FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

National Testing Agency

Question Paper Name :	Chemical Sciences 30th Nov 2020 Shift 1
Subject Name :	Chemical Sciences
Creation Date :	2020-11-30 15:59:21
Duration :	180
Number of Questions :	120
Total Marks :	200
Display Marks:	Yes

Chemical Sciences

Group Number :	1
Group Id :	77203310
Group Maximum Duration :	0
Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	200
Is this Group for Examiner? :	No

firstranker.com
www.FirstRanker.com

Part A General Aptitude

Section Id :	77203328
Section Number :	1
Section type :	Online

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

...ory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	15
Section Marks :	30
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	77203358
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 7720331116 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

Single-grain density and bulk density of four varieties of grains are given in the table. If we take 1 kg of each of these, which one will have the largest volume?

Grain	Single-grain density (g/cm^3)	Bulk density (g/cm^3)
Rice	1.13	0.56
Wheat	1.39	0.80
Millet	1.27	0.77
Maize	0.97	0.68

1. Rice
2. Wheat
3. Millet
4. Maize

Options :

7720334461. 1

7720334462. 2

7720334463. 3

7720334464. 4

Question Number : 1 Question Id : 7720331116 Question Type : MCQ Option Shuffling : No Is

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

Correct Marks : 2 Wrong Marks : 0.5

चार प्रकार के अनाजों के एक दानें और दानों के पुन्ज का घनत्व तालिका में दिए गए हैं ।यदि इनमें से प्रत्येक को 1 कि.ग्राम लिया जाए तो किस का आयतन अधिकतम होगा?

अनाज	एक दाने का घनत्व (ग्रा./से.मी.^{3})	दानों के पुन्ज का घनत्व (ग्रा. /से.मी.^{3})
चावल	1.13	0.56
गेंहू	1.39	0.80
बाजरा	1.27	0.77
मक्का	0.97	0.68

1. चावल
2. गेंहू
3. बाजरा
4. मक्का

firstranker.com
www.FirstRanker.

Options :

7720334461. 1

7720334462. 2

7720334463. 3

7720334464. 4

Question Number : 2 Question Id : 7720331117 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice

What will be the difference in mass (in g) between two packets each containing 500 sheets of 80 GSM and 70 GSM papers of size 20 cm x 30 cm? (GSM = g/m^2)

www.FirstRanker.com www.FirstRanker.com

1. 200
2. 2000
3. 300
4. 3000

Options :

7720334465. 1

7720334466. 2

7720334467. 3

7720334468. 4

Question Number : 2 Question Id : 7720331117 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

दो कागजों के पैकेटों, जिनमें प्रत्येक में 80 GSM और 70 GSM के 20 से.मी. x 30 से. मी. आकार के 500 कागज हैं, के द्रव्यमानों में कितना अंतर (ग्रा. में) होगा?

(GSM = ग्रा. / मी ^{2})

1. 200
2. 2000
3. 300
4. 3000

Options :

7720334465. 1

7720334466. 2

7720334467. 3

7720334468. 4

Question Number : 3 Question Id : 7720331118 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Suppose there are 6 non-stop flights from Chennai to Mumbai in the morning and 4 non-stop flights from Mumbai to Goa in the evening. In how many ways can one fly from Chennai to Goa via Mumbai using these flights in a day?

1. 10
2. 24
3. 4^6
4. 6^4

Options :

7720334469. 1

7720334470. 2

7720334471. 3

7720334472. 4

firstranker.com

Question Number : 3 Question Id : 7720331118 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

माना कि 6 अविराम उड़ानें चेन्नई से मुंबई प्रात: जाती है और 4 अविराम उड़ानें मुंबई से गोवा शाम को जाती है । कितने प्रकार से एक व्यक्ति चेन्नई से मुंबई होते हुए गोवा एक दिन में उड़ान भर सकता है?

1. 10
2. 24
3. 4^6
4. 6^4

Options :

7720334469. 1

7720334470. 2

7720334471. 3

7720334472. 4

Question Number : 4 Question Id : 7720331119 Question Type : MCQ Option Shuffling : No Is

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

Correct Marks : 2 Wrong Marks : 0.5

A pack contains 6 cards numbered 1, 2, 3, 4, 5 and 6. Four cards are drawn one by one at random without replacement. What is the probability that the card numbered 1 is drawn in the selected four cards?

1. $\frac{4}{6}$
2. $1-\frac{4}{6}$
3. $\frac{1}{24}$
4. $\frac{4}{10}$

Options :

7720334473. 1

7720334474. 2

7720334475. 3

7720334476. 4

Question Number : 4 Question Id : 7720331119 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

एक पैकेट में 1, 2, 3, 4, 5 और 6 से अन्कित 6 कार्ड है । चार कार्ड यादृच्छिक रूप से एक के बाद एक बिना प्रतिस्थापित किये हुए निकाले जाते हैं । इसकी क्या प्रायिकता है कि 1 अन्कित कार्ड चुने गए चार कार्डों में है

1. $\frac{4}{6}$
2. $1-\frac{4}{6}$
3. $\frac{1}{24}$
4. $\frac{4}{10}$

Options :

7720334473. 1

7720334474. 2

7720334475. 3

7720334476. 4

Question Number : 5 Question Id : 7720331120 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

The present age of a father is square of the age of his son. After six years, the age of the father would be $3\frac{1}{2}$ times the age of the son. The present age of the father is

1. 36
2. 42
3. 48
4. 54

Options :

7720334477. 1

7720334478. 2

7720334479. 3

7720334480. 4

firstranker.com
www.FirstRanker.com

Question Number : 5 Question Id : 7720331120 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

पिता की वर्तमान आयु पुत्र की आयु की वर्ग है। छः वर्षों के उपरान्त पिता की आयु पुत्र की आयु की $3\frac{1}{2}$ गुनी होगी । पिता की वर्तमान आयु कितनी है ?

1. 36
2. 42
3. 48
4. 54

Options :

7720334481. 1

4478. 2

7720334479. 3

7720334480. 4

Question Number : 6 Question Id : 7720331121 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

In an exam the average marks for the class was 60, the average of marks of the students who passed was 70 and those failed was 30. What is the percentage of the students of the class who failed?

1. 25
2. 40
3. 60
4. 75

Options :

7720334481. 1

7720334482. 2

7720334483. 3

7720334484. 4

firstranker.com
www.FirstRanker.com

Question Number : 6 Question Id : 7720331121 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

किसी परीक्षा में कक्षा के विद्यार्थियों के औसत अंक 60 है । उत्तीर्ण होने वाले विद्यार्थियों के औसत अंक 70 एवं अनुत्तीर्ण होने वाले विद्यार्थियों के औसत अंक 30 हैं । कितने प्रतिशत विद्यार्थी अनुत्तीर्ण हुए?

1. 25
2. 40
3. 60
4. 75

7720334481. 1

7720334482. 2

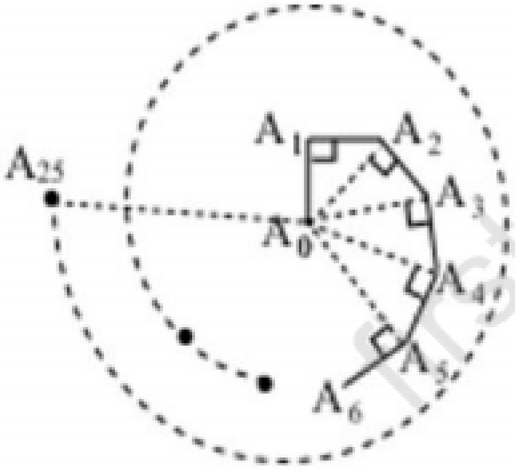
7720334483. 3

7720334484. 4

Question Number : 7 Question Id : 7720331122 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

A bug moves in a straight line from a point A_0 to a point A_1 1 cm away . It then turns by an angle of 90° and moves straight another 1 cm to reach a point A_2. Then it moves 1 cm perpendicular to the line joining A_o to A_2 to a point A_3 . It continues this way as shown, moving 1cm every time till it reaches a point A_{25}. What is the straight line distance from A_o to A_{25}?



1. 3 cm
2. √5 cm
3. 5 cm
4. 16 cm

Options :

7720334485. 1

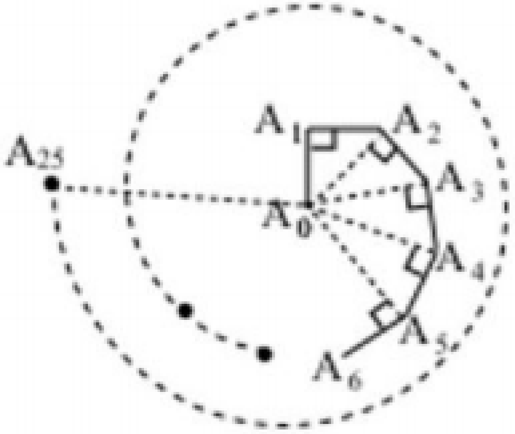
7720334486. 2

7720334487. 3

Question Number : 7 Question Id : 7720331122 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

एक कीड़ा सीधी रेखा में बिन्दु A_0 से A_1 की 1 से.मी. की दूरी तय करता है। इसके बाद वह 90° के कोण से मुड़कर सीधे बिंदु A_2 की ओर जाता है जो कि 1 से.मी. दूर है। इसके बाद वह A_o से A_2 को मिलाने वाली रेखा के लम्बवत 1 से.मी. की दूरी तय कर बिंदु A_3 पर पहुंचता है, इस प्रकार जैसा कि चित्र में दिखाया गया है, वह हर बार 1 से.मी. की दूरी तय करते हुए बिंदु A_{25} तक पहुंचता है। A_o से A_{25} के बीच की सीधी रेखा में दूरी है?



1. 3 से.मी.
2. √5 से.मी.
3. 5 से. मी.
4. 16 से.मी.

Options :

7720334485. 1

7720334486. 2

7720334487. 3

7720334488. 4

Question Number : 8 Question Id : 7720331123 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

A worker is asked to arrange 1000 identical square tiles into a rectangular pattern and paint only the tiles forming the border. What should be the dimension of the rectangular pattern he arranges, in order to use the minimum amount of paint?

1. 50 tiles x 20 tiles
2. 8 tiles x 125 tiles
3. 200 tiles x 5 tiles
4. 40 tiles x 25 tiles

Options :

7720334489. 1

7720334490. 2

7720334491. 3

7720334492. 4

firstranker.com

Question Number : 8 Question Id : 7720331123 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

एक कर्मचारी को 1000 वर्गीय टाईलों को एक आयताकार पैटर्न में क्रमबद्ध करके केवल किनारे की टाईलों को रंगने के लिए कहा गया । कम से कम रंग का उपयोग करने के लिये आयताकार पैटर्न का परिमाण कितना होना चाहिए?

1. 50 टाईल x 20 टाईल
2. 8 टाईल x 125 टाईल
3. 200 टाईल x 5 टाईल
4. 40 टाईल x 25 टाईल

Options :

7720334489. 1

7720334490. 2

7720334491. 3

7720334492. 4

Question Number : 9 Question Id : 7720331124 Question Type : MCQ Option Shuffling : No Is

Correct Marks : 2 Wrong Marks : 0.5

There are 150 vehicles in a parking place. Each vehicle is either a bike or a car, and is either red or green. Sixty vehicles are red, and 100 vehicles are cars. If there are 20 green bikes, how many red cars are there?

1. 70
2. 30
3. 40
4. 50

Options :

7720334493. 1

7720334494. 2

7720334495. 3

7720334496. 4

Question Number : 9 Question Id : 7720331124 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

एक पार्किंग स्थान पर 150 वाहन हैं। प्रत्येक वाहन या तो बाईक है या कार हैं, और या तो लाल है या हरा है। साठ वाहन लाल हैं, और 100 वाहन कारें हैं। यदि 20 हरी बाईक हैं तो लाल कारें कितनी हैं?

1. 70
2. 30
3. 40
4. 50

Options :

7720334493. 1

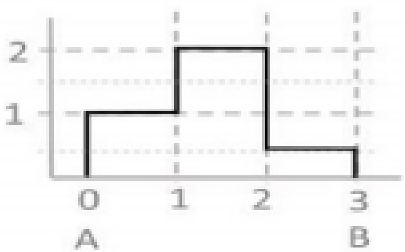
7720334494. 2

7720334495. 3

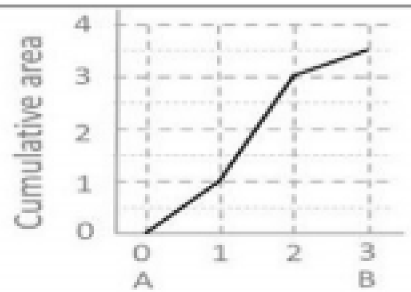
7720334496. 4

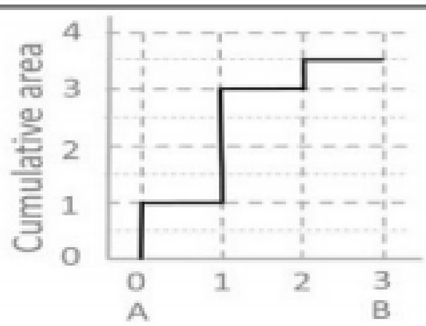
Question Number : 10 Question Id : 7720331125 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

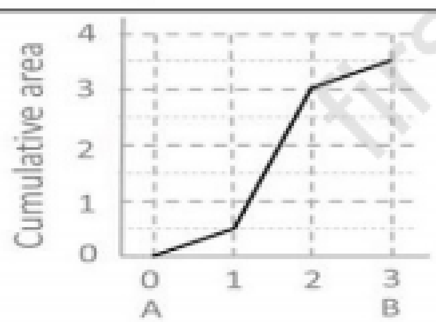
Correct Marks : 2 Wrong Marks : 0.5

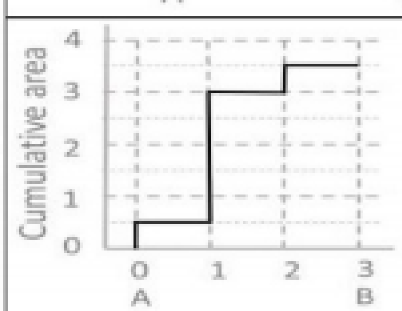


Which one of the following graphs represents the cumulative area under the plot shown?

1.


2.


3.


4.


Options :

7720334497. 1

7720334498. 2

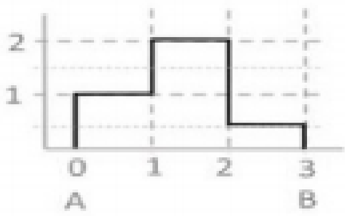
FirstRanker.com
Firstranker's choice
4499. 3

www.FirstRanker.com www.FirstRanker.com

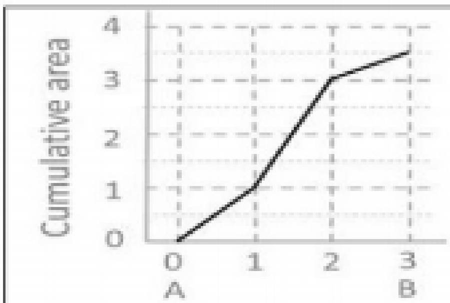
7720334500. 4

Question Number : 10 Question Id : 7720331125 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

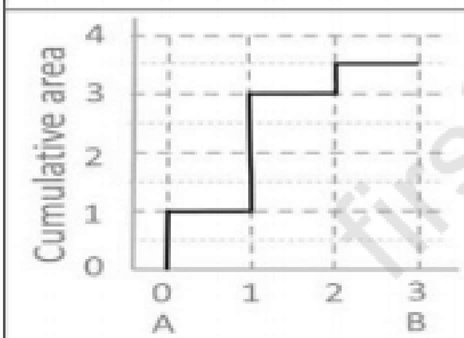
Correct Marks : 2 Wrong Marks : 0.5



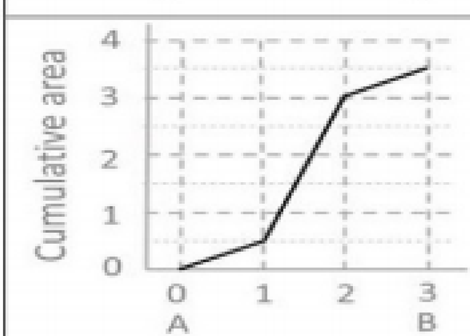
निम्न में कौन सा ग्राफ दिखाये गए प्लाट के नीचे के संचयी क्षेत्रफल (Cumulative area) को दर्शाता है ?



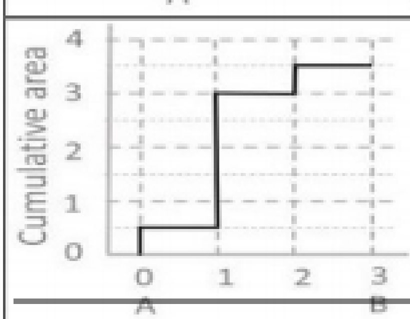
1.



2.



3.



4.

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

7720334497. 1

7720334498. 2

7720334499. 3

7720334500. 4

Question Number : 11 Question Id : 7720331126 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

The number of times the minute hand and the hour hand, in a clock, are exactly above each other (i.e. angle between them is zero) from 1 am of a day to 1 am on the next day is

1. 21
2. 22
3. 23
4. 24

Options :

7720334501. 1

7720334502. 2

7720334503. 3

7720334504. 4

firstranker.com
www.FirstRanker.com

Question Number : 11 Question Id : 7720331126 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
किसी दिन सुबह 1 बजे से अगले दिन सुबह 1 am के बीच, कितनी बार एक घड़ी की मिनट सुई और घंटे की सुई एक दूसरे के एकदम उपर (अर्थात उनके बीच का कोण शून्य होता है) आती हैं?

www.FirstRanker.com www.FirstRanker.com

1. 21
2. 22
3. 23
4. 24

Options :

7720334501. 1

7720334502. 2

7720334503. 3

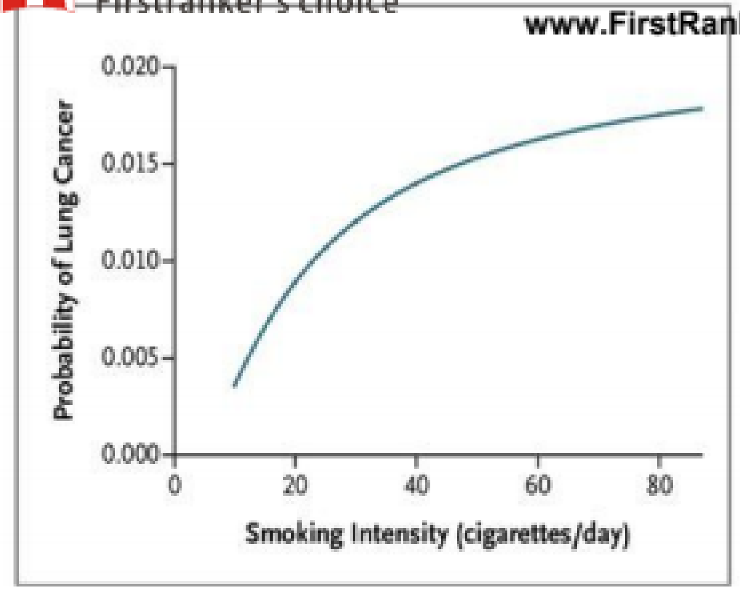
7720334504. 4

Question Number : 12 Question Id : 7720331127 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

firstranker.com
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com



The graph shows relationship between smoking intensity and probability of getting lung cancer in a population. Which one of the following inferences is supported by the study?

1. Smoking always causes lung cancer.
2. People have healthy lungs if they don't smoke.
3. Smoking intensity is not directly proportional to the probability of getting lung cancer.
4. High intensity smokers will get the lung cancer.

Options :

7720334505. 1

7720334506. 2

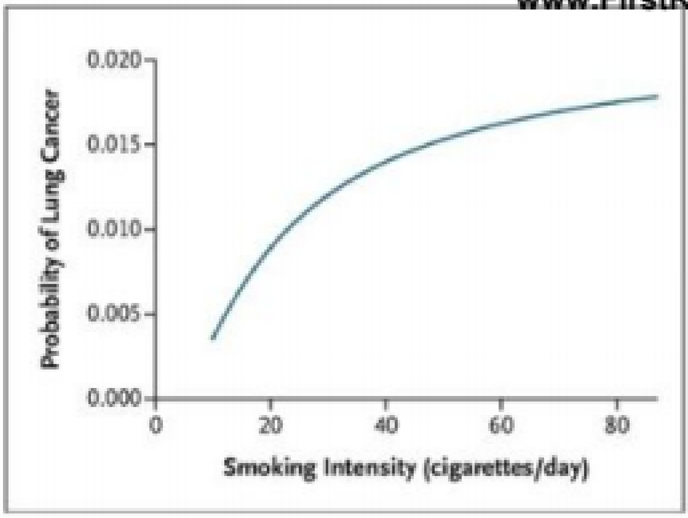
7720334507. 3

7720334508. 4

firstranker.com
www.FirstRanker.com

Question Number : 12 Question Id : 7720331127 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5



किसी जनसंख्या में धूम्रपान की मात्रा (Smoking Intensity; सिगारेट्स / दिन) और फेफड़ों के कैंसर होनी की प्रायिकता (Probability of Lung Cancer) का सम्बन्ध ग्राफ में दिखाया गया है । निम्न में से कौन सा निष्कर्ष इस अध्ययन से समर्थित है?

1. धूम्रपान से हमेशा फेफड़ों को कैंसर होता है ।
2. व्यक्तियों के फेफड़े स्वस्थ होते हैं अगर वे धूम्रपान नहीं करते ।
3. धूम्रपान की मात्रा फेफड़ों के कैंसर होने की प्रायिकता के सीधे रूप से आनुपातिक नहीं है ।
4. धूम्रपान करने वालों को फेफड़ों का कैंसर होगा ।

Options :

7720334505. 1

7720334506. 2

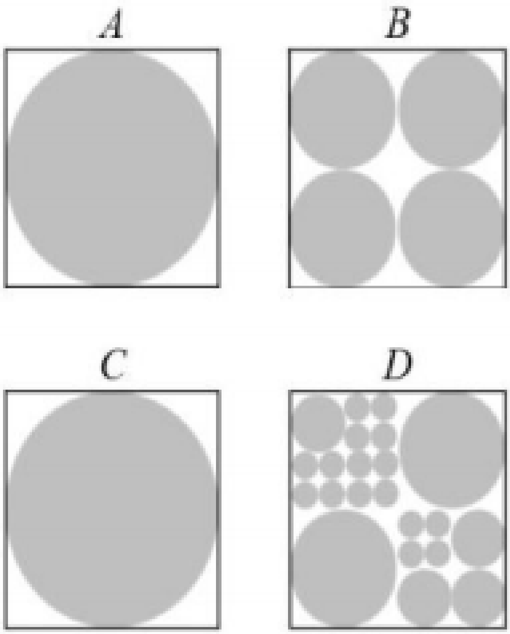
7720334507. 3

7720334508. 4

Question Number : 13 Question Id : 7720331128 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

The shaded circles having diameter of 1, 0.5, 0.25 and 0.125 cm are inside squares of side www.FirstRanker.com www.FirstRanker.com
1 cm as shown in the figure. The ratio of shaded area in *A* and *B* is one.



The ratio of shaded area in *C* and *D* would be

1. 1
2. 1.25
3. 1.5
4. 1.75

Options :

7720334509. 1

7720334510. 2

7720334511. 3

7720334512. 4

firstranker.com
www.FirstRanker.

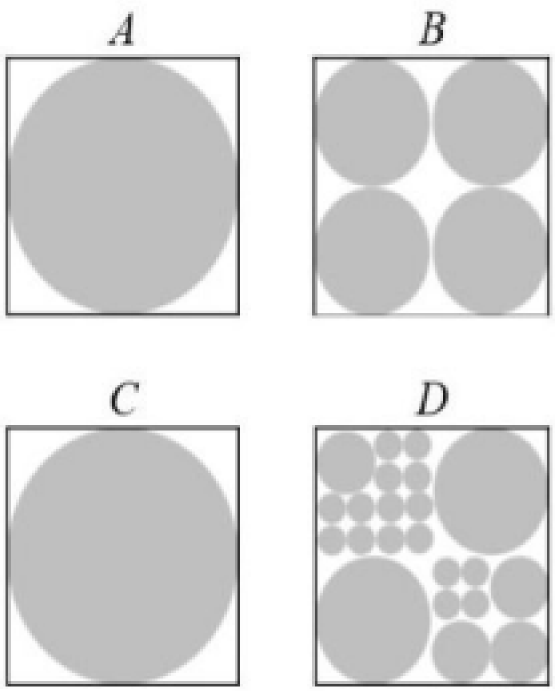
Question Number : 13 Question Id : 7720331128 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice

[illegible]खाये अनुसार 1, 0.5, 0.25 और 0.125 से.मी. व्यास के छायांकित वृत्त 1 से.मी. भुजा वाले वर्ग में हैं। *A* और *B* के छायांकित क्षेत्रफलों का अनुपात एक है।

www.FirstRanker.com www.FirstRanker.com



C और *D* के छायांकित क्षेत्रफलों का अनुपात होगा?

1. 1
2. 1.25
3. 1.5
4. 1.75

firstranker.com
www.FirstR

Options :

7720334509. 1

7720334510. 2

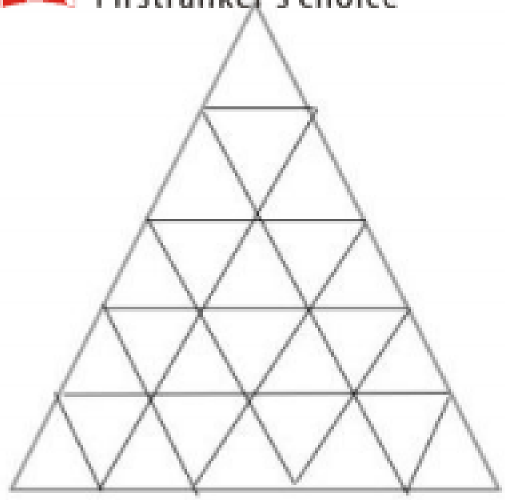
7720334511. 3

7720334512. 4

Question Number : 14 Question Id : 7720331129 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice



How many triangles are there in the figure?

1. 35
2. 38
3. 39
4. 48

Options :

7720334513. 1

7720334514. 2

7720334515. 3

7720334516. 4

firstranker.com
www.FirstRanker.com

Question Number : 14 Question Id : 7720331129 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

चित्र में कितने त्रिभुज हैं ?

1. 35
2. 38
3. 39
4. 48

Options :

7720334513. 1

7720334514. 2

7720334515. 3

7720334516. 4

firstranker.com
www.FirstRanker.com

Question Number : 15 Question Id : 7720331130 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

Each person in a group of teachers and students is given the same number of chocolates as the number of students. If 4 more students are added then in order to have the same number of chocolates per person as earlier, 28 more chocolates are needed. The total number of students now is

1. 7
2. 11
3. 13
4. 5

7720334517. 1

7720334518. 2

7720334519. 3

7720334520. 4

Question Number : 15 Question Id : 7720331130 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

एक शिक्षकों और विद्यार्थियों के समूह में प्रत्येक को विद्यार्थियों की संख्या की समान संख्या में चॉकलेट दी गईं । यदि 4 विद्यार्थी और आ जाते हैं तो प्रत्येक व्यक्ति के पास पहले की संख्या के समान संख्या में चॉकलेट रखने के लिए 28 अधिक चॉकलेटों की आवश्यकता होती है । तो अभी विद्यार्थियों के कुल संख्या है

1. 7
2. 11
3. 13
4. 15

Options :

7720334517. 1

7720334518. 2

7720334519. 3

7720334520. 4

Question Number : 16 Question Id : 7720331131 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

A ball is moving with a constant speed in a circular path in a vertical plane. The system is illuminated from the top so that the shadow of the ball on the ground oscillates. The maximum probability of finding the shadow of the ball is at

1. the extreme points.
2. the mean point.
3. half the distance from the mean point.
4. one third the distance from the mean point.

Options :

7720334521. 1

7720334522. 2

7720334523. 3

7720334524. 4

Question Number : 16 Question Id : 7720331131 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

एक उर्ध्वाधर सतह में एक गेंद एक वृत्तीय मार्ग पर एक समान गति से घूम रही है । यदि इस व्यस्था को उपर से प्रकाशित किया जाता है तो गेंद की छाया धरातल पर दोलन करती है । किस स्थान पर गेंद की छाया के मिलने की प्रायिकता अधिकतम होगी?

1. छोर के बिंदुओं पर
2. मध्य बिंदु पर
3. मध्य बिंदु से आधी दूरी पर
4. मध्य बिंदु से एक तिहाई के दूरी पर

Options :

7720334521. 1

7720334522. 2

7720334523. 3

7720334524. 4

Question Number : 17 Question Id : 7720331132 Question Type : MCQ Option Shuffling : No Is

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

Correct Marks : 2 Wrong Marks : 0.5

Five concentric, adjacent, semi-circular running tracks, each of mean length 100 m and width 2.5 m are marked on a field. If the angle subtended by inner track is 1.00 rad, the angle subtended by the outermost track is

1. 0.90 rad
2. 0.91 rad
3. 0.88 rad
4. 0.98 rad

Options :

7720334525. 1

7720334526. 2

7720334527. 3

7720334528. 4

Question Number : 17 Question Id : 7720331132 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

एक मैदान में चिन्हित पांच संकेंद्रिक, सटे हुए, अर्धवृत्तीय दौड़ के मार्गों में प्रत्येक की औसत लम्बाई 100 मी. और चौड़ाई 2.5 मी. है । यदि अंत: मार्ग द्वारा अंतरित कोण 1.00 rad है तो सबसे बाहरी मार्ग द्वारा अंतरित कोण होगा

1. 0.90 rad
2. 0.91 rad
3. 0.88 rad
4. 0.98 rad

Options :

7720334525. 1

7720334526. 2

7720334527. 3

7720334528. 4

Question Number : 18 Question Id : 7720331133 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

In a legislative assembly of 250 members, political parties A, B, C, D and E got 100, 70, 48, 15, 7 seats, respectively, while 10 seats were won by the independents. If parties A, B and C decide not to support each other, what is the minimum number of political parties required to join hands to form a majority government?

1. One
2. Two
3. Three
4. Four

Options :

7720334529. 1

7720334530. 2

7720334531. 3

7720334532. 4

firstranker.com
FirstRanker.com

Question Number : 18 Question Id : 7720331133 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

एक विधानसभा में 250 सदस्य हैं, जिसमें से राजनैतिक दलों A, B, C, D एवं E द्वारा क्रमश: 100, 70, 48, 15, 7 स्थान और निर्दलीय द्वारा 10 स्थान जीते गये । यदि दल A, B और C एक दूसरे को समर्थन नहीं देने का निश्चय करते है, तो कम से कम कितने दलों को एक बहुमत की सरकार बनाने के लिये साथ आना होगा?

1. एक
2. दो
3. तीन
4. चार

Options :

7720334529. 1

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

4530. 2

7720334531. 3

7720334532. 4

Question Number : 19 Question Id : 7720331134 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

A heater is used to boil water in a container. The heater supplies heat at a constant rate R. Water boils at 100 °C. Assume that the water in the container loses heat to the atmosphere at a rate that is proportional to both, the temperature of the water as well as to the volume of water in the container. If this proportionality constant is K then the maximum volume of water that can be boiled by the heater is

1. 100/KR
2. K/100R
3. R/100K
4. KR/100

Options :

7720334533. 1

7720334534. 2

7720334535. 3

7720334536. 4

firstranker.com
www.FirstRanker.com

Question Number : 19 Question Id : 7720331134 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

एक पात्र में रखे पानी को उबालने के लिए एक हीटर का उपयोग किया जाता है । हीटर द्वारा एक स्थिर दर R से उष्मा प्रदान की जाती है । पानी 100 °C पर उबलता है । यह मानिए कि पात्र में रखे पानी द्वारा वातावरण में उष्मा की क्षति, पानी के तापमान तथा पात्र में पानी के आयतन, दोनों के आनुपातिक है। यदि आनुपातिक स्थिरांक K है तो इस हीटर द्वारा पानी के कितने अधिकतम आयतन को उबाला जा सकता है?

1. 100/KR
2. K/100R
3. R/100K
4. KR/100

Options :

7720334533. 1

7720334534. 2

7720334535. 3

7720334536. 4

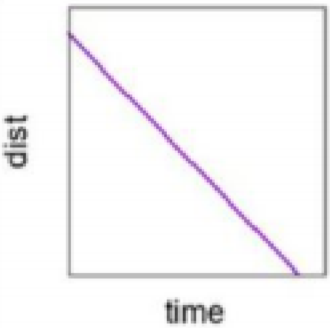
Question Number : 20 Question Id : 7720331135 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

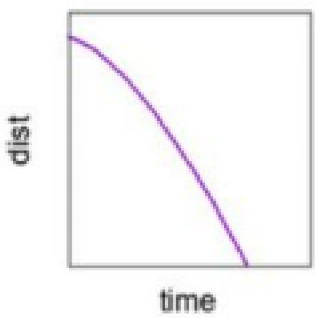
Correct Marks : 2 Wrong Marks : 0.5

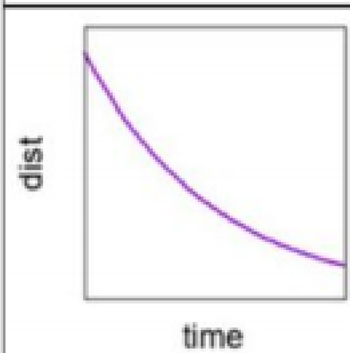
firstranker.com
www.FirstRanker.com

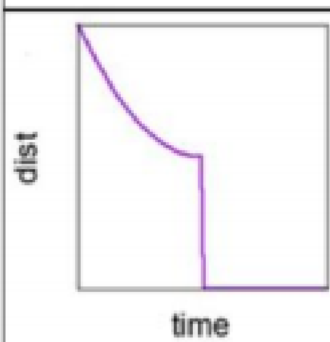
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Two trains are approaching each other on the same straight track. One is moving at a constant speed, while the other is decelerating. Which of the graphs shows the correct change in their separation as a function of time?

1. 

2. 

3. 

4. 

firstranker.com

Options :

7720334537. 1

7720334538. 2

7720334539. 3

7720334540. 4

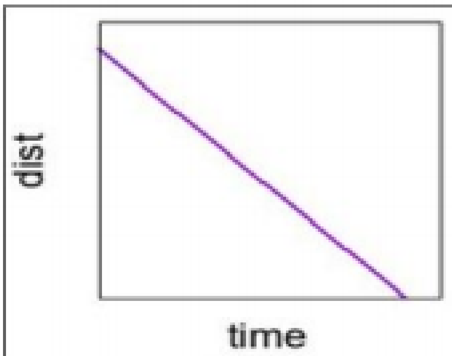
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

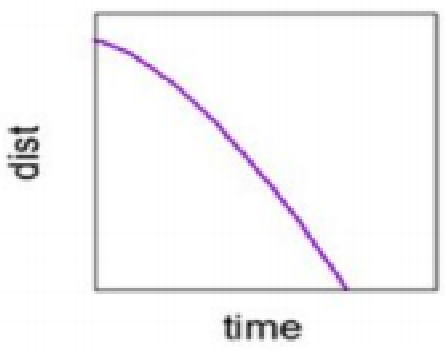
Question Number : 20 Question Id : 7720331135 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

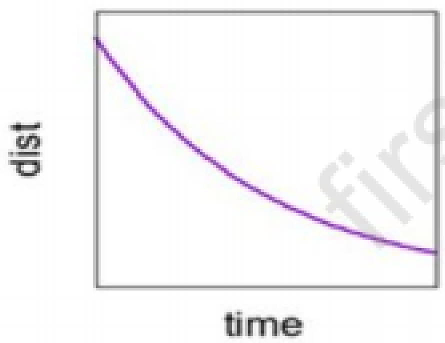
दो रेलगाड़ीयां एक ही पटरी पर एक दूसरे की तरफ आ रही हैं। एक रेलगाड़ी स्थिर गति से चल रही है जबकि दूसरी की गति में मंदन हो रहा है । कौन सा ग्राफ दोनों के बीच की दूरी (dist) में समय (time) के साथ परिवर्तन को सही रूप से दर्शाता है?



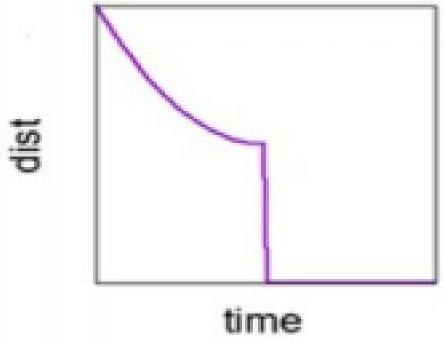
1.



2.



3.



4.

Options :

7720334537. 1

7720334538. 2

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

4539. 3

7720334540. 4

Part B Chemical Sciences

Section Id :	77203329
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	40
Number of Questions to be attempted :	35
Section Marks :	70
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	77203359
Question Shuffling Allowed :	Yes

firstranker.com
www.FirstRanker.com

Question Number : 21 Question Id : 7720331086 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

The rate of hydration of $[Cr^{III}(H_2O)_5X]^{n+}$ ($X = N_3^-$, F^-, CN^- and NH_3) in neutral aqueous medium remains unaffected in acidic medium at room temperature, if 'X' is

1. N_3^-
2. F^-
3. CN^-
4. NH_3

Options :

7720334541. 1

7720334542. 2

7720334543. 3

Question Number : 21 Question Id : 7720331136 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

उदासीन जलीय माध्यम में तथा कमरे के ताप पर $[Cr^{III}(H_2O)_5X]^{n+}$,$(X = N_3^-, F^-, CN^-$ तथा $NH_3)$ के जलयोजन की दर, अम्लीय माध्यम में अप्रभावित रहती है, यदि 'X' है

1. N_3^-
2. F^-
3. CN^-
4. NH_3

Options :

7720334541. 1

7720334542. 2

7720334543. 3

7720334544. 4

Question Number : 22 Question Id : 7720331137 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

The first ionization energy of the metals follows the order:

1. Zn > Cd > Hg
2. Hg > Zn > Cd
3. Hg > Cd > Zn
4. Cd > Zn > Hg

Options :

7720334545. 1

7720334546. 2

7720334547. 3

7720334548. 4

firstranker.com
FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

...tion Id : 7720331137 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

धातुओं की प्रथम आयनन ऊर्जा जिस क्रम का अनुसरण करती है, वह है:

1. Zn > Cd > Hg
2. Hg > Zn > Cd
3. Hg > Cd > Zn
4. Cd > Zn > Hg

Options :

7720334545. 1

7720334546. 2

7720334547. 3

7720334548. 4

Question Number : 23 Question Id : 7720331138 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

The red colour of the gem, ruby is predominantly due to

1. O^{2-} to Al^{3+} charge transfer
2. O^{2-} to Cr^{3+} charge transfer
3. Red emission (phosphorescence) of Cr^{3+} ions
4. Red emission (fluorescence) of Al^{3+} ions

Options :

7720334549. 1

7720334550. 2

7720334551. 3

7720334552. 4

Question Number : 23 Question Id : 7720331138 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

...क्य के लाल रंग का कारण मुख्यत: है

1. O^{2-} से Al^{3+} को आवेश स्थानांतरण
2. O^{2-} से Cr^{3+} को आवेश स्थानांतरण
3. Cr^{3+} आयनों का लाल उत्सर्जन (स्फुरदीप्ति)
4. Al^{3+} आयनों का लाल उत्सर्जन (प्रतिदीप्ति)

Options :

7720334549. 1

7720334550. 2

7720334551. 3

7720334552. 4

Question Number : 24 Question Id : 7720331139 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

The correct pair among the following, in which each species shows orbital contribution to its magnetic moment is

1. $[CoCl_4]^{2-}$ and $[Ni(H_2O)_6]^{2+}$
2. $[NiCl_4]^{2-}$ and $[CoF_6]^{2-}$
3. $[Co(H_2O)_6]^{2+}$ and $[Cr(H_2O)_6]^{3+}$
4. $[Ni(NH_3)_6]^{2+}$ and $[CrCl_4]^{2-}$

Options :

7720334553. 1

7720334554. 2

7720334555. 3

7720334556. 4

firstranker.com
www.FirstR...

Question Number : 24 Question Id : 7720331139 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

निम्नलिखित में से सही युग्म जिसकी प्रत्येक स्पीशीज़ अपने चुम्बकीय आघूर्ण में कक्षक योगदान को दर्शाती है, वह है

1. $[CoCl_4]^{2-}$ तथा $[Ni(H_2O)_6]^{2+}$
2. $[NiCl_4]^{2-}$ तथा $[CoF_6]^{2-}$
3. $[Co(H_2O)_6]^{2+}$ तथा $[Cr(H_2O)_6]^{3+}$
4. $[Ni(NH_3)_6]^{2+}$ तथा $[CrCl_4]^{2-}$

Options :

7720334553. 1

7720334554. 2

7720334555. 3

7720334556. 4

Question Number : 25 Question Id : 7720331140 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

Marsh test is used to identify traces of the element,

1. As
2. Sb
3. Bi
4. Se

Options :

7720334557. 1

7720334558. 2

7720334559. 3

7720334560. 4

firstranker.com
www.FirstRanker.com

Question Number : 25 Question Id : 7720331140 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

[illegible] जिस तत्व के [illegible] की पहचान में किया जाता है, वह है

1. As
2. Sb
3. Bi
4. Se

Options :

7720334557. 1

7720334558. 2

7720334559. 3

7720334560. 4

Question Number : 26 Question Id : 7720331141 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

In a sample of charcoal, the remaining fraction of ^{14}C is 2×10^{-2}. Its age (in years) is closest to
[Given $t_{1/2}$ of ^{14}C = 5730 years]

1. 3.2×10^4
2. 3.0×10^4
3. 2.8×10^4
4. 3.4×10^4

Options :

7720334561. 1

7720334562. 2

7720334563. 3

7720334564. 4

Question Number : 26 Question Id : 7720331141 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

firstranker.com
www.FirstRanker.com

FirstRanker.com
Firstranker's choice

...ल के नमूने में ^{14}C का शेष अंश 2×10^{-2} है। इसकी आयु (वर्षों में) जिसके निकटतम है, वह है [दिया है ^{14}C का $t_{1/2}$ = 5730 वर्ष]

1. 3.2×10^4
2. 3.0×10^4
3. 2.8×10^4
4. 3.4×10^4

Options :

7720334561. 1

7720334562. 2

7720334563. 3

7720334564. 4

Question Number : 27 Question Id : 7720331142 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

The correct statement(s) for oxygen from the following

A. The ground state for the O atom is $^3P_1$.

B. Both the atom and the diatomic molecule are paramagnetic with two unpaired electrons.

C. The most readily accessible singlet excited state for dioxygen has an empty π^* orbital.

is/are

Choose the ***correct*** answer from the options given below:

1. A and B only
2. B and C only
3. A and C only
4. B only

Options :

7720334565. 1

7720334566. 2

7720334567. 3

7720334568. 4

Question Number : 27 Question Id : 7720331142 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित में से ऑक्सीज़न के लिए

i. O परमाणु की निम्नतम अवस्था $^3P_1$ है
ii. परमाणु तथा द्विपरमाणुक अणु दोनों ही दो अयुग्मित इलेक्ट्रॉनों के साथ अनुचम्बुकीय है
iii. डाइऑक्सीज़न की अतिशीघ्र उपलब्ध सिन्गलिट उत्तेजित अवस्था में एक रिक्त π^* कक्षक होता है।
सही कथन है/हैं

1. (i) तथा (ii)
2. (ii) तथा (iii)
3. (i) तथा (iii)
4. केवल (ii)

Options :

7720334565. 1

7720334566. 2

7720334567. 3

7720334568. 4

Question Number : 28 Question Id : 7720331143 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

The correct statement for peroxydisulfuric and dithionic acids from the following, is:

1. Each of these has two O-H bonds.
2. Peroxydisulfuric has one O-H bond and dithionic acid has two O-H bonds.
3. Peroxydisulfuric has two O-H bonds and dithionic acid has one O-H bond
4. Each of these has only one O-H bond

Options :

7720334569. 1

7720334570. 2

7720334571. 3

7720334572. 4

Question Number : 28 Question Id : 7720331143 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

परऑक्सीडाईसल्फ्यूरिक तथा डाइथायोनिक अम्लों के लिए निम्नलिखित में से सही कथन है।

1. इनमे से प्रत्येक में दो O-H आबन्ध हैं।
2. परऑक्सीडाइसल्फ्यूरिक अम्ल में एक O-H आबंध तथा डाइथायोनिक अम्ल में दो O-H आबंध हैं।
3. परऑक्सीडाइसल्फ्यूरिक अम्ल में दो O-H आबंध तथा डाइथायोनिक अम्ल में एक O-H आबंध हैं।
4. इनमें से प्रत्येक में केवल एक O-H आबंध है।

Options :

7720334569. 1

7720334570. 2

7720334571. 3

7720334572. 4

Question Number : 29 Question Id : 7720331144 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

The correct statement for the CO and N_2 ligands in the complexes *trans*- $[IrCl(CO)(PPh_3)_2]$ and *trans*-$[IrCl(N_2)(PPh_3)_2]$ is:

1. N_2 is both better σ-donor and better π-acceptor ligand than CO
2. CO is a better π-acceptor, but poor σ-donor ligand than N_2
3. CO is a better σ-donor, but poor π-acceptor ligand than N_2
4. CO is both better σ-donor and better π-acceptor ligand than N_2

Options :

7720334573. 1

7720334574. 2

7720334575. 3

7720334576. 4

Question Number : 29 Question Id : 7720331144 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice

...ns-[IrCl(CO)(PPh$_3$)$_2$] तथा *trans*-[IrCl(N_2)(PPh$_3$)$_2$] में CO तथा N_2 लिगन्डों के संदर्भ में सही कथन है:

1. CO की अपेक्षा N_2 लिगन्ड एक बेहतर σ-दाता तथा बेहतर π-ग्राही दोनों है।
2. N_2 की अपेक्षा CO एक बेहतर π-ग्राही परन्तु तुच्छ σ-दाता लिगन्ड है।
3. N_2 की अपेक्षा CO एक बेहतर σ-दाता परन्तु तुच्छ π-ग्राही लिगन्ड है।
4. N_2 की अपेक्षा CO लिगन्ड एक बेहतर σ-दाता तथा बेहतर π-ग्राही दोनों है।

Options :

7720334573. 1

7720334574. 2

7720334575. 3

7720334576. 4

Question Number : 30 Question Id : 7720331145 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

Among the following divalent metal ions which forms polymeric compound, when ligand used is $C_5H_5^-$ only

1. V
2. Ni
3. Mn
4. Co

Options :

7720334577. 1

7720334578. 2

7720334579. 3

7720334580. 4

Question Number : 30 Question Id : 7720331145 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

firstranker.com
www.Firs...

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

द्विसंयोजक धातु आयनों में से कौन सा, 'बहुलक रूप का यौगिक विरचित करता है जब केवल - $C_5H_5^-$ लिगन्ड को ही प्रयोग में लाते हैं

1. V
2. Ni
3. Mn
4. Co

Options :

7720334577. 1

7720334578. 2

7720334579. 3

7720334580. 4

firstranker.com

Question Number : 31 Question Id : 7720331146 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

Match **List I** with **List II**

List I	**List II**
Metalloprotein	**Metal**
A. carboxypeptidase A	I. Mn
B. oxygen-evolving complex	II. Fe
C. hemerythrin	III. Ni
D. coenzyme F-430	IV. Zn

Choose the **correct** answer from the options given below:

1. A-III, B-I, C-II, D-IV
2. A-IV, B-I, C-II, D-III
3. A-II, B-III, C-IV, D-I
4. A-IV, B-III, C-I, D-II

Options :

7720334581. 1

7720334582. 2

7720334583. 3

7720334584. 4

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

Question Number : 31 Question Id : 7720331146 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

धात्वीय प्रोटीनों का उनके अपने धातुओं से मिलान कीजिए

धात्वीय प्रोटीन		धातु	
A	कार्बोक्सीपेप्टिडेस A	I	Mn
B	ऑक्सीज़न उत्पन्न करने वाले संकुल	II	Fe
C	हीमरिथ्रिन	III	Ni
D	सहएंजाइम F-430	IV	Zn

मिलान का सही सेट है।

1. A-III, B-I, C-II, D-IV
2. A-IV, B-I, C-II, D-III
3. A-II, B-III, C-IV, D-I
4. A-IV, B-III, C-I, D-II

Options :

7720334581. 1

7720334582. 2

7720334583. 3

7720334584. 4

firstranker.com
www.FirstRanker.com

Question Number : 32 Question Id : 7720331147 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

^{212}Bi decays with the emission of an α particle. The resulting nuclide emits a β particle to give an element

1. Tl
2. Pb
3. Po
4. At

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

7720334585. 1

7720334586. 2

7720334587. 3

7720334588. 4

Question Number : 32 Question Id : 7720331147 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

^{212}Bi का क्षय α-कण के उत्सर्जन से होता है। फलस्वरूप उत्पन्न न्यूक्लिआइड एक β कण का उत्सर्जन करके जो तत्व देता है, वह है

1. Tl
2. Pb
3. Po
4. At

Options :

7720334585. 1

7720334586. 2

7720334587. 3

7720334588. 4

firstranker.com
www.FirstRanker.com

Question Number : 33 Question Id : 7720331148 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

... the following statements with respect to Jacobsen's catalyst used for epoxidation reaction. It is/has

A. manganese(III) complex

B. salen type ligand

C. cobalt(III) bromide complex

D. 1-nitroso-2-naphthol type ligand

E. square pyramid geometry

F. square planar geometry

Choose the ***correct*** answer from the options given below:

1. C, D and F only
2. A, B and E only
3. A, D and E only
4. B, C and F only

Options :

7720334589. 1

7720334590. 2

7720334591. 3

7720334592. 4

firstranker.com
www.FirstRanker.com

Question Number : 33 Question Id : 7720331148 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice

...ण अभिक्रिया में उपयोग किये जाने वाले जकब्सन उत्प्रेरक के लिए निम्नलिखित कथनों पर विचार कीजिए। यह/इसमें/इसकी

www.FirstRanker.com www.FirstRanker.com

a. एक मैंगनीज़(III) का संकुल है
b. सैलेन प्रकार का लिगन्ड होता है
c. एक कोबाल्ट(III) ब्रोमाइड संकुल है
d. 1-नाइट्रोसो-2-नैफ़्थॉल प्रकार का लिगन्ड होता है
e. ज्यामिति वर्ग पिरैमिडी है
f. ज्यामिति वर्गतली है
सही कथनों का सेट है ।

1. (c), (d) तथा (f)
2. (a), (b) तथा (e)
3. (a), (d) तथा (e)
4. (b), (c) तथा (f)

Options :

7720334589. 1

7720334590. 2

7720334591. 3

7720334592. 4

Sub-Section Number : 2

Sub-Section Id : 77203360

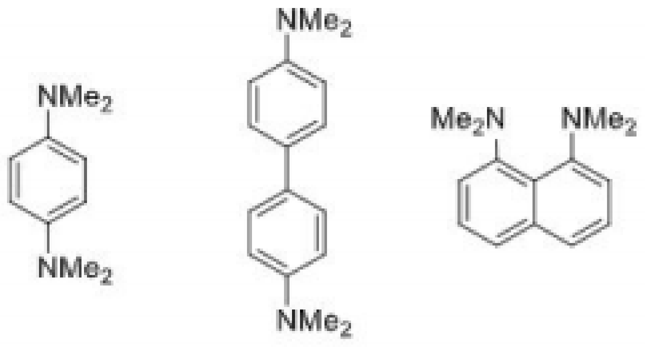
Question Shuffling Allowed : Yes

Question Number : 34 Question Id : 7720331149 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

firstranker.com
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
The correct order of basicity for following compounds is
www.FirstRanker.com www.FirstRanker.com



A B C

Choose the ***correct*** answer from the options given below

1. A > B > C
2. B > A > C
3. C > B > A
4. C > A > B

Options :

7720334593. 1

7720334594. 2

7720334595. 3

7720334596. 4

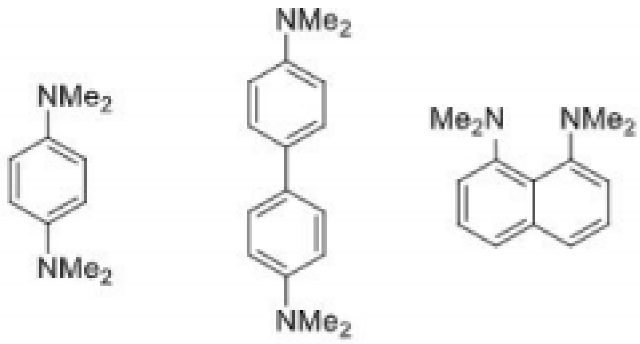
Question Number : 34 Question Id : 7720831149 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

firstranker.com
www.FirstRanker.com

FirstRanker.com
Firstranker's choice

निम्नलिखित यौगिकों की क्षारीयता का सही क्रम है



A B C

1. A > B > C
2. B > A > C
3. C > B > A
4. C > A > B

Options :

7720334593. 1

7720334594. 2

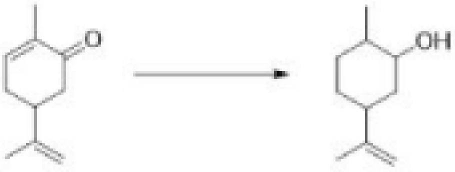
7720334595. 3

7720334596. 4

Question Number : 35 Question Id : 7720331150 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

The most suitable reagent to effect the following conversion is



1. $BH_3{\cdot}SMe_2$
2. Na, EtOH
3. $NaBH_4$, $CeCl_3$
4. H_2, Pd/C

Options :

4597. 1

7720334598. 2

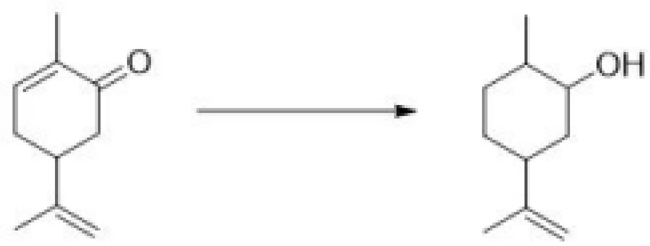
7720334599. 3

7720334600. 4

Question Number : 35 Question Id : 7720331150 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित परिवर्तन को प्रभावी करने के लिए सर्वाधिक उपयुक्त अभिकर्मक है



1. $BH_3 \cdot SMe_2$
2. Na, EtOH
3. $NaBH_4$, $CeCl_3$
4. H_2, Pd/C

Options :

7720334597. 1

7720334598. 2

7720334599. 3

7720334600. 4

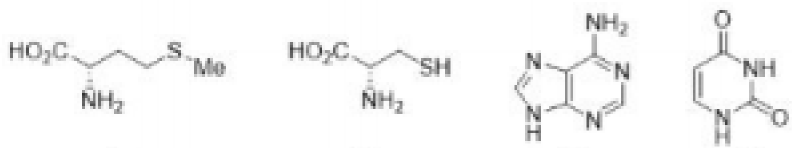
firstranker.com
www.FirstRanker.com

Question Number : 36 Question Id : 7720331151 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Components of S-adenosyl methionine are



A B C D

Choose the ***correct*** answer from the options given below:

1. A and C only
2. A and D only
3. B and C only
4. B and D only

Options :

7720334601. 1

7720334602. 2

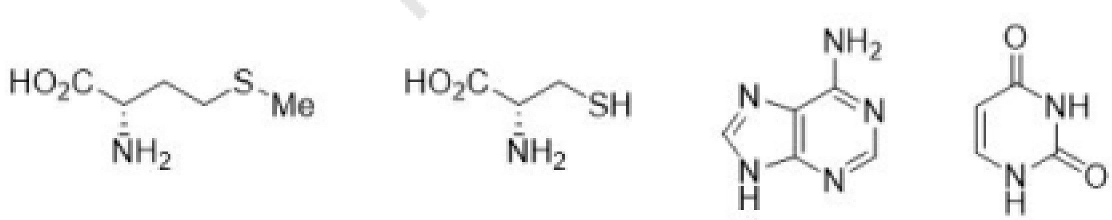
7720334603. 3

7720334604. 4

Question Number : 36 Question Id : 7720331151 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

S-ऐडेनोसिल मेथाइओनीन के अंग हैं



A B C D

1. A तथा C
2. A तथा D
3. B तथा C
4. B तथा D

Options :

7720334601. 1

7720334602. 2

7720334603. 3

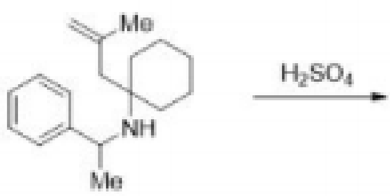
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

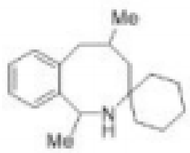
FirstRanker.com
4604. 4
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

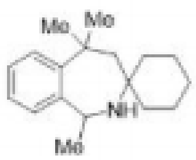
Question Number : 37 Question Id : 7720331152 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

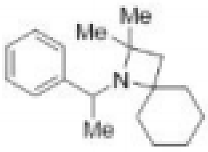
Correct Marks : 2 Wrong Marks : 0.5

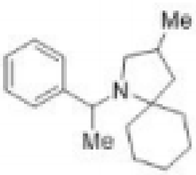
The major product formed in the following reaction is



1. 

2. 

3. 

4. 

Options :

7720334605. 1

7720334606. 2

7720334607. 3

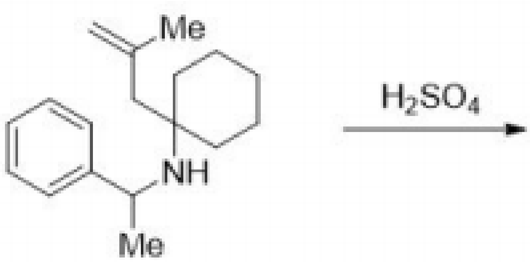
7720334608. 4

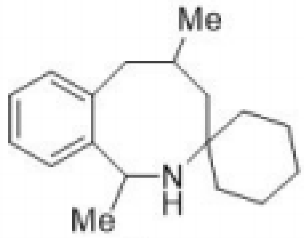
Question Number : 37 Question Id : 7720331152 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

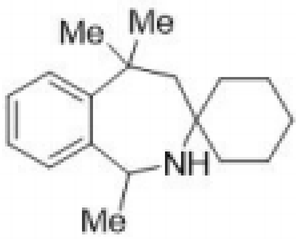
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

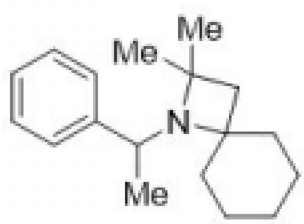
FirstRanker.com
Firstranker's choice

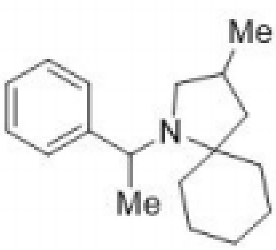
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



1. 

2. 

3. 

4. 

Options :

7720334605. 1

7720334606. 2

7720334607. 3

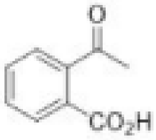
7720334608. 4

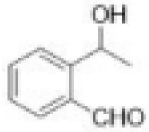
Question Number : 38 Question Id : 7720331153 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

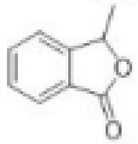
FirstRanker.com
Firstranker's choice
rks : 0.5
www.FirstRanker.com www.FirstRanker.com

The compound that answers both, haloform and Tollens' tests, is

1.

2. 

3. 

4. 

Options :

7720334609. 1

7720334610. 2

7720334611. 3

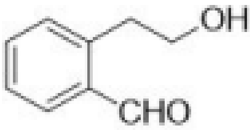
7720334612. 4

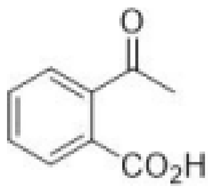
Question Number : 38 Question Id : 7720331153 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

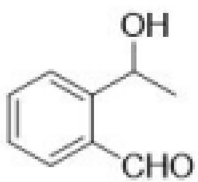
Correct Marks : 2 Wrong Marks : 0.5

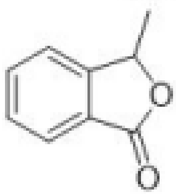
firstranker.com
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
यौगिक जो हेलोफ़ॉर्म तथा टॉलेन परीक्षणों, दोनों का उत्तर देता है वह है www.FirstRanker.com www.FirstRanker.com

1. 

2. 

3. 

4. 

Options :

7720334609. 1

7720334610. 2

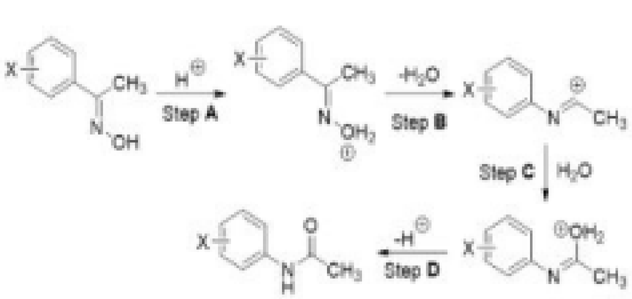
7720334611. 3

7720334612. 4

Question Number : 39 Question Id : 7720331154 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

The Hammett ρ-value for the following reaction is –2.0. The rate-determining step (RDS) is:



1. Step **A**
2. Step **B**
3. Step **C**
4. Step **D**

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

7720334613. 1

7720334614. 2

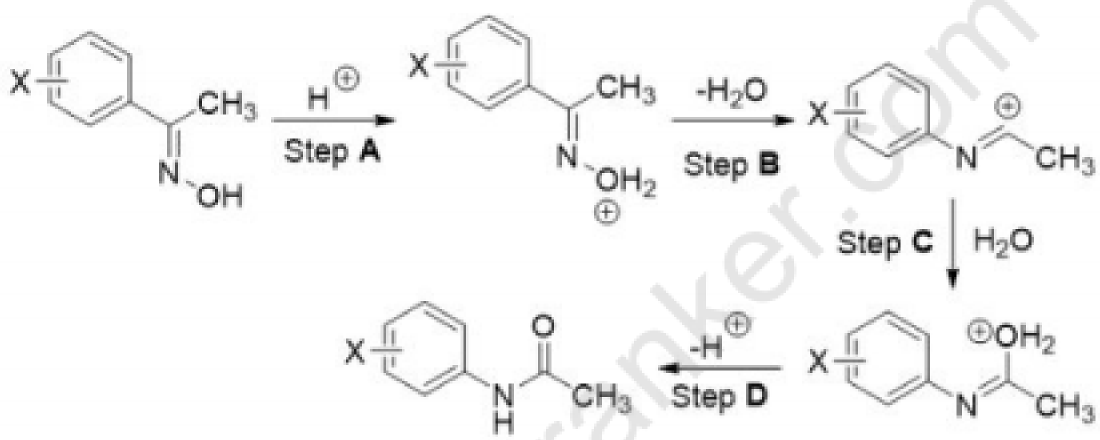
7720334615. 3

7720334616. 4

Question Number : 39 Question Id : 7720331154 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित अभिक्रिया के लिए हैमेट ρ-मान –2.0 है। दर निर्णायक पद (RDS) है :



1. Step **A**
2. Step **B**
3. Step **C**
4. Step **D**

Options :

7720334613. 1

7720334614. 2

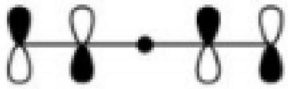
7720334615. 3

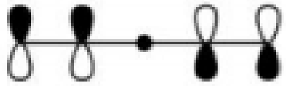
7720334616. 4

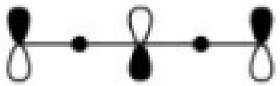
Question Number : 40 Question Id : 7720331155 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
ect order of energy for the following molecular orbitals is
www.FirstRanker.com www.FirstRanker.com

A. 

B. 

C. 

Choose the ***correct*** answer from the options given below

1. C > A > B
2. C > B > A
3. A > C > B
4. B > A > C

Options :

7720334617. 1

7720334618. 2

7720334619. 3

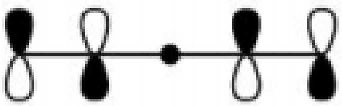
7720334620. 4

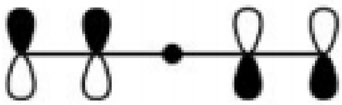
Question Number : 40 Question Id : 7720331156 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

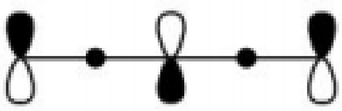
Correct Marks : 2 Wrong Marks : 0.5

firstranker.com
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
निम्नलिखित आण्विक कक्षकों की ऊर्जा का सही क्रम है
www.FirstRanker.com www.FirstRanker.com

A. 

B. 

C. 

1. C > A > B
2. C > B > A
3. A > C > B
4. B > A > C

Options :

7720334617. 1

7720334618. 2

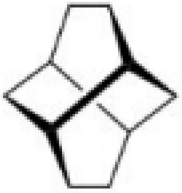
7720334619. 3

7720334620. 4

Question Number : 41 Question Id : 7720331158 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

The following hydrocarbon, twistane, is



1. achiral due to the presence of centre of symmetry
2. achiral due to the presence of plane of symmetry
3. chiral with no elements of symmetry
4. chiral with C_2-axes of symmetry

Options :

7720334621. 1

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

4622. 2

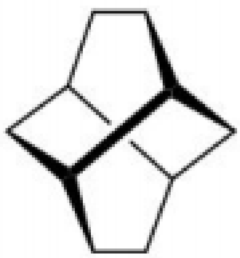
7720334623. 3

7720334624. 4

Question Number : 41 Question Id : 7720331156 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित हाईड्रोकार्बन टविस्टेन



1. सममिति केन्द्र उपस्थित होने के कारण अकिरेल है
2. सममिति तल की उपस्थिति के कारण अकिरेल है
3. कोई भी समतिति तत्व न होने के कारण किरेल है
4. C_2-सममिति अक्षों के साथ किरेल है

firstranker.com
www.FirstRanker.com

Options :

7720334621. 1

7720334622. 2

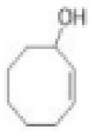
7720334623. 3

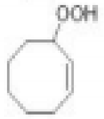
7720334624. 4

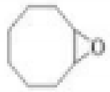
Question Number : 42 Question Id : 7720331157 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

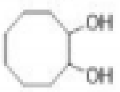
Correct Marks : 2 Wrong Marks : 0.5

r product formed in the photochemical reaction of cyclooctene in the presence of oxygen and a photosensitizer is

1. 

2. 

3. 

4. 

Options :

7720334625. 1

7720334626. 2

7720334627. 3

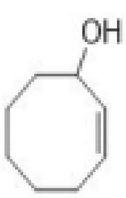
7720334628. 4

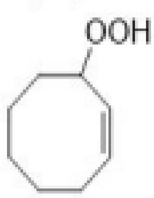
Question Number : 42 Question Id : 7720331157 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

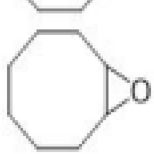
Correct Marks : 2 Wrong Marks : 0.5

firstranker.com

ऑक्सीज़न तथा प्रकाश सुग्राही कारक की उपस्थिति में साइक्लोऑक्टीन की प्रकाश रासायनिक अभिक्रिया में विरचित मुख्य उत्पाद है

1. 

2. 

3. 

4.

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

7720334625. 1

7720334626. 2

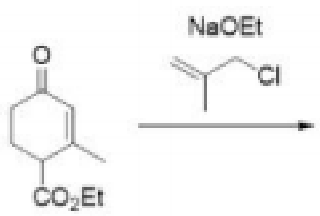
7720334627. 3

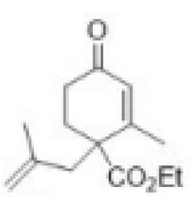
7720334628. 4

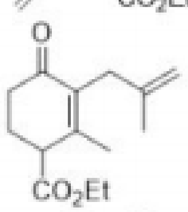
Question Number : 43 Question Id : 7720331158 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

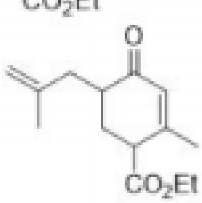
Correct Marks : 2 Wrong Marks : 0.5

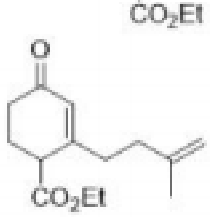
The major product formed in the following reaction is



1. 

2. 

3. 

4. 

Options :

7720334629. 1

7720334630. 2

7720334631. 3

7720334632. 4

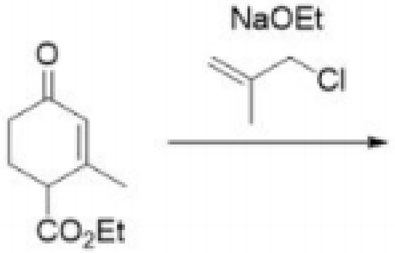
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

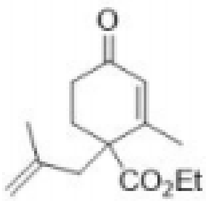
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

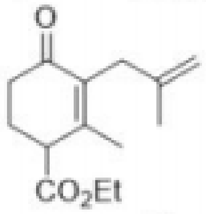
Question Number : 43 Question Id : 7720331158 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

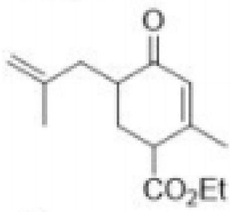
Correct Marks : 2 Wrong Marks : 0.5

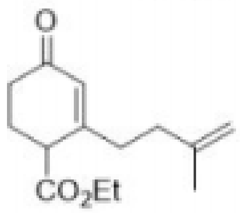
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



1. 

2. 

3. 

4. 

Options :

7720334629. 1

7720334630. 2

7720334631. 3

7720334632. 4

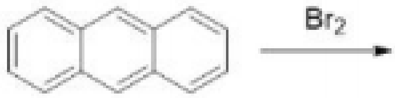
Question Number : 44 Question Id : 7720331159 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

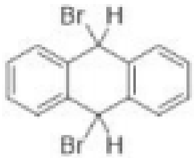
Correct Marks : 2 Wrong Marks : 0.5

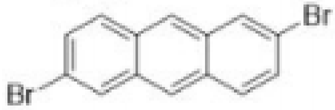
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

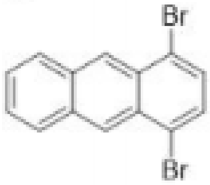
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

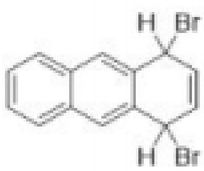
...or product formed in the following reaction is



1. 

2. 

3. 

4. 

Options :

7720334633. 1

7720334634. 2

7720334635. 3

7720334636. 4

firstranker.com
www.FirstRanker.com

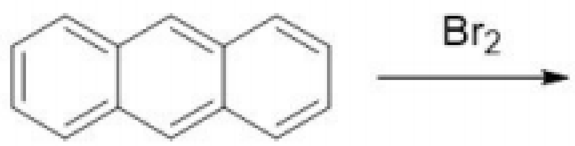
Question Number : 44 Question Id : 7720331159 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

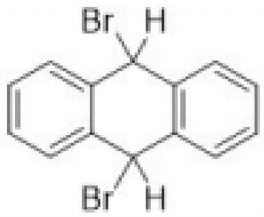
Correct Marks : 2 Wrong Marks : 0.5

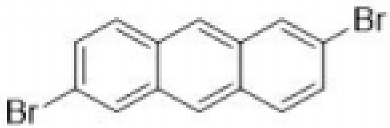
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

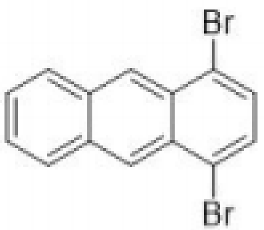
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

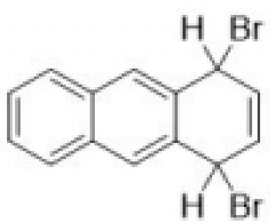
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



1. 

2. 

3. 

4. 

Options :

7720334633. 1

7720334634. 2

7720334635. 3

7720334636. 4

firstranker.com
www.FirstRanker.com

Question Number : 45 Question Id : 7720331160 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

Given in the options are compounds with the molecular weight 125. The one that will show the EI mass spectral data: 125 ($[M]^+$, 55%), 126 ($[M+1]^+$, 3.65%), 127 ($[M+2]^+$, 2.35%) is

1. C_6H_7NS
2. $C_6H_7NO_2$
3. C_7H_8FN
4. $C_8H_{15}N$

FirstRanker.com
Firstranker's choice

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

7720334637. 1

7720334638. 2

7720334639. 3

7720334640. 4

Question Number : 45 Question Id : 7720331160 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

दिए गये विकल्पों में यौगिक 125 आण्विक संहति के हैं। EI द्रव्यमान स्पेक्ट्रल आंकड़ों: 125 ($[M]^+$, 55%), 126 ($[M+1]^+$, 3.65%), 127 ($[M+2]^+$, 2.35%) को जो दर्शाएगा वह एक है

1. C_6H_7NS
2. $C_6H_7NO_2$
3. C_7H_8FN
4. $C_8H_{15}N$

Options :

7720334637. 1

7720334638. 2

7720334639. 3

7720334640. 4

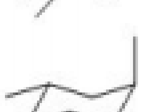
firstranker.com
www.FirstRanker.com

Question Number : 46 Question Id : 7720331161 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

The compound that will show six signals in the proton-decoupled ^{13}C NMR spectrum is

1.

2. 

3.

4.

www.FirstRanker.com
Firstranker's choice

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

7720334641. 1

7720334642. 2

7720334643. 3

7720334644. 4

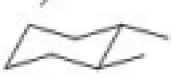
Question Number : 46 Question Id : 7720331161 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

प्रोटान-अयुग्मित ^{13}C NMR स्पेक्ट्रम में जो यौगिक छः सिग्नल दर्शाएगा वह है

1.

2.

3. 

4.

firstranker.com
www.FirstRanker.com

Options :

7720334641. 1

7720334642. 2

7720334643. 3

7720334644. 4

Sub-Section Number :	3
Sub-Section Id :	77203361
Question Shuffling Allowed :	Yes

Question Number : 47 Question Id : 7720331162 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

nt groups of *cis*- and *trans*-1,2-dichloroethylene are respectively

1. C_{2v} and C_{2v}
2. C_{2v} and C_{2h}
3. C_{2h} and C_{2v}
4. C_{2h} and C_{2h}

Options :

7720334645. 1

7720334646. 2

7720334647. 3

7720334648. 4

Question Number : 47 Question Id : 7720331162 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

cis- तथा *trans*-1, 2 -डाइक्लोरो एथीलीन के बिंदु समूह हैं, क्रमश:

1. C_{2v} तथा C_{2v}
2. C_{2v} तथा C_{2h}
3. C_{2h} तथा C_{2v}
4. C_{2h} तथा C_{2h}

firstranker.com
www.FirstRanker.com

Options :

7720334645. 1

7720334646. 2

7720334647. 3

7720334648. 4

Question Number : 48 Question Id : 7720331163 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice

www.FirstRanker.com www.FirstRanker.com

...ct expression for the internal energy of a system following Boltzmann distribution of energy is (Q : partition function, T : temperature, k_B : Boltzmann constant, N : number of molecules and V : volume)

1. $k_B T\left(\frac{\partial \ln Q}{\partial T}\right)_{N,V}$
2. $k_B T^2\left(\frac{\partial \ln Q}{\partial T}\right)_{N,V}$
3. $k_B T\left(\frac{\partial \ln Q}{\partial \beta}\right)_{N,V}$
4. $k_B T^2\left(\frac{\partial \ln Q}{\partial \beta}\right)_{N,V}$

Options :

7720334649. 1

7720334650. 2

7720334651. 3

7720334652. 4

Question Number : 48 Question Id : 7720331163 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

ऊर्जा के लिए बोल्ट्समान वितरण का अनुसरण करने वाले एक निकाय की आंतरिक ऊर्जा का सही व्यंजक है (Q : विभाजन फलन, T : ताप, k_B : बोल्ट्समान नियतांक N अणुओं की संख्या तथा V : आयतन)

1. $k_B T\left(\frac{\partial \ln Q}{\partial T}\right)_{N,V}$
2. $k_B T^2\left(\frac{\partial \ln Q}{\partial T}\right)_{N,V}$
3. $k_B T\left(\frac{\partial \ln Q}{\partial \beta}\right)_{N,V}$
4. $k_B T^2\left(\frac{\partial \ln Q}{\partial \beta}\right)_{N,V}$

Options :

7720334649. 1

7720334650. 2

7720334651. 3

7720334652. 4

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Question Number : 49 Question Id : 7720331164 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

A metallic lattice exhibits peaks corresponding to Miller indices (110), (111), (210), and (211) in its powder XRD pattern. The metal is crystallized in the Bravis lattice

1. body centered cubic
2. face centered cubic
3. side centered cubic
4. primitive cubic

Options :

7720334653. 1

7720334654. 2

7720334655. 3

7720334656. 4

Question Number : 49 Question Id : 7720331164 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

www.firstranker.com

पाउडर XRD पैटर्न में एक धातु का जालक मिलर सूचकांकों (110), (111), (210), तथा (211) के अनुरूप शिखर दर्शाता है। ब्रेवे जालक जिसमें धातु क्रिस्टलित होता है, वह है

1. काय केन्द्रित घनीय
2. फलक केन्द्रित घनीय
3. भुजा केन्द्रित घनीय
4. आद्य घनीय

Options :

7720334653. 1

7720334654. 2

7720334655. 3

7720334656. 4

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com
Question Number : 50 Question Id : 7720331165 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

In the electric double layer model, the difference in potential between the fixed part of the double layer and bulk solution is called:

1. Zeta potential
2. Double layer potential
3. Sedimentation potential
4. Chemical potential

Options :

7720334657. 1

7720334658. 2

7720334659. 3

7720334660. 4

Question Number : 50 Question Id : 7720331165 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

वैद्युत द्विस्तर माडल में, द्विस्तर के दृढ़ भाग तथा विस्तृत विलयन के मध्य विभव अंतर को कहते हैं:

1. जीटा विभव
2. द्विस्तर विभव
3. अवसादन विभव
4. रासायनिक विभव

Options :

7720334657. 1

7720334658. 2

7720334659. 3

7720334660. 4

Question Number : 51 Question Id : 7720331166 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

The resistance of a 0.1 M KCl solution in a cell is 300 ohms and specific conductance is 1.5 Scm^{-1}.

If the resistance of a 0.05 M NaCl in the same cell is 750 ohms, then the molar conductance ($S\ cm^2\ mol^{-1}$) of the NaCl is:

1. 6,000
2. 8,000
3. 12,000
4. 3,000

Options :

7720334661. 1

7720334662. 2

7720334663. 3

7720334664. 4

Question Number : 51 Question Id : 7720331166 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

एक सेल में 0.1 M KCl विलयन का प्रतिरोध 300 ohms है और इसकी विशिष्ट चालकता 1.5 $S\ cm^{-1}$ है। उसी सेल में 0.05 M NaCl का प्रतिरोध 750 ohms है, तो NaCl की मोलर चालकता ($S\ cm^2\ mol^{-1}$) है:

1. 6,000
2. 8,000
3. 12,000
4. 3,000

Options :

7720334661. 1

7720334662. 2

7720334663. 3

7720334664. 4

Question Number : 52 Question Id : 7720331167 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

...e between the z-axis and the intrinsic spin angular momentum for $m_s = \pm 1/2$ is

1. $cos^{-1}(1/\sqrt{2})$
2. $cos^{-1}(\sqrt{3}/2)$
3. $cos^{-1}(1/2)$
4. $cos^{-1}(1/\sqrt{3})$

Options :

7720334665. 1

7720334666. 2

7720334667. 3

7720334668. 4

Question Number : 52 Question Id : 7720331167 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

z-अक्ष तथा $m_s = \pm 1/2$ के लिए नैज स्पिन कोणीय संवेग के मध्य कोण है

1. $cos^{-1}(1/\sqrt{2})$
2. $cos^{-1}(\sqrt{3}/2)$
3. $cos^{-1}(1/2)$
4. $cos^{-1}(1/\sqrt{3})$

Options :

7720334665. 1

7720334666. 2

7720334667. 3

7720334668. 4

Question Number : 53 Question Id : 7720331168 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

...itted values of the total angular momentum quantum number, j, for an electron occupying an f orbital are

1. 7/2 and 5/2
2. 1/2 and -1/2
3. 9/2 and 7/2
4. 3/2 and 1/2

Options :

7720334669. 1

7720334670. 2

7720334671. 3

7720334672. 4

Question Number : 53 Question Id : 7720331168 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

‘f’ कक्षक में बसे एक इलेक्ट्रॉन के लिए संपूर्ण कोणीय संवेग संख्या j के अनुमत मान है

1. 7/2 तथा 5/2
2. 1/2 तथा -1/2
3. 9/2 तथा 7/2
4. 3/2 तथा 1/2

www.firstranker.com

Options :

7720334669. 1

7720334670. 2

7720334671. 3

7720334672. 4

Question Number : 54 Question Id : 7720331169 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

... that the enthalpy of mixing is zero, the mixture with the largest Gibbs free energy, at the same temperature, among the following, is

1. 0.1 moles of benzene and 0.9 moles of toluene
2. 0.25 moles of benzene and 0.75 moles of toluene
3. 0.6 moles of benzene and 0.4 moles of toluene
4. 0.8 moles of benzene and 0.2 moles of toluene

Options :

7720334673. 1

7720334674. 2

7720334675. 3

7720334676. 4

Question Number : 54 Question Id : 7720331169 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

मिश्रित करने की एन्थैल्पी को शून्य मान कर, निम्नलिखित में से मिश्रण जिसकी समान ताप पर सर्वाधिक गिब्ज मुक्त ऊर्जा है, वह है

1. 0.1 moles बेन्ज़ीन तथा 0.9 moles टॉलूईन
2. 0.25 moles बेन्ज़ीन तथा 0.75 moles टॉलूईन
3. 0.6 moles बेन्ज़ीन तथा 0.4 moles टॉलूईन
4. 0.8 moles बेन्ज़ीन तथा 0.2 moles टॉलूईन

Options :

7720334673. 1

7720334674. 2

7720334675. 3

7720334676. 4

Question Number : 55 Question Id : 7720331170 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

...tity that is an exact differential of a state function is (following the convention that *heat flowing in and work done on the system are positive*)

1. dq
2. $TdS - PdV$
3. $TdS - VdP$
4. $VdP + SdT$

Options :

7720334677. 1

7720334678. 2

7720334679. 3

7720334680. 4

Question Number : 55 Question Id : 7720331170 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

राशि जो अवस्था फलन का शुद्ध अवकल है, वह है (निकाय की ओर बहती ऊष्मा तथा इस पर किया गया कार्य धनात्मक हैं, इस परंपरा का अनुसरण करके)

1. dq
2. $TdS - PdV$
3. $TdS - VdP$
4. $VdP + SdT$

Options :

7720334677. 1

7720334678. 2

7720334679. 3

7720334680. 4

Question Number : 56 Question Id : 7720331171 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

firstranker.com
www.Fi...
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

...c molecule undergoing simple harmonic motion has a displacement (q) of 4.9×10^{-12} m . Its force constant is 1610 N m^{-1}. The potential energy of the molecule is (in Joules)

1. 1.93×10^{22}
2. 1.93×10^{-23}
3. 3.86×10^{-20}
4. 1.93×10^{-20}

Options :

7720334681. 1

7720334682. 2

7720334683. 3

7720334684. 4

Question Number : 56 Question Id : 7720331171 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

एक द्विपरमाणुक अणु जो सरल आवर्त गति में है, के लिए विस्थापन (q) का मान है, 4.9×10^{-12} m इसके लिए बल नियतांक 1610 N m^{-1} है। अणु की स्थितिज़ ऊर्जा (Joules में) है

1. 1.93×10^{22}
2. 1.93×10^{-23}
3. 3.86×10^{-20}
4. 1.93×10^{-20}

Options :

7720334681. 1

7720334682. 2

7720334683. 3

7720334684. 4

Question Number : 57 Question Id : 7720331172 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

density in propenyl radical is predominantly localized on

1. atoms 1 and 2
2. atoms 2 and 3
3. atoms 1 and 3
4. equally on all the atoms

Options :

7720334685. 1

7720334686. 2

7720334687. 3

7720334688. 4

Question Number : 57 Question Id : 7720331172 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

प्रोपीनाइल मूलक में स्पिन सघनता केन्द्रित है मुख्यत:

1. परमाणुओं 1 तथा 2 पर।
2. परमाणुओं 2 तथा 3 पर।
3. परमाणुओं 1 तथा 3 पर।
4. समान रूप से सभी परमाणुओं पर।

firstranker.com
www.FirstRanker.com

Options :

7720334685. 1

7720334686. 2

7720334687. 3

7720334688. 4

Question Number : 58 Question Id : 7720331173 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

... of a rate constant for the reaction nA → products , is $L.mol^{-1}.min^{-1}$. If the half life is 300 min when $[A_0]$ = 0.05 M, its half-life (in min), when $[A_0]$ = 0.1 M, is closest to

1. 450
2. 300
3. 150
4. 75

Options :

7720334689. 1

7720334690. 2

7720334691. 3

7720334692. 4

Question Number : 58 Question Id : 7720331173 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

अभिक्रिया nA → उत्पाद के लिए वेग नियतांक की इकाई है $L.mol^{-1}.min^{-1}$, $[A_0]$ = 0.05 M पर इसकी अर्ध आयु 300 min है, जब $[A_0]$ = 0.1 M है तो इसकी अर्ध आयु (min में), जिसके निकटतम है, वह है

1. 450
2. 300
3. 150
4. 75

Options :

7720334689. 1

7720334690. 2

7720334691. 3

7720334692. 4

Question Number : 59 Question Id : 7720331174 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

on whose rate constant is least dependent on the dielectric constant of the medium is : [P = product(s)]

1. $S_2O_8^{2-} + I^- \rightarrow P$
2. $CH_3COOC_2H_5 + OH^- \rightarrow P$
3. $A^{2+} + [M(C_2O_4)_3]^{3-} \rightarrow P$
4. $A^+ + B^{2+} \rightarrow P$

Options :

7720334693. 1

7720334694. 2

7720334695. 3

7720334696. 4

Question Number : 59 Question Id : 7720331174 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

अभिक्रिया जिसके वेग नियतांक की माध्यम के परावैद्युतांक पर निर्भरता न्यूनतम है, वह है: [P = उत्पाद]

1. $S_2O_8^{2-} + I^- \rightarrow P$
2. $CH_3COOC_2H_5 + OH^- \rightarrow P$
3. $A^{2+} + [M(C_2O_4)_3]^{3-} \rightarrow P$
4. $A^+ + B^{2+} \rightarrow P$

www.firstranker.com

Options :

7720334693. 1

7720334694. 2

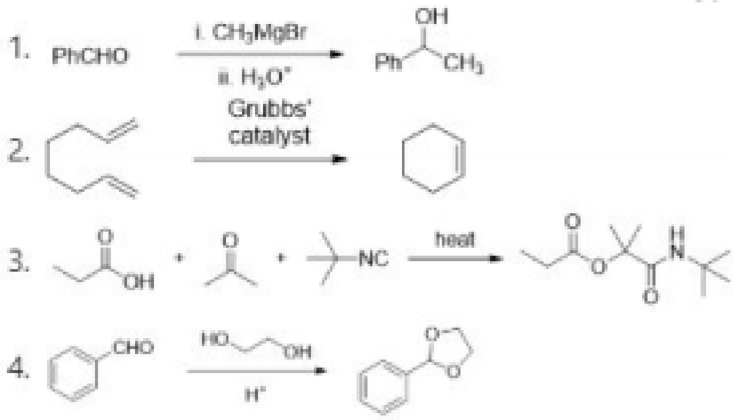
7720334695. 3

7720334696. 4

Question Number : 60 Question Id : 7720331175 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

...t efficient reaction in terms of atom economy, among the following, is



Options :

7720334697. 1

7720334698. 2

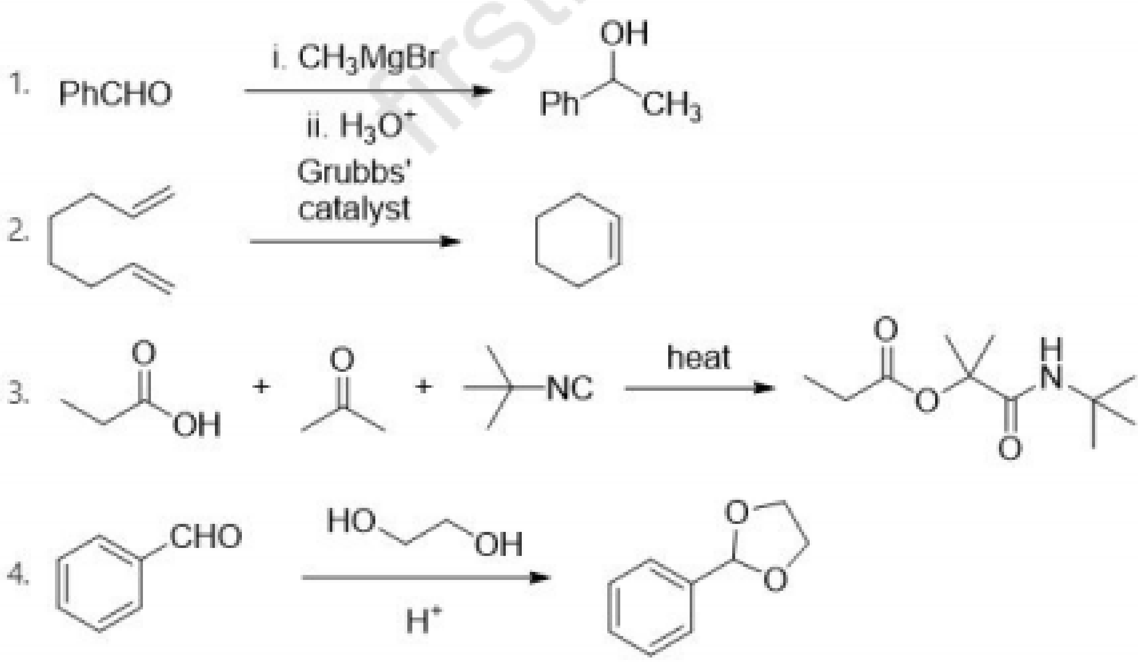
7720334699. 3

7720334700. 4

Question Number : 60 Question Id : 7720331175 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 2 Wrong Marks : 0.5

निम्नलिखित में से जो परमाणु मितव्ययता में सर्वाधिक दक्ष है, वह अभिक्रिया है



Options :

7720334697. 1

7720334698. 2

firstranker.com

7720334700. 4

Part C Chemical Sciences

Section Id :	77203330
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	60
Number of Questions to be attempted :	25
Section Marks :	100
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	77203362
Question Shuffling Allowed :	Yes

Question Number : 61 Question Id : 7720331076 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

firstranker.com
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Consider the following statements for haemoglobin (Hb) and myoglobin (Mb):

A. Oxy-Hb is formed in lungs, whereas oxy-Mb is formed in tissues.

B. Mb has greater affinity for dioxygen than Hb.

C. The equilibrium constant for the formation of the oxy-Mb is $K_{Mb} = \frac{[MbO_2]}{[Mb][O_2]}$

D. The equilibrium constant for the formation of the oxy-Hb is $K_{Hb} = \frac{[Hb(O_2)_4]}{[Hb][O_2]^4}$

Choose the ***correct*** answer from the options given below:

1. A, B and C only
2. A, C and D only
3. B, C and D only
4. A, B and D only

Options :

7720334701. 1

7720334702. 2

7720334703. 3

7720334704. 4

Question Number : 61 Question Id : 7720331176 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice

हीमोग्लोबिन (Hb) तथा मायोग्लोबिन (Mb) के लिए निम्न कथनों पर विचार कीजिए। www.FirstRanker.com www.FirstRanker.com

A. ऑक्सी-Hb फेफड़ों में बनती है जबकि ऑक्सी-Mb कोशिकाओं में बनती है

B. Hb की अपेक्षा Mb की ऑक्सीज़न के प्रति बंधुता अधिक होती है

C. ऑक्सी-Mb बनने के लिए साम्य स्थिरांक है $K_{Mb} = \frac{[MbO_2]}{[Mb][O_2]}$

D. ऑक्सी-Hb बनने के लिए साम्य स्थिरांक है $K_{Hb} = \frac{[Hb(O_2)_4]}{[Hb][O_2]^4}$

सही कथन हैं:

1. A, B तथा C
2. A, C तथा D
3. B, C तथा D
4. A, B तथा D

Options :

7720334701. 1

7720334702. 2

7720334703. 3

7720334704. 4

Question Number : 62 Question Id : 77203311[illegible] Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Based on Wade's rules, the correct structure types for $[B_4H_{10}]$, $[B_8H_8]^{2-}$, $[B_{10}H_{14}]$ and $[Mn(CO)_4B_3H_8]$ respectively, are

1. *arachno, closo, arachno,* and *hypho*
2. *nido, nido , arachno,* and *hypho*
3. *arachno, closo, nido,* and *arachno*
4. *nido, closo, nido, and hypho*

Options :

7720334705. 1

7720334706. 2

7720334707. 3

7720334708. 4

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Question Number : 62 Question Id : 7720331177 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$[B_4H_{10}]$, $[B_8H_8]^{2-}$, $[B_{10}H_{14}]$ तथा $[Mn(CO)_4B_3H_8]$ के लिए वेड के नियमों पर आधारित संरचनाओं के सही प्रकार हैं, क्रमशः

1. *arachno, closo, arachno,* तथा *hypho*
2. *nido, nido , arachno,* तथा *hypho*
3. *arachno, closo, nido,* तथा *arachno*
4. *nido, closo, nido,* तथा *hypho*

Options :

7720334705. 1

7720334706. 2

7720334707. 3

7720334708. 4

Question Number : 63 Question Id : 7720331178 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The number of Ge–Ge, Te–Te and Pb–Pb bonds in Ge_4^{4-}, Te_4^{2+} and Pb_5^{2-}, respectively are

1. 6, 4 and 8
2. 4, 6 and 9
3. 6, 4 and 9
4. 4, 6 and 8

Options :

7720334709. 1

7720334710. 2

7720334711. 3

7720334712. 4

Question Number : 63 Question Id : 7720331178 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

Correct Marks : 4 Wrong Marks : 1

Ge_4^{4-}, Te_4^{2+} तथा Pb_5^{2-} में Ge–Ge, Te–Te तथा Pb–Pb आबंधों की संख्या है, क्रमश:

1. 6, 4 तथा 8
2. 4, 6 तथा 9
3. 6, 4 तथा 9
4. 4, 6 तथा 8

Options :

7720334709. 1

7720334710. 2

7720334711. 3

7720334712. 4

Question Number : 64 Question Id : 7720331179 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The $[(\eta^5\text{-}C_5H_5)Fe(CO)_2]_2$ molecule exists in solution as a 1:1 mixture of *cis*- and *trans*-isomers. At 28 °C , ^1H NMR spectrum of the molecule shows

1. One singlet
2. Two singlet
3. Four singlet
4. Three singlet

Options :

7720334713. 1

7720334714. 2

7720334715. 3

7720334716. 4

Question Number : 64 Question Id : 7720331179 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

FirstRanker.com
Firstranker's choice
अणु $[(\eta^5\text{-}C_5H_5)Fe(CO)_2]_2$ cis- तथा *trans*- समावयवों के 1:1 मिश्रण के रूप में रहता है। इस अणु का 28 °C पर, ^{1}H NMR स्पेक्ट्रम दर्शाता है
www.FirstRanker.com www.FirstRanker.com

1. एक सिन्गलिट
2. दो सिन्गलिट
3. चार सिन्गलिट
4. तीन सिन्गलिट

Options :

7720334713. 1

7720334714. 2

7720334715. 3

7720334716. 4

Question Number : 65 Question Id : 7720331180 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the following with regard to gas chromatography (GC).

A. Electron capture

B. Deemter equation

C. Partition Coefficient

D. Critical temperature of gas

Of the above, which are relevant to GC?

Choose the ***correct*** answer from the options given below:

1. A, B and D only
2. A, C and D only
3. B, C and D only
4. A, B and C only

Options :

7720334717. 1

7720334718. 2

7720334719. 3

7720334720. 4

firstranker.com

Question Number : 65 Question Id : 7720331180 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

गैस क्रोमैटोग्रैफ़ी (GC) के संबंध में निम्न पर विचार कीजिए

A. इलेक्ट्रॉन प्रग्रहण

B. डीमटर समीकरण

C. विभाजन गुणाक

D. गैस का क्रांतिक ताप

उपरोक्त में से जो GC के लिए प्रासंगिक हैं, वह हैं

1. A, B तथा D
2. A, C तथा D
3. B, C तथा D
4. A, B तथा C

Options :

7720334717. 1

7720334718. 2

7720334719. 3

7720334720. 4

www.FirstRanker.com

Question Number : 66 Question Id : 7720331181 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Considering spin-orbit coupling, the multiplet width [$W_{SO} = \lambda S(2L+1)$] for Eu^{3+} ion is

1. 14λ
2. 21λ
3. 7λ
4. 28λ

Options :

7720334721. 1

7720334722. 2

7720334723. 3

7720334724. 4

Question Number : 66 Question Id : 7720331181 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Eu^{3+} आयन के लिए स्पिन-कक्षा युग्मन को ध्यान में रखते हुए बहुक चौड़ाई [$W_{SO} = \lambda S(2L+1)$] है

1. 14λ
2. 21λ
3. 7λ
4. 28λ

Options :

7720334721. 1

7720334722. 2

7720334723. 3

7720334724. 4

Question Number : 67 Question Id : 7720331182 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

firstranker.com
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Among the following combinations of metal carbonyl clusters and their skeletal structures identify the correct ones.

A. $Co_6(CO)_{14}^{4-}$ → capped trigonal bipyramid

B. $Ni_6(CO)_{12}^{2-}$ → trigonal antiprism

C. $Rh_6C(CO)_{15}^{2-}$ → trigonal prism

D. $Os_6(CO)_{18}$ → octahedron

Choose the ***correct*** answer from the options given below:

1. A, C and D only
2. B and C only
3. B and D only
4. C and D only

Options :

7720334725. 1

7720334726. 2

7720334727. 3

7720334728. 4

Question Number : 67 Question Id : 7720331182 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

firstranker.com
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
धातु कार्बोनिल क्लस्टरों तथा उनकी कंकाली संरचनाओं के निम्नलिखित युग्मितों में से जो सही हैं, उनको www.FirstRanker.com www.FirstRanker.com
पहचानें

A. $Co_6(CO)_{14}^{4-}$ → टोपीकृत त्रिसमनताक्ष द्विपिरैमिड

B. $Ni_6(CO)_{12}^{2-}$ → त्रिसमनताक्ष प्रतिप्रिज़्म

C. $Rh_6C(CO)_{15}^{2-}$ → त्रिसमनताक्ष प्रिज़्म

D. $Os_6(CO)_{18}$ → अष्टफलक

उत्तर है

1. A, C तथा D
2. B तथा C
3. B तथा D
4. C तथा D

Options :

7720334725. 1

7720334726. 2

7720334727. 3

7720334728. 4

Question Number : 68 Question Id : 7720331183 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

For octahedral geometry the triad with **no** net gain in CFSE, when the ligand field changes from weak to strong, is

1. Fe^{2+}, Co^{3+}, Mn^{3+}
2. Ni^{2+}, Pt^{2+}, Cr^{3+}
3. Mn^{2+}, Fe^{3+}, Ni^{3+}
4. Co^{2+}, Os^{3+}, Rh^{3+}

Options :

7720334729. 1

7720334730. 2

7720334731. 3

7720334732. 4

firstranker.com
FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Question Number : 68 Question Id : 7720331183 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

अष्टफलकीय ज्यामिति के लिए, लिगन्ड क्षेत्र को दुर्बल से प्रबल करने पर, CFSE में जिस त्रिक के लिए कोई शुद्ध लाभ नहीं होता है, वह है

1. Fe^{2+}, Co^{3+}, Mn^{3+}
2. Ni^{2+}, Pt^{2+}, Cr^{3+}
3. Mn^{2+}, Fe^{3+}, Ni^{3+}
4. Co^{2+}, Os^{3+}, Rh^{3+}

Options :

7720334729. 1

7720334730. 2

7720334731. 3

7720334732. 4

Question Number : 69 Question Id : 7720331184 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The possible terms arising from a p^1d^1 configuration are

1. ^1F and ^2D
2. ^3F and ^3D
3. ^3F and ^1D
4. ^3F and ^1F

Options :

7720334733. 1

7720334734. 2

7720334735. 3

7720334736. 4

Question Number : 69 Question Id : 7720331184 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
Correct Marks : 4 Wrong Marks : 1
www.FirstRanker.com www.FirstRanker.com

p^1d^1 विन्यास के परिणामस्वरूप संभव पद हैं

1. ^1F तथा ^2D
2. ^3F तथा ^3D
3. ^3F तथा ^1D
4. ^3F तथा ^1F

Options :

7720334733. 1

7720334734. 2

7720334735. 3

7720334736. 4

Question Number : 70 Question Id : 7720331185 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider following statements regarding the magnetic moment of the 3d transition metal complexes:

A. Octahedral complexes of Mn^{II} (high spin) and Fe^{III} (high spin) have μ_{eff} approximately equal to their μ_{spin} values.

B. Tetrahedral complexes of Ni^{II} and octahedral complexes of Co^{II} have orbital contribution added to their magnetic moments.

C. Orbital contribution is quenched for metal ions having A or E ground state.

D. Octahedral complexes of Cu^{II} have $\mu_{eff} > \mu_{spin}$ value at 300 K due to orbital contribution added to their magnetic moments

Choose the ***correct*** answer from the options given below:

1. A, B and D only
2. B, C and D only
3. A, B and C only
4. A, C and D only

Options :

7720334737. 1

7720334738. 2

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

7720334739. 3

7720334740. 4

Question Number : 70 Question Id : 7720331185 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

3d संक्रमण धातुओं के संकुलों के संबंध में निम्नलिखित कथनों पर विचार कीजिए:

A. Mn^{II} (उच्च स्पिन) तथा Fe^{III} (उच्च स्पिन) के अष्टफलकीय संकुलों के μ_{eff} लगभग उनकी μ_{spin} मानों के समान होते हैं

B. Ni^{II} के चतुष्फलकीय संकुलों तथा Co^{II} के अष्टफलकीय संकुलों के लिए कक्षक योग दान उनके चुंबकीय आघूर्णों में जुड़ा होता है

C. धातुओं जिनकी निम्नतम अवस्था A या E है, के लिए कक्षक योगदान का शमन हो जाता है

D. Cu^{II} के अष्टफलीय संकुलों के लिए 300 K पर μ_{eff} मान > μ_{spin} मान, क्योंकि कक्षक योगदान उनके चुंबकीय आघूर्णों में जुड़ा है

सही कथन हैं:

1. A, B तथा D
2. B, C तथा D
3. A, B तथा C
4. A, C तथा D

Options :

7720334737. 1

7720334738. 2

7720334739. 3

7720334740. 4

Question Number : 71 Question Id : 7720331186 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

FirstRanker.com
Firstranker's choice

the following feasible reaction(s) is/are?

www.FirstRanker.com www.FirstRanker.com

A. $SiO_2 + LiAlH_4 \xrightarrow{175\text{-}180\ ^\circ C} SiH_4 + LiAlO_2$

B. $SiH_4 + 2\ O_2 \xrightarrow{25\ ^\circ C} SiO_2 + 2\ H_2O$

C. $SiH_4 + 4\ H_2O \xrightarrow[\text{Basic medium}]{25\ ^\circ C} 4\ H_2 + Si(OH)_4$

Choose the ***correct*** answer from the options given below:

1. A only
2. C only
3. B and C only
4. A, B and C only

Options :

7720334741. 1

7720334742. 2

7720334743. 3

7720334744. 4

Question Number : 71 Question Id : 7720331186 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित में से संभव अभिक्रिया है/ अभिक्रियायें हैं?

A. $SiO_2 + LiAlH_4 \xrightarrow{175\text{-}180\ ^\circ C} SiH_4 + LiAlO_2$

B. $SiH_4 + 2\ O_2 \xrightarrow{25\ ^\circ C} SiO_2 + 2\ H_2O$

C. $SiH_4 + 4\ H_2O \xrightarrow[\text{Basic medium}]{25\ ^\circ C} 4\ H_2 + Si(OH)_4$

उत्तर

1. केवल A
2. केवल C
3. केवल B तथा C
4. A, B तथा C

Options :

7720334741. 1

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

7720334742. 2

7720334743. 3

7720334744. 4

Question Number : 72 Question Id : 7720331187 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Isolobal pairs from the fragments (A-D) is /are

A. {BH}

B. {$Fe(CO)_3$

C. {P}

D. {$Co(CO)_3$}

Choose the ***correct*** answer from the options given below:

1. A and D; B and C
2. A and B; C and D
3. A and B only
4. A and C; B and D

Options :

7720334745. 1

7720334746. 2

7720334747. 3

7720334748. 4

Question Number : 72 Question Id : 7720331187 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

firstranker.com
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
खण्डों (A-D) में से आइसोलोबल युग्म है/हैं

www.FirstRanker.com www.FirstRanker.com

A. {BH},

B. $\{Fe(CO)_3\}$,

C. {P},

D. $\{Co(CO)_3\}$

1. A तथा D; B तथा C
2. A तथा B; C तथा D
3. केवल A तथा B
4. A तथा C; B तथा D

Options :

7720334745. 1

7720334746. 2

7720334747. 3

7720334748. 4

Question Number : 73 Question Id : 7720331188 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The reaction(s)/event(s) used to prove the existence of neutrinos is/are

A. $e^+ + e^- \rightarrow \gamma + \gamma$

B. $^{113}Cd(n,\gamma)^{114}Cd^*$

C. $^{133}Cs(\alpha,4n)^{133}La$

Choose the ***correct*** answer from the options given below:

1. A and C only
2. A and B only
3. B and C only
4. B only

Options :

7720334749. 1

FirstRanker.com
Firstranker's choice
www.FirstRanker.com
firstranker.com
FirstRanker.com

4750. 2

7720334751. 3

7720334752. 4

Question Number : 73 Question Id : 7720331188 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

अभिक्रिया(यें)/घटना(यें) जो न्यूट्रिनों के अस्तित्व को सिद्ध करती है/हैं, वह है/हैं

A. $e^+ + e^- \rightarrow \gamma + \gamma$

B. $^{113}Cd(n,\gamma)^{114}Cd^*$

C. $^{133}Cs(\alpha,4n)^{133}La$

1. A तथा C
2. A तथा B
3. B तथा C
4. केवल B

Options :

7720334749. 1

7720334750. 2

7720334751. 3

7720334752. 4

firstranker.com
www.FirstRanker.com

Question Number : 74 Question Id : 7720331189 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In solution, Vaska's complex is known to bind O_2 reversibly. In the product, oxidation state of the metal ion center coordination geometry and mode of binding of O_2, respectively are

1. +3, octahedron and side-on
2. +3, square pyramid and end-on
3. +1, octahedron and side-on
4. +1, trigonal bipyramid and end-on

7720334753. 1

7720334754. 2

7720334755. 3

7720334756. 4

Question Number : 74 Question Id : 7720331189 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

विलयन में वास्का संकुल O_2 से उत्क्रमणीय रूप से बंधन करता है। उत्पाद में धातु आयन केन्द्र की ऑक्सीकरण अवस्था, सहसंयोजक ज्यामिति तथा O_2 का बंधन मोड है, क्रमश:

1. +3, अष्टफलक, तथा साइड-ऑन
2. +3, वर्ग पिरैमिड, तथा पर-अंत
3. +1, अष्टफलक, तथा साइड-ऑन
4. +1, त्रिसमनताक्ष द्विपिरैमिड तथा पर-अन्त

Options :

7720334753. 1

7720334754. 2

7720334755. 3

7720334756. 4

firstranker.com
www.FirstRanker.com

Question Number : 75 Question Id : 7720331190 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

FirstRanker.com
Firstranker's choice

Consider the following reactions.

$Os(CO)_3(PPh_3)_2$ + Br_2 → $Os(CO)_2(PPh_3)_2(Br)_2$ (**A**) + CO

$Mo(CO)_6$ + 3 PEt_3 → $Mo(CO)_3(PEt_3)_3$ (**B**) + 3 CO

The correct stereochemical dispositions of the Br ligands in **A** and the CO ligands in **B**, respectively, are

1. *trans* and *fac*
2. *trans* and *mer*
3. *cis* and *fac*
4. *cis* and *mer*

Options :

7720334757. 1

7720334758. 2

7720334759. 3

7720334760. 4

Question Number : 75 Question Id : 7720331190 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रियाओं पर विचार कीजिए।

$Os(CO)_3(PPh_3)_2$ + Br_2 → $Os(CO)_2(PPh_3)_2(Br)_2$ (**A**) + CO

$Mo(CO)_6$ + 3 PEt_3 → $Mo(CO)_3(PEt_3)_3$ (**B**) + 3 CO

Br लिगन्डों का **A** में तथा CO लिगन्डों का **B** में सही त्रिवम रासायनिक प्रबन्ध हैं, क्रमश:

1. *trans* तथा *fac*
2. *trans* तथा *mer*
3. *cis* तथा *fac*
4. *cis* तथा *mer*

Options :

7720334757. 1

7720334758. 2

7720334759. 3

FirstRanker.com
Firstranker's choice
4760. 4

Question Number : 76 Question Id : 7720331191 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The ground state term symbol and the g_j value for Pr^{3+} ion, respectively are (Atomic number of Pr is 59)

1. $^3H_4$ and 6/7
2. $^3H_6$ and 4/5
3. $^3H_6$ and 6/7
4. $^3H_4$ and 4/5

Options :

7720334761. 1

7720334762. 2

7720334763. 3

7720334764. 4

Question Number : 76 Question Id : 7720331191 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Pr^{3+} ion के लिए निम्नतम अवस्था पद प्रतीक तथा g_j का मान है क्रमश: (Pr की परमाणु संख्या, 59)

1. $^3H_4$ तथा 6/7
2. $^3H_6$ तथा 4/5
3. $^3H_6$ तथा 6/7
4. $^3H_4$ तथा 4/5

Options :

7720334761. 1

7720334762. 2

7720334763. 3

7720334764. 4

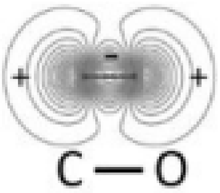
Question Number : 77 Question Id :

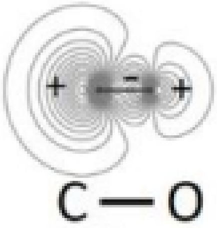
FirstRanker.com
Firstranker's choice
Type : MCQ Option Shuffling : No Is

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

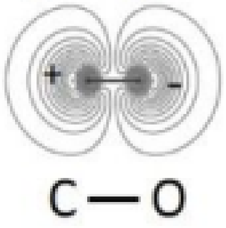
Correct Marks : 4 Wrong Marks : 1

For CO, the contour plot of the molecular orbital which best represents the HOMO is

1. 

2. 

3.

4. 

Options :

7720334765. 1

7720334766. 2

7720334767. 3

7720334768. 4

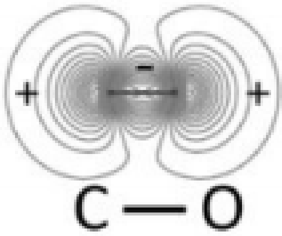
firstranker.com
www.FirstRanker.com

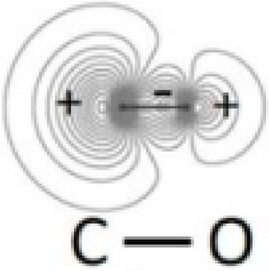
Question Number : 77 Question Id : 7720331192 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

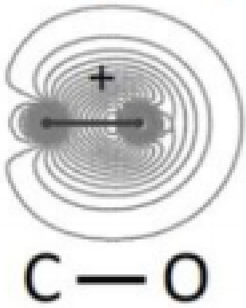
Correct Marks : 4 Wrong Marks : 1

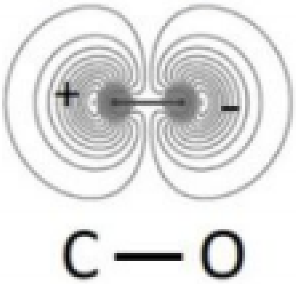
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
म आण्विक कक्षक, जो उसके HOMO का सर्वोत्तम चित्रण है, के लिए कंटूर प्लाट है
www.FirstRanker.com www.FirstRanker.com

1. 

2. 

3. 

4. 

Options :

7720334765. 1

7720334766. 2

7720334767. 3

7720334768. 4

Question Number : 78 Question Id : 7720331193 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Among the following statements, select those which best describe plastocyanine

A. Coordination geometry of Cu^{II}-ion is distorted tetrahedron

B. The geometry around Cu^{II} changes to square-planar on reduction

C. In EPR spectrum, the $A_{||}$ values are smaller in plastocyanine than in $CuCl_4^{2-}$

D. The active site contains the amino acids histidine and cysteine only

Choose the ***correct*** answer from the options given below:

1. A and C only
2. A and D only
3. A, B and D only
4. B, C and D only

Options :

7720334769. 1

7720334770. 2

7720334771. 3

7720334772. 4

Question Number : 78 Question Id : 7720331193 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित कथनों में से उनको चुनिए जो प्लास्टोसायनीन का सर्वोत्तम वर्णन करते हैं।

A Cu^{II}-आयन की सहसंयोजक ज्यामिति विकृत चतुष्फलक है।

B अपचयन के पश्चात Cu^{II} के इर्द-किर्द ज्यामिति वर्ग तली हो जाती है।

C EPR स्पेक्ट्रम में $CuCl_4^{2-}$ की अपेक्षा प्लास्टोसायनीन के लिए $A_{||}$ के मान छोटे होते हैं।

D सक्रिय स्थलों में केवल ऐमीनों अम्ल हिस्टीड़ीन तथा सिस्टीन होते हैं।

उत्तर है

1. A तथा C
2. A तथा D
3. A, B तथा D
4. B, C तथा D

Options :

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
4769. 1
www.FirstRanker.com www.FirstRanker.com

7720334770. 2

7720334771. 3

7720334772. 4

Question Number : 79 Question Id : 7720331194 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the ^{31}P NMR (decoupled from ^{1}H and ^{195}Pt) spectra for the isomers of '**A**' $[PtBrCl(PMe_3)_2]$ and '**B**' $[IrCl_3(PMe_3)_3]$, separately. The number of ^{31}P NMR signals for the different isomers of the complexes are given in the table below. The correct answer is set

1.

No. of ^{31}P resonance signal(s)			
Complex **A**		Complex **B**	
isomer 1	isomer 2	isomer 1	isomer 2
one	one	One	One

2.

No. of ^{31}P resonance signal(s)			
Complex **A**		Complex **B**	
isomer 1	isomer 2	isomer 1	isomer 2
one	two	one	Two

3.

No. of ^{31}P resonance signal(s)			
Complex **A**		Complex **B**	
isomer 1	isomer 2	isomer 1	isomer 2
two	two	one	Two

4.

No. of ^{31}P resonance signal(s)			
Complex **A**		Complex **B**	
isomer 1	isomer 2	isomer 1	isomer 2
one	two	Two	Two

Options :

7720334773. 1

7720334774. 2

7720334775. 3

7720334776. 4

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice

Question Number : 79 Question Id : 7720331194 Question Type : MCQ Option Shuffling : No Is

www.FirstRanker.com www.FirstRanker.com

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

'**A**' $[PtBrCl(PMe_3)_2]$ तथा '**B**' $[IrCl_3(PMe_3)_3]$ के समावयवों के ^{31}P NMR (^{1}H तथा ^{195}Pt से अयुग्मित) पर अलग-अलग विचार कीजिए। संकुलों के विभिन्न समावयवों के लिए ^{31}P NMR सिग्नलों की संख्या नीचे तालिका में दी गई है

सही उत्तर है सेट

1.

^{31}P अनुनाद सिग्नल/सिग्नलों की संख्या			
संकुल **A**		संकुल **B**	
समावयव 1	समावयव 2	समावयव 1	समावयव 2
एक	एक	एक	एक

2.

^{31}P अनुनाद सिग्नल/सिग्नलों की संख्या			
संकुल **A**		संकुल **B**	
समावयव 1	समावयव 2	समावयव 1	समावयव 2
एक	दो	एक	दो

3.

^{31}P अनुनाद सिग्नल/सिग्नलों की संख्या			
संकुल **A**		संकुल **B**	
समावयव 1	समावयव 2	समावयव 1	समावयव 2
दो	दो	एक	दो

4.

^{31}P अनुनाद सिग्नल/सिग्नलों की संख्या			
संकुल **A**		संकुल **B**	
समावयव 1	समावयव 2	समावयव 1	समावयव 2
एक	दो	दो	दो

firstranker.com

Options :

7720334773. 1

7720334774. 2

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

7720334776. 4

Question Number : 80 Question Id : 7720331195 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Mössbauer spectrum of $Fe(CO)_5$ at liquid nitrogen temperature in the presence of a field gradient and taking into effect quadrupole interaction [For ^{57}Fe, I = 1/2 for the ground state and I = 3/2 for the first excited state], shows a

1. quintet
2. triplet
3. doublet
4. singlet

Options :

7720334777. 1

7720334778. 2

7720334779. 3

7720334780. 4

firstranker.com
www.FirstRanker.com

Question Number : 80 Question Id : 7720331195 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

द्रव नाइट्रोज़न के ताप पर, क्षेत्र ग्रेडिएन्ट की उपस्थिति में तथा चतुर्ध्रुव अन्योन्य क्रिया के प्रभाव में, लिया गया $Fe(CO)_5$ का मॉसबौर स्पेक्ट्रम, दर्शाता है [^{57}Fe, I = 1/2 निम्नतम अवस्था के लिए; I = 3/2 प्रथम उत्तेजित अवस्था के लिए]

1. पंचक
2. त्रिक
3. द्विक
4. एकक

Options :

7720334777. 1

7720334778. 2

...4779. 3

7720334780. 4

Sub-Section Number : 2

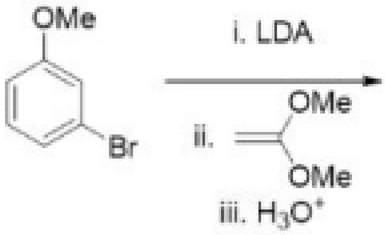
Sub-Section Id : 77203363

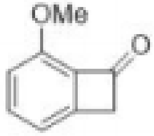
Question Shuffling Allowed : Yes

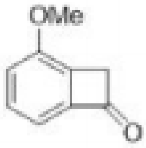
Question Number : 81 Question Id : 7720331196 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

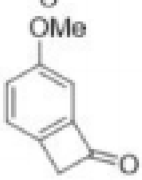
The major product formed in the following reaction is



1. 

2. 

3.

4. 

Options :

7720334781. 1

7720334782. 2

7720334783. 3

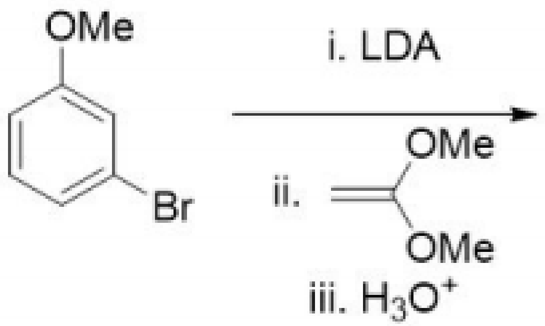
7720334784. 4

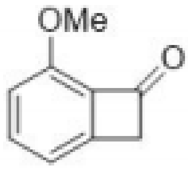
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

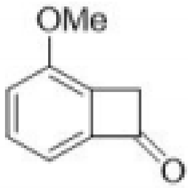
Question Number : 81 Question Id : 7720331196 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

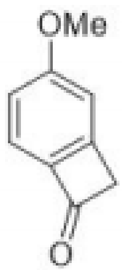
Correct Marks : 4 Wrong Marks : 1

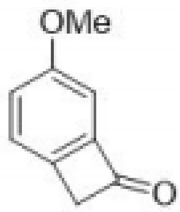
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है।



1. 

2. 

3. 

4. 

Options :

7720334781. 1

7720334782. 2

7720334783. 3

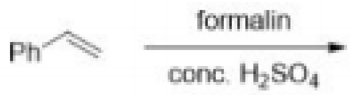
7720334784. 4

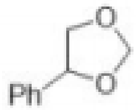
Question Number : 82 Question Id : 7720331197 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

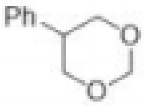
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

The major product formed in the following reaction is



1. 

2. 

3.

4.

Options :

7720334785. 1

7720334786. 2

7720334787. 3

7720334788. 4

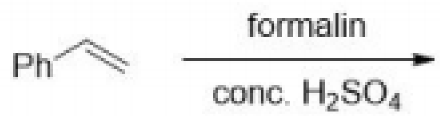
Question Number : 82 Question Id : 7720331197 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

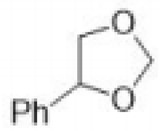
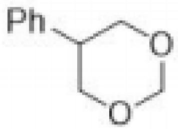
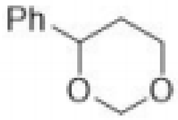
Correct Marks : 4 Wrong Marks : 1

www.FirstRanker.com
firstranker.com
www.FirstRanker.com

FirstRanker.com
Firstranker's choice

निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है



1. 
2. 
3.
4. 

Options :

7720334785. 1

7720334786. 2

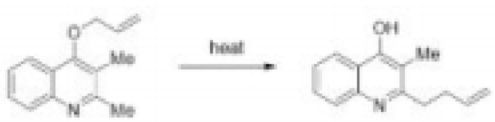
7720334787. 3

7720334788. 4

Question Number : 83 Question Id : 7720331098 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The sequence through which the following reaction proceeds is



1. Claisen rearrangement, tautomerization and Cope rearrangement
2. Claisen rearrangement, aza-Claisen rearrangement and tautomerization
3. Cope rearrangement, Claisen rearrangement and tautomerization
4. Claisen rearrangement, tautomerization and aza-Claisen rearrangement

Options :

7720334789. 1

7720334790. 2

7720334791. 3

7720334792. 4

Question Number : 83 Question Id : 7720331198 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया जिस क्रम के अनुसार अग्रसर होती है, वह है

1. क्लेजन पुनर्विन्यास, चलावयव बनना तथा कोप पुनर्विन्यास
2. क्लेजन पुनर्विन्यास, ऐज़- क्लेजन पुनर्विन्यास, तथा चलावयव बनना
3. कोप पुनर्विन्यास, क्लेजन पुनर्विन्यास तथा चलावयव बनना
4. क्लेजन पुनर्विन्यास, चलावयव बनना तथा ऐज़- क्लेजन पुनर्विन्यास

Options :

7720334789. 1

7720334790. 2

7720334791. 3

7720334792. 4

www.FirstRanker.com

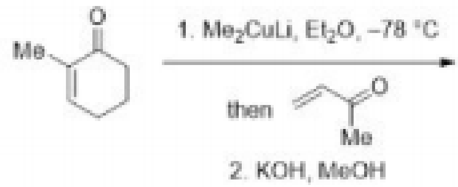
Question Number : 84 Question Id : 7720331199 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

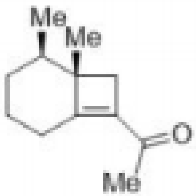
Correct Marks : 4 Wrong Marks : 1

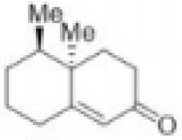
FirstRanker.com
Firstranker's choice

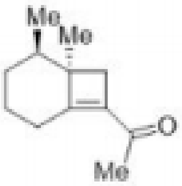
...or product formed in the following reaction sequence is

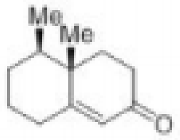
www.FirstRanker.com www.FirstRanker.com



1. 

2. 

3. 

4. 

Options :

7720334793. 1

7720334794. 2

7720334795. 3

7720334796. 4

firstranker.com
www.FirstRanker.com

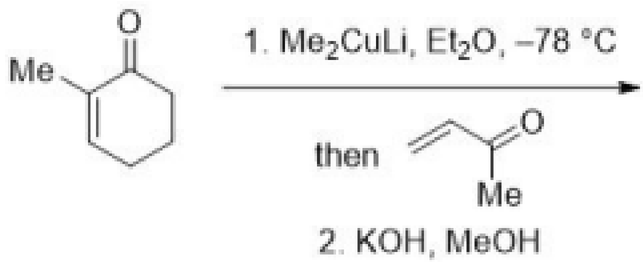
Question Number : 84 Question Id : 7720331199 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

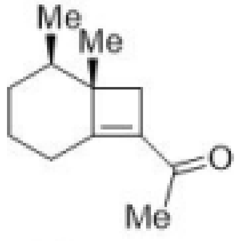
Correct Marks : 4 Wrong Marks : 1

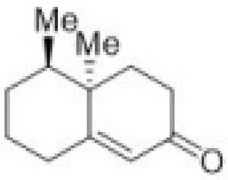
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

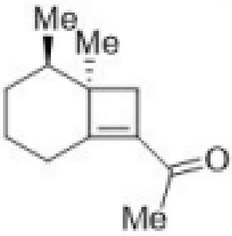
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

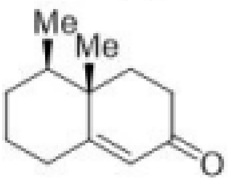
अभिक्रिया क्रम में विरचित मुख्य उत्पाद है



1. 

2. 

3. 

4. 

Options :

7720334793. 1

7720334794. 2

7720334795. 3

7720334796. 4

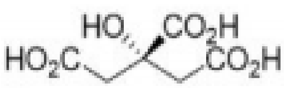
Question Number : 85 Question Id : 7720331200 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

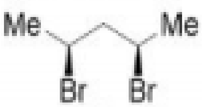
www.FirstRanker.com
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

ound that will show the following characteristic splitting pattern in the ^{1}H NMR spectrum is

1. 

2.

3. 

4.

Options :

7720334797. 1

7720334798. 2

7720334799. 3

7720334800. 4

firstranker.com
www.FirstRanker.com

Question Number : 85 Question Id : 7720331200 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

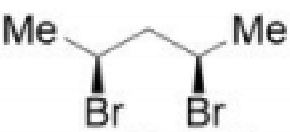
Correct Marks : 4 Wrong Marks : 1

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
स्पेक्ट्रम में निम्नलिखित अभिलक्षणिक विपाटन दर्शाने वाला यौगिक है
www.FirstRanker.com www.FirstRanker.com

1.

2.

3. 

4.

Options :

7720334797. 1

7720334798. 2

7720334799. 3

7720334800. 4

firstranker.com
www.FirstRanker.com

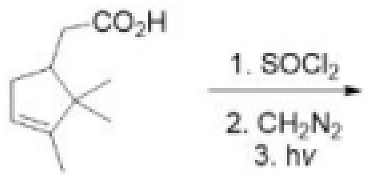
Question Number : 86 Question Id : 7720331201 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

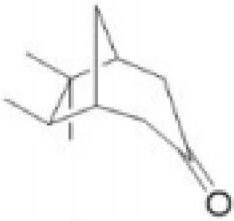
Correct Marks : 4 Wrong Marks : 1

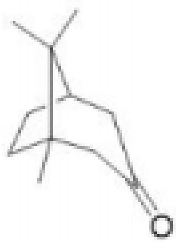
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
...or product formed in the following reaction sequence is

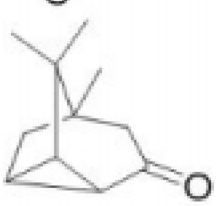
www.FirstRanker.com www.FirstRanker.com



1. 

2. 

3.

4. 

Options :

7720334801. 1

7720334802. 2

7720334803. 3

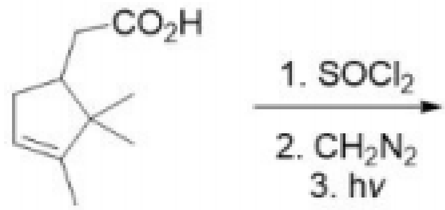
7720334804. 4

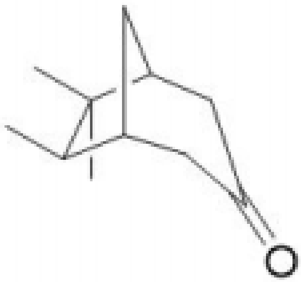
Question Number : 86 Question Id : 7720331201 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

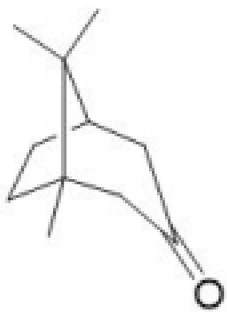
Correct Marks : 4 Wrong Marks : 1

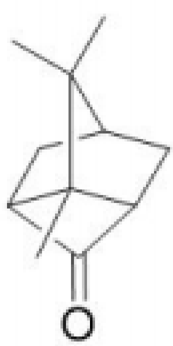
firstranker.com
www.FirstRank...

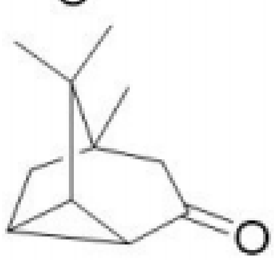
FirstRanker.com
Firstranker's choice
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है www.FirstRanker.com www.FirstRanker.com



1. 

2. 

3. 

4. 

Options :

7720334801. 1

7720334802. 2

7720334803. 3

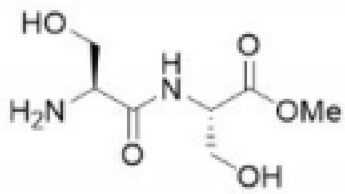
7720334804. 4

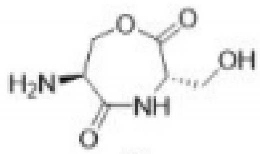
Question Number : 87 Question Id : 7720331202 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

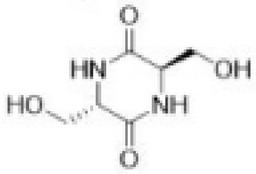
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

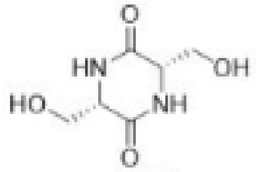
www.FirstRanker.com www.FirstRanker.com

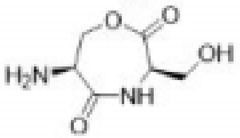
Cyclization of the following dipeptide under mildly basic conditions gives



1. 

2. 

3. 

4. 

Options :

7720334805. 1

7720334806. 2

7720334807. 3

7720334808. 4

firstranker.com
www.FirstRanker.com

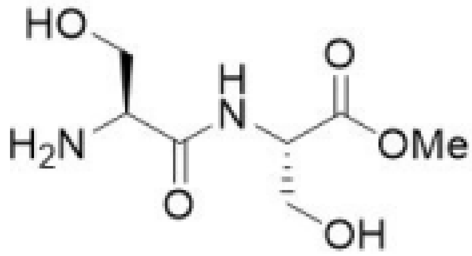
Question Number : 87 Question Id : 7720331202 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

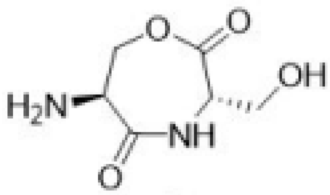
Correct Marks : 4 Wrong Marks : 1

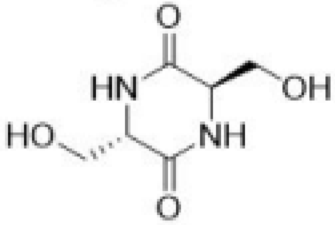
FirstRanker.com
Firstranker's choice

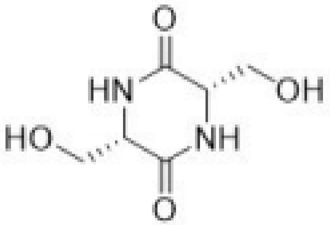
...त डाइपेप्टाइड का मृदु क्षारीय स्थिति में चक्रीकरण देता है

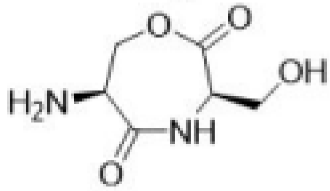
www.FirstRanker.com www.FirstRanker.com



1. 

2. 

3. 

4. 

firstranker.com
www.FirstRanker.com

Options :

7720334805. 1

7720334806. 2

7720334807. 3

7720334808. 4

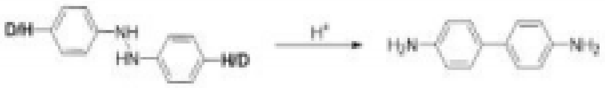
Question Number : 88 Question Id : 7720331203 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

...ven reaction, isotopic substitution (H to D) at the indicated position of **A** will lead to the observation of



A

1. primary kinetic isotope effect
2. secondary kinetic isotope effect with $k_H > k_D$
3. secondary kinetic isotope effect with $k_D > k_H$
4. no kinetic isotope effect, $k_H = k_D$

Options :

7720334809. 1

7720334810. 2

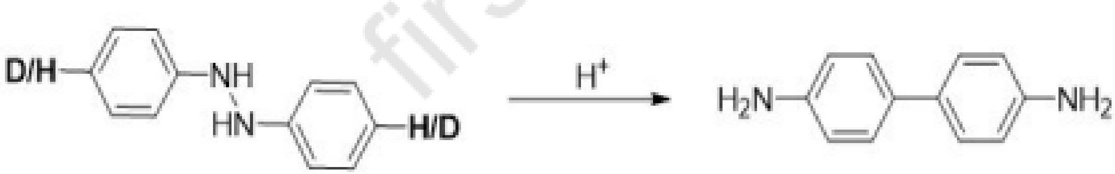
7720334811. 3

7720334812. 4

Question Number : 88 Question Id : 7720331203 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

एक दी गई अभिक्रिया में इंगित स्थान पर समस्थानिक प्रतिस्थापन (H से D) **A**, जिस प्रेक्षण की ओर ले जाएगा वह है



A

1. प्राथमिक गतिक समस्थानिक प्रभाव
2. द्वितीयक गतिक समस्थानिक प्रभाव $k_H > k_D$ के साथ
3. द्वितीयक गतिक समस्थानिक प्रभाव $k_D > k_H$
4. कोई गतिक समस्थानिक प्रभाव नहीं $k_H = k_D$

Options :

7720334809. 1

7720334810. 2

7720334811. 3

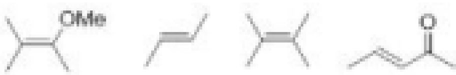
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

4812. 4

Question Number : 89 Question Id : 7720331204 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The correct order of reactivity of the following olefins towards ozone is



A B C D

1. **A** > **C** > **B** > **D**
2. **A** > **B** > **D** > **C**
3. **B** > **C** > **A** > **D**
4. **C** > **A** > **D** > **B**

Options :

7720334813. 1

7720334814. 2

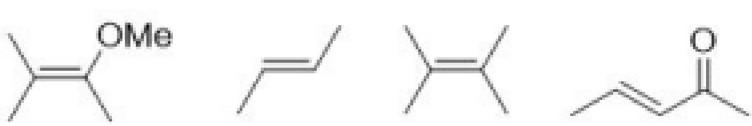
7720334815. 3

7720334816. 4

Question Number : 89 Question Id : 7720331204 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ओज़ोन के प्रति अभिक्रियाशीलता के लिए निम्नलिखित ओलिफिनों का सही क्रम है



A B C D

1. **A** > **C** > **B** > **D**
2. **A** > **B** > **D** > **C**
3. **B** > **C** > **A** > **D**
4. **C** > **A** > **D** > **B**

Options :

7720334813. 1

7720334814. 2

4815. 3

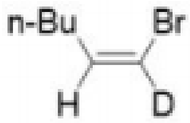
7720334816. 4

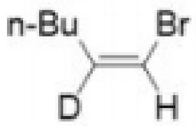
Question Number : 90 Question Id : 7720331205 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

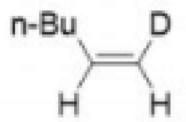
Correct Marks : 4 Wrong Marks : 1

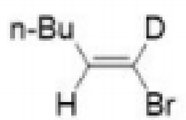
The major product formed in the following reaction sequence is

(Cy_2BH = dicyclohexylborane)

1. 

2. 

3. 

4. 

Options :

7720334817. 1

7720334818. 2

7720334819. 3

7720334820. 4

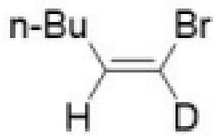
firstranker.com
www.FirstRanker.com

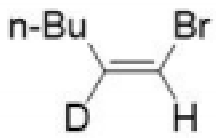
Question Number : 90 Question Id : 7720331205 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

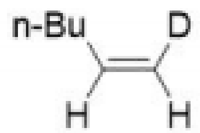
Correct Marks : 4 Wrong Marks : 1

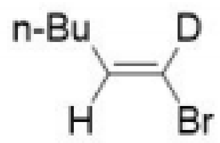
FirstRanker.com
Firstranker's choice
ित अभिक्रिया क्रम में विरचित मुख्य उत्पाद है
www.FirstRanker.com www.FirstRanker.com

(Cy_2BH = dicyclohexylborane)

1. 

2. 

3. 

4. 

Options :

7720334817. 1

7720334818. 2

7720334819. 3

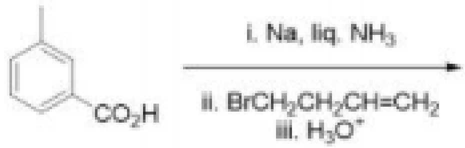
7720334820. 4

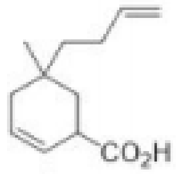
Question Number : 91 Question Id : 7720331206 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

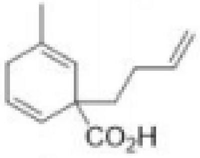
Correct Marks : 4 Wrong Marks : 1

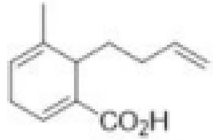
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

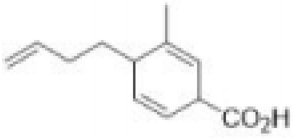
or product formed in the following reaction is



1. 

2. 

3. 

4. 

Options :

7720334821. 1

7720334822. 2

7720334823. 3

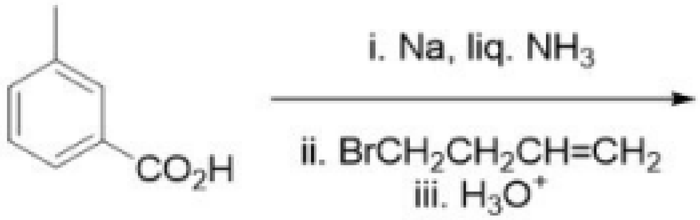
7720334824. 4

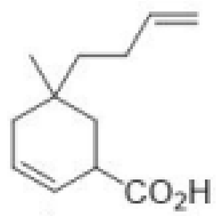
Question Number : 91 Question Id : 7720331206 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

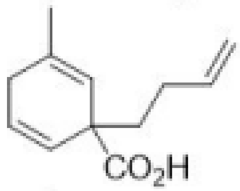
Correct Marks : 4 Wrong Marks : 1

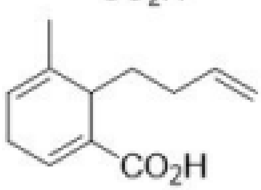
firstranker.com
www.FirstRanker.com

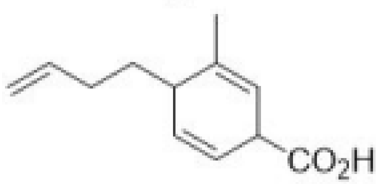
FirstRanker.com
Firstranker's choice
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है www.FirstRanker.com www.FirstRanker.com



1. 

2. 

3. 

4. 

Options :

7720334821. 1

7720334822. 2

7720334823. 3

7720334824. 4

firstranker.com
www.FirstRanker.com

Question Number : 92 Question Id : 7720331207 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

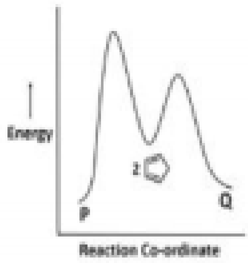
Correct Marks : 4 Wrong Marks : 1

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

are isomers of cyclopentadiene dimer. A representative energy profile diagram of the dimerization is given below. The correct statement about the reaction under ambient conditions is

www.FirstRanker.com



1. **P** is the major product as it is more stable.
2. **Q** is the major product as it is more stable.
3. **P** is the major product as it is formed faster.
4. **Q** is the major product as it is formed faster.

Options :

7720334825. 1

7720334826. 2

7720334827. 3

7720334828. 4

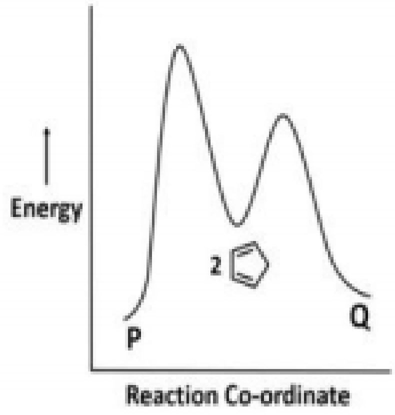
Question Number : 92 Question Id : 7720331207 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

firstranker.com
www.FirstRanker.com

FirstRanker.com
Firstranker's choice

साइक्लोपेन्टाडाइन के **P** तथा **Q** समावयव हैं द्वितयन के लिए निरूपक ऊर्जा प्रोफाइल का चित्र नीचे दिया गया है।
www.FirstRanker.com www.FirstRanker.com
परिवेश स्थिति में अभिक्रिया के लिए सही कथन है



1. **P** मुख्य उत्पाद है क्योंकि यह अधिक स्थिर है
2. **Q** मुख्य उत्पाद है क्योंकि इसका विरचन अधिक है
3. **P** मुख्य उत्पाद है क्योंकि यह द्रुत होता है
4. **Q** मुख्य उत्पाद है क्योंकि यह अधिक स्थिर है

Options :

7720334825. 1

7720334826. 2

7720334827. 3

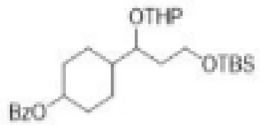
7720334828. 4

firstranker.com
www.FirstRanker.com

Question Number : 93 Question Id : 7720331208 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The correct match of reagents in Column I for the selective cleavage of the protecting group in Column II for the following substrate is



Column I	Column II
A. TBAF, THF	I. THP
B. AcOH, H_2O, THF	II. Bz
C. LiOH, H_2O, THF	III. TBS

Choose the **correct** answer from the options given below:

1. A - III, B - I, C - II
2. A - III, B - II, C - I
3. A - II, B - III, C - I
4. A - I, B - III, C - II

Options :

7720334829. 1

7720334830. 2

7720334831. 3

7720334832. 4

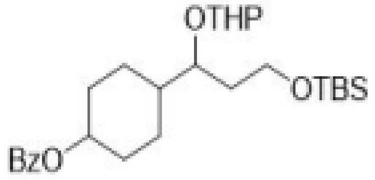
Question Number : 93 Question Id : 7720334208 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

firstranker.com
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

... सबस्ट्रेट के लिए, कॉलम I में दिए गए रक्षक ग्रुप के वरणात्मक विदलन के अभिकर्मकों का कॉलम II में दिए रक्षक ग्रुपों से सही मिलान है



	कॉलम I		कॉलम II
A.	TBAF, THF	**I.**	THP
B.	AcOH, H_2O, THF	**II.**	Bz
C.	LiOH, H_2O, THF	**III.**	TBS

1. A - III, B - I, C - II
2. A - III, B - II, C - I
3. A - II, B - III, C - I
4. A - I, B - III, C - II

Options :

7720334829. 1

7720334830. 2

7720334831. 3

7720334832. 4

firstranker.com
www.FirstRanker.com

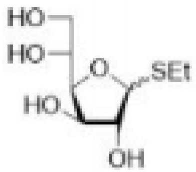
Question Number : 94 Question Id : 7720331209 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

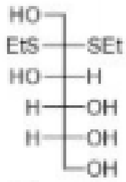
FirstRanker.com
Firstranker's choice

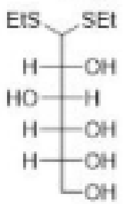
or product formed in the following reaction is

www.FirstRanker.com www.FirstRanker.com

1. 

2.

3. 

4. 

Options :

7720334833. 1

7720334834. 2

7720334835. 3

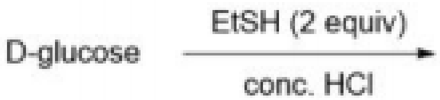
7720334836. 4

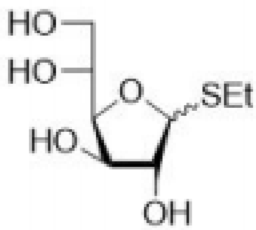
firstranker.com
www.FirstRanker.com

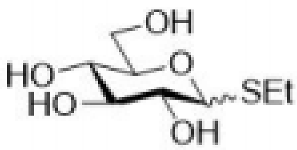
Question Number : 94 Question Id : 7720331209 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

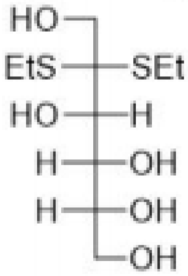
Correct Marks : 4 Wrong Marks : 1

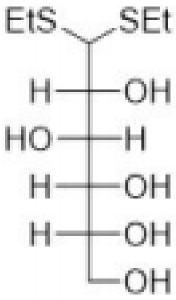
FirstRanker.com
Firstranker's choice
निम्नलिखित अभिक्रिया में विरचित मुख्य उत्पाद है
www.FirstRanker.com www.FirstRanker.com



1.


2.


3.


4.


Options :

7720334833. 1

7720334834. 2

7720334835. 3

7720334836. 4

Question Number : 95 Question Id : 7720331210 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

List I	List II
functional groups	respective approximate symmetric and asymmetric stretching frequencies
A. N-H bonds of $R-NH_2$	I. 1790 and 1810
B. N-O bonds of $R-NO_2$	II. 3300 and 3400
C. C=O bonds of anhydride	III. 1350 and 1550

Choose the **correct** answer from the options given below:

1. A - II, B - I, C - III
2. A - III, B - I, C - II
3. A - III, B - II, C - I
4. A - II, B - III, C - I

Options :

7720334837. 1

7720334838. 2

7720334839. 3

7720334840. 4

firstranker.com
FirstRanker.com

Question Number : 95 Question Id : 7720331210 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

कॉलम I के अभिलक्षकीय ग्रुपों का उनकी कॉलम II में दी हुई संबंधित सममिति तथा असममित प्रतान आवृत्तियों के लगभग मान का सही मिलान है

	कॉलम I		कॉलम II (cm^{-1})
A.	$R-NH_2$ का N-H आबंध	**I.**	1790 तथा 1810
B.	$R-NO_2$ का N-O आबंध	**II.**	3300 तथा 3400
C.	ऐनहाइड्राइड के C=O आबंध	**III.**	1350 तथा 1550

1. A - II, B - I, C - III
2. A - III, B - I, C - II
3. A - III, B - II, C - I
4. A - II, B - III, C - I

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

7720334837. 1

7720334838. 2

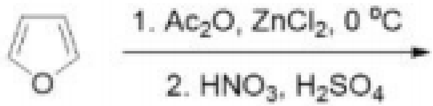
7720334839. 3

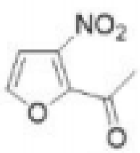
7720334840. 4

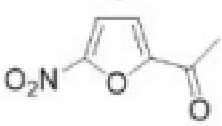
Question Number : 96 Question Id : 7720331211 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

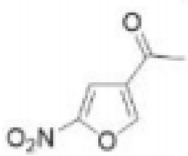
Correct Marks : 4 Wrong Marks : 1

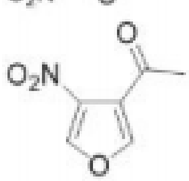
The major product formed in the following reaction sequence is



1. 

2. 

3. 

4. 

Options :

7720334841. 1

7720334842. 2

7720334843. 3

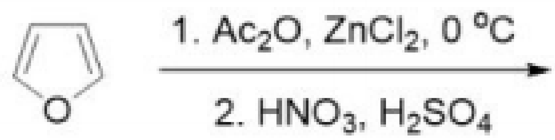
7720334844. 4

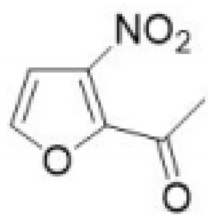
Question Number : 96 Question Id : 7720331211 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

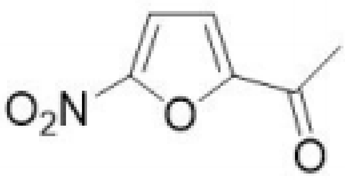
Correct Marks : 4 Wrong Marks : 1

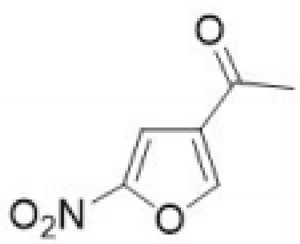
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

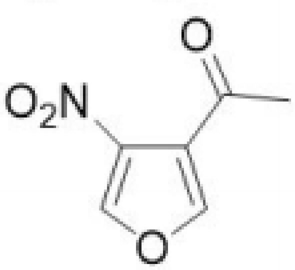
FirstRanker.com
Firstranker's choice
निम्नलिखित अभिक्रिया क्रम में विरचित मुख्य उत्पाद है
www.FirstRanker.com www.FirstRanker.com



1. 

2. 

3. 

4. 

Options :

7720334841. 1

7720334842. 2

7720334843. 3

7720334844. 4

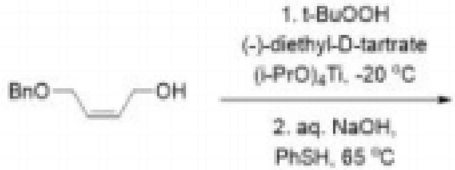
Question Number : 97 Question Id : 7720331212 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

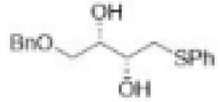
Correct Marks : 4 Wrong Marks : 1

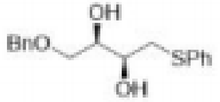
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

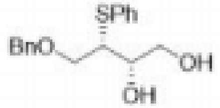
FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

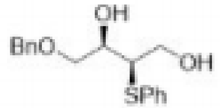
or product formed in the following reaction sequence is



1. 

2. 

3. 

4. 

Options :

7720334845. 1

7720334846. 2

7720334847. 3

7720334848. 4

Question Number : 97 Question Id : 7720331242 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

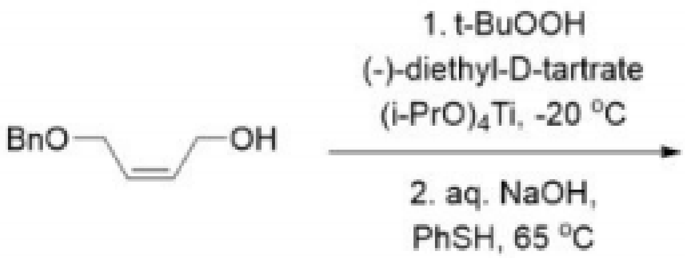
Correct Marks : 4 Wrong Marks : 1

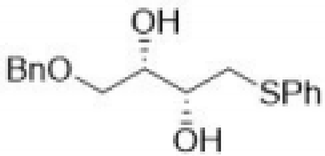
firstranker.com
www.FirstRanker.com

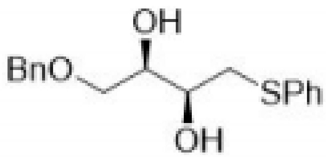
FirstRanker.com
Firstranker's choice

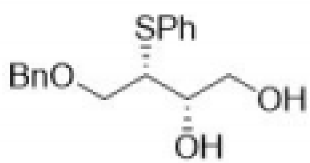
...ित अभिक्रिया क्रम में विरचित मुख्य उत्पाद है

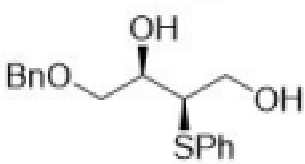
www.FirstRanker.com www.FirstRanker.com



1. 

2. 

3. 

4. 

Options :

7720334845. 1

7720334846. 2

7720334847. 3

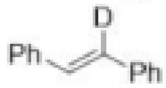
7720334848. 4

Question Number : 98 Question Id : 7720331213 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

www.FirstRanker.com
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

...or product formed in the following reaction sequence is

1.
2. 
3.
4.

Options :

7720334849. 1

7720334850. 2

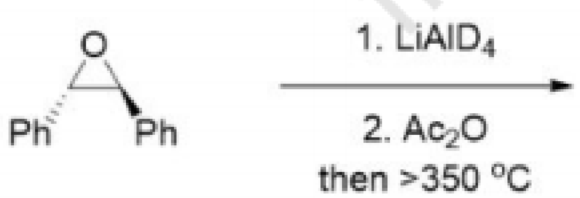
7720334851. 3

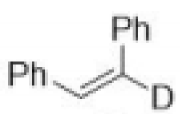
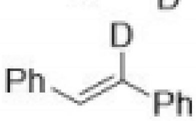
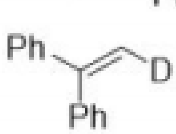
7720334852. 4

Question Number : 98 Question Id : 7720331213 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

निम्नलिखित अभिक्रिया क्रम में विरचित मुख्य उत्पाद है



1. 
2. 
3. 
4.

Options :

7720334849. 1

4850. 2

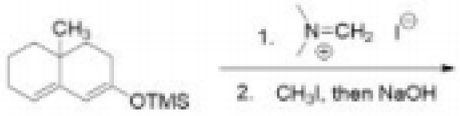
7720334851. 3

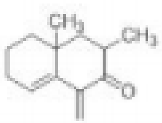
7720334852. 4

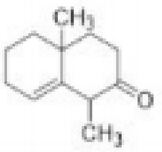
Question Number : 99 Question Id : 7720331214 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

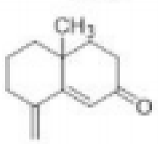
Correct Marks : 4 Wrong Marks : 1

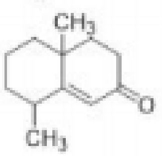
The major product formed in the following reaction sequence is



1. 

2. 

3. 

4. 

Options :

7720334853. 1

7720334854. 2

7720334855. 3

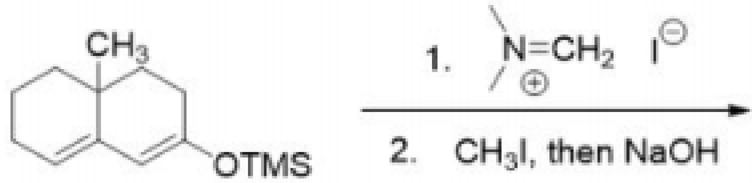
7720334856. 4

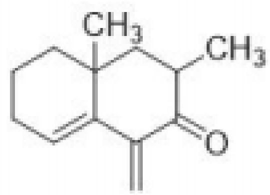
firstranker.com
www.Firstr

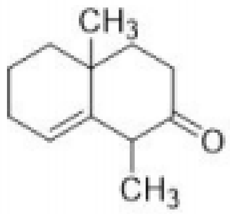
Question Number : 99 Question Id : 7720331214 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

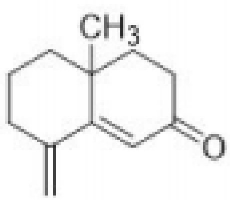
Correct Marks : 4 Wrong Marks : 1

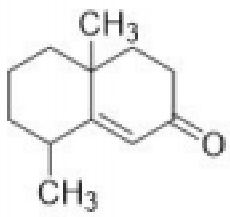
FirstRanker.com
Firstranker's choice
निम्नलिखित अभिक्रिया क्रम में विरचित मुख्य उत्पाद है
www.FirstRanker.com www.FirstRanker.com



1. 

2. 

3. 

4. 

Options :

7720334853. 1

7720334854. 2

7720334855. 3

7720334856. 4

firstranker.com
www.FirstRanker.com

Question Number : 100 Question Id : 7720331215 Question Type : MCQ Option Shuffling : No
Is Question Mandatory : No

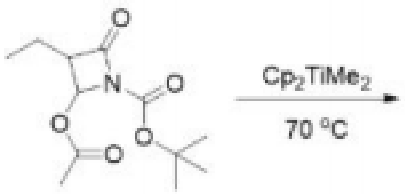
Correct Marks : 4 Wrong Marks : 1

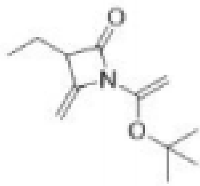
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

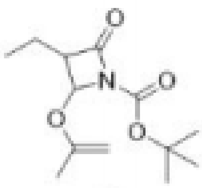
FirstRanker.com
Firstranker's choice

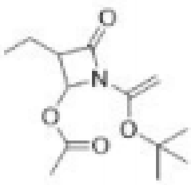
or product formed in the following reaction is

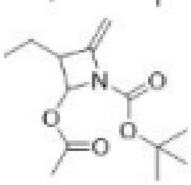
www.FirstRanker.com www.FirstRanker.com



1. 

2. 

3. 

4. 

Options :

7720334857. 1

7720334858. 2

7720334859. 3

7720334860. 4

firstranker.com
www.FirstRanker.com

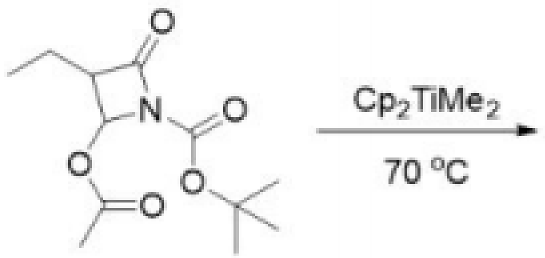
Question Number : 100 Question Id : 7720331215 Question Type : MCQ Option Shuffling : No

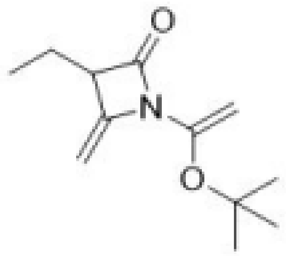
Is Question Mandatory : No

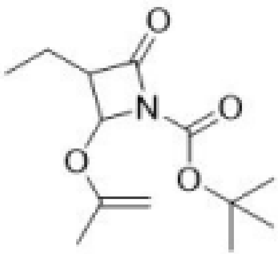
Correct Marks : 4 Wrong Marks : 1

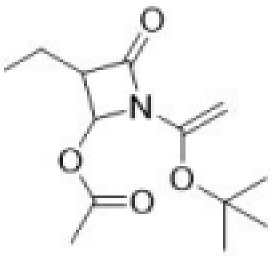
FirstRanker.com
Firstranker's choice
www.FirstRanker.com

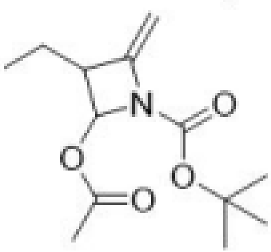
FirstRanker.com
Firstranker's choice
निम्नलिखित अभिक्रिया क्रम में विरचित मुख्य उत्पाद है www.FirstRanker.com www.FirstRanker.com



1. 

2. 

3. 

4. 

Options :

7720334857. 1

7720334858. 2

7720334859. 3

7720334860. 4

Sub-Section Number : 3

Sub-Section Id : 77203364

Question Shuffling Allowed : Yes

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Question Number : 101 Question Id : 7720331216 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The equivalent symmetry operations for S_6^4 and S_3^3 are, respectively,

1. C_3^2 and C_3
2. C_6^4 and i
3. C_3^2 and σ_h
4. C_6^4 and E

Options :

7720334861. 1

7720334862. 2

7720334863. 3

7720334864. 4

Question Number : 101 Question Id : 7720331216 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

S_6^4 तथा S_3^3 के तुल्य सममिति प्रचालन हैं,
क्रमशः

1. C_3^2 तथा C_3
2. C_6^4 तथा i
3. C_3^2 तथा σ_h
4. C_6^4 तथा E

Options :

7720334861. 1

7720334862. 2

7720334863. 3

7720334864. 4

Question Number : 102 Question Id : 7720331217 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
Marks : 4 Wrong Marks : 1
www.FirstRanker.com www.FirstRanker.com

The characters of a reducible representation Γ_R under the C_{3h} point group are presented at the end of the character table below. The correct coefficients of the irreducible representations A' and A'' in the Γ_R are

C_{3h}	E	$2C_3$	σ_h	$2S_3$
A'	1	1	1	1
E'	2	-1	2	-1
A''	1	1	-1	-1
E''	2	-1	-2	1
Γ_R	**21**	**0**	**7**	**-2**

1. 3, 3
2. 4, 3
3. 3, 4
4. 4, 4

Options :

7720334865. 1

7720334866. 2

7720334867. 3

7720334868. 4

firstranker.com
www.FirstRanker.com

Question Number : 102 Question Id : 7720331217 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
C_{3h} बिंदु ग्रुप के अंतर्गत खंडनीय निरूपण Γ_R के लक्षण नीचे दी गयी तालिका के अंत में दिए गए हैं। Γ_R में अखंडनीय निरूपण A' तथा A'' के लिए सही गुणांक हैं
www.FirstRanker.com www.FirstRanker.com

C_{3h}	E	$2C_3$	σ_h	$2S_3$
A'	1	1	1	1
E'	2	–1	2	–1
A''	1	1	–1	–1
E''	2	–1	–2	1
Γ_R	**21**	**0**	**7**	**–2**

1. 3, 3
2. 4, 3
3. 3, 4
4. 4, 4

Options :

7720334865. 1

7720334866. 2

7720334867. 3

7720334868. 4

Question Number : 103 Question Id : 7720331218 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Entropy associated with a die with all its six faces having equal probability of being on top is

(k_B : Boltzmann constant):

1. $\exp(-k_B/6)$
2. $\exp(-6k_B)$
3. $6 \ln k_B$
4. $k_B \ln 6$

Options :

7720334869. 1

7720334870. 2

7720334871. 3

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

Question Number : 103 Question Id : 7720331218 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ठप्पा, जिसके सभी छः फलकों के टाप पर रहने की प्रायिकता समान है, से संयुक्त एन्ट्रापी है

(k_B: बोल्टसमान नियतांक):

1. $\exp(-k_B/6)$
2. $\exp(-6k_B)$
3. $6 \ln k_B$
4. $k_B \ln 6$

Options :

7720334869. 1

7720334870. 2

7720334871. 3

7720334872. 4

firstranker.com
www.FirstRanker.com

Question Number : 104 Question Id : 7720331219 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A compound consists of atoms A and B. Atoms of B form cubic close packing lattice and atoms of A occupy half of octahedral voids and half of tetrahedral voids. What is the molecular formula of the compound?

1. AB
2. A_3B_2
3. A_2B_3
4. A_2B

Options :

7720334873. 1

7720334874. 2

7720334875. 3

Question Number : 104 Question Id : 7720331219 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

एक यौगिक में परमाणु A तथा B हैं, B के परमाणु घनीय निविड संकुलन जालक बनाते हैं। A के परमाणु आधी अष्टफलकीय रिक्तिओं को और आधी चतुष्फलकीय रिक्तिओं को भरते हैं। यौगिक का अणुसूत्र क्या है?

1. AB
2. A_3B_2
3. A_2B_3
4. A_2B

Options :

7720334873. 1

7720334874. 2

7720334875. 3

7720334876. 4

firstranker.com
FirstRanker.com

Question Number : 105 Question Id : 7720331220 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The system with the largest internal pressure is

1. a droplet of pure water with 0.1 mm radius
2. a droplet of 0.1M aqueous soap solution with radius of 0.1 mm radius
3. a droplet of 0.1M aqueous NaCl solution with a radius of 0.1 mm radius
4. a 0.1M bulk aqueous sugar solution

Options :

7720334877. 1

7720334878. 2

7720334879. 3

7720334880. 4

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Question Number : 105 Question Id : 7720331220 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

अधिकतम आंतरिक दाब का निकाय है

1. शुद्ध जल की 0.1 mm त्रिज्या की छोटी बूंद
2. 0.1M साबुन के जलीय विलयन की 0.1 mm त्रिज्या की छोटी बूंद
3. 0.1M NaCl के जलीय विलयन की 0.1 mm त्रिज्या की छोटी बूंद
4. 0.1M चीनी का विस्तृत जलीय विलयन

Options :

7720334877. 1

7720334878. 2

7720334879. 3

7720334880. 4

Question Number : 106 Question Id : 7720331221 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The approximate length (in μm) of the extended chain (contour length) of polypropylene of molar mass 420 kg mol^{-1} is close to:

1. 1.5
2. 3
3. 4.5
4. 0.5

Options :

7720334881. 1

7720334882. 2

7720334883. 3

7720334884. 4

Question Number : 106 Question Id : 7720331221 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

firstranker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

[illegible]न-मोलर संहति 420 kg mol^{-1}, की विस्तृत श्रृंखला (कटूर लंबाई) की लगभग लंबाई (μm में) जिसके निकटतम है, वह है:

1. 1.5
2. 3
3. 4.5
4. 0.5

Options :

7720334881. 1

7720334882. 2

7720334883. 3

7720334884. 4

Question Number : 107 Question Id : 7720331222 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The equilibrium constant for the formation of the complex $Zn(NH_3)_4{}^{2+}$ at 25°C is close to:

[Given: $E^0_{Zn^{+2}/Zn} = -0.763\ V$ and $E^0_{Zn(NH_3)_4^{+2}/Zn,\ NH_3} = -1.03\ V$]

1. 2×10^8
2. 5.5×10^{10}
3. 1×10^9
4. 6.6×10^7

Options :

7720334885. 1

7720334886. 2

7720334887. 3

7720334888. 4

Question Number : 107 Question Id : 7720331222 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice

$(NH_3)_4^{2+}$ के वियोजन के लिए 25°C पर साम्य स्थिरांक जिसके निकटतम है, वह है:

www.FirstRanker.com www.FirstRanker.com

[दिया है : $E^0_{Zn^{+2}/Zn} = -0.763\,V$ तथा $E^0_{Zn(NH_3)_4^{+2}/Zn,\ NH_3} = -1.03\,V$]

1. 2×10^8
2. 5.5×10^{10}
3. 1×10^9
4. 6.6×10^7

Options :

7720334885. 1

7720334886. 2

7720334887. 3

7720334888. 4

Question Number : 108 Question Id : 7720331223 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider $A \underset{k_2}{\overset{k_1}{\rightleftharpoons}} B$ the action

If a, x and x_e are the initial concentration of A, concentration of B at time t and equilibrium concentration of B, respectively for the above reaction, then the $\frac{dx}{dt}$ is:

1. $\frac{k_1 a}{x_e}(x_e + x)$
2. $k_1(x_e - x)$
3. $\frac{k_1 a}{x_e}(x_e - x)$
4. $\frac{k_1 x_e}{a}(x_e - x)$

Options :

7720334889. 1

7720334890. 2

7720334891. 3

7720334892. 4

Question Number : 108 Question Id : 7720331223 Question Type : MCQ Option Shuffling : No

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

Correct Marks : 4 Wrong Marks : 1

अभिक्रिया $A \underset{k_2}{\overset{k_1}{\rightleftharpoons}} B$ पर विचार कीजिए

उपरोक्त अभिक्रिया के लिए यदि a, x तथा x_e क्रमशः A की प्रारंभिक सांद्रता B की समय t पर सान्द्रता तथा B की साम्य पर सांद्रता हैं, तो $\frac{dx}{dt}$ है:

1. $\frac{k_1 a}{x_e}(x_e + x)$
2. $k_1(x_e - x)$
3. $\frac{k_1 a}{x_e}(x_e - x)$
4. $\frac{k_1 x_e}{a}(x_e - x)$

Options :

7720334889. 1

7720334890. 2

7720334891. 3

7720334892. 4

Question Number : 109 Question Id : 7720331224 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Thermal decomposition of acetaldehyde follows a chain reaction mechanism in which methane gas is produced in the chain propagation step. The rate of methane formation is proportional to:

1. $[CH_3CHO]^{3/2}$
2. $[CH_3CHO]^{1/2}$
3. $[CH_3CHO]^{5/2}$
4. $[CH_3CHO]^{2}$

Options :

7720334893. 1

7720334894. 2

7720334895. 3

7720334896. 4

Question Number : 109 Question Id : 7720331224 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ऐसीट-ऐल्डिहाइड का तापीय अपघटन श्रृंखला अभिक्रिया विधि का अनुसरण करता है, जिसके श्रृंखला संचरण पद में मेथेन गैस उत्पन्न होती है। मेथेन विरचन की दर जिसके समानुपाती है, वह है:

1. $[CH_3CHO]^{3/2}$
2. $[CH_3CHO]^{1/2}$
3. $[CH_3CHO]^{5/2}$
4. $[CH_3CHO]^2$

Options :

7720334893. 1

7720334894. 2

7720334895. 3

7720334896. 4

Question Number : 110 Question Id : 7720331225 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The data obtained from an enzyme catalyzed reaction are plotted as *1/rate* against $1/[S]_0$, where $[S]_0$ is the initial substrate concentration. The slope and *y*-intercept obtained from this plot are 50 and 100, respectively. If the enzyme concentration used in this reaction is 0.5 mM, then the turnover number (in mM^{-1}) of the enzyme is:

1. 0.02
2. 0.04
3. 0.08
4. 0.06

Options :

7720334897. 1

7720334898. 2

7720334899. 3

7720334900. 4

Question Number : 110 Question Id : 7720331225 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

एंजाइम उत्प्रेरित अभिक्रिया के लिए प्राप्त आंकड़ों को *1/* दर विरूद्ध *1/[S]₀* प्लाट किया गया है। *[S]₀* सबस्ट्रेट की आरंभिक सांद्रता है। इस प्लाट से प्राप्त स्लोप तथा *y*-अंत: खंड क्रमश: 50 तथा 100 है। यदि एंजाइम की इस अभिक्रिया में उपयोग की गयी सांद्रता 0.5 mM, है, तो एंजाइम की टर्नओवर संख्या (mM^{-1} में) है :

1. 0.02
2. 0.04
3. 0.08
4. 0.06

Options :

7720334897. 1

7720334898. 2

7720334899. 3

7720334900. 4

firstranker.com
www.FirstRanker.com

Question Number : 111 Question Id : 7720331226 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Two angular momenta with quantum numbers j_1 = 3/2 and j_2 = 5/2 are added. The possible values of *J* for the resultant angular momentum states are

1. 4, 3, 2, 1
2. 4, 1
3. 4, 3, 2, 1, 0
4. ± 4, ± 1

Options :

7720334901. 1

7720334902. 2

7720334903. 3

Question Number : 111 Question Id : 7720331226 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

दो कोणीय संवेगों जिनकी क्वांटम संख्यायें j_1 = 3/2 तथा j_2 = 5/2 हैं को जोड़ दिया गया है। परिणाम स्वरूप प्राप्त कोणीय संवेग अवस्थाओं के लिए J के संभावित मान हैं

1. 4, 3, 2, 1
2. 4, 1
3. 4, 3, 2, 1, 0
4. ± 4, ± 1

Options :

7720334901. 1

7720334902. 2

7720334903. 3

7720334904. 4

Question Number : 112 Question Id : 7720331227 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Radiation from a helium ion He^+ is nearly equal in wavelength to the H_α line (the first line of the Balmer series). The states (values of n) between which the transition in the helium ion occur are

1. 6, 2
2. 3, 1
3. 3, 2
4. 6, 4

Options :

7720334905. 1

7720334906. 2

7720334907. 3

7720334908. 4

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

Question Number : 112 Question Id : 7720331227 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

एक हीलियम आयन He^+ से विकिरण, तरंग दैर्ध्य में लगभग H_α लाइन (बामर श्रेणी की प्रथम लाइन) के समान है, अवस्थायें (n का मान) जिनके मध्य हीलियम आयन में इसके लिए संक्रमण होता है, वह हैं

1. 6, 2
2. 3, 1
3. 3, 2
4. 6, 4

Options :

7720334905. 1

7720334906. 2

7720334907. 3

7720334908. 4

Question Number : 113 Question Id : 7720331228 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Lamb dip spectroscopy can reduce

1. Natural line width
2. Doppler line width
3. Collision induced line width
4. Saturation line width

Options :

7720334909. 1

7720334910. 2

7720334911. 3

7720334912. 4

Question Number : 113 Question Id : 7720331228 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice

। स्पेक्ट्रोस्कोपी कम कर देता है

www.FirstRanker.com www.FirstRanker.com

1. प्राकृतिक लाइन चौड़ाई को।
2. डॉप्लर लाइन चौड़ाई को।
3. संघटटन प्रेरित लाइन चौड़ाई को ।
4. संतृप्ति लाइन चौड़ाई को ।

Options :

7720334909. 1

7720334910. 2

7720334911. 3

7720334912. 4

Question Number : 114 Question Id : 7720331229 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The molecule that can absorb in the infra-red among the following is

1. $^{13}N_2$
2. $^{13}N^{16}O$
3. $^{16}O_2$
4. $^{13}N^{14}N$

Options :

7720334913. 1

7720334914. 2

7720334915. 3

7720334916. 4

firstranker.com
www.FirstRanker.com

Question Number : 114 Question Id : 7720331229 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

[illegible]त में से अणु जो अवरक्त का अवशोषण कर सकता है, वह है

1. $^{13}N_2$
2. $^{13}N^{16}O$
3. $^{16}O_2$
4. $^{13}N^{14}N$

Options :

7720334913. 1

7720334914. 2

7720334915. 3

7720334916. 4

Question Number : 115 Question Id : 7720331230 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The first two lines in the R- branch of the vibrational spectrum of HCl appear at 2906 and 2926 cm^{-1} respectively.

The first line in the R- branch of DCl appears at 2102 cm^{-1} .

The second line (in cm^{-1}) is expected to appear close to

1. 2112
2. 2122
3. 2152
4. 2192

Options :

7720334917. 1

7720334918. 2

7720334919. 3

7720334920. 4

Question Number : 115 Question Id : 7720331230 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
न स्पेक्ट्रम की R- ब्रान्च की प्रथम दो लाइन 2906 तथा 2926 cm^{-1} पर क्रमश: दृष्टिगोचर होती है।
www.FirstRanker.com www.FirstRanker.com
DCl की R- ब्रांच की प्रथम लाइन 2102 cm^{-1} पर दृष्टिगोचर होता है। इसकी द्वितीय लाइन (cm^{-1} में) को जिसके निकट दृष्टिगोचर होना प्रत्याशित है, वह है

1. 2112
2. 2122
3. 2152
4. 2192

Options :

7720334917. 1

7720334918. 2

7720334919. 3

7720334920. 4

Question Number : 116 Question Id : 7720331231 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$(\partial T/\partial P)_S$ =

1. $(\partial S/\partial U)_S$
2. $(\partial T/\partial P)_V$
3. $(\partial V/\partial S)_P$
4. $(\partial U/\partial P)_T$

Options :

7720334921. 1

7720334922. 2

7720334923. 3

7720334924. 4

Question Number : 116 Question Id : 7720331231 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

firstranker.com
www.FirstRanker.com

$(\partial T/\partial P)_S$ =

1. $(\partial S/\partial U)_S$
2. $(\partial T/\partial P)_V$
3. $(\partial V/\partial S)_P$
4. $(\partial U/\partial P)_T$

Options :

7720334921. 1

7720334922. 2

7720334923. 3

7720334924. 4

Question Number : 117 Question Id : 7720331232 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The depression in the freezing point of four solutions containing one g/L of the solutes A, B, C, D are 2, 4, 3, and 1 ^{0}C respectively. The solute with the largest molecular weight is

1. A
2. B
3. C
4. D

Options :

7720334925. 1

7720334926. 2

7720334927. 3

7720334928. 4

Question Number : 117 Question Id : 7720331232 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

...ी, में A, B, C तथा D विलेय हैं, जिनकी मात्रा एक g/L है। इनके हिमांकों का अवनमन क्रमशः 2, 4, 3, तथा 1 °C है। सर्वाधिक अणु संहति का विलेय है

1. A
2. B
3. C
4. D

Options :

7720334925. 1

7720334926. 2

7720334927. 3

7720334928. 4

Question Number : 118 Question Id : 7720331233 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The equilibrium constant of a chemical reaction decreases monotonically with increasing temperature. From this we may conclude that

1. $\Delta H^o < 0$
2. $\Delta G^o < 0$
3. $\Delta S^o < 0$
4. $\Delta U^o < 0$

Options :

7720334929. 1

7720334930. 2

7720334931. 3

7720334932. 4

Question Number : 118 Question Id : 7720331233 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
...निक अभिक्रिया का साम्य स्थिरांक ताप बढ़ने से एकदिष्टत: घटता है। इससे निष्कर्ष निकाल सकते हैं कि
www.FirstRanker.com www.FirstRanker.com

1. $\Delta H^o < 0$
2. $\Delta G^o < 0$
3. $\Delta S^o < 0$
4. $\Delta U^o < 0$

Options :

7720334929. 1

7720334930. 2

7720334931. 3

7720334932. 4

Question Number : 119 Question Id : 7720331234 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The molecule that is better described by single determinantal MO theory rather than the elementary single resonance structure VB theory is

1. LiH
2. F_2
3. H_2
4. O_2

Options :

7720334933. 1

7720334934. 2

7720334935. 3

7720334936. 4

firstranker.com
www.First...

Question Number : 119 Question Id : 7720331234 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

FirstRanker.com
Firstranker's choice
www.FirstRanker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com www.FirstRanker.com

...का वर्णन प्राथमिक सिंगल अनुनाद संरचना VB सिद्धांत की अपेक्षा सिंगल डिटर्मिनेंटल MO सिद्धांत से बेहतर कर सकते हैं, वह है

1. LiH
2. F_2
3. H_2
4. O_2

Options :

7720334933. 1

7720334934. 2

7720334935. 3

7720334936. 4

Question Number : 120 Question Id : 7720331235 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

An electron in a hydrogen atom is exposed to a perturbation $V = V_0\, r \cos\varphi$. The first order correction to the ground-state energy of the electron is

1. $-V_0/2$
2. 0
3. $V_0/2$
4. V_0

Options :

7720334937. 1

7720334938. 2

7720334939. 3

7720334940. 4

Question Number : 120 Question Id : 7720331235 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

www.firstranker.com

FirstRanker.com
Firstranker's choice
www.FirstRanker.com
www.FirstRanker.com

हाइड्रोजन परमाणु में एक इलेक्ट्रॉन क्षोभ $V = V_0 r Cos\,\varphi$ से प्रभावित है। इलेक्ट्रॉन की निम्नतम अवस्था ऊर्जा में प्रथम कोटि का शोधन है

1. $- V_0/2$
2. 0
3. $V_0/2$
4. V_0

Options :

7720334937. 1

7720334938. 2

7720334939. 3

7720334940. 4

firstranker.com
www.FirstRanker.com