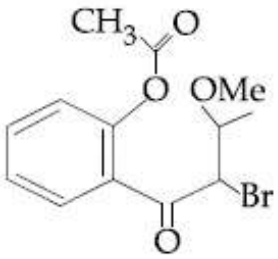
નીચે આપેલા રૂપાંતરણ થી મળતી મુખ્ય નીપજ શોધો ?

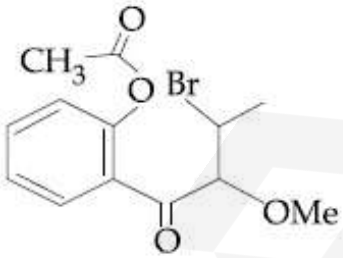


Options :

1. 

2. 

3. 

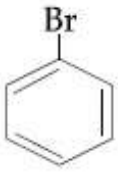
4. 

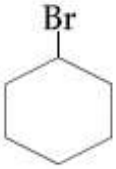
Question Number : 39 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

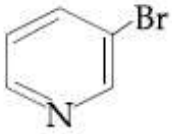
Correct Marks : 4 Wrong Marks : 1

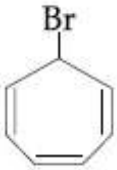
Which of the following compounds will produce a precipitate with $AgNO_3$?

Options :

1. 

2. 

3. 

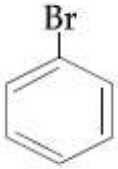
4. 

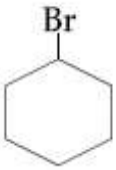
Question Number : 39 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

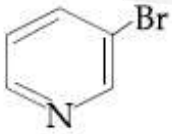
Correct Marks : 4 Wrong Marks : 1

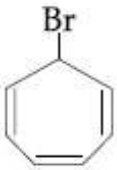
$AgNO_3$ के साथ निम्न यौगिकों में से कौन सा अवक्षेप देगा :

Options :

1. 

2. 

3. 

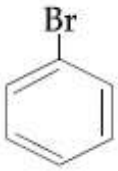
4. 

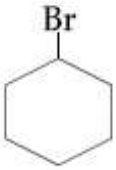
Question Number : 39 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

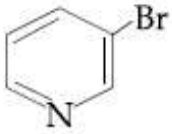
Correct Marks : 4 Wrong Marks : 1

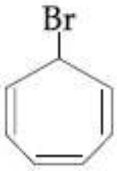
નીચે આપેલા સંયોજનો પૈકી કયો એક $AgNO_3$ સાથે અવક્ષેપ આપશે?

Options :

1. 

2. 

3. 

4. 

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

Correct Marks : 4 Wrong Marks : 1

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

	Item I		Item II
(A)	Allosteric effect	(P)	Molecule binding to the active site of enzyme
(B)	Competitive inhibitor	(Q)	Molecule crucial for communication in the body
(C)	Receptor	(R)	Molecule binding to a site other than the active site of enzyme
(D)	Poison	(S)	Molecule binding to the enzyme covalently

Options :

1. (A)→(P); (B)→(R); (C)→(Q); (D)→(S)

2. (A)→(P); (B)→(R); (C)→(S); (D)→(Q)

3. (A)→(R); (B)→(P); (C)→(Q); (D)→(S)

4. (A)→(R); (B)→(P); (C)→(S); (D)→(Q)

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

Correct Marks : 4 Wrong Marks : 1

मद I तथा **मद II** के बीच सही सुमेल है :

	मद I		**मद II**
(A)	ऐलोस्टेरिक प्रभार	(P)	एन्जाइम के सक्रिय भाग से अणु का बंधन
(B)	प्रतियोगी निरोधक	(Q)	शरीर में संकटकालीन संसूचक अणु
(C)	ग्राही	(R)	एन्जाइम के सक्रिय भाग के अलावा अणु का बंधन
(D)	विष	(S)	अणु जो एन्जाइम से सहसंयोजक रूप से आबंधित है

Options :

1. (A)→(P); (B)→(R); (C)→(Q); (D)→(S)

2. (A)→(P); (B)→(R); (C)→(S); (D)→(Q)

3. (A)→(R); (B)→(P); (C)→(Q); (D)→(S)

4. (A)→(R); (B)→(P); (C)→(S); (D)→(Q)

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

Correct Marks : 4 Wrong Marks : 1

સુચી I અને સુચી II ને યોગ્ય રીતે જોડો

	સુચી I		સુચી II
(A)	બાહ્ય ત્રિપરિમાણ્વિય અસર (Allosteric effect)	(P)	અણુ ત્સેચકની સક્રિય સ્થાને જોડાય છે.
(B)	સ્પર્ધાત્મક અવરોધક	(Q)	અણુ શરીરમાં સંદેશાવહન માટે જવાબદાર છે.
(C)	ગ્રાહી	(R)	અણુ ઉત્સેચકની સક્રિય સ્થાનની જગ્યાને બદલે અલગ જગ્યાએ જોડાય છે.
(D)	વિષ	(S)	અણુ ઉત્સેચક સાથે સંહસંયોજક બંધથી જોડાય છે.

Options :

1. (A)→(P); (B)→(R); (C)→(Q); (D)→(S)

2. (A)→(P); (B)→(R); (C)→(S); (D)→(Q)

3. (A)→(R); (B)→(P); (C)→(Q); (D)→(S)

4. (A)→(R); (B)→(P); (C)→(S); (D)→(Q)

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

Correct Marks : 4 Wrong Marks : 1

The correct option with respect to the Pauling electronegativity values of the elements is :

Options :

1. Te > Se

2. P > S

3. Si < Al

4. Ga < Ge

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

Correct Marks : 4 Wrong Marks : 1

तत्वों के पाउलिंग विद्युत ऋणात्मकता मान का सही विकल्प है :

Options :

1. Te > Se

2. P > S

3. Si < Al

4. Ga < Ge

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

Correct Marks : 4 Wrong Marks : 1

તત્વોની પાઉલિંગ વિદ્યુતઋણતાના મૂલ્યોના સંદર્ભમાં સાચો વિકલ્પ શોધો?

Options :

1. Te > Se

2. P > S

3. Si < Al

4. Ga < Ge

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

Correct Marks : 4 Wrong Marks : 1

The reaction that does NOT define calcination is :

Options :

1. $Fe_2O_3 \cdot XH_2O \xrightarrow{\Delta} Fe_2O_3 + XH_2O$

2. $ZnCO_3 \xrightarrow{\Delta} ZnO + CO_2$

3. $CaCO_3 \cdot MgCO_3 \xrightarrow{\Delta} CaO + MgO + 2CO_2$

4. $2Cu_2S + 3O_2 \xrightarrow{\Delta} 2Cu_2O + 2SO_2$

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

Correct Marks : 4 Wrong Marks : 1

अभिक्रिया जो निस्तापन को परिभाषित नहीं करती है,
है :

Options :

1. $Fe_2O_3 \cdot XH_2O \xrightarrow{\Delta} Fe_2O_3 + XH_2O$

2. $ZnCO_3 \xrightarrow{\Delta} ZnO + CO_2$

3. $CaCO_3 \cdot MgCO_3 \xrightarrow{\Delta} CaO + MgO + 2CO_2$

4. $2Cu_2S + 3O_2 \xrightarrow{\Delta} 2Cu_2O + 2SO_2$

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

Correct Marks : 4 Wrong Marks : 1

નીચે આપેલી પ્રક્રિયા પૈકી કઈ એક ભસ્મીકરણ (નિસ્તાપન)
નક્કી કરતી નથી?

Options :

1. $Fe_2O_3 \cdot XH_2O \xrightarrow{\Delta} Fe_2O_3 + XH_2O$

2. $ZnCO_3 \xrightarrow{\Delta} ZnO + CO_2$

3. $CaCO_3 \cdot MgCO_3 \xrightarrow{\Delta} CaO + MgO + 2CO_2$

4. $2Cu_2S + 3O_2 \xrightarrow{\Delta} 2Cu_2O + 2SO_2$

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

Correct Marks : 4 Wrong Marks : 1

The hydride that is NOT electron deficient
is :

Options :

1. SiH_4

2. AlH_3

3. B_2H_6

4. GaH_3

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

Correct Marks : 4 Wrong Marks : 1

हाइड्राइड जो इलेक्ट्रॉन-न्यून **नहीं** है, वह है :

Options :

1. SiH_4

2. AlH_3

3. B_2H_6

4. GaH_3

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

Correct Marks : 4 Wrong Marks : 1

હાઇડ્રાઇડ જે ઇલેક્ટ્રોન ઊણપ દર્શાવતો નથી તે શોધો?

Options :

1. SiH_4

2. AlH_3

3. B_2H_6

4. GaH_3

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

Correct Marks : 4 Wrong Marks : 1

Match the following items in column I with the corresponding items in column II.

	Column I		Column II
(i)	$Na_2CO_3 \cdot 10\ H_2O$	(A)	Portland cement ingredient
(ii)	$Mg(HCO_3)_2$	(B)	Castner-Kellner process
(iii)	NaOH	(C)	Solvay process
(iv)	$Ca_3Al_2O_6$	(D)	Temporary hardness

Options :

1. (i)→(B); (ii)→(C); (iii)→(A); (iv)→(D)
2. (i)→(C); (ii)→(B); (iii)→(D); (iv)→(A)
3. (i)→(C); (ii)→(D); (iii)→(B); (iv)→(A)
4. (i)→(D); (ii)→(A); (iii)→(B); (iv)→(C)

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

Correct Marks : 4 Wrong Marks : 1

कॉलम I में दिये गये निम्न मदों को उनके संगत **कॉलम II** में दिये गये मदों से सुमेलित कीजिए।

	कॉलम I		कॉलम II
(i)	$Na_2CO_3 \cdot 10\ H_2O$	(A)	पोर्टलैंड सीमेंट का संघटक
(ii)	$Mg(HCO_3)_2$	(B)	कैस्टनर केलनर प्रक्रम
(iii)	NaOH	(C)	साल्वे प्रक्रम
(iv)	$Ca_3Al_2O_6$	(D)	अस्थायी कठोरता

Options :

1. (i)→(B); (ii)→(C); (iii)→(A); (iv)→(D)
2. (i)→(C); (ii)→(B); (iii)→(D); (iv)→(A)
3. (i)→(C); (ii)→(D); (iii)→(B); (iv)→(A)
4. (i)→(D); (ii)→(A); (iii)→(B); (iv)→(C)

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

Correct Marks : 4 Wrong Marks : 1

સ્તંભ I માં આપેલી વસ્તુઓને સ્તંભ II માં આપેલી વસ્તુઓ સાથે જોડો

	સ્તંભ I		સ્તંભ II
(i)	$Na_2CO_3 \cdot 10\ H_2O$	(A)	પોર્ટલેન્ડ સીમેન્ટનો ભાગ
(ii)	$Mg(HCO_3)_2$	(B)	કાસ્ટનર કેલનર પ્રક્રમ
(iii)	NaOH	(C)	સોલ્વે પ્રક્રમ
(iv)	$Ca_3Al_2O_6$	(D)	અસ્થાયી કઠીનતા

Options :

1. (i)→(B); (ii)→(C); (iii)→(A); (iv)→(D)

2. (i)→(C); (ii)→(B); (iii)→(D); (iv)→(A)

3. (i)→(C); (ii)→(D); (iii)→(B); (iv)→(A)

4. (i)→(D); (ii)→(A); (iii)→(B); (iv)→(C)

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

Correct Marks : 4 Wrong Marks : 1

ग्रुप 13 तत्वों की +1 ऑक्सीकरण अवस्था का आपेक्षिक स्थायित्व इस क्रम में है :

Options :

1. Al < Ga < In < Tl

2. Tl < In < Ga < Al

3. Ga < Al < In < Tl

4. Al < Ga < Tl < In

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

Correct Marks : 4 Wrong Marks : 1

The relative stability of +1 oxidation state of group 13 elements follows the order :

Options :

1. Al < Ga < In < Tl

2. Tl < In < Ga < Al

3. Ga < Al < In < Tl

4. $Al < Ga < Tl < In$

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

Correct Marks : 4 Wrong Marks : 1

ગ્રુપ(સમૂહ) 13 ના તત્વોની +1 ઓક્સીડેશન અવસ્થાની સાપેક્ષ સ્થિરતાનો ક્રમ શોધો

Options :

1. $Al < Ga < In < Tl$

2. $Tl < In < Ga < Al$

3. $Ga < Al < In < Tl$

4. $Al < Ga < Tl < In$

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

Correct Marks : 4 Wrong Marks : 1

$$\underline{A} \xrightarrow{4\,KOH,\,O_2} 2\underline{B} + 2\,H_2O$$

(Green)

$$3\,\underline{B} \xrightarrow{4\,HCl} 2\underline{C} + MnO_2 + 2\,H_2O$$

(Purple)

$$2\,\underline{C} \xrightarrow{H_2O,\,KI} 2\underline{A} + 2\,KOH + \underline{D}$$

In the above sequence of reactions, $\underline{A}$ and $\underline{D}$, respectively, are :

Options :

1. KI and K_2MnO_4

2. MnO_2 and KIO_3

3. KIO_3 and MnO_2

4. KI and $KMnO_4$

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

Correct Marks : 4 Wrong Marks : 1

$$\underline{A} \xrightarrow{4\,KOH,\,O_2} 2\underline{B} + 2\,H_2O$$

(हरा)

$$3\,\underline{B} \xrightarrow{4\,HCl} 2\underline{C} + MnO_2 + 2\,H_2O$$

(बैंगनी)

$$2\,\underline{C} \xrightarrow{H_2O,\,KI} 2\underline{A} + 2\,KOH + \underline{D}$$

अभिक्रियाओं के उपरोक्त क्रम में, $\underline{A}$ तथा $\underline{D}$ क्रमशः है :

Options :

1. KI तथा K_2MnO_4

2. MnO_2 तथा KIO_3

3. KIO_3 तथा MnO_2

4. KI तथा $KMnO_4$

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

Correct Marks : 4 Wrong Marks : 1

$$\underline{A} \xrightarrow{4\,KOH,\,O_2} 2\underline{B} + 2\,H_2O$$

(લીલો)

$$3\,\underline{B} \xrightarrow{4\,HCl} 2\underline{C} + MnO_2 + 2\,H_2O$$

(જાંબલી)

$$2\,\underline{C} \xrightarrow{H_2O,\,KI} 2\underline{A} + 2\,KOH + \underline{D}$$

ઉપરોક્ત શ્રેણીબધ્ધ પ્રક્રિયાઓમાં $\underline{A}$ અને $\underline{D}$ અનુક્રમે શોધો?

Options :

1. KI અને K_2MnO_4

2. MnO_2 અને KIO_3

3. KIO_3 અને MnO_2

4. KI અને $KMnO_4$

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

Correct Marks : 4 Wrong Marks : 1

The number of bridging CO ligand(s) and Co-Co bond(s) in $Co_2(CO)_8$, respectively are :

Options :

1. 0 and 2
2. 2 and 0
3. 2 and 1
4. 4 and 0

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

Correct Marks : 4 Wrong Marks : 1

$Co_2(CO)_8$ में सेतु बंधन CO लिगन्ड तथा Co-Co आबन्ध/आबन्धों की संख्या क्रमशः है :

Options :

1. 0 तथा 2
2. 2 तथा 0
3. 2 तथा 1
4. 4 तथा 0

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

Correct Marks : 4 Wrong Marks : 1

$Co_2(CO)_8$ માં બ્રીજીંગ CO લિગાન્ડ(સ) અને Co-Co બંધ(ધો)અનુક્રમે :

Options :

1. 0 અને 2
2. 2 અને 0
3. 2 અને 1
4. 4 અને 0

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

Correct Marks : 4 Wrong Marks : 1

The coordination number of Th in $K_4[Th(C_2O_4)_4(OH_2)_2]$ is :

$\left(C_2O_4^{2-} = \text{Oxalato}\right)$

Options :

1. 6

2. 8

3. 10

4. 14

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

Correct Marks : 4 Wrong Marks : 1

$K_4[Th(C_2O_4)_4(OH_2)_2]$ में Th की समन्वय संख्या है :

$\left(C_2O_4^{2-} = \text{Oxalato}\right)$

Options :

1. 6

2. 8

3. 10

4. 14

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

Correct Marks : 4 Wrong Marks : 1

$K_4[Th(C_2O_4)_4(OH_2)_2]$ માં Th નો સર્વગઆંક શોધો

$\left(C_2O_4^{2-} = \text{ઓક્ઝલેટો}\right)$

Options :

1. 6

2. 8

3. 10

4. 14

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

Correct Marks : 4 Wrong Marks : 1

ताजमहल धीरे-धीरे विरूप तथा बेरंग होता जा रहा है।
यह मुख्य रूप से इस कारण से है :

Options :

1. मृदा प्रदूषण

2. ग्लोबल वार्मिंग

3. अम्ल वृष्टि

4. जल प्रदूषण

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

Correct Marks : 4 Wrong Marks : 1

તાજમહાલ ધીરે ધીરે વિરૂપ અને ડાઘાવાળો થતો જાય છે
જેનું મુખ્ય કારણ શોધો?

Options :

1. જમીન પ્રદૂષણ

2. ગ્લોબલ વાર્મિંગ

3. અસિડ વર્ષા

4. જળ પ્રદૂષણ

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

Correct Marks : 4 Wrong Marks : 1

Taj Mahal is being slowly disfigured and discoloured. This is primarily due to :

Options :

1. soil pollution

2. global warming

3. acid rain

4. water pollution

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

Correct Marks : 4 Wrong Marks : 1

The higher concentration of which gas in air can cause stiffness of flower buds ?

Options :

1. SO_2

2. CO_2

3. NO_2

4. CO

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

Correct Marks : 4 Wrong Marks : 1

हवा में किसकी उच्च सान्द्रता फूल की कलियों में सख्तपन ला सकती है?

Options :

1. SO_2

2. CO_2

3. NO_2

4. CO

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

Correct Marks : 4 Wrong Marks : 1

ફુલ કળીની જડતા માટે નીચેના માંથી હવામાં કયા વાયુની વધુ સાંદ્રતા જવાબદાર છે?

Options :

1. SO_2

2. CO_2

3. NO_2

4. CO

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

Correct Marks : 4 Wrong Marks : 1

25 ml of the given HCl solution requires 30 mL of 0.1 M sodium carbonate solution. What is the volume of this HCl solution required to titrate 30 mL of 0.2 M aqueous NaOH solution ?

Options :

1. 25 mL

2. 50 mL

3. 75 mL

4. 12.5 mL

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

Correct Marks : 4 Wrong Marks : 1

25 mL HCl विलयन के लिये 0.1 M सोडियम कार्बोनेट विलयन का 30 mL आवश्यक होता है, 0.2 M जलीय NaOH के विलयन को अनुमापित करने के लिये इस HCl विलयन के कितने आयतन की आवश्यकता होगी ?

Options :

1. 25 mL

2. 50 mL

3. 75 mL

4. 12.5 mL

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

Correct Marks : 4 Wrong Marks : 1

આપેલા 25 mL HCl ના દ્રાવણ માટે 30 mL 0.1 M સોડિયમ કાર્બોનેટ નું દ્રાવણ જરૂરી છે તો 30 mL 0.2 M જલીય NaOH ના દ્રાવણનું અનુમાપન કરવામાટે HCl ના આ દ્રાવણનું કેટલુ કદ જરૂરી છે?

Options :

1. 25 mL

2. 50 mL

3. 75 mL

4. 12.5 mL

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

Correct Marks : 4 Wrong Marks : 1

The radius of the largest sphere which fits properly at the centre of the edge of a body centred cubic unit cell is : (Edge length is represented by 'a')

Options :

1. 0.134 a

2. 0.067 a

3. 0.027 a

4. 0.047 a

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

Correct Marks : 4 Wrong Marks : 1

काय केन्द्रित घन एकल सेल के कोर के केन्द्र में बैठने वाले (फिट होने वाले) सबसे बड़े गोले की त्रिज्या होगी (कोर लम्बाई को 'a' द्वारा व्यक्त किया गया है) :

Options :

1. 0.134 a

2. 0.067 a

3. 0.027 a

4. 0.047 a

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

Correct Marks : 4 Wrong Marks : 1

સૌથી મોટા ગોળા જે અંતઃકેન્દ્રીત એકમ કોશની ધારની મધ્યમા બરાબર બંધ બેસે છે તો તેની ત્રિજ્યા શોધો (ધાર લંબાઇને 'a' વડે દર્શાવામાં આવે છે)

Options :

1. 0.134 a

2. 0.067 a

3. 0.027 a

4. 0.047 a

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

Correct Marks : 4 Wrong Marks : 1

The de Broglie wavelength (λ) associated with a photoelectron varies with the frequency (ν) of the incident radiation as, [ν_0 is threshold frequency] :

Options :

1. $\lambda \propto \frac{1}{(\nu - \nu_0)^{\frac{1}{2}}}$

2. $\lambda \propto \frac{1}{(\nu - \nu_0)}$

3. $\lambda \propto \frac{1}{(\nu - \nu_0)^{\frac{1}{4}}}$

4. $\lambda \propto \frac{1}{(\nu - \nu_0)^{\frac{3}{2}}}$

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

Correct Marks : 4 Wrong Marks : 1

प्रकाशिक इलेक्ट्रॉन से सम्बन्धित डि-ब्रॉग्ली तरंगदैर्घ्य (λ), आपतित विकिरण की आवृत्ति (ν) के साथ इस प्रकार परिवर्तित होती है, (ν_0 = देहली आवृत्ति)

Options :

1. $\lambda \propto \frac{1}{(\nu - \nu_0)^{\frac{1}{2}}}$

2. $\lambda \propto \frac{1}{(\nu - \nu_0)}$

3. $\lambda \propto \frac{1}{(\nu - \nu_0)^{\frac{1}{4}}}$

4. $\lambda \propto \frac{1}{(\nu - \nu_0)^{\frac{3}{2}}}$

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

Correct Marks : 4 Wrong Marks : 1

ફોટોઇલેક્ટ્રોન સાથે સંકળાયેલી ડી-બ્રોગ્લી તરંગલંબાઈ (λ), આપાત થતા વિકિરણોની આવૃત્તિ (ν) સાથે બદલાય છે તે શોધો [ν_0 એ થ્રેશહોલ્ડ આવૃતિ છે]

Options :

1. $\lambda \propto \frac{1}{(\nu - \nu_0)^{\frac{1}{2}}}$

2. $\lambda \propto \frac{1}{(\nu - \nu_0)}$

3. $\lambda \propto \frac{1}{(\nu - \nu_0)^{\frac{1}{4}}}$

4. $\lambda \propto \frac{1}{(\nu - \nu_0)^{\frac{3}{2}}}$

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

Correct Marks : 4 Wrong Marks : 1

The standard reaction Gibbs energy for a chemical reaction at an absolute temperature T is given by

$$\Delta_r G^\circ = A - BT$$

Where A and B are non-zero constants. Which of the following is **TRUE** about this reaction ?

Options :

1. Endothermic if $A > 0$

2. Exothermic if $B < 0$

3. Endothermic if $A < 0$ and $B > 0$

4. Exothermic if $A > 0$ and $B < 0$

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

Correct Marks : 4 Wrong Marks : 1

परम ताप T पर एक रासायनिक अभिक्रिया के लिए मानक अभिक्रिया गिब्ज ऊर्जा निम्न के द्वारा अभिव्यक्त की जाती है :

$$\Delta_r G^\circ = A - BT$$

जहाँ A तथा B शून्य न होने वाले स्थिरांक हैं। इस अभिक्रिया के लिए निम्न में से कौन-सा **सत्य** है?

Options :

1. ऊष्माशोषी यदि $A > 0$

2. ऊष्माक्षेपी यदि $B < 0$

3. ऊष्माशोषी यदि $A < 0$ तथा $B > 0$

4. ऊष्माक्षेपी यदि $A > 0$ तथा $B < 0$

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

Correct Marks : 4 Wrong Marks : 1

નિરપેક્ષ તાપમાન T એ એક રાસાયનિક પ્રક્રિયા માટે પ્રમાણિત પ્રક્રિયા ગીબ્જ ઊર્જા નીચે મુજબ આપી શકાય,

$$\Delta_r G^\circ = A - BT$$

જ્યાં A અને B શૂન્ય સિવાયના અચળાંકો છે. આ પ્રક્રિયા માટે નીચે આપેલા માંથી કયું સાચુ છે?

Options :

1. ઊષ્માશોષક જો $A > 0$

2. ઊષ્માક્ષેપક જો $B < 0$

3. ઊષ્માશોષક જો $A < 0$ અને $B > 0$

4. ઊષ્માક્ષેપક જો $A > 0$ અને $B < 0$

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

Correct Marks : 4 Wrong Marks : 1

The reaction, $MgO(s) + C(s) \rightarrow Mg(s) + CO(g)$, for which $\Delta_r H^\circ = +491.1 \text{ kJ mol}^{-1}$ and $\Delta_r S^\circ = 198.0 \text{ JK}^{-1} \text{ mol}^{-1}$, is not feasible at 298 K. Temperature above which reaction will be feasible is :

Options :

1. 2040.5 K

2. 2480.3 K

3. 2380.5 K

4. 1890.0 K

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

Correct Marks : 4 Wrong Marks : 1

अभिक्रिया $MgO(s) + C(s) \rightarrow Mg(s) + CO(g)$ जिसका $\Delta_r H^\circ = +491.1 \text{ kJ mol}^{-1}$ तथा $\Delta_r S^\circ = 198.0 \text{ JK}^{-1} \text{ mol}^{-1}$ है, 298 K पर सम्भव नहीं है। वह ताप जिसके ऊपर अभिक्रिया सम्भव होगी, है :

Options :

1. 2040.5 K

2. 2480.3 K

3. 2380.5 K

4. 1890.0 K

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

Correct Marks : 4 Wrong Marks : 1

પ્રક્રિયા $MgO(s) + C(s) \rightarrow Mg(s) + CO(g)$ માટે $\Delta_r H^\circ = +491.1 \text{ kJ mol}^{-1}$ અને $\Delta_r S^\circ = 198.0 \text{ JK}^{-1}\text{mol}^{-1}$, જે 298 K એ શક્ય નથી તો આ તાપમાનથી ઊપર કયા તાપમાને પ્રક્રિયા શક્ય બનશે ?

Options :

1. 2040.5 K

2. 2480.3 K

3. 2380.5 K

4. 1890.0 K

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

Correct Marks : 4 Wrong Marks : 1

K_2HgI_4 is 40% ionised in aqueous solution. The value of its van't Hoff factor (i) is :

Options :

1. 1.6

2. 1.8

3. 2.0

4. 2.2

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

Correct Marks : 4 Wrong Marks : 1

K_2HgI_4 जलीय विलयन में 40% आयनित है। इसके वान्टहॉफ गुणांक (i) का मान होगा :

Options :

1. 1.6

2. 1.8

3. 2.0

4. 2.2

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

Correct Marks : 4 Wrong Marks : 1

K_2HgI_4 એ 40% જલીય દ્રાવણમાં આયનીકરણ પામે છે તો આ માટે વૉન્ટહોફ અવયવ (i) નું મૂલ્ય નીચેનામાંથી શોધો ?

Options :

1. 1.6

2. 1.8

3. 2.0

4. 2.2

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

Correct Marks : 4 Wrong Marks : 1

For the equilibrium,
$2\ H_2O \rightleftharpoons H_3O^+ + OH^-$, the value of ΔG° at 298 K is approximately :

Options :

1. $-100\ kJ\ mol^{-1}$

2. $-80\ kJ\ mol^{-1}$

3. $80\ kJ\ mol^{-1}$

4. $100\ kJ\ mol^{-1}$

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

Correct Marks : 4 Wrong Marks : 1

$2\ H_2O \rightleftharpoons H_3O^+ + OH^-$ साम्य के लिए, 298 K पर ΔG° का मान लगभग है :

Options :

1. $-100\ kJ\ mol^{-1}$

2. $-80\ kJ\ mol^{-1}$

3. $80\ kJ\ mol^{-1}$

4. $100\ kJ\ mol^{-1}$

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

Correct Marks : 4 Wrong Marks : 1

સંતુલનને, $2H_2O \rightleftharpoons H_3O^+ + OH^-$ માટે 298 K
એ ΔG° નું અંદાજીત મૂલ્ય નીચેનામાંથી શોધો?

Options :

1. $-100\ kJ\ mol^{-1}$

2. $-80\ kJ\ mol^{-1}$

3. $80\ kJ\ mol^{-1}$

4. $100\ kJ\ mol^{-1}$

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

Correct Marks : 4 Wrong Marks : 1

Given the equilibrium constant :
K_C of the reaction :
$Cu(s) + 2Ag^+(aq) \rightarrow Cu^{2+}(aq) + 2Ag(s)$ is
10×10^{15}, calculate the E^θ_{cell} of this reaction
at 298 K

$$\left[2.303\ \frac{RT}{F} \text{ at } 298\ K = 0.059\ V\right]$$

Options :

1. 0.04736 V

2. 0.4736 V

3. 0.04736 mV

4. 0.4736 mV

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

Correct Marks : 4 Wrong Marks : 1

$Cu(s) + 2Ag^+(aq) \rightarrow Cu^{2+}(aq) + 2Ag(s)$ अभिक्रिया का दिया गया साम्य स्थिरांक, K_C, 10×10^{15} है। 298 K पर इस अभिक्रिया के $E^{\ominus}_{cell}$ की गणना कीजिए।

$\left[2.303 \frac{RT}{F} \text{ at } 298 \text{ K} = 0.059 \text{ V}\right]$

Options :

1. 0.04736 V
2. 0.4736 V
3. 0.04736 mV
4. 0.4736 mV

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

Correct Marks : 4 Wrong Marks : 1

આપેલ પ્રક્રિયા

$Cu(s) + 2Ag^+(aq) \rightarrow Cu^{2+}(aq) + 2Ag(s)$

માટે સંતુલન અચળાંક K_C, 10×10^{15} છે, તો 298 K ને $E^{\ominus}_{cell}$ ની ગણતરી કરો?

$\left[2.303 \frac{RT}{F} \text{ એ } 298 \text{ K} = 0.059 \text{ V}\right]$

Options :

1. 0.04736 V
2. 0.4736 V
3. 0.04736 mV
4. 0.4736 mV

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

Correct Marks : 4 Wrong Marks : 1

The reaction $2X \rightarrow B$ is a zeroth order reaction. If the initial concentration of X is 0.2 M, the half-life is 6 h. When the initial concentration of X is 0.5 M, the time required to reach its final concentration of 0.2 M will be :

Options :

1. 7.2 h

2. 18.0 h

3. 9.0 h

4. 12.0 h

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

Correct Marks : 4 Wrong Marks : 1

अभिक्रिया, $2X \rightarrow B$ एक शून्य कोटि की अभिक्रिया है। 0.2 M की प्रारम्भिक सान्द्रता के लिए, अर्द्धआयु 6 h है। यदि X की प्रारम्भिक सान्द्रता 0.5 M हो, तो 0.2 M की अंतिम सान्द्रता पहुचने में लगने वाला समय होगा :

Options :

1. 7.2 h

2. 18.0 h

3. 9.0 h

4. 12.0 h

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

Correct Marks : 4 Wrong Marks : 1

પ્રક્રિયા $2X \rightarrow B$ એ શૂન્ય ક્રમની પ્રક્રિયા છે X ની પ્રારંભિક સાંદ્રતા 0.2 M છે, અર્ધઆયુષ્ય સમય 6 h છે જો X ની પ્રારંભિક સાંદ્રતા 0.5 M હોય તો, અંતિમ સાંદ્રતા 0.2 M થવા માટે જરૂરી સમય શોધો?

Options :

1. 7.2 h

2. 18.0 h

3. 9.0 h

4. 12.0 h

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

Correct Marks : 4 Wrong Marks : 1

Among the colloids cheese (C), milk (M) and smoke (S), the correct combination of the dispersed phase and dispersion medium, respectively is :

Options :

1. C : solid in liquid; M : liquid in liquid ; S : gas in solid

2. C : solid in liquid; M : solid in liquid ; S : solid in gas

3. C : liquid in solid; M : liquid in solid ; S : solid in gas

4. C : liquid in solid; M : liquid in liquid ; S : solid in gas

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

Correct Marks : 4 Wrong Marks : 1

कोलाइडों, जैसे पनीर (C), दूध (M) तथा धूआं (S) के विषय में परिक्षिप्त प्रावस्था तथा परिक्षेपण माध्यम का सही मेल क्रमशः होगा :

Options :

1. C : द्रव में ठोस; M : द्रव में द्रव; S : द्रव में गैस

2. C : द्रव में ठोस; M : द्रव में ठोस; S : गैस में ठोस

3. C : ठोस में द्रव; M : ठोस में द्रव; S : गैस में ठोस

4. C : ठोस में द्रव; M : द्रव में द्रव; S : गैस में ठोस

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

Correct Marks : 4 Wrong Marks : 1

કલિલો જેવા કે, ચીઝ (C), દૂધ (M) અને ધુમ્મસ (S) ના કિસ્સામાં પરિક્ષિપ્ત કલા અને પરિક્ષેપણ માધ્યમની સાચી સંગતતા અનુક્રમે શોધો ?

Options :

1. C : ઘન પ્રવાહીમાં ; M : પ્રવાહીમાં પ્રવાહીમાં ; S : વાયુ ઘનમાં

2. C : ઘન પ્રવાહીમાં; M : ઘન પ્રવાહીમાં ; S : ઘન વાયુમાં

3. C : પ્રવાહી ઘનમાં; M : પ્રવાહી ઘનમાં ; S : ઘન વાયુમાં

4. C : પ્રવાહી ઘનમાં; M : પ્રવાહી પ્રવાહીમાં ; S : ઘન વાયુમાં

Mathematics

Section Id :	416529144
Section Number :	3
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	30
Number of Questions to be attempted:	30
Section Marks:	120
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	416529153
Question Shuffling Allowed :	Yes

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

Correct Marks : 4 Wrong Marks : 1

Let a function $f:(0,\infty)\to(0,\infty)$ be defined by $f(x)=\left|1-\frac{1}{x}\right|$. Then f is :

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

Options :

1. injective only

2. not injective but it is surjective

3. neither injective nor surjective

4. both injective as well as surjective

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

Correct Marks : 4 Wrong Marks : 1

माना एक फलन $f:(0,\infty)\to(0,\infty)$

$f(x)=\left|1-\frac{1}{x}\right|$ द्वारा परिभाषित है, तो f :

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

Options :

1. केवल एकैकी है।

2. आच्छादी है पर एकैकी नहीं है।

3. न एकैकी है न आच्छादी है।

4. एकैकी और आच्छादी दोनों हैं।

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

Correct Marks : 4 Wrong Marks : 1

ધારોકે વિધેય $f:(0,\infty)\to(0,\infty)$ એ

$f(x)=\left|1-\frac{1}{x}\right|$ દ્વારા વ્યાખ્યાયિત છે. તો f _____

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

Options :

1. ફક્ત એક-એક છે.

2. એક-એક નથી પરંતુ એ વ્યાપ્ત છે.

3. એક-એક નથી વ્યાપ્ત પણ નથી.

4. એક-એક અને વ્યાપ્ત બન્ને છે.

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

Correct Marks : 4 Wrong Marks : 1

Let z be a complex number such that $|z|+z=3+i$ (where $i=\sqrt{-1}$).

Then $|z|$ is equal to :

Options :

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

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

3. $\frac{\sqrt{34}}{3}$

4. $\frac{\sqrt{41}}{4}$

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

Correct Marks : 4 Wrong Marks : 1

माना एक सम्मिश्र संख्या z इस प्रकार है कि $|z|+z=3+i$ (जहाँ $i=\sqrt{-1}$), तो $|z|$ बराबर है :

Options :

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

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

3. $\frac{\sqrt{34}}{3}$

4. $\frac{\sqrt{41}}{4}$

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

Correct Marks : 4 Wrong Marks : 1

ધારોકે z એક એવી સંકર સંખ્યા છે કે જેથી $|z|+z=3+i$ (જ્યાં $i=\sqrt{-1}$) થાય. તો $|z|$ બરાબર _____ છે.

Options :

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

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

3. $\frac{\sqrt{34}}{3}$

4. $\frac{\sqrt{41}}{4}$

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

Correct Marks : 4 Wrong Marks : 1

Let α and β be the roots of the quadratic equation

$x^2\sin\theta - x(\sin\theta\cos\theta+1)+\cos\theta=0$

$(0<\theta<45^\circ)$, and $\alpha<\beta$. Then

$\sum_{n=0}^{\infty}\left(\alpha^n+\frac{(-1)^n}{\beta^n}\right)$ is equal to :

Options :

1. $\frac{1}{1+\cos\theta}-\frac{1}{1-\sin\theta}$

2. $\frac{1}{1-\cos\theta}-\frac{1}{1+\sin\theta}$

3. $\frac{1}{1+\cos\theta}+\frac{1}{1-\sin\theta}$

4. $\frac{1}{1-\cos\theta}+\frac{1}{1+\sin\theta}$

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

Correct Marks : 4 Wrong Marks : 1

माना द्विघात समीकरण

$x^2 \sin\theta - x(\sin\theta \cos\theta + 1) + \cos\theta = 0$

$(0 < \theta < 45^\circ)$, के मूल α तथा β $(\alpha < \beta)$ हैं, तो

$\sum_{n=0}^{\infty}\left(\alpha^n + \frac{(-1)^n}{\beta^n}\right)$ बराबर है :

Options :

1. $\frac{1}{1+\cos\theta} - \frac{1}{1-\sin\theta}$

2. $\frac{1}{1-\cos\theta} - \frac{1}{1+\sin\theta}$

3. $\frac{1}{1+\cos\theta} + \frac{1}{1-\sin\theta}$

4. $\frac{1}{1-\cos\theta} + \frac{1}{1+\sin\theta}$

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

Correct Marks : 4 Wrong Marks : 1

ધારો કે α અને β એ દ્વિઘાત સમીકરણ

$x^2 \sin\theta - x(\sin\theta \cos\theta + 1) + \cos\theta = 0$

$(0 < \theta < 45^\circ)$, નાં બીજ છે તથા $\alpha < \beta$ છે. તો

$\sum_{n=0}^{\infty}\left(\alpha^n + \frac{(-1)^n}{\beta^n}\right)$ બરાબર _____ છે.

Options :

1. $\frac{1}{1+\cos\theta} - \frac{1}{1-\sin\theta}$

2. $\frac{1}{1-\cos\theta} - \frac{1}{1+\sin\theta}$

3. $\frac{1}{1+\cos\theta} + \frac{1}{1-\sin\theta}$

4. $\frac{1}{1-\cos\theta}+\frac{1}{1+\sin\theta}$

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

Correct Marks : 4 Wrong Marks : 1

Let A and B be two invertible matrices of order 3×3. If $\det(ABA^T)=8$ and $\det(AB^{-1})=8$, then $\det(BA^{-1}B^T)$ is equal to :

Options :

1. 1

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

3. 16

4. $\frac{1}{16}$

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

Correct Marks : 4 Wrong Marks : 1

माना A तथा B, 3×3 कोटि के दो व्युत्क्रमणीय आव्यूह हैं। यदि $\det(ABA^T)=8$ तथा $\det(AB^{-1})=8$, तो $\det(BA^{-1}B^T)$ बराबर है :

Options :

1. 1

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

3. 16

4. $\frac{1}{16}$

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

Correct Marks : 4 Wrong Marks : 1

ધારો કે 3×3 ક્રમાના શ્રેણિકો A અને B નાં વ્યસ્ત મળે છે. જો $\det(ABA^T)=8$ તથા $\det(AB^{-1})=8$ તો $\det(BA^{-1}B^T)$ બરાબર _____ છે.

Options :

1. 1

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

3. 16

4. $\frac{1}{16}$

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

Correct Marks : 4 Wrong Marks : 1

If $\begin{vmatrix} a-b-c & 2a & 2a \\ 2b & b-c-a & 2b \\ 2c & 2c & c-a-b \end{vmatrix}$

$=(a+b+c)\ (x+a+b+c)^2$, $x\neq0$ and $a+b+c\neq0$, then x is equal to :

Options :

1. abc

2. $2(a+b+c)$

3. $-(a+b+c)$

4. $-2(a+b+c)$

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

Correct Marks : 4 Wrong Marks : 1

यदि $\begin{vmatrix} a-b-c & 2a & 2a \\ 2b & b-c-a & 2b \\ 2c & 2c & c-a-b \end{vmatrix}$

$=(a+b+c)\ (x+a+b+c)^2$, $x\neq0$ तथा $a+b+c\neq0$, तो x बराबर है :

Options :

1. abc

2. $2(a+b+c)$

3. $-(a+b+c)$

4. $-2(a+b+c)$

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

Correct Marks : 4 Wrong Marks : 1

જો $\begin{vmatrix} a-b-c & 2a & 2a \\ 2b & b-c-a & 2b \\ 2c & 2c & c-a-b \end{vmatrix}$

$= (a+b+c)\ (x+a+b+c)^2$, $x \neq 0$ અને $a+b+c \neq 0$, તો x બરાબર _____ છે.

Options :

1. abc

2. $2(a+b+c)$

3. $-(a+b+c)$

4. $-2(a+b+c)$

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

Correct Marks : 4 Wrong Marks : 1

The number of functions f from $\{1, 2, 3, ..., 20\}$ onto $\{1, 2, 3, ..., 20\}$ such that $f(k)$ is a multiple of 3, whenever k is a multiple of 4, is :

Options :

1. $5! \times 6!$

2. $5^6 \times 15$

3. $6^5 \times (15)!$

4. $(15)! \times 6!$

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

Correct Marks : 4 Wrong Marks : 1

$\{1, 2, 3, ..., 20\}$ से $\{1, 2, 3, ..., 20\}$ पर ऐसे आच्छादक फलनों, जिनके लिए $f(k)$ तीन का गुणज है जब k चार का गुणज है, की संख्या है :

Options :

1. $5! \times 6!$

2. $5^6 \times 15$

3. $6^5 \times (15)!$

4. $(15)! \times 6!$

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

Correct Marks : 4 Wrong Marks : 1

જ્યારે પણ k એ 4 નો ગુણિત હોય ત્યારે $f(k)$ એ 3 નો ગુણિત થાય એવાં $\{1, 2, 3, ..., 20\}$ થી $\{1, 2, 3, ..., 20\}$ ના વ્યાપ્ત વિધેયો f ની સંખ્યા _____ છે.

Options :

1. $5! \times 6!$

2. $5^6 \times 15$

3. $6^5 \times (15)!$

4. $(15)! \times 6!$

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

Correct Marks : 4 Wrong Marks : 1

Let $(x+10)^{50} + (x-10)^{50} = a_0 + a_1 x + a_2 x^2 + ... + a_{50} x^{50}$, for all $x \in R$; then $\frac{a_2}{a_0}$ is equal to :

Options :

1. 12.75

2. 12.50

3. 12.25

4. 12.00

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

Correct Marks : 4 Wrong Marks : 1

माना सभी $x \epsilon \mathbf{R}$ के लिए

$(x+10)^{50} + (x-10)^{50}$

$= a_0 + a_1 x + a_2 x^2 + \ldots + a_{50} x^{50}$, तो $\frac{a_2}{a_0}$

बराबर है :

Options :

1. 12.75

2. 12.50

3. 12.25

4. 12.00

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

Correct Marks : 4 Wrong Marks : 1

તમામ $x \in \mathbf{R}$ માટે, ધારો કે

$(x+10)^{50} + (x-10)^{50}$

$= a_0 + a_1 x + a_2 x^2 + \ldots + a_{50} x^{50}$ તો $\frac{a_2}{a_0}$ બરાબર

_____ છે.

Options :

1. 12.75

2. 12.50

3. 12.25

4. 12.00

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

Correct Marks : 4 Wrong Marks : 1

If 19th term of a non-zero A.P. is zero, then its (49th term) : (29th term) is :

Options :

1. 4 : 1

2. 1 : 3

3. 2 : 1

4. 3 : 1

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

Correct Marks : 4 Wrong Marks : 1

यदि एक शून्येतर समान्तर श्रेढ़ी का 19वां पद शून्य है,
तो इसका (49वां पद) : (29वां पद) है :

Options :

1. 4 : 1

2. 1 : 3

3. 2 : 1

4. 3 : 1

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

Correct Marks : 4 Wrong Marks : 1

જો શૂન્યતેર સમાંતર શ્રેણી (A.P.) નું 19મું પદ શૂન્ય
હોય, તો તેના (49 મું પદ) : (29 મું પદ) એ
_____છે.

Options :

1. 4 : 1

2. 1 : 3

3. 2 : 1

4. 3 : 1

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

Correct Marks : 4 Wrong Marks : 1

ધારોકે $S_n = 1 + q + q^2 + \ldots + q^n$ અને

$T_n = 1 + \left(\frac{q+1}{2}\right) + \left(\frac{q+1}{2}\right)^2 + \ldots + \left(\frac{q+1}{2}\right)^n$ જ્યાં

q એ વાસ્તવિક સંખ્યા છે તથા $q \neq 1$ જો

$^{101}C_1 + {}^{101}C_2 \cdot S_1 + \ldots + {}^{101}C_{101} \cdot S_{100} = \alpha T_{100}$,

તો α બરાબર _____ છે.

Options :

1. 202
2. 200
3. 2^{100}
4. 2^{99}

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

Correct Marks : 4 Wrong Marks : 1

Let $S_n = 1 + q + q^2 + \ldots + q^n$ and

$T_n = 1 + \left(\frac{q+1}{2}\right) + \left(\frac{q+1}{2}\right)^2 + \ldots + \left(\frac{q+1}{2}\right)^n$

where q is a real number and $q \neq 1$. If

$^{101}C_1 + {}^{101}C_2 \cdot S_1 + \ldots + {}^{101}C_{101} \cdot S_{100} = \alpha T_{100}$,

then α is equal to :

Options :

1. 202
2. 200
3. 2^{100}
4. 2^{99}

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

Correct Marks : 4 Wrong Marks : 1

माना $S_n = 1 + q + q^2 + \ldots + q^n$ तथा

$T_n = 1 + \left(\frac{q+1}{2}\right) + \left(\frac{q+1}{2}\right)^2 + \ldots + \left(\frac{q+1}{2}\right)^n$, जहाँ

q एक वास्तविक संख्या है तथा $q \neq 1$। यदि

$^{101}C_1 + {}^{101}C_2 \cdot S_1 + \ldots + {}^{101}C_{101} \cdot S_{100} = \alpha T_{100}$,

तो α बराबर है :

Options :

1. 202

2. 200

3. 2^{100}

4. 2^{99}

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

Correct Marks : 4 Wrong Marks : 1

$\lim\limits_{x \to 0} \dfrac{x \cot(4x)}{\sin^2 x \cot^2(2x)}$ is equal to :

Options :

1. 2

2. 0

3. 1

4. 4

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

Correct Marks : 4 Wrong Marks : 1

$\lim\limits_{x \to 0} \dfrac{x \cot(4x)}{\sin^2 x \cot^2(2x)}$ बराबर है :

Options :

1. 2

2. 0

3. 1

4. 4

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

Correct Marks : 4 Wrong Marks : 1

$\lim\limits_{x\to 0} \dfrac{x\cot(4x)}{\sin^2 x\cot^2(2x)}$ બરાબર _____ છે.

Options :

1. 2

2. 0

3. 1

4. 4

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

Correct Marks : 4 Wrong Marks : 1

Let K be the set of all real values of x where the function $f(x)=\sin|x|-|x|+2(x-\pi)\cos|x|$ is not differentiable. Then the set K is equal to :

Options :

1. $\{0\}$

2. $\{\pi\}$

3. $\{0,\pi\}$

4. ϕ (an empty set)

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

Correct Marks : 4 Wrong Marks : 1

माना K (x के) उन सभी वास्तविक मानों का समुच्चय है जहाँ फलन $f(x)=\sin|x|-|x|+2\ (x-\pi)\ \cos|x|$ अवकलनीय नहीं है, तो समुच्चय K बराबर है :

Options :

1. $\{0\}$

2. {π}

3. {0, π}

4. ϕ (एक रिक्त समुच्चय)

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

Correct Marks : 4 Wrong Marks : 1

ધારો કે K (x કે) એવા વાસ્તવિક બિંદુઓનો ગણ છે કે જ્યાં વિધેય $f(x)=\sin|x|-|x|+2(x-\pi)$ $\cos|x|$ એ વિકલનીય નથી. તો ગણ K બરાબર _____ થાય.

Options :

1. {0}

2. {π}

3. {0, π}

4. ϕ (ખાલીગણ)

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

Correct Marks : 4 Wrong Marks : 1

Let $f(x)=\frac{x}{\sqrt{a^2+x^2}}-\frac{d-x}{\sqrt{b^2+(d-x)^2}}$, $x\in R$, where a, b and d are non-zero real constants. Then :

Options :

1. f is an increasing function of x

2. f is neither increasing nor decreasing function of x

3. f is a decreasing function of x

4. f' is not a continuous function of x

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

Correct Marks : 4 Wrong Marks : 1

माना $f(x)=\frac{x}{\sqrt{a^2+x^2}}-\frac{d-x}{\sqrt{b^2+(d-x)^2}},\ x\epsilon R,$

जहाँ a, b तथा d शून्येतर वास्तविक अचर हैं, तो :

Options :

1. f, x का एक वर्धमान फलन है।

2. f, x का न तो वर्धमान न ही ह्रासमान फलन है।

3. f, x का ह्रासमान फलन है।

4. f', x का संतत फलन नहीं है।

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

Correct Marks : 4 Wrong Marks : 1

ધારોકે $f(x)=\frac{x}{\sqrt{a^2+x^2}}-\frac{d-x}{\sqrt{b^2+(d-x)^2}},\ x\epsilon R,$

જ્યાં a, b અને d શૂન્યેતર વાસ્તવિક અચળો છે. તો :

Options :

1. f એ x નું વધતું વિધેય છે.

2. f અ x નું વધતું વિધેય પણ નથી અને ઘટતું વિધેય પણ નથી.

3. f એ x નું ઘટતું વિધેય છે.

4. f' એ x નું સતત વિધેય નથી.

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

Correct Marks : 4 Wrong Marks : 1

Let x, y be positive real numbers and m, n positive integers. The maximum value of the expression $\frac{x^m y^n}{(1+x^{2m})(1+y^{2n})}$ is :

Options :

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

2. 1

3. $\frac{m+n}{6mn}$

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

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

Correct Marks : 4 Wrong Marks : 1

माना x, y धनात्मक वास्तविक संख्याएँ हैं तथा m, n धनपूर्णांक हैं।

व्यंजक $\frac{x^m y^n}{\left(1+x^{2m}\right)\left(1+y^{2n}\right)}$ का अधिकतम मान है :

Options :

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

2. 1

3. $\frac{m+n}{6mn}$

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

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

Correct Marks : 4 Wrong Marks : 1

ધારોકે x, y એ ધન વાસ્તવિક સંખ્યાઓ તથા m, n ધન પૂર્ણાંકો છે. નિરૂપણ $\frac{x^m y^n}{\left(1+x^{2m}\right)\left(1+y^{2n}\right)}$ ની મહત્તમ કિંમત _____ થાય

Options :

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

2. 1

3. $\frac{m+n}{6mn}$

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

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

Correct Marks : 4 Wrong Marks : 1

If $\int\frac{x+1}{\sqrt{2x-1}}dx=f(x)\sqrt{2x-1}+C$, where C is a constant of integration, then $f(x)$ is equal to :

Options :

1. $\frac{1}{3}(x+1)$

2. $\frac{2}{3}(x+2)$

3. $\frac{2}{3}(x-4)$

4. $\frac{1}{3}(x+4)$

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

Correct Marks : 4 Wrong Marks : 1

यदि $\int\frac{x+1}{\sqrt{2x-1}}dx=f(x)\sqrt{2x-1}+C$ है, जहाँ C एक समाकलन अचर है, तो $f(x)$ बराबर है :

Options :

1. $\frac{1}{3}(x+1)$

2. $\frac{2}{3}(x+2)$

3. $\frac{2}{3}(x-4)$

4. $\frac{1}{3}(x+4)$

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

Correct Marks : 4 Wrong Marks : 1

જો $\int\frac{x+1}{\sqrt{2x-1}}dx=f(x)\sqrt{2x-1}+C$ જ્યાં C એ સંકલનનો અચળાંક છે, તો $f(x)$ બરાબર _____ છે.

Options :

1. $\frac{1}{3}(x+1)$

2. $\frac{2}{3}(x+2)$

3. $\frac{2}{3}(x-4)$

4. $\frac{1}{3}(x+4)$

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

Correct Marks : 4 Wrong Marks : 1

The integral $\int_{\pi/6}^{\pi/4}\frac{dx}{\sin 2x\,(\tan^5 x+\cot^5 x)}$ equals :

Options :

1. $\frac{1}{10}\left(\frac{\pi}{4}-\tan^{-1}\left(\frac{1}{9\sqrt{3}}\right)\right)$

2. $\frac{1}{5}\left(\frac{\pi}{4}-\tan^{-1}\left(\frac{1}{3\sqrt{3}}\right)\right)$

3. $\frac{\pi}{40}$

4. $\frac{1}{20}\tan^{-1}\left(\frac{1}{9\sqrt{3}}\right)$

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

Correct Marks : 4 Wrong Marks : 1

समाकल $\int_{\pi/6}^{\pi/4} \frac{dx}{\sin 2x\,(\tan^5 x+\cot^5 x)}$ बराबर

है :

Options :

1. $\frac{1}{10}\left(\frac{\pi}{4}-\tan^{-1}\left(\frac{1}{9\sqrt{3}}\right)\right)$

2. $\frac{1}{5}\left(\frac{\pi}{4}-\tan^{-1}\left(\frac{1}{3\sqrt{3}}\right)\right)$

3. $\frac{\pi}{40}$

4. $\frac{1}{20}\tan^{-1}\left(\frac{1}{9\sqrt{3}}\right)$

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

Correct Marks : 4 Wrong Marks : 1

સંકલિત $\int_{\pi/6}^{\pi/4} \frac{dx}{\sin 2x\,(\tan^5 x+\cot^5 x)}$ બરાબર

_____.

Options :

1. $\frac{1}{10}\left(\frac{\pi}{4}-\tan^{-1}\left(\frac{1}{9\sqrt{3}}\right)\right)$

2. $\frac{1}{5}\left(\frac{\pi}{4}-\tan^{-1}\left(\frac{1}{3\sqrt{3}}\right)\right)$

3. $\frac{\pi}{40}$

4. $\frac{1}{20}\tan^{-1}\left(\frac{1}{9\sqrt{3}}\right)$

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

Correct Marks : 4 Wrong Marks : 1

The area(in sq. units) in the first quadrant bounded by the parabola, $y = x^2 + 1$, the tangent to it at the point (2, 5) and the coordinate axes is :

Options :

1. $\frac{37}{24}$

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

3. $\frac{187}{24}$

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

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

Correct Marks : 4 Wrong Marks : 1

परवलय $y = x^2 + 1$, इस के एक बिंदु $(2, 5)$ पर खींची गई स्पर्श रेखा तथा निर्देशांक अक्षों द्वारा प्रथम चतुर्थांश में घिरे क्षेत्र का क्षेत्रफल (वर्ग इकाइयों में) है :

Options :

1. $\frac{37}{24}$

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

3. $\frac{187}{24}$

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

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

Correct Marks : 4 Wrong Marks : 1

પરવલય $y = x^2 + 1$, બિન્દુ $(2, 5)$ આગળનો તેનો સ્પર્શક તથા યામાક્ષો દ્વારા પ્રથમ ચરણમાં આવૃત્ત પ્રદેશનું ક્ષેત્રફળ (ચો. એકમમાં) _____ થાય.

Options :

1. $\frac{37}{24}$

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

3. $\frac{187}{24}$

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

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

Correct Marks : 4 Wrong Marks : 1

The solution of the differential equation,

$\frac{dy}{dx} = (x-y)^2$, when $y(1) = 1$, is :

Options :

1. $-\log_e \left|\frac{1-x+y}{1+x-y}\right| = 2(x-1)$

2. $\log_e \left|\frac{2-y}{2-x}\right| = 2(y-1)$

3. $\log_e\left|\frac{2-x}{2-y}\right|=x-y$

4. $-\log_e\left|\frac{1+x-y}{1-x+y}\right|=x+y-2$

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

Correct Marks : 4 Wrong Marks : 1

अवकल समीकरण $\frac{dy}{dx}=(x-y)^2$, जबकि $y(1)=1$

है, का हल है :

Options :

1. $-\log_e\left|\frac{1-x+y}{1+x-y}\right|=2(x-1)$

2. $\log_e\left|\frac{2-y}{2-x}\right|=2(y-1)$

3. $\log_e\left|\frac{2-x}{2-y}\right|=x-y$

4. $-\log_e\left|\frac{1+x-y}{1-x+y}\right|=x+y-2$

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

Correct Marks : 4 Wrong Marks : 1

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

$y(1)=1$ હોય ત્યારે _____ થાય.

Options :

1. $-\log_e\left|\frac{1-x+y}{1+x-y}\right|=2(x-1)$

2. $\log_e\left|\frac{2-y}{2-x}\right|=2(y-1)$

3. $\log_e\left|\frac{2-x}{2-y}\right|=x-y$

4. $-\log_e\left|\frac{1+x-y}{1-x+y}\right|=x+y-2$

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

Correct Marks : 4 Wrong Marks : 1

If in a parallelogram ABDC, the coordinates of A, B and C are respectively $(1, 2)$, $(3, 4)$ and $(2, 5)$, then the equation of the diagonal AD is :

Options :

1. $5x+3y-11=0$

2. $5x-3y+1=0$

3. $3x-5y+7=0$

4. $3x+5y-13=0$

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

Correct Marks : 4 Wrong Marks : 1

यदि एक समांतर चतुर्भुज ABDC के बिंदुओं A, B तथा C के निर्देशांक क्रमशः $(1, 2)$, $(3, 4)$ तथा $(2, 5)$ हैं, तो विकर्ण AD का समीकरण है :

Options :

1. $5x+3y-11=0$

2. $5x-3y+1=0$

3. $3x-5y+7=0$

4. $3x+5y-13=0$

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

Correct Marks : 4 Wrong Marks : 1

જો કોઈ એક સમાંતરબાજુ ચતુષ્કોણ ABDC માં A, B અને C ના યામો અનુક્રમે (1, 2), (3, 4) અને (2, 5) હોય તો, વિકર્ણ AD નું સમીકરણ _____ છે.

Options :

1. $5x+3y-11=0$

2. $5x-3y+1=0$

3. $3x-5y+7=0$

4. $3x+5y-13=0$

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

Correct Marks : 4 Wrong Marks : 1

माना एक दीर्घवृत्त, जिसका दीर्घ-अक्ष x-अक्ष के अनुदिश है तथा केंद्र मूलबिंदु पर है, के नाभिलंब की लंबाई 8 है। यदि दीर्घवृत्त की नाभियों के बीच की दूरी, इसके लघु-अक्ष की लंबाई के समान हो, तो निम्न में से कौन-सा बिंदु इस पर स्थित है?

Options :

1. $(4\sqrt{2}, 2\sqrt{2})$

2. $(4\sqrt{2}, 2\sqrt{3})$

3. $(4\sqrt{3}, 2\sqrt{3})$

4. $(4\sqrt{3}, 2\sqrt{2})$

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

Correct Marks : 4 Wrong Marks : 1

Let the length of the latus rectum of an ellipse with its major axis along x-axis and centre at the origin, be 8. If the distance between the foci of this ellipse is equal to the length of its minor axis, then which one of the following points lies on it ?

Options :

1. $(4\sqrt{2}, 2\sqrt{2})$

2. $(4\sqrt{2}, 2\sqrt{3})$

3. $(4\sqrt{3}, 2\sqrt{3})$

4. $(4\sqrt{3}, 2\sqrt{2})$

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

Correct Marks : 4 Wrong Marks : 1

જેનો પ્રધાન અક્ષ એ x–અક્ષ પર હોય, કેન્દ્ર ઊગમબિંદુ આગળ આવેલ હોય તેવા કોઈ એક ઉપવલયના નાભિલંબની લંબાઈ ધારો કે 8 છે. જો આ ઉપવલયની નાભિઓ વચ્ચેનું અંતર તેના ગૌણ અક્ષની લંબાઈ જેટલું હોય, તો નીચેના પૈકી કયું બિંદુ તેના પર આવેલું છે?

Options :

1. $(4\sqrt{2}, 2\sqrt{2})$

2. $(4\sqrt{2}, 2\sqrt{3})$

3. $(4\sqrt{3}, 2\sqrt{3})$

4. $(4\sqrt{3}, 2\sqrt{2})$

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

Correct Marks : 4 Wrong Marks : 1

A circle cuts a chord of length 4a on the x-axis and passes through a point on the y-axis, distant 2b from the origin. Then the locus of the centre of this circle, is :

Options :

1. a straight line

2. an ellipse

3. a parabola

4. a hyperbola

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

Correct Marks : 4 Wrong Marks : 1

एक वृत्त x–अक्ष पर एक जीवा काटता है जिसकी लंबाई 4a है तथा यह वृत्त y–अक्ष के एक बिन्दु से हो कर जाता है जिसकी मूलबिंदु से दूरी 2b है। तो वृत्त के केंद्र का बिंदुपथ (locus) है :

Options :

1. एक सरल रेखा

2. एक दीर्घवृत्त

3. एक परवलय

4. एक अतिपरवलय

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

Correct Marks : 4 Wrong Marks : 1

ઊગમબિંદુથી 2b અંતરે આવેલા y–અક્ષ પરના એક બિંદુમાંથી પસાર થતા તથા x–અક્ષ પર 4a લંબાઈની જીવા કાપતા વર્તુળના કેન્દ્રનો બિંદુપથ _____ છે.

Options :

1. એક રેખા

2. એક ઉપવલય

3. એક પરવલય

4. એક અતિવલય

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

Correct Marks : 4 Wrong Marks : 1

If the area of the triangle whose one vertex is at the vertex of the parabola, $y^2+4(x-a^2)=0$ and the other two vertices are the points of intersection of the parabola and y-axis, is 250 sq. units, then a value of 'a' is :

Options :

1. $5(2^{1/3})$
2. $(10)^{2/3}$
3. 5
4. $5\sqrt{5}$

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

Correct Marks : 4 Wrong Marks : 1

यदि एक त्रिभुज, जिसका एक शीर्ष परवलय $y^2+4(x-a^2)=0$ के शीर्ष पर है तथा अन्य दो शीर्ष परवलय तथा y-अक्ष के प्रतिच्छेदन बिंदुओं पर हैं, का क्षेत्रफल 250 वर्ग इकाई है, तो 'a' का एक मान है :

Options :

1. $5(2^{1/3})$
2. $(10)^{2/3}$
3. 5
4. $5\sqrt{5}$

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

Correct Marks : 4 Wrong Marks : 1

જેનું એક શિરોબિંદુ પરવલય $y^2+4(x-a^2)=0$ નાં શિરોબિંદુ આગળ હોય તથા બીજા બે શિરોબિંદુઓ આ પરવલય અને y-અક્ષના છેદબિંદુઓ હોય એવા ત્રિકોણનું ક્ષેત્રફળ 250 ચો. એકમ હોય, તો 'a' ની કોઈ એક કિંમત _____ છે.

Options :

1. $5(2^{1/3})$

2. $(10)^{2/3}$

3. 5

4. $5\sqrt{5}$

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

Correct Marks : 4 Wrong Marks : 1

If a hyperbola has length of its conjugate axis equal to 5 and the distance between its foci is 13, then the eccentricity of the hyperbola is :

Options :

1. $\frac{13}{6}$

2. 2

3. $\frac{13}{8}$

4. $\frac{13}{12}$

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

Correct Marks : 4 Wrong Marks : 1

यदि एक अतिपरवलय के संयुग्मी अक्ष (conjugate axis) की लंबाई 5 है तथा इसकी नाभियों के बीच की दूरी 13 है, तो इस अतिपरवलय की उत्केंद्रता है :

Options :

1. $\frac{13}{6}$

2. 2

3. $\frac{13}{8}$

4. $\frac{13}{12}$

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

Correct Marks : 4 Wrong Marks : 1

જો એક અતિવલયના અનુબધ્ધ અક્ષની લંબાઈ 5 તથા તેની નાભિઓ વચ્ચેનું અંતર 13 હોય, તો આ અતિવલયની ઉત્કેન્દ્રતા _____ છે.

Options :

1. $\frac{13}{6}$

2. 2

3. $\frac{13}{8}$

4. $\frac{13}{12}$

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

Correct Marks : 4 Wrong Marks : 1

Two lines $\frac{x-3}{1}=\frac{y+1}{3}=\frac{z-6}{-1}$ and $\frac{x+5}{7}=\frac{y-2}{-6}=\frac{z-3}{4}$ intersect at the point R.

The reflection of R in the xy-plane has coordinates :

Options :

1. $(2, -4, -7)$

2. $(2, 4, 7)$

3. $(2, -4, 7)$

4. $(-2, 4, 7)$

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

Correct Marks : 4 Wrong Marks : 1

दो रेखाएँ $\frac{x-3}{1}=\frac{y+1}{3}=\frac{z-6}{-1}$ तथा $\frac{x+5}{7}=\frac{y-2}{-6}=\frac{z-3}{4}$ बिंदु R पर काटती हैं। बिंदु R के xy - तल में प्रतिबिंब के निर्देशांक हैं :

Options :

1. $(2,-4,-7)$
2. $(2,4,7)$
3. $(2,-4,7)$
4. $(-2,4,7)$

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

Correct Marks : 4 Wrong Marks : 1

બે રેખાઓ $\frac{x-3}{1}=\frac{y+1}{3}=\frac{z-6}{-1}$ અને $\frac{x+5}{7}=\frac{y-2}{-6}=\frac{z-3}{4}$ બિંદુ R આગળ છેદે છે. તો R ના xy - સમતલમાં પ્રતિબિંબના યામ _____ છે.

Options :

1. $(2,-4,-7)$
2. $(2,4,7)$
3. $(2,-4,7)$
4. $(-2,4,7)$

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

Correct Marks : 4 Wrong Marks : 1

If the point $(2, \alpha, \beta)$ lies on the plane which passes through the points $(3, 4, 2)$ and $(7, 0, 6)$ and is perpendicular to the plane $2x-5y=15$, then $2\alpha-3\beta$ is equal to :

Options :

1. 17

2. 12

3. 5

4. 7

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

Correct Marks : 4 Wrong Marks : 1

यदि बिंदु $(2, \alpha, \beta)$ उस समतल पर स्थित है जो बिंदुओं $(3, 4, 2)$ तथा $(7, 0, 6)$ से हो कर जाता है तथा समतल $2x - 5y = 15$ के लंबवत है, तो $2\alpha - 3\beta$ बराबर है :

Options :

1. 17

2. 12

3. 5

4. 7

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

Correct Marks : 4 Wrong Marks : 1

બિંદુઓ $(3, 4, 2)$ અને $(7, 0, 6)$ માંથી પસાર થતા તથા સમતલ $2x - 5y = 15$ ને લંબ હોય તેવા સમતલ પર જો બિંદુ $(2, \alpha, \beta)$ આવેલું હોય, તો $2\alpha - 3\beta$ બરાબર _____ થાય.

Options :

1. 17

2. 12

3. 5

4. 7

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

Correct Marks : 4 Wrong Marks : 1

Let $\sqrt{3}\hat{i}+\hat{j}$, $\hat{i}+\sqrt{3}\hat{j}$ and $\beta\hat{i}+(1-\beta)\hat{j}$ respectively be the position vectors of the points A, B and C with respect to the origin O. If the distance of C from the bisector of the acute angle between OA and OB is $\frac{3}{\sqrt{2}}$, then the sum of all possible values of β is :

Options :

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

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

Correct Marks : 4 Wrong Marks : 1

माना $\sqrt{3}\hat{i}+\hat{j}$, $\hat{i}+\sqrt{3}\hat{j}$ तथा $\beta\hat{i}+(1-\beta)\hat{j}$ क्रमशः तीन बिंदुओं A, B तथा C के मूलबिंदु O के सापेक्ष, स्थिति सदिश हैं। यदि C की, OA तथा OB के बीच बने न्यूनकोण के समद्विभाजक से दूरी $\frac{3}{\sqrt{2}}$ है, तो β के सभी संभावित मानों का योग है :

Options :

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

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

Correct Marks : 4 Wrong Marks : 1

ધારોકે $\sqrt{3}\hat{i}+\hat{j}$, $\hat{i}+\sqrt{3}\hat{j}$ અને $\beta\hat{i}+(1-\beta)\hat{j}$ અનુક્રમે બિંદુઓ A, B અને C ના ઊગમબિંદુ O ને સાપેક્ષ સ્થાન સદિશો છે. જો C નું OA અને OB વચ્ચેના લઘુકોણના દ્વિભાજકથી અંતર $\frac{3}{\sqrt{2}}$ હોય, તો β ની તમામ શક્ય કિંમતોનો સરવાળો _____ થાય.

Options :

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

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

Correct Marks : 4 Wrong Marks : 1

A bag contains 30 white balls and 10 red balls. 16 balls are drawn one by one randomly from the bag with replacement. If X be the number of white balls drawn, then $\left(\frac{\text{mean of X}}{\text{standard deviation of X}}\right)$ is equal to :

Options :

1. $3\sqrt{2}$
2. $\frac{4\sqrt{3}}{3}$
3. $4\sqrt{3}$
4. 4

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

Correct Marks : 4 Wrong Marks : 1

एक थैले में 30 सफेद गेंदें तथा 10 लाल गेंदें हैं। थैले में से यादृच्छया, एक एक करके (प्रतिस्थापना सहित) 16 गेंदें निकाली गई। यदि निकाली गई सफेद गेंदों की संख्या X है, तो $\left(\frac{\text{X का माध्य}}{\text{X का मानक विचलन}}\right)$ बराबर है :

Options :

1. $3\sqrt{2}$
2. $\frac{4\sqrt{3}}{3}$
3. $4\sqrt{3}$
4. 4

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

Correct Marks : 4 Wrong Marks : 1

એક થેલીમાં 30 સફેદ દડા અને 10 લાલ દડા છે. આ થેલીમાંથી 16 દડા પુરવણી સહિત એક પછી એક યાદચ્છિક રીતે પસંદ કરવામાં આવે છે. જો X એ પસંદ થયેલ સફેદ દડાની સંખ્યા હોય, તો $\left(\frac{\text{X નો મધ્યક}}{\text{X નું પ્રમાણિત વિચલન}}\right)$ બરાબર _____ થાય.

Options :

1. $3\sqrt{2}$
2. $\frac{4\sqrt{3}}{3}$
3. $4\sqrt{3}$
4. 4

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

Correct Marks : 4 Wrong Marks : 1

Let S = {1, 2, ..., 20}. A subset B of S is said to be "nice", if the sum of the elements of B is 203. Then the probability that a randomly chosen subset of S is "nice" is :

Options :

1. $\frac{5}{2^{20}}$

2. $\frac{6}{2^{20}}$

3. $\frac{4}{2^{20}}$

4. $\frac{7}{2^{20}}$

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

Correct Marks : 4 Wrong Marks : 1

माना S = {1, 2, ..., 20} है। S के एक उपसमुच्चय B को "nice" कहा जाता है यदि इसके अवयवों का योग 203 है। तो, S के एक यादृच्छया चुने गए उपसमुच्चय के "nice" होने की प्रायिकता है :

Options :

1. $\frac{5}{2^{20}}$

2. $\frac{6}{2^{20}}$

3. $\frac{4}{2^{20}}$

4. $\frac{7}{2^{20}}$

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

Correct Marks : 4 Wrong Marks : 1

ધારોકે $S=\{1, 2, ..., 20\}$. જો S ના કોઈ ઉપગણ B ના ઘટકોને સરવાળો 203 થાય તો તેવા ઉપગણ B ને "nice" કહેવામાં આવે છે. તો કોઈ યાદચ્છિક રીતે પસંદ કરવામાં આવેલ S નો ઉપગણ "nice" હોય તેની સંભાવના _____ છે.

Options :

1. $\frac{5}{2^{20}}$

2. $\frac{6}{2^{20}}$

3. $\frac{4}{2^{20}}$

4. $\frac{7}{2^{20}}$

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

Correct Marks : 4 Wrong Marks : 1

Given $\frac{b+c}{11}=\frac{c+a}{12}=\frac{a+b}{13}$ for a ΔABC with usual notation. If $\frac{\cos A}{\alpha}=\frac{\cos B}{\beta}=\frac{\cos C}{\gamma}$, then the ordered triad (α, β, γ) has a value :

Options :

1. $(3, 4, 5)$

2. $(19, 7, 25)$

3. $(7, 19, 25)$

4. $(5, 12, 13)$

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

Correct Marks : 4 Wrong Marks : 1

एक ΔABC में सामान्य संकेतों के आधार पर दिया है कि $\frac{b+c}{11}=\frac{c+a}{12}=\frac{a+b}{13}$ है। यदि $\frac{\cos A}{\alpha}=\frac{\cos B}{\beta}=\frac{\cos C}{\gamma}$ है, तो क्रमित त्रिक (α, β, γ) का एक मान है :

Options :

1. $(3, 4, 5)$

2. $(19, 7, 25)$

3. $(7, 19, 25)$

4. $(5, 12, 13)$

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

Correct Marks : 4 Wrong Marks : 1

પ્રચલિત સંકેત માં ΔABC માટે $\frac{b+c}{11}=\frac{c+a}{12}=\frac{a+b}{13}$ આપેલ છે. જો $\frac{\cos A}{\alpha}=\frac{\cos B}{\beta}=\frac{\cos C}{\gamma}$, તો ક્રમયુક્ત ત્રય (α, β, γ) ની એક કિંમત _____ છે.

Options :

1. $(3, 4, 5)$

2. $(19, 7, 25)$

3. $(7, 19, 25)$

4. $(5, 12, 13)$

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

Correct Marks : 4 Wrong Marks : 1

वे सभी x, जो असमीकरण $(\cot^{-1}x)^2-7(\cot^{-1}x)+10>0$ को संतुष्ट करते हैं, निम्न में से किस अंतराल में है?

Options :

1. $(\cot 5, \cot 4)$

2. $(\cot 2, \infty)$

3. $(-\infty, \cot 5) \cup (\cot 4, \cot 2)$

4. $(-\infty, \cot 5) \cup (\cot 2, \infty)$

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

Correct Marks : 4 Wrong Marks : 1

જો x એ અસમતા $(\cot^{-1}x)^2 - 7(\cot^{-1}x) + 10 > 0$ ને સંતોષે તો આવા તમામ x, _____ અંતરાલમાં આવેલા છે.

Options :

1. $(\cot 5, \cot 4)$

2. $(\cot 2, \infty)$

3. $(-\infty, \cot 5) \cup (\cot 4, \cot 2)$

4. $(-\infty, \cot 5) \cup (\cot 2, \infty)$

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

Correct Marks : 4 Wrong Marks : 1

All x satisfying the inequality $(\cot^{-1}x)^2 - 7(\cot^{-1}x) + 10 > 0$, lie in the interval :

Options :

1. $(\cot 5, \cot 4)$

2. $(\cot 2, \infty)$

3. $(-\infty, \cot 5) \cup (\cot 4, \cot 2)$

4. $(-\infty, \cot 5) \cup (\cot 2, \infty)$

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

Correct Marks : 4 Wrong Marks : 1

Contrapositive of the statement

"If two numbers are not equal, then their squares are not equal." is :

Options :

1. If the squares of two numbers are equal, then the numbers are not equal.

2. If the squares of two numbers are not equal, then the numbers are not equal.

3. If the squares of two numbers are not equal, then the numbers are equal.

4. If the squares of two numbers are equal, then the numbers are equal.

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

Correct Marks : 4 Wrong Marks : 1

कथन

''यदि दो संख्याएँ बराबर नहीं हैं, तो उनके वर्ग भी बराबर नहीं हैं''

का प्रतिधनात्मक (contrapositive) कथन है :

Options :

1. यदि दो संख्याओं के वर्ग बराबर हैं, तो संख्याएँ बराबर नहीं हैं।

2. यदि दो संख्याओं के वर्ग बराबर नहीं हैं, तो संख्याएँ बराबर नहीं हैं।

3. यदि दो संख्याओं के वर्ग बराबर नहीं हैं, तो संख्याएँ बराबर हैं।

4. यदि दो संख्याओं के वर्ग बराबर हैं, तो संख्याएँ बराबर हैं।

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

Correct Marks : 4 Wrong Marks : 1

વિધાન

''જો બે સંખ્યઓ સરખી ન હોય, તો તેઓના વર્ગો સરખા નથી''

નું સમાનાર્થી પ્રેરણ _____ છે.

Options :

1. જો બે સંખ્યાના વર્ગો સરખા હોય, તો સંખ્યાઓ સરખી નથી.

2. જો બે સંખ્યાના વર્ગો સરખા ન હોય, તો સંખ્યાઓ સરખી નથી.

3. જો બે સંખ્યાના વર્ગો સરખા ન હોય, તો સંખ્યાઓ સરખી થાય.

4. જો બે સંખ્યાના વર્ગો સરખા હોય, તો સંખ્યાઓ સરખી થાય.