Question Paper Preview

Subject Name: Stream SA
Share Answer Key With Delivery Engine: Yes
Actual Answer Key: Yes

Part I Mathematics

Display Number Panel: Yes
Group All Questions: No

Question Number : 1 Question Id : 6584303921 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The number of pairs (a, b) of positive real numbers satisfying $a^4 + b^4 < 1$ and $a^2 + b^2 > 1$ is

A. 0 B. 1 C. 2 D. more than 2

Question Number : 1 Question Id : 6584303921 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

धनात्मक वास्तविक संख्याओं के ऐसे युग्मों (a, b), जो $a^4 + b^4 < 1$ एवं $a^2 + b^2 > 1$ को संतुष्ट करते हैं, की संख्या होगी:

A. 0 B. 1 C. 2 D. 2 से अधिक

Question Number : 2 Question Id : 6584303922 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The number of real roots of the polynomial equation $x^4 - x^2 + 2x - 1 = 0$ is

A. 0 B. 2 C. 3 D. 4

Question Number : 2 Question Id : 6584303922 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

बहुपद समीकरण $x^4 - x^2 + 2x - 1 = 0$ के वास्तविक मूलों की संख्या है:

A. 0 B. 2 C. 3 D. 4

Question Number : 3 Question Id : 6584303923 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Suppose the sum of the first m terms of an arithmetic progression is n and the sum of its first n terms is m, where $m \neq n$. Then the sum of the first $(m + n)$ terms of the arithmetic progression is

A. $1 - mn$ B. $mn - 5$ C. $-(m + n)$ D. $m + n$

Question Number : 3 Question Id : 6584303923 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

मान लें कि एक समांतर श्रेणी (arithmetic progression) के पहले m पदों का योग n है एवं इसके पहले n पदों का योग m है। यहाँ $m \neq n$ है। तब इस श्रेणी के पहले $(m + n)$ पदों का योग होगा:

A. $1 - mn$ B. $mn - 5$ C. $-(m + n)$ D. $m + n$

Question Number : 4 Question Id : 6584303924 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Consider the following two statements:

I. Any pair of consistent linear equations in two variables must have a unique solution.

II. There do *not* exist two consecutive integers, the sum of whose squares is 365.

Then

A. both I and II are true

B. both I and II are false

C. I is true and II is false

D. I is false and II is true

Question Number : 4 Question Id : 6584303924 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

इन दो कथनों पर विचार करें :

I. दो चरों वाले संगत रैखीय समीकरणों (consistent linear equations) के किसी भी युग्म का अद्वितीय हल है।

II. ऐसे दो क्रमागत पूर्णांकों का अस्तित्व नहीं हैं जिनके वर्गों का योग 365 है।

तब

A. I एवं II दोनों सत्य हैं

B. I एवं II दोनों असत्य हैं

C. I सत्य है एवं II असत्य है

D. I असत्य है एवं II सत्य है

Question Number : 5 Question Id : 6584303925 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The number of polynomials $p(x)$ with integer coefficients such that the curve $y = p(x)$ passes through $(2,2)$ and $(4,5)$ is

A. 0

B. 1

C. more than 1 but finite

D. infinite

Question Number : 5 Question Id : 6584303925 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

बहुपद $p(x)$ के सभी गुणांक (coefficients) पूर्णांक है। यदि वक्र रेखा $y = p(x)$ बिन्दुओं $(2,2)$ एवं $(4,5)$ से गुजरती है, तब ऐसे बहुपदों की संख्या होगी

A. 0

B. 1

C. 1 से अधिक, परंतु सीमित

D. अनंत

Question Number : 6 Question Id : 6584303926 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The median of all 4-digit numbers that are divisible by 7 is

A. 5497 B. 5498.5 C. 5499.5 D. 5490

Question Number : 6 Question Id : 6584303926 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

4-अंकों वाली वे सभी संख्याएँ जो 7 से विभाजित हो जाती हैं के माध्यिका (median) का मान है

A. 5497 B. 5498.5 C. 5499.5 D. 5490

Question Number : 7 Question Id : 6584303927 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A solid hemisphere is attached to the top of a cylinder, having the same radius as that of the cylinder. If the height of the cylinder were doubled (keeping both radii fixed), the volume of the entire system would have increased by 50%. By what percentage would the volume have increased if the radii of the hemisphere and the cylinder were doubled (keeping the height fixed)?

A. 300% B. 400% C. 500% D. 600%

Question Number : 7 Question Id : 6584303927 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक ठोस अर्धगोले को एक बेलन के ऊपर रखा गया है। अर्धगोले एवं बेलन की त्रिज्याएँ समान है। यदि बेलन की ऊंचाई दो गुनी कर दी जाए और उनकी त्रिज्याओं का मान नहीं बदला जाए, तब पूरे निकाय का आयतन 50% बढ़ जाता है। यदि ऊंचाई का मान अचर रखते हुए अर्धगोले एवं बेलन की त्रिज्याओं को दो गुना कर दिया जाये, तब निकाय का आयतन निम्न प्रतिशत से बढ़ जाएगा:

A. 300% B. 400% C. 500% D. 600%

Question Number : 8 Question Id : 6584303928 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Consider a triangle PQR in which the relation $QR^2 + PR^2 = 5\,PQ^2$ holds. Let G be the point of intersection of medians PM and QN. Then $\angle QGM$ is always

A. less than 45°

B. obtuse

C. a right angle

D. acute and larger than 45°

Question Number : 8 Question Id : 6584303928 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक त्रिभुज PQR की भुजाओं के लिए संबंध $QR^2 + PR^2 = 5\,PQ^2$ मान्य है। यदि माध्यिकायें (medians) PM एवं QN बिन्दु G पर विच्छेदित (intersect) करती हैं, तब $\angle QGM$ हमेशा:

A. 45° से कम होगा

B. अधिकोण (obtuse) होगा

C. समकोण होगा

D. न्यूनकोण एवं 45° से अधिक

Question Number : 9 Question Id : 6584303929 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Let a, b, c be the side-lengths of a triangle, and l, m, n be the lengths of its medians. Put $K = \frac{l+m+n}{a+b+c}$. Then, as a, b, c vary, K can assume every value in the interval

A. $\left(\frac{1}{4}, \frac{2}{3}\right)$ B. $\left(\frac{1}{2}, \frac{4}{5}\right)$ C. $\left(\frac{3}{4}, 1\right)$ D. $\left(\frac{4}{5}, \frac{5}{4}\right)$

Question Number : 9 Question Id : 6584303929 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक त्रिभुज की भुजाओं की लंबाई a, b, c है एवं इसकी मध्यिकाओं (median) की लंबाई l, m, n है। मान लें कि $K = \frac{l+m+n}{a+b+c}$। यदि a, b, c को बदला जाए, तब K इस अंतराल में सभी मान ले सकता है:

A. $\left(\frac{1}{4}, \frac{2}{3}\right)$ B. $\left(\frac{1}{2}, \frac{4}{5}\right)$ C. $\left(\frac{3}{4}, 1\right)$ D. $\left(\frac{4}{5}, \frac{5}{4}\right)$

Question Number : 10 Question Id : 6584303930 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

. Let x_0, y_0 be fixed real numbers such that $x_0^2 + y_0^2 > 1$. If x, y are arbitrary real numbers such that $x^2 + y^2 \leq 1$, then the minimum value of $(x - x_0)^2 + (y - y_0)^2$ is

A. $\left(\sqrt{x_0^2 + y_0^2} - 1\right)^2$

B. $x_0^2 + y_0^2 - 1$

C. $(|x_0| + |y_0| - 1)^2$

D. $(|x_0| + |y_0|)^2 - 1$

Question Number : 10 Question Id : 6584303930 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

मान लें कि x_0, y_0 अचर (fixed) वास्तविक संख्याएँ हैं, जिनके लिए $x_0^2 + y_0^2 > 1$ मान्य है। यदि x, y कोई वास्तविक संख्याएँ हैं, जिनके लिए $x^2 + y^2 \leq 1$ मान्य है, तब $(x - x_0)^2 + (y - y_0)^2$ का न्यूनतम मान होगा:

A. $\left(\sqrt{x_0^2 + y_0^2} - 1\right)^2$

B. $x_0^2 + y_0^2 - 1$

C. $(|x_0| + |y_0| - 1)^2$

D. $(|x_0| + |y_0|)^2 - 1$

Question Number : 11 Question Id : 6584303931 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Let PQR be a triangle in which $PQ = 3$. From the vertex R, draw the altitude RS to meet PQ at S. Assume that $RS = \sqrt{3}$ and $PS = QR$. Then PR equals

A. $\sqrt{5}$ B. $\sqrt{6}$ C. $\sqrt{7}$ D. $\sqrt{8}$

Question Number : 11 Question Id : 6584303931 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

. त्रिभुज PQR में भुजा $PQ = 3$ है। शीर्ष R से एक शीर्षलंब (altitude) RS खींचा जाता है, जो भुजा PQ में S पर मिलता है। मान लें कि $RS = \sqrt{3}$ एवं $PS = QR$ है। तब PR निम्न के बराबर होगा

A. $\sqrt{5}$ B. $\sqrt{6}$ C. $\sqrt{7}$ D. $\sqrt{8}$

Question Number : 12 Question Id : 6584303932 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 100 mark examination was administered to a class of 50 students. Despite only integer marks being given, the average score of the class was 47.5. Then, the maximum number of students who could get marks more than the class average is

A. 25 B. 35 C. 45 D. 49

Question Number : 12 Question Id : 6584303932 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

50 विद्यार्थी एक 100 अंकों वाली परीक्षा देते हैं। यद्यपि विद्यार्थियों को पूर्णांक में अंक दिए जाते है, कक्षा में सभी का औसत अंक 47.5 है। ऐसी स्थिति में ऐसे विद्यार्थियों की अधिकतम संख्या होगी, जो कक्षा के औसत से अधिक अंक लाए हैं :

A. 25 B. 35 C. 45 D. 49

Question Number : 13 Question Id : 6584303933 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Let s be the sum of the digits of the number $15^2 \times 5^{18}$ in base 10. Then

A. $s < 6$ B. $6 \leq s < 140$

C. $140 \leq s < 148$ D. $s \geq 148$

Question Number : 13 Question Id : 6584303933 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

संख्या $15^2 \times 5^{18}$ को यदि आधार (base) 10 में लिखा जाए, तब इसके अंकों का योग s है। तब

A. $s < 6$ B. $6 \leq s < 140$

C. $140 \leq s < 148$ D. $s \geq 148$

Question Number : 14 Question Id : 6584303934 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Let PQR be an acute-angled triangle in which $PQ < QR$. From the vertex Q draw the altitude QQ_1, the angle bisector QQ_2 and the median QQ_3, with Q_1, Q_2, Q_3 lying on PR. Then

A. $PQ_1 < PQ_2 < PQ_3$

B. $PQ_2 < PQ_1 < PQ_3$

C. $PQ_1 < PQ_3 < PQ_2$

D. $PQ_3 < PQ_1 < PQ_2$

Question Number : 14 Question Id : 6584303934 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

PQR एक न्यूनकोण त्रिभुज है, जिसमें $PQ < QR$। शीर्ष Q से एक शीर्षलंब (altitude) QQ_1, एक कोण द्विभाजक (angle bisector) QQ_2 एवं माध्यिका (median) QQ_3 खींचे जाते हैं। यदि Q_1, Q_2, Q_3 भुजा PR पर अवस्थित है, तब

A. $PQ_1 < PQ_2 < PQ_3$

B. $PQ_2 < PQ_1 < PQ_3$

C. $PQ_1 < PQ_3 < PQ_2$

D. $PQ_3 < PQ_1 < PQ_2$

Question Number : 15 Question Id : 6584303935 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

All the vertices of a rectangle are of the form (a, b) with a, b integers satisfying the equation $(a-8)^2 - (b-7)^2 = 5$. Then the perimeter of the rectangle is

A. 20 B. 22 C. 24 D. 26

Question Number : 15 Question Id : 6584303935 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक आयत की सभी शीर्ष (a, b) प्रकार के है, जहाँ a, b पूर्णांक है। यदि a, b समीकरण $(a-8)^2 - (b-7)^2 = 5$ को संतुष्ट करता है, तब इस आयत की परिधि होगी:

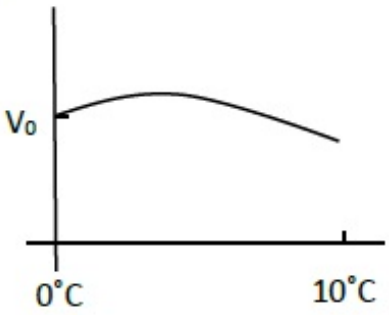
A. 20 B. 22 C. 24 D. 26

Display Number Panel: Yes
Group All Questions: No

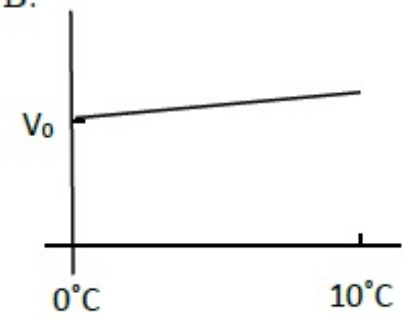
Question Number : 16 Question Id : 6584303936 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A block of wood is floating on water at 0°C with volume V_0 above water. When the temperature of water increases from 0 to 10 °C, the change in the volume of the block that is above water is best described schematically by the graph

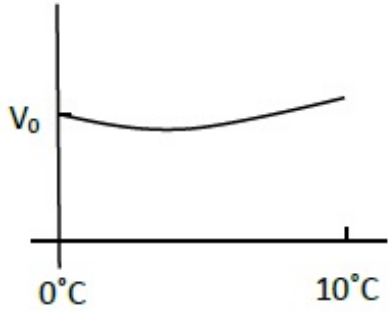
A.



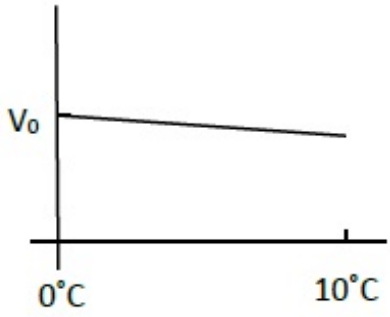
B.



C.



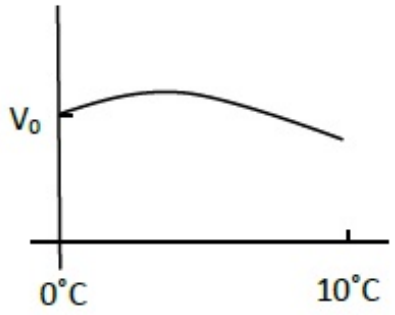
D.



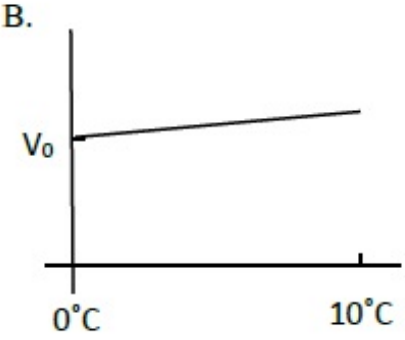
Question Number : 16 Question Id : 6584303936 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक लकड़ी का टुकड़ा 0°C तापमान के जल में तैरता है, जिसका आयतन V_0 जल के सतह से ऊपर है। यदि जल के तापमान को 0 से 10 °C तक बढ़ा दिया जाए, तो निम्न में कौनसा आरेख तापमान के सापेक्ष इस टुकड़े के उस आयतन को जो जल के सतह से ऊपर है, में हुए परिवर्तन को दर्शाता है

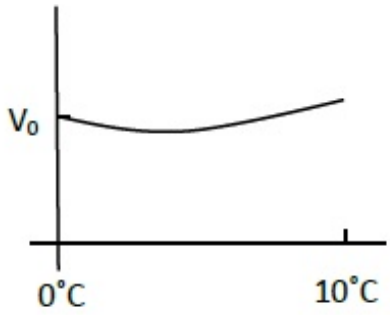
A.



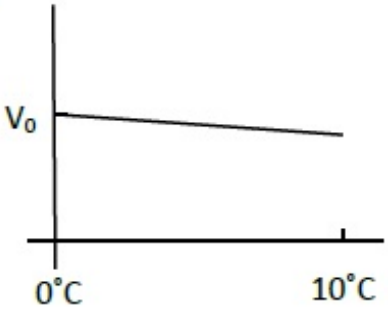
B.



C.



D.



Question Number : 17 Question Id : 6584303937 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A very large block of ice of the size of a volleyball court and of uniform thickness of 8 m is floating on water. A person standing near its edge wishes to fetch a bucketful of water using a rope. The smallest length of rope required for this is about

A. 3.6m

B. 1.8m

C. 0.9m

D. 0.4m

Question Number : 17 Question Id : 6584303937 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक वॉलीबाल के मैदान के बराबर के बहुत बड़े बर्फ के टुकड़े की एकसमान मोटाई 8 m हैं। यह बर्फ का टुकड़ा पानी में तैर रहा है। एक व्यक्ति जो इसके एक छोर पर खड़ा है, वह एक बाल्टी में रस्सी बांध कर पानी निकालना चाहता है। रस्सी की न्यूनतम लंबाई कितनी होगी ?

A. 3.6m

B. 1.8m

C. 0.9m

D. 0.4m

Question Number : 18 Question Id : 6584303938 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A box filled with water has a small hole on its side near the bottom. It is dropped from the top of a tower. As it falls, a camera attached on the side of the box records the shape of the water stream coming out of the hole. The resulting video will show

A. the water coming down forming a parabolic stream.

B. the water going up forming a parabolic stream.

C. the water coming out in a straight line.

D. no water coming out.

Question Number : 18 Question Id : 6584303938 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक पानी से भरे बक्से की निचली सतह के एक छोर पर एक छिद्र है। इस बक्से को एक ऊंचे मीनार की छत से नीचे गिराया जाता है। बॉक्स के गिरते समय, इसकी सतह पर लगा कैमरा बक्से से बाहर आते हुये पानी के पथ को अभिलिखित (record) करता है। कैमरे द्वारा अभिलिखित चलचित्र में दिखेगा कि

A. जल एक परवलयाकार पथ के अनुसार नीचे गिरता है।

B. जल एक परवलयाकार पथ के अनुसार ऊपर जाता है।

C. जल एक सीधी रेखा मे बाहर आयेगा।

D. बक्से से बाहर जल नहीं आयेगा।

Question Number : 19 Question Id : 6584303939 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An earthen pitcher used in summer cools water in it essentially by evaporation of water from its porous surface. If a pitcher carries 4 kg of water and the rate of evaporation is 20 g per hour, temperature of water in it decreases by ΔT in two hours. The value of ΔT is close to (ratio of latent of evaporation to specific heat of water is 540 ˚C)

A. 2.7 ˚C

B. 4.2 ˚C

C. 5.4 ˚C

D. 10.8 ˚C

Question Number : 19 Question Id : 6584303939 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

गर्मियों में मिट्टी के घड़े में रखा जल, घड़े की सरंध्र सतह पर हो रहे जल के वाष्पन के द्वारा ठंडा होता है। यदि घड़े में 4 kg जल है, जिसका वाष्पन 20 g/h की दर से होता है। यदि दो घंटे बाद जल के तापमान में ΔT का परिवर्तन होता है, तो ΔT का मान क्या होगा (जल के लिए वाष्पन की गुप्त ऊष्मा का उसकी विशिष्ट ऊष्मा के साथ अनुपात 540 ˚C है)

A. 2.7 ˚C

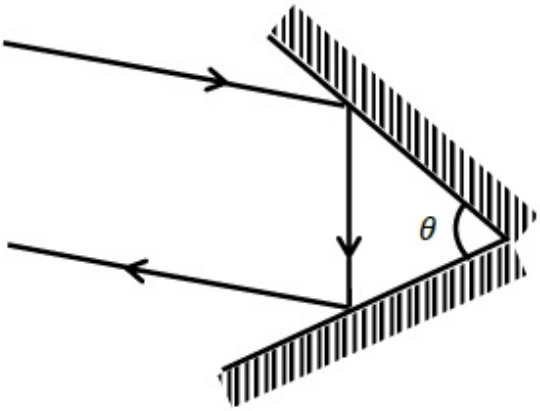
B. 4.2 ˚C

C. 5.4 ˚C

D. 10.8 ˚C

Question Number : 20 Question Id : 6584303940 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two plane mirrors are kept on a horizontal table making an angle θ with each other as shown schematically in the figure. The angle θ is such that any ray of light reflected after striking both the mirrors returns parallel to its incident path. For this to happen, the value of θ should be



A. 30°

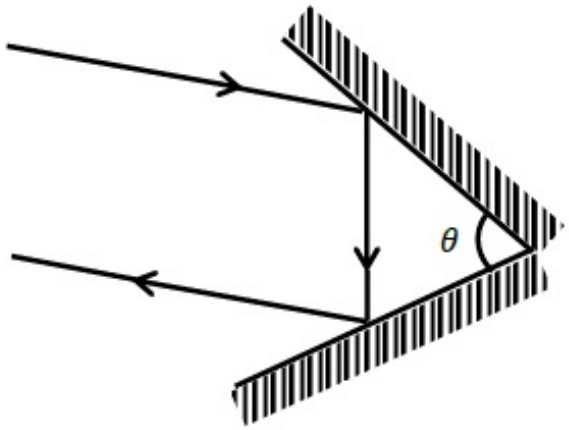
B. 45°

C. 60°

D. 90°

Question Number : 20 Question Id : 6584303940 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

दो समतल दर्पण, जो एक दूसरे से θ कोण बनाते है, को चित्रानुसार एक क्षैतिज टेबल पर रखा गया है। कोण θ इस प्रकार है कि प्रकाश की किरण दोनों दर्पणों से परावर्तित होकर आपतित किरण के समानान्तर हो जाती है। कोण θ का मान होगा



A. 30°

B. 45°

C. 60°

D. 90°

Question Number : 21 Question Id : 6584303941 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A certain liquid has a melting point of – 50° C and a boiling point of 150° C. A thermometer is designed with this liquid and its melting and boiling points are designated as 0° L and 100° L. The melting and boiling points of water on this scale are

A. 25° L and 75° L, respectively.

B. 0° L and 100° L, respectively.

C. 20° L and 70° L, respectively.

D. 30° L and 80° L, respectively.

Question Number : 21 Question Id : 6584303941 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक द्रव का गलनांक – 50° C तथा क्वथनांक 150° C है। इस द्रव से एक तापमापी बनाया जाता हैं, जो द्रव के गलनांक तथा क्वथनांक को क्रमशः 0° L तथा 100° L दर्शाता है। इस पैमाने (Scale) पर जल का गलनांक तथा क्वथनांक क्रमशः

A. 25° L तथा 75° L हैं।

B. 0° L तथा 100° L हैं।

C. 20° L तथा 70° L हैं।

D. 30° L तथा 80° L हैं।

Question Number : 22 Question Id : 6584303942 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

One can define an alpha-Volt (αV) to be the energy acquired by an α particle when it is accelerated by a potential of 1 Volt. For this problem you may take a proton to be 2000 times heavier than an electron. Then

A. 1 αV = 1 eV/4000

B. 1 αV = 2 eV

C. 1 αV = 8000 eV

D. 1 αV = 1 eV

Question Number : 22 Question Id : 6584303942 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

अल्फा कण को 1 V के विभव से त्वरित करने पर जो ऊर्जा प्राप्त होती है उसको अल्फा-वोल्ट (αV) से परिभाषित किया जाता है। यदि मान लीजिए कि प्रोटॉन, इलेक्ट्रॉन से 2000 गुना ज्यादा भारी है तो निम्न में से कौन सा विकल्प सही होगा?

A. 1 αV = 1 eV/4000

B. 1 αV = 2 eV

C. 1 αV = 8000 eV

D. 1 αV = 1 eV

Question Number : 23 Question Id : 6584303943 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a particle accelerator, a current of 500 μA is carried by a proton beam in which each proton has a speed of $3x10^7$ m/s. The cross sectional area of the beam is 1.50 mm^2. The charge density in this beam in Coulomb/m^3 is close to

A. 10^{-8}
B. 10^{-7}
C. 10^{-6}
D. 10^{-5}

Question Number : 23 Question Id : 6584303943 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक कण त्वरक (Particle accelerator) में, प्रोटॉन पुंज की 500 μA की विद्युत धारा प्रवाहित हो रही है। इस पुंज में प्रत्येक प्रोटॉन की चाल $3x10^7$ m/s है। पुंज के अनुप्रस्थ काट का क्षेत्रफल 1.50 mm^2 है। इस पुंज में आवेश का घनत्व Coulomb/m^3 मात्रक में लगभग होगा।

A. 10^{-8}
B. 10^{-7}
C. 10^{-6}
D. 10^{-5}

Question Number : 24 Question Id : 6584303944 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is NOT true about the total lunar eclipse?

A. A lunar eclipse can occur on a new moon and full moon day.
B. The lunar eclipse would occur roughly every month if the orbits of earth and moon were perfectly coplanar.
C. The moon appears red during the eclipse because the blue light is absorbed in earth's atmosphere and red is transmitted.
D. A lunar eclipse can occur only on a full moon day.

Question Number : 24 Question Id : 6584303944 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

निम्न में से कौन सा कथन पूर्ण चंद्रग्रहण के लिए सही नहीं है।

A. चंद्रग्रहण अमावस्या तथा पूर्णिमाँ को हो सकता है।

B. यदि पृथ्वी और चंद्रमा की कक्षा पूर्णतः समतलीय हो तो चंद्रग्रहण लगभग हर महीने में होगा।

C. चंद्रग्रहण के समय चंद्रमा लाल दिखायी देगा, क्योंकि पृथ्वी के वातावरण में नीला प्रकाश अवशोषित होता है तथा लाल प्रकाश पारगत होता है।

D. चंद्रग्रहण केवल पूर्णिमाँ को ही होता हैं।

Question Number : 25 Question Id : 6584303945 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Many exoplanets have been discovered by the transit method, wherein one monitors a dip in the intensity of the parent star as the exoplanet moves in front of it. The exoplanet has a radius R and the parent star has radius $100R$. If I_0 is the intensity observed on earth due to the parent star, then as the exoplanet transits,

A. the minimum observed intensity of the parent star is 0.9 I_0.

B. the minimum observed intensity of the parent star is 0.99 I_0.

C. the minimum observed intensity of the parent star is 0.999 I_0.

D. the minimum observed intensity of the parent star is 0.9999 I_0.

Question Number : 25 Question Id : 6584303945 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

बहुत सारे गैर-सौरीय (exoplanet) ग्रहों को ट्रांसिट (transit) विधि द्वारा खोजा जाता है। इस विधि में जब ग्रह अपने मूल तारे के सामने से गुजरता है, तब तारे की तीव्रता में आयी कमी को अवलोकित (monitor) करके ग्रह को खोजा जाता है। एक गैर-सौरीय ग्रह की त्रिज्या R है तथा इसके मूल तारे की त्रिज्या 100R है। यदि मूल तारे की पृथ्वी पर मापी गई तीव्रता I_0 है, तो जब यह गैर-सौरीय ग्रह तारे के सामने से गुजरेगा तो

A. मूल तारे की तीव्रता का न्यूनतम प्रेक्षित मान 0.9 I_0 होगा।

B. मूल तारे की तीव्रता का न्यूनतम प्रेक्षित मान 0.99 I_0 होगा।

C. मूल तारे की तीव्रता का न्यूनतम प्रेक्षित मान 0.999 I_0 होगा।

D. मूल तारे की तीव्रता का न्यूनतम प्रेक्षित मान 0.9999 I_0 होगा।

Question Number : 26 Question Id : 6584303946 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A steady current I is set up in a wire whose cross-sectional area decreases in the direction of the flow of the current. Then, as we examine the narrowing region

A. the current density decreases in value.
B. the magnitude of the electric field increases.
C. the current density remains constant.
D. the average speed of the moving charges remains constant.

Question Number : 26 Question Id : 6584303946 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक अपरिवर्ती विद्युत धारा I एक ऐसे तार में प्रवाहित होती है जिसके अनुप्रस्थ काट का क्षेत्रफल विद्युत धारा के प्रवाह की दिशा में कम होता जाता है। तार के संकीर्ण क्षेत्र में

A. विद्युत धारा घनत्व का मान घट जाएगा।
B. विद्युत क्षेत्र का परिमाण बढ़ जाएगा।
C. विद्युत धारा घनत्व स्थिर रहेगा।
D. गतिमान विद्युत आवेशों की औसत गति स्थिर रहेगी।

Question Number : 27 Question Id : 6584303947 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Select the correct statement about rainbow:

A. We can see a rainbow in the western sky in the late afternoon.
B. The double rainbow has red on the inside and violet on the outside.
C. A rainbow has an arc shape since the earth is round.
D. A rainbow on the moon is violet on the inside and red on the outside.

Question Number : 27 Question Id : 6584303947 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

इन्द्रधनुष के बारे में कौन सा कथन सही है

A. इन्द्रधनुष को पश्चिमी आकाश में देर-दोपहर (late afternoon) में देख सकते हैं।
B. द्विइन्द्रधनुष (double rainbow) में लाल रंग अंदर तथा बैंगनी रंग बाहर की तरफ होगा।
C. पृथ्वी के गोल होने के कारण इन्द्रधनुष वक्र (arc) आकार का होता है।
D. चंद्रमा पर इन्द्रधनुष में बैंगनी रंग अंदर तथा लाल रंग बाहर की तरफ होगा।

Question Number : 28 Question Id : 6584303948 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Remote sensing satellites move in an orbit that is at an average height of about 500 km from the surface of the earth. The camera onboard one such satellite has a screen of area A on which the images captured by it are formed. If the focal length of the camera lens is 50 cm, then the terrestrial area that can be observed from the satellite is close to

A. $2 \times 10^3 A$

B. $10^6 A$

C. $10^{12} A$

D. $4 \times 10^{12} A$

Question Number : 28 Question Id : 6584303948 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक सुदुर संवेदन उपग्रह, पृथ्वी की सतह से औसतन 500 km की दूरी पर अपनी कक्षा में गति करता है। इस उपग्रह में लगे कैमरे, जिसके पर्दे का क्षेत्रफल A है, पर चित्र बनता है। यदि कैमरे में लगे लेन्स की फोकस दूरी 50 cm है, तो उपग्रह के कैमरे के द्वारा कितना स्थलीय क्षेत्र प्रेक्षित (observed) किया जा सकता है ?

A. $2 \times 10^3 A$

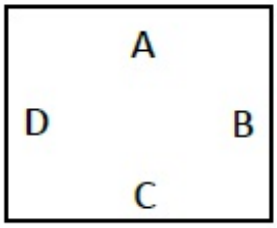
B. $10^6 A$

C. $10^{12} A$

D. $4 \times 10^{12} A$

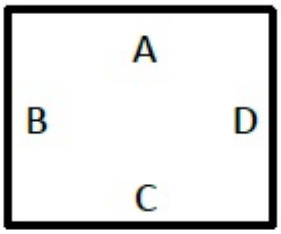
Question Number : 29 Question Id : 6584303949 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Letters A, B, C and D are written on a cardboard as shown in the picture.

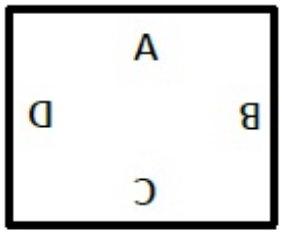


The cardboard is kept at a suitable distance behind a transparent empty glass of cylindrical shape. If the glass is now filled with water, one sees an inverted image of the pattern on the cardboard when looking through the glass. Ignoring magnification effects, the image would appear as

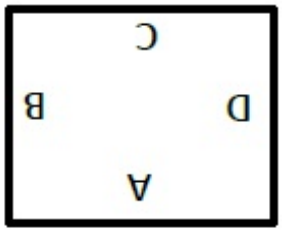
A.



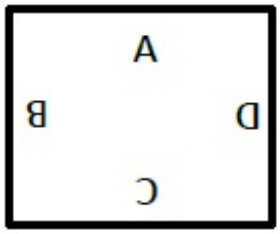
B.



C.

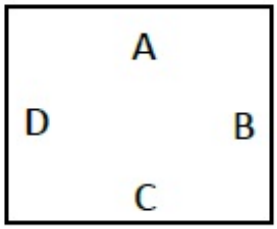


D.



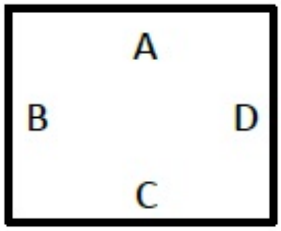
Question Number : 29 Question Id : 6584303949 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

चित्रानुसार अक्षर A, B, C, और D एक कागज के तख्ते पर लिखे गए हैं:

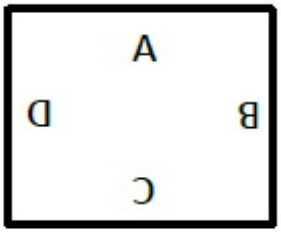


इस तख्ते को एक खाली पारदर्शी बेलनाकार गिलास के पीछे एक उचित दूरी पर रखा गया है। यदि इस गिलास में पानी भर दिया जाए, तो गिलास से देखने पर बने अक्षरों के क्रम का उल्टा प्रतिबिम्ब (inverted image) दिखता है। आवर्धन को नगण्य मानते हुए निम्न में कौनसा प्रतिबिम्ब सही है :

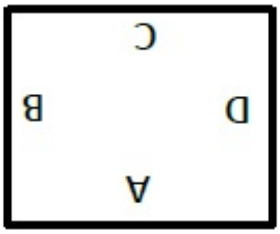
A.



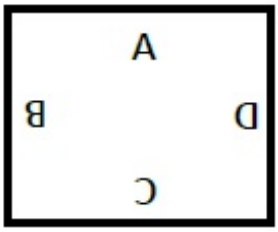
B.



C.



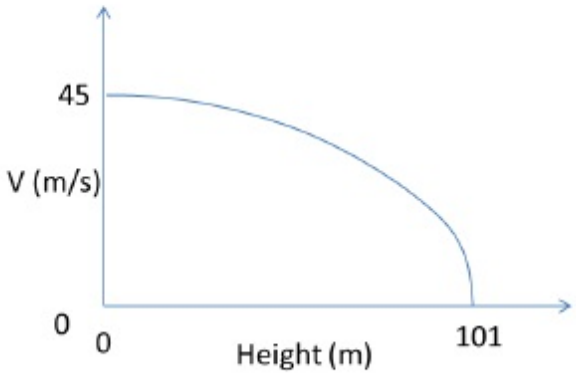
D.



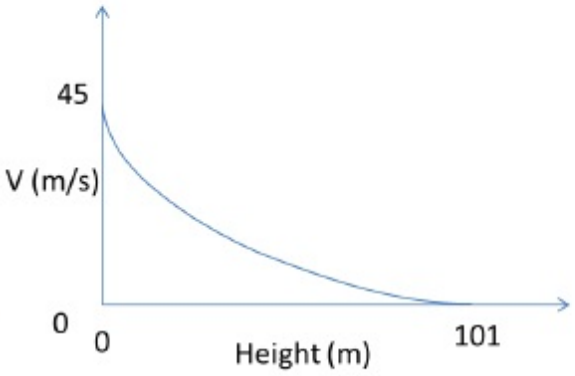
Question Number : 30 Question Id : 6584303950 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If a ball is thrown at a velocity of 45 m/s in vertical upward direction, then what would be the velocity profile as function of height? Assume g = 10 m/s^2.

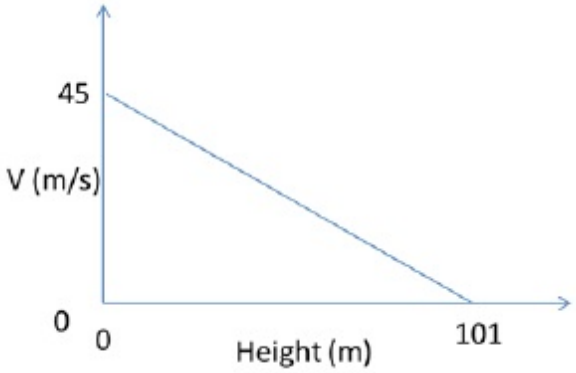
A.



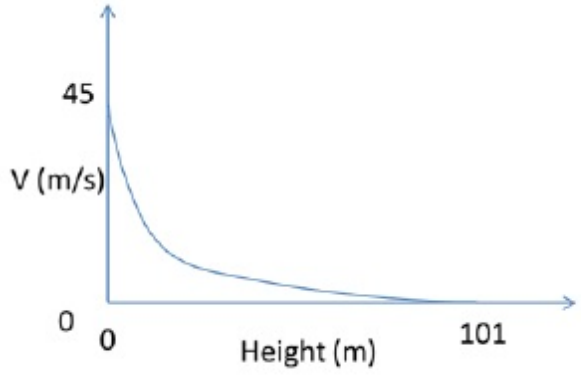
B.



C.



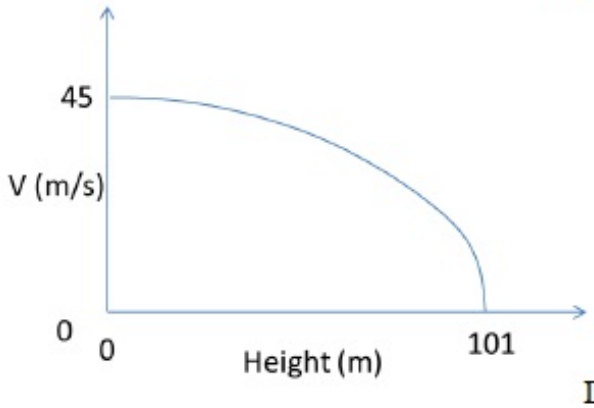
D.



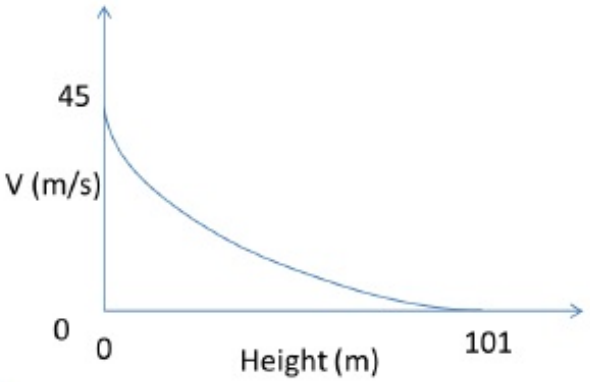
Question Number : 30 Question Id : 6584303950 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक गेंद को 45 m/s के वेग से ऊर्ध्वाधर दिशा में ऊपर की ओर फेंका जाता है। वेग का ऊँचाई के सापेक्ष में सही आरेख क्या होगा ? मान लीजिए $g = 10\ m/s^2$ ।

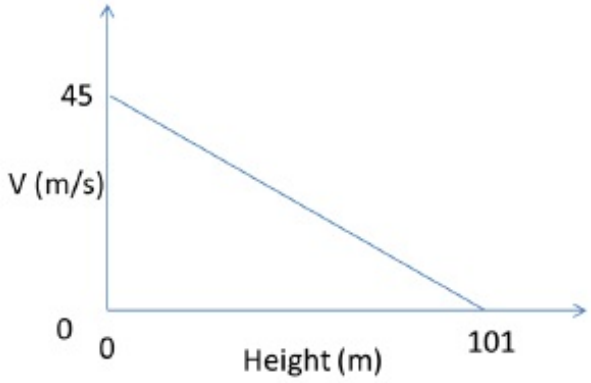
A.



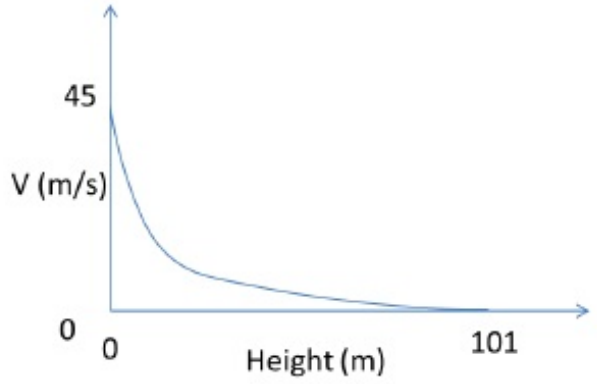
B.



C.



D.



Part I Chemistry

Display Number Panel: Yes
Group All Questions: No

Question Number : 31 Question Id : 6584303951 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The number of water molecules in 250 mL of water is closest to

[Given: Density of water is 1.0 g mL^{-1}; Avogadro's number = 6.023×10^{23}]

A. 83.6×10^{23}

B. 13.9×10^{23}

C. 1.5×10^{23}

D. 33.6×10^{23}

Question Number : 31 Question Id : 6584303951 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

250 mL जल में जल के अणुओं की संख्या निम्न के निकटतम होगी [दिया है: जल का घनत्व 1.0 g mL^{-1} है एवं

अवागाद्रो संख्या = 6.023×10^{23}]

A. 83.6×10^{23}

B. 13.9×10^{23}

C. 1.5×10^{23}

D. 33.6×10^{23}

Question Number : 32 Question Id : 6584303952 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Among the following, the correct statement is

A. pH decreases when solid ammonium chloride is added to a dilute aqueous solution of NH_3

B. pH decreases when solid sodium acetate is added to a dilute aqueous solution of acetic acid

C. pH decreases when solid NaCl is added to a dilute aqueous solution of NaOH

D. pH decreases when solid sodium oxalate is added to a dilute aqueous solution of oxalic acid

Question Number : 32 Question Id : 6584303952 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

निम्नलिखित में सही कथन है

A. pH घटता है, जब ठोस अमोनियम क्लोराइड को NH_3 के एक तनु जलीय विलयन में मिलाया जाता है।

B. pH घटता है, जब ठोस सोडियम एसीटेट को एसीटिक एसिड के एक तनु जलीय विलयन में मिलाया जाता है।

C. pH घटता है, जब ठोस NaCl को NaOH के एक तनु जलीय विलयन में मिलाया जाता है।

D. pH घटता है, जब ठोस सोडियम ऑक्सेलेट को ऑक्सेलिक एसिड के एक तनु जलीय विलयन में मिलाया जाता है।

Question Number : 33 Question Id : 6584303953 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solubility of $BaSO_4$ in pure water (in g L^{-1}) is closest to

[Given: K_{sp} for $BaSO_4$ is 1.0×10^{-10} at 25 °C. Molecular weight of $BaSO_4$ is 233 g mol^{-1}]

A. 1.0×10^{-5}

B. 1.0×10^{-3}

C. 2.3×10^{-5}

D. 2.3×10^{-3}

Question Number : 33 Question Id : 6584303953 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

शुद्ध जल में $BaSO_4$ की विलेयता (g L^{-1} में) निम्न के निकटतम है

[दिया है: 25 °C पर $BaSO_4$ की K_{sp} 1.0×10^{-10} है। $BaSO_4$ का आण्विक भार 233 g mol^{-1}]

A. 1.0×10^{-5}

B. 1.0×10^{-3}

C. 2.3×10^{-5}

D. 2.3×10^{-3}

Question Number : 34 Question Id : 6584303954 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Among the following, the **INCORRECT** statement is

A. No two electrons in an atom can have the same set of four quantum numbers
B. The maximum number of electrons in the shell with principal quantum number, n, is equal to n^2+2
C. Electrons in an orbital must have opposite spin
D. In the ground state, atomic orbitals are filled in the order of their increasing energies

Question Number : 34 Question Id : 6584303954 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

निम्नलिखित में से गलत कथन है ;

A. एक परमाणु में कोई भी दो इलेक्ट्रॉनों की चारों क्वान्टम संख्याएं समान नहीं हो सकती है।
B. एक कोश में जिसकी प्रमुख क्वान्टम संख्या n है, अधिकतम इलेक्ट्रॉनों की संख्या n^2+2।
C. एक आर्बिटल (orbital) में इलेक्ट्रॉनों के प्रचक्रण (spin) अनिवार्यतः विपरीत होंगे।
D. भूमिज अवस्था (ground state) में, परमाणु के आर्बिटल (orbitals) को उनकी ऊर्जा के आरोही क्रमों में भरा जाता है।

Question Number : 35 Question Id : 6584303955 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A container of volume 2.24 L can withstand a maximum pressure of 2 atm at 298 K before exploding. The maximum amount of nitrogen (in g) that can be safely put in this container at this temperature is closest to

A. 2.8
B. 5.6
C. 1.4
D. 4.2

Question Number : 35 Question Id : 6584303955 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक पात्र जिसका आयतन 2.24 L है, विस्फोटित होने से पहले 298 K के ताप पर 2 atm का दाब सहन कर सकता है। इस तापमान पर नाइट्रोजन की अधिकतम मात्रा (g में) जो इस पात्र में सुरक्षित तरीके से रखी जा सकती है, निम्न के निकटतम है

A. 2.8

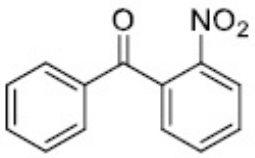
B. 5.6

C. 1.4

D. 4.2

Question Number : 36 Question Id : 6584303956 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The compound shown below



can be readily prepared by Friedel-Crafts reaction between

A. benzene and 2-nitrobenzoyl chloride

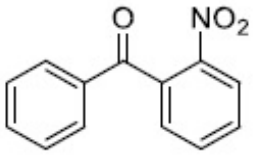
B. benzyl chloride and nitrobenzene

C. nitrobenzene and benzoyl chloride

D. benzene and 2-nitrobenzyl chloride

Question Number : 36 Question Id : 6584303956 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

नीचे दिखाया गया यौगिक



फ्रीडल-क्राफ्ट अभिक्रिया द्वारा नीचे दिये गए निम्न यौगिकों के बीच की अभिक्रिया से सरलता से बनाया जा सकता है ?

A. बेंज़ीन और 2-नाइट्रोबेन्ज़ोइल (2-nitrobenzoyl) क्लोराइड

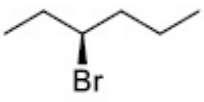
B. बेंजाइल (benzyl) क्लोराइड और नाइट्रो बेंज़ीन

C. नाइट्रो बेंज़ीन और बेन्ज़ोइल (benzoyl) क्लोराइड

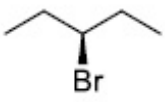
D. बेंज़ीन और 2-नाइट्रोबेंजाइल (2-nitrobenzyl) क्लोराइड

Question Number : 37 Question Id : 6584303957 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The correct statement about the following compounds



X



Y

is

A. both are chiral

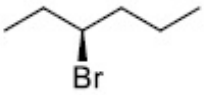
B. both are achiral

C. **X** is chiral and **Y** is achiral

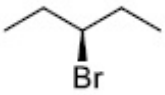
D. **X** is achiral and **Y** is chiral

Question Number : 37 Question Id : 6584303957 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

निम्न यौगिकों



X



Y

के बारे में सही कथन कौनसा है

A. दोनों काइरल हैं।

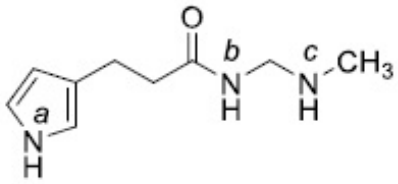
B. दोनों काइरल नहीं हैं।

C. X काइरल हैं परंतु Y काइरल नहीं हैं।

D. X काइरल नहीं हैं परंतु Y काइरल हैं।

Question Number : 38 Question Id : 6584303958 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The most acidic proton and the strongest nucleophilic nitrogen in the following compound



respectively, are

A. N^a-H; N^b

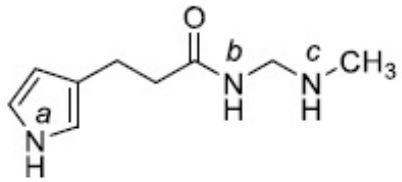
B. N^b-H; N^c

C. N^a-H; N^c

D. N^c-H; N^a

Question Number : 38 Question Id : 6584303958 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

निम्न यौगिक



में अधिकतम अम्लीय प्रोटॉन तथा सबसे सशक्त नाभिकस्नेही नाइट्रोजन क्रमश: हैं

A. N^a-H; N^b

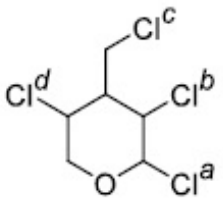
B. N^b-H; N^c

C. N^a-H; N^c

D. N^c-H; N^a

Question Number : 39 Question Id : 6584303959 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The chlorine atom of the following compound



that reacts most readily with $AgNO_3$ to give a precipitate is

A. Cl^a

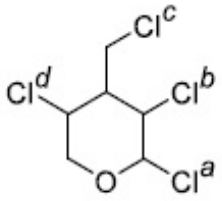
B. Cl^b

C. Cl^c

D. Cl^d

Question Number : 39 Question Id : 6584303959 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

निम्न यौगिक में क्लोरीन परमाणु,



जो $AgNO_3$ के साथ अधिकतम सरलता से क्रिया कर अवक्षेप बनाता है

A. Cl^a

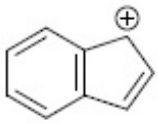
B. Cl^b

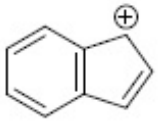
C. Cl^c

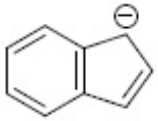
D. Cl^d

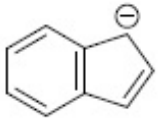
Question Number : 40 Question Id : 6584303960 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Among the following sets, the most stable ionic species are

A.  and 

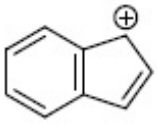
B.  and 

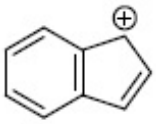
C.  and 

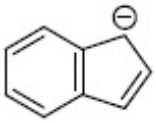
D.  and 

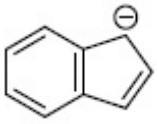
Question Number : 40 Question Id : 6584303960 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

निम्नलिखित समूहों में, अधिकतम स्थायी ऑयनिक युग्म निम्न है

A.  and 

B.  and 

C.  and 

D.  and 

Question Number : 41 Question Id : 6584303961 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The correct order of energy of 2s orbitals in H, Li, Na and K, is

A. $K < Na < Li < H$

B. $Na < Li < K < H$

C. $Na < K < H < Li$

D. $H < Na < Li < K$

Question Number : 41 Question Id : 6584303961 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

H, Li, Na और K में 2s ओरबिटल (orbital) की ऊर्जा का सही क्रम निम्न है

A. $K < Na < Li < H$

B. $Na < Li < K < H$

C. $Na < K < H < Li$

D. $H < Na < Li < K$

Question Number : 42 Question Id : 6584303962 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The hybridization of xenon atom in XeF_4 is

A. sp^3

B. dsp^2

C. sp^3d^2

D. d^2sp^3

Question Number : 42 Question Id : 6584303962 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

XeF_4 में Xe परमाणु का संकरण निम्न है

A. sp^3

B. dsp^2

C. sp^3d^2

D. d^2sp^3

Question Number : 43 Question Id : 6584303963 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The formal oxidation numbers of Cr and Cl in the ions $Cr_2O_7^{2-}$ and ClO_3^-,

respectively, are

A. +6 and +7

B. +7 and +5

C. +6 and +5

D. +8 and +7

Question Number : 43 Question Id : 6584303963 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$Cr_2O_7^{2-}$ और ClO_3^- में Cr एवं Cl की सामान्य ऑक्सीकरण संख्या क्रमश: निम्न है

A. +6 और +7

B. +7 और +5

C. +6 और +5

D. +8 और +7

Question Number : 44 Question Id : 6584303964 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A filter paper soaked in salt **X** turns brown when exposed to HNO_3 vapor. The salt **X** is

A. KCl

B. KBr

C. KI

D. K_2SO_4

Question Number : 44 Question Id : 6584303964 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक फ़िल्टर पेपर जो कि **X** लवण से भीगा है, HNO_3 की वाष्प के संपर्क में आने पर भूरा रंग देता है। लवण **X** निम्न है

A. KCl

B. KBr

C. KI

D. K_2SO_4

Question Number : 45 Question Id : 6584303965 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The role of haemoglobin is to

A. store oxygen in muscles

B. transport oxygen to different parts of the body

C. convert CO to CO_2

D. convert CO_2 into carbonic acid

Question Number : 45 Question Id : 6584303965 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

हिमोग्लोबिन का कार्य निम्न है

A. ऑक्सिजन को पेशियों में संचित करना।

B. ऑक्सिजन को शरीर के विभिन्न भागों में ले जाना।

C. CO को CO_2 में बदलना।

D. CO_2 को कार्बोनिक अम्ल में बदलना।

Display Number Panel: Yes
Group All Questions: No

Question Number : 46 Question Id : 6584303966 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which ONE of the following molecules is a secondary metabolite?

A. Ethanol

B. Lactate

C. Penicillin

D. Citric Acid

Question Number : 46 Question Id : 6584303966 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

निम्नलिखित में से कौन सा अणु द्वितीयक उपापचयी उत्पाद है?

A. इथेनॉल

B. लैक्टेट

C. पेनिसिलिन

D. सिट्रिक अम्ल

Question Number : 47 Question Id : 6584303967 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Lecithin is a

A. carbohydrate

B. phospholipid

C. nucleoside

D. protein

Question Number : 47 Question Id : 6584303967 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

लेसिथिन क्या है?

A. कॉर्बोहाईड्रेट

B. फॉस्फोलिपिड

C. न्यूक्लिओसाइड

D. प्रोटीन

Question Number : 48 Question Id : 6584303968 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The water potential (ψ_P) of pure water at standard temperature and atmospheric pressure is

A. 0

B. 0.5

C. 1.0

D. 2.0

Question Number : 48 Question Id : 6584303968 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

मानक ताप और वायुमंडलीय दाब पर शुद्ध जल का जल विभव (ψp) कितना होता है?

A. 0

B. 0.5

C. 1.0

D. 2.0

Question Number : 49 Question Id : 6584303969 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Action potential in neurons is generated by a rapid influx of

A. chloride ions

B. potassium ions

C. calcium ions

D. sodium ions

Question Number : 49 Question Id : 6584303969 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

तंत्रिका कोशिका मे उत्पन्न क्रियात्मक विभव किसके त्वरित अंतर्वाह से होता है?

A. क्लोराइड आयन्स

B. पोटैशियम आयन्स

C. कैल्शियम आयन्स

D. सोडियम आयन्स

Question Number : 50 Question Id : 6584303970 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Erythropoietin is produced by

A. heart

B. kidney

C. bone marrow

D. adrenal gland

Question Number : 50 Question Id : 6584303970 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

इरिथ्रोपोइटिन का उत्पादन कहाँ होता है?

A. हृदय

B. वृक्क

C. अस्थि मज्जा

D. अधिवृक्क ग्रंथि

Question Number : 51 Question Id : 6584303971 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Tendrils are modifications of

A. stem or leaf

B. stem only

C. leaf only

D. aerial roots only

Question Number : 51 Question Id : 6584303971 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

प्रतान (टेंड्रिल) निम्न में से किसका परिवर्तित रूप है?

A. पत्ती या तने का

B. केवल तने का

C. केवल पत्ती का

D. केवल वायवीय जड़ों का

Question Number : 52 Question Id : 6584303972 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which ONE of the following combinations of biomolecules is present in the ribosomes?

A. RNA, DNA and protein

B. RNA, lipids and DNA

C. RNA and protein

D. RNA and DNA

Question Number : 52 Question Id : 6584303972 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

निम्नलिखित में से जैविक अणुओं का कौन सा संयोजन राइबोसोम्स में मौजूद होता है?

A. RNA, DNA और प्रोटीन

B. RNA, लिपिड्स और DNA

C. RNA और प्रोटीन

D. RNA और DNA

Question Number : 53 Question Id : 6584303973 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which ONE of the following proteins does NOT play a role in skeletal muscle contraction?

A. Actin

B. Myosin

C. Troponin

D. Microtubule

Question Number : 53 Question Id : 6584303973 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

निम्नलिखित में से कौन सा प्रोटीन अस्थि पेशियों के संकुचन मे कोई भूमिका नहीं निभाता है?

A. एक्टिन

B. मायोसिन

C. ट्रोपोनिन

D. माइक्रोट्यूब्यूल

Question Number : 54 Question Id : 6584303974 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which ONE of the following reactions is catalyzed by high-energy ultraviolet radiation in the stratosphere?

A. $O_2 + O \rightarrow O_3$

B. $O_2 \rightarrow O + O$

C. $O_3 + O_3 \rightarrow 3O_2$

D. $O + O \rightarrow O_2$

Question Number : 54 Question Id : 6584303974 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

निम्नलिखित में से कौन सी अभिक्रिया समताप-मण्डल मे उच्च-ऊर्जा की पराबैंगनी विकिरणों से उत्प्रेरित होता है?

A. $O_2 + O \rightarrow O_3$

B. $O_2 \rightarrow O + O$

C. $O_3 + O_3 \rightarrow 3O_2$

D. $O + O \rightarrow O_2$

Question Number : 55 Question Id : 6584303975 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which ONE of the following statements is TRUE about trypsinogen?

A. It is activated by enterokinase

B. It is activated by renin

C. It is activated by pepsin

D. It does not need activation

Question Number : 55 Question Id : 6584303975 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

ट्रिप्सिनोजेन के विषय मे निम्नलिखित में से कौन सा कथन सत्य है?

A. इसका सक्रियण एंटेरोकाइनेज़ द्वारा होता है।

B. इसका सक्रियण रेनिन (Renin) द्वारा होता है।

C. इसका सक्रियण पेप्सिन द्वारा होता है।

D. इसे सक्रियण की आवश्यकता नहीं होती है।

Question Number : 56 Question Id : 6584303976 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which ONE of the following organisms respire through the skin?

A. Blue whale

B. Salamander

C. Platypus

D. Peacock

Question Number : 56 Question Id : 6584303976 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

निम्नलिखित में से कौन सा जीव अपनी त्वचा द्वारा श्वसन करता है?

A. ब्लू व्हेल

B. सैलामैंडर

C. प्लेटिपस

D. मोर

Question Number : 57 Question Id : 6584303977 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which ONE of the following human cells lacks a nucleus?

A. Neutrophil

B. Neuron

C. Mature erythrocyte

D. Keratinocyte

Question Number : 57 Question Id : 6584303977 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

निम्नलिखित में से कौन सी मानव कोशिका केंद्रक विहीन होती है?

A. न्यूट्रोफिल

B. तंत्रिका

C. परिपक्व लाल रूधिराणु

D. किरैटिनोसाइट

Question Number : 58 Question Id : 6584303978 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The first enzyme that the food encounters in human digestive system is

A. pepsin

B. trypsin

C. chymotrypsin

D. amylase

Question Number : 58 Question Id : 6584303978 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

मनुष्य के पाचन तंत्र मे भोजन सबसे पहले किस एंजाइम के संपर्क मे आता है?

A. पेप्सिन

B. ट्रिप्सिन

C. काइमोट्रिप्सिन

D. एमाइलेज़

Question Number : 59 Question Id : 6584303979 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Glycoproteins are formed in which ONE of the following organelles?

A. Peroxisome

B. Lysosome

C. Golgi apparatus

D. Mitochondria

Question Number : 59 Question Id : 6584303979 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

निम्नलिखित में से किस कोशिकांग मे ग्लाइकोप्रोटीन का निर्माण होता है?

A. पर-ऑक्सीसोम

B. लयनकाय (लाइसोसोम)

C. गॉल्जी उपकरण

D. सूत्रकणिका

Question Number : 60 Question Id : 6584303980 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An example of nastic movement (external stimulus-dependent movement) in plants is

A. folding-up of the leaves of *Mimosa pudica*

B. climbing of tendrils

C. growth of roots from seeds

D. growth of pollen tube towards the ovule

Question Number : 60 Question Id : 6584303980 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

निम्न में से कौन सा पौधों मे नैस्टिक संचलन (वाह्य उद्दीपन आधारित संचलन) का उदाहरण है?

A. मिमोसा पुडिका (छुई मुई) की पत्तियों का मुरझाना

B. प्रतानों का चढ़ना

C. बीजों से जड़ों की वृद्धि

D. पराग-नलिका का बीजाण्डों की दिशा मे वृद्धि

Part II Mathematics

Display Number Panel: Yes
Group All Questions: No

Question Number : 61 Question Id : 6584303981 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What is the sum of all natural numbers n such that the product of the digits of n (in base 10) is equal to $n^2 - 10n - 36$?

A. 12 B. 13 C. 124 D. 2612

Question Number : 61 Question Id : 6584303981 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

यदि आधार 10 (base 10) में प्राकृतिक संख्याओं n के अंकों का गुणनफल $n^2 - 10n - 36$ है, तब ऐसी सभी प्राकृतिक संख्याओं का योगफल होगा :

A. 12 B. 13 C. 124 D. 2612

Question Number : 62 Question Id : 6584303982 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Let m (respectively, n) be the number of 5-digit integers obtained by using the digits 1,2,3,4,5 with repetitions (respectively, without repetitions) such that the sum of any two adjacent digits is odd. Then $\frac{m}{n}$ is equal to

A. 9 B. 12 C. 15 D. 18

Question Number : 62 Question Id : 6584303982 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

अंक $1,2,3,4,5$ को मिलाकर 5-अंकों की पूर्णांक संख्याएँ m एवं n बनाई जाती है। संख्या m में अंकों का पुनरावर्तन (repetition) होता है एवं संख्या n में अंकों का पुनरावर्तन संभव नहीं है। इन दोनों प्रकार के पूर्णांकों में स्लंग्न (adjacent) अंको का योग विषम है। तब $\frac{m}{n}$ का मान होगा :

A. 9 B. 12 C. 15 D. 18

Question Number : 63 Question Id : 6584303983 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The number of solid cones with integer radius and integer height each having its volume numerically equal to its total surface area is

A. 0 B. 1 C. 2 D. infinite

Question Number : 63 Question Id : 6584303983 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

पूर्णांक त्रिज्या एवं पूर्णांक ऊंचाई वाले प्रत्येक शंकु का आयतन का संख्यात्मक मान इसके कुल पृष्ठीय क्षेत्रफल के बराबर है। ऐसे शंकुओं की संख्या है:

A. 0 B. 1 C. 2 D. अनंत

Question Number : 64 Question Id : 6584303984 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Let $ABCD$ be a square. An arc of a circle with A as center and AB as radius is drawn inside the square joining the points B and D. Points P on AB, S on AD, Q and R on arc BD are taken such that $PQRS$ is a square. Further suppose that PQ and RS are parallel to AC. Then $\frac{\text{area } PQRS}{\text{area } ABCD}$ is

A. $\frac{1}{8}$ B. $\frac{1}{5}$ C. $\frac{1}{4}$ D. $\frac{2}{5}$

Question Number : 64 Question Id : 6584303984 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$ABCD$ एक वर्ग है। एक वृत के चाप (arc) को इस वर्ग के अंदर खिंचा जाता है। इस चाप का केंद्र A है, इसकी त्रिज्या AB है और यह बिन्दु B एवं D को जोड़ता है। AB पर एक बिन्दु P, AD पर एक बिन्दु S तथा चाप BD पर बिन्दु Q एवं R इस प्रकार लिए जाते है कि $PQRS$ एक वर्ग बन जाता है। इसके अलवा, यदि मान लें कि PQ एवं RS रेखा AC के समानान्तर हैं, तब $\frac{\text{क्षेत्रफल } PQRS}{\text{क्षेत्रफल } ABCD}$ का मान होगा:

A. $\frac{1}{8}$ B. $\frac{1}{5}$ C. $\frac{1}{4}$ D. $\frac{2}{5}$

Question Number : 65 Question Id : 6584303985 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Suppose $ABCD$ is a trapezium whose sides and height are integers and AB is parallel to CD. If the area of $ABCD$ is 12 and the sides are distinct, then $|AB - CD|$

A. is 2

B. is 4

C. is 8

D. cannot be determined from the data

Question Number : 65 Question Id : 6584303985 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

समलंब $ABCD$ की भुजाएँ एवं ऊंचाई पूर्णांक है एवं AB तथा CD समानान्तर है। यदि $ABCD$ का क्षेत्रफल 12 है एवं इसकी भुजाएँ विभिन्न है, तब $|AB - CD|$ का मान होगा:

A. 2

B. 4

C. 8

D. दिये गए आंकड़ो से पता नहीं लगाया जा सकता है।

Part II Physics

Display Number Panel: Yes
Group All Questions: No

Question Number : 66 Question Id : 6584303986 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A coffee maker makes coffee by passing steam through a mixture of coffee powder, milk and water. If the steam is mixed at the rate of 50 g per minute in a mug containing 500 g of mixture, then it takes about t_0 seconds to make coffee at 70 °C when the initial temperature of the mixture is 25 °C. The value of t_0 is close to (ratio of latent heat of evaporation to specific heat of water is 540 °C and specific heat of the mixture can be taken to be the same as that of water)

A. 30

B. 45

C. 60

D. 90

Question Number : 66 Question Id : 6584303986 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक कॉफी मशीन, कॉफी चूर्ण, दूध और पानी के मिश्रण में भाप को मिला कर कॉफी बनाती है। एक मग में 500 gm का मिश्रण 25 °C पर है, और उसमें 50 g/minute की दर से भाप को मिला कर t_0 सेकंड में 70 °C तापमान वाली कॉफी बनायी जाती है। t_0 का निकटतम मान क्या होगा (जल के वाष्पन की गुप्त ऊष्मा का उसके विशिष्ट ऊष्मा के साथ अनुपात 540 °C है, तथा मिश्रण एवं जल की विशिष्ट ऊष्मा को समान माना जा सकता है)

A. 30

B. 45

C. 60

D. 90

Question Number : 67 Question Id : 6584303987 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A person in front of a mountain is beating a drum at the rate of 40 per minute and hears no distinct echo. If the person moves 90 m closer to the mountain, he has to beat the drum at 60 per minute to not hear any distinct echo. The speed of sound is

A. 320 ms^{-1}

B. 340 ms^{-1}

C. 360 ms^{-1}

D. 380 ms^{-1}

Question Number : 67 Question Id : 6584303987 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक व्यक्ति पर्वत के सामने खड़े होकर 40 / मिनट की दर से ढ़ोल बजाता है और उसे कोई भिन्न प्रतिध्वनि सुनायी नहीं देती है। यदि वह व्यक्ति पर्वत की ओर 90 m चले, तो भिन्न प्रतिध्वनि नहीं सुनने के लिये उसे ढ़ोल को 60 / मिनट की दर से बजाना पड़ता है। ध्वनि की गति क्या होगी

A. 320 ms^{-1}

B. 340 ms^{-1}

C. 360 ms^{-1}

D. 380 ms^{-1}

Question Number : 68 Question Id : 6584303988 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A glass beaker is filled with water up to 5 cm. It is kept on top of a 2 cm thick glass slab. When a coin at the bottom of the glass slab is viewed at the normal incidence from above the beaker, its apparent depth from the water surface is d cm. Value of d is close to (the refractive indices of water and glass are 1.33 and 1.50, respectively)

A. 2.5

B. 5.1

C. 3.7

D. 6.0

Question Number : 68 Question Id : 6584303988 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक काँच के बीकर में 5 cm के ऊँचाई तक जल भरा है। इस बीकर को 2 cm मोटाई की काँच की एक शिला पर रखा जाता है। एक सिक्के को शिला के निचली तल पर रखा है। यदि इस सिक्के को बीकर के ऊपर से लम्बवत दिशा में देखा जाता है, तब इसकी आभासी गहराई पानी की सतह से d cm होती है। d का निकटतम मान होगा (पानी तथा काँच का अपवर्तनांक क्रमशः 1.33 तथा 1.50 है, बीकर की मोटाई को नगण्य मानिए।)

A. 2.5

B. 5.1

C. 3.7

D. 6.0

Question Number : 69 Question Id : 6584303989 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A proton of mass m and charge e is projected from a very large distance towards an α particle with velocity v. Initially, α particle is at rest, but it is free to move. If gravity is neglected, then the minimum separation along the straight line of their motion will be

A. $e^2/4\pi\varepsilon_0 mv^2$

B. $5e^2/4\pi\ \varepsilon_0 mv^2$

C. $2e^2/4\pi\ \varepsilon_0 mv^2$

D. $4e^2/4\pi\ \varepsilon_0 mv^2$

Question Number : 69 Question Id : 6584303989 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एक m द्रव्यमान तथा e आवेश के प्रोटॉन को लम्बी दूरी से α कण की ओर v वेग से प्रक्षेपित किया जाता है। α कण शुरुआत में स्थिर अवस्था में है, परंतु गति करने के लिय स्वतंत्र है। गुरुत्व को नगण्य मानते हुए, उनकी गति की रेखा में, α कण और प्रोटॉन के बीच की न्यूनतम दूरी क्या होगी ?

A. $e^2/4\pi\varepsilon_0 mv^2$

B. $5e^2/4\pi\ \varepsilon_0 mv^2$

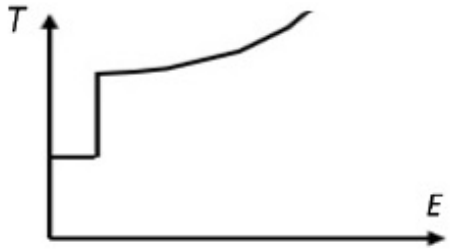
C. $2e^2/4\pi\ \varepsilon_0 mv^2$

B. $4e^2/4\pi\ \varepsilon_0 mv^2$

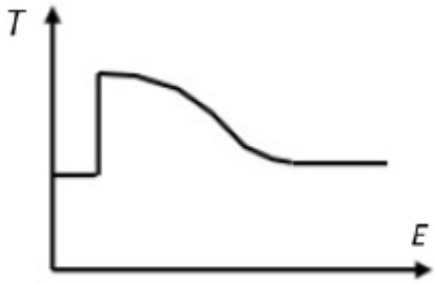
Question Number : 70 Question Id : 6584303990 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A potential is given by $V(x) = k(x+a)^2/2$ for $x < 0$ and $V(x) = k(x-a)^2/2$ for $x > 0$. The schematic variation of oscillation period (T) for a particle performing periodic motion in this potential as a function of its energy E is:

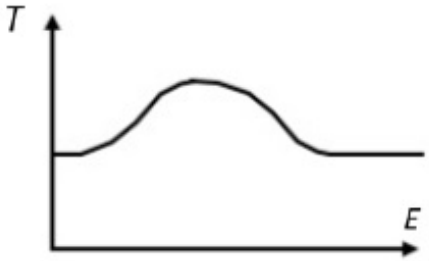
A.



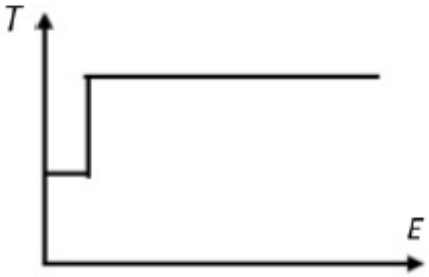
B.



C.



D.

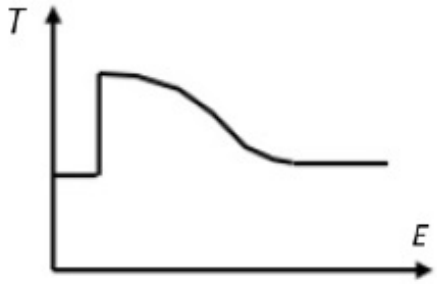


Question Number : 70 Question Id : 6584303990 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

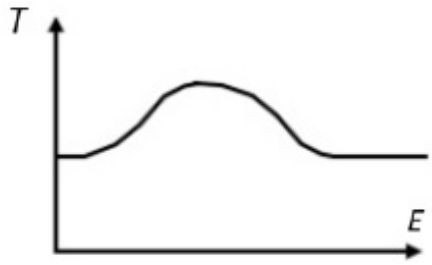
किसी स्थितिज ऊर्जा, V(x) को x के सापेक्ष समीकरण $V(x) = k(x+a)^2/2$, जब $x < 0$, और $V(x) = k(x-a)^2/2$, जब $x > 0$, (a एक धनात्मक स्थिरांक है) से निरूपित किया जाता है। एक आवर्त गति करते हुए कण की स्थितिज ऊर्जा इस समीकरण के अनुसार बदलती है। इस कण के आवर्त काल का कण की ऊर्जा E के सापेक्ष परिवर्तन किस आरेख द्वारा सही रूप दर्शाया गया है

A.

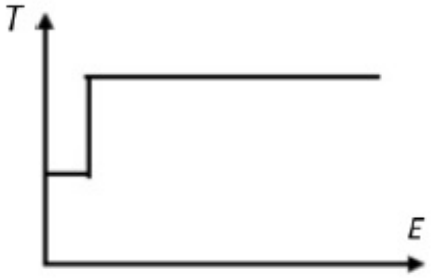
B.



C.



D.



Part II Chemistry

Display Number Panel: Yes
Group All Questions: No

Question Number : 71 Question Id : 6584303991 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Among the following, the species with identical bond order are

A. CO and O_2^{2-}

B. O_2^- and CO

C. O_2^{2-} and B_2

D. CO and N_2^+

Question Number : 71 Question Id : 6584303991 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

निम्न युग्मों में से किस युग्म में एकसमान आबंध क्रम (बॉन्ड ऑर्डर) पाया जाता है?

A. CO और O_2^{2-}

B. O_2^- और CO

C. O_2^{2-} और B_2

D. CO और N_2^+

Question Number : 72 Question Id : 6584303992 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The quantity of heat (in J) required to raise the temperature of 1.0 kg of ethanol from 293.45 K to the boiling point and then change the liquid to vapor at that temperature is closest to

[Given: Boiling point of ethanol 351.45 K

Specific heat capacity of liquid ethanol 2.44 J g^{-1} K^{-1}

Latent heat of vaporization of ethanol 855 J g^{-1}]

A. 1.42×10^2

B. 9.97×10^2

C. 1.42×10^5

D. 9.97×10^5

Question Number : 72 Question Id : 6584303992 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

1.0 kg इथेनॉल के तापमान को 293.45 K से क्वथनांक तक और फिर उस तापमान पर द्रव को वाष्पित करने के लिए आवश्यक उष्मा की मात्रा (J में) का निकटतम मान निम्न में से कौन सा होगा?

[दिया है : इथेनॉल का क्वथनांक 351.45 K, द्रव इथेनॉल की विशिष्ट उष्मा धारिता 2.44 J g^{-1} K^{-1} और इथेनॉल के वाष्पीकरण की गुप्त उष्मा 855 J g^{-1}]

A. 1.42×10^2

B. 9.97×10^2

C. 1.42×10^5

D. 9.97×10^5

Question Number : 73 Question Id : 6584303993 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A solution of 20.2 g of 1,2-dibromopropane in MeOH upon heating with excess Zn produces 3.58 g of an unsaturated compound **X**. The yield (%) of **X** is closest to

[Atomic weight of Br is 80]

A. 18

B. 85

C. 89

D. 30

Question Number : 73 Question Id : 6584303993 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

मीथेनॉल में 20.2 g 1,2-डाइब्रोमोप्रोपेन को मिलाकर Zn की अधिकता में गरम करने पर 3.58 g एक असंतृप्त यौगिक X उत्पन्न होता है। X का उत्पाद (प्रतिशतता में) निम्न मे से किसके निकटतम है? (Br का परमाणु भार 80 है)

A. 18

B. 85

C. 89

D. 30

Question Number : 74 Question Id : 6584303994 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The lower stability of ethyl anion compared to methyl anion and the higher stability of ethyl radical compared to methyl radical, respectively, are due to

A. +I effect of the methyl group in ethyl anion and $\sigma \rightarrow$p-orbital conjugation in ethyl radical

B. -I effect of the methyl group in ethyl anion and $\sigma \rightarrow \sigma^*$ conjugation in ethyl radical

C. +I effect of the methyl group in both cases

D. +I effect of the methyl group in ethyl anion and $\sigma \rightarrow \sigma^*$ conjugation in ethyl radical

Question Number : 74 Question Id : 6584303994 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

एथिल ऋणायन का मेथिल ऋणायन की तुलना मे कम स्थायी होना और एथिल मूलक का मेथिल मूलक की तुलना मे ज्यादा स्थायी होने का क्रमशः निम्न में से कौन सा कारण है ?

A. एथिल ऋणायन मे मेथिल समूह का +I प्रभाव और एथिल मूलक मे σ से p ओरबिटल (orbital) का संयुग्मन।

B. एथिल ऋणायन मे मेथिल समूह का -I प्रभाव और एथिल मूलक मे σ से σ^* ओरबिटल (orbital) का संयुग्मन।

C. दोनों हीं दशाओं मे मेथिल समूह का +I प्रभाव।

D. एथिल ऋणायन मे मेथिल समूह का +I प्रभाव और एथिल मूलक मे σ से σ^* ओरबिटल (orbital) का संयुग्मन।

Question Number : 75 Question Id : 6584303995 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The F-Br-F bond angles in BrF_5 and the Cl-P-Cl bond angles in PCl_5, respectively, are

A. identical in BrF_5 but non-identical in PCl_5

B. identical in BrF_5 and identical in PCl_5

C. non-identical in BrF_5 but identical in PCl_5

D. non-identical in BrF_5 and non-identical in PCl_5

Question Number : 75 Question Id : 6584303995 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

BrF_5 मे F-Br-F और PCl_5 मे Cl-P-Cl के बंधक कोण क्रमशः निम्न में किस कथन के अनुसार हैं?

A. BrF_5 मे समरूप और PCl_5 में असमरूप

B. BrF_5 मे समरूप और PCl_5 में भी समरूप

C. BrF_5 मे असमरूप और PCl_5 में समरूप

D. BrF_5 मे असमरूप और PCl_5 में भी असमरूप

Part II Biology

Display Number Panel: Yes
Group All Questions: No

Question Number : 76 Question Id : 6584303996 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the genotypes determining the blood groups of a couple are I^AI^O and I^AI^B, then the probability of their first child having type O blood is

A. 0

B. 0.25

C. 0.50

D. 0.75

Question Number : 76 Question Id : 6584303996 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

यदि किसी जोड़े के रक्त समूह का निर्धारण करने वाले जीनों का जीन प्रारूप I^AI^0 और I^AI^B है तो उनके पहले बच्चे का रक्त समूह O होने की प्रायिकता कितनी है?

A. 0

B. 0.25

C. 0.50

D. 0.75

Question Number : 77 Question Id : 6584303997 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cross was carried out between two individuals heterozygous for two pairs of genes was carried out. Assuming segregation and independent assortment, the number of different genotypes and phenotypes obtained respectively would be

A. 4 and 9

B. 6 and 3

C. 9 and 4

D. 11 and 4

Question Number : 77 Question Id : 6584303997 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

जीन के दो जोड़ों के लिए दो विषमयुग्मजी व्यष्टियों के मध्य संकरण कराते हैं। पृथक्करण और स्वतंत्र अपव्यूहन के सिद्धांतों को अपनाते हुए, इस संकरण से प्राप्त हुए विभिन्न जीन-प्रारूप और दर्श-प्रारूप क्रमशः कितने होंगे?

A. 4 और 9

B. 6 और 3

C. 9 और 4

D. 11 और 4

Question Number : 78 Question Id : 6584303998 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the H^+ concentration of an aqueous solution is 0.001 M, then the pOH of the solution would be

A. 0.001

B. 0.999

C. 3

D. 11

Question Number : 78 Question Id : 6584303998 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

यदि किसी जलीय विलयन मे H^+ आयन का सांद्रण 0.001M है, तो इस विलयन का pOH कितना होगा?

A. 0.001

B. 0.999

C. 3

D. 11

Question Number : 79 Question Id : 6584303999 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Consider the following vision defects listed in **Columns I & II** and the corrective measures in **Column III**. Choose the correct combination.

Column I	**Column II**	**Column III**
P. Hypermetropia	i. near-sightedness	a. convex lens
Q. Myopia	ii. far-sightedness	b. concave lens

A. P-ii-b

B. Q-i-b

C. P-i-a

D. Q-i-a

Question Number : 79 Question Id : 6584303999 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

स्तंभ I और II मे सूचीबद्ध विभिन्न दृष्टिबाधाओं तथा स्तंभ III मे दिए गए इन दोषों के संशोधनों के तरीकों पर विचार करें।

स्तंभ I	स्तंभ II	स्तंभ III
P. दूर दृष्टिदोष	i. निकटदर्शिता	a. उत्तल लेंस
Q. निकट दृष्टिदोष	ii. दूरदर्शिता	b. अवतल लेंस

स्तंभों मे दी गई जानकारी के आधार पर सही विकल्प का चुनाव करें?

A. P-ii-b

B. Q-i-b

C. P-i-a

D. Q-i-a

Question Number : 80 Question Id : 6584304000 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which ONE of the following properties causes the plant tendrils to coil around a bamboo stick?

A. Tendril has spines

B. The base of the tendril grows faster than the tip

C. Part of the tendril in contact with the bamboo stick grows at a slower rate than the part away from it.

D. The tip of the tendril grows faster than the base

Question Number : 80 Question Id : 6584304000 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

निम्नलिखित में से कौन सा गुण पौधों के प्रतानों को बाँस की छड़ी के चारो ओर लिपटने मे सहायक होता है?

A. प्रतानों में काँटे होते हैं।

B. प्रतान का आधार उसके शिखर की तुलना मे तेजी से वृद्धि करता है।

C. प्रतान को वह हिस्सा जो बाँस की छड़ी के स्पर्श मे रहता है, अन्य हिस्से जो स्पर्श मे नहीं हैं की तुलना मे धीमी दर से वृद्धि करता है।

D. प्रतान का शिखर उसके आधार की तुलना मे तेजी से वृद्धि करता है।

Question Booklet Series :– A Question Booklet No. :–

DO NOT OPEN THIS BOOKLET UNTIL TOLD TO DO SO

Time Allowed: 2 Hours UDC PAPER – I **Total No. of Questions : 100**

SESSION – I

Time : 10:00 AM – TO – 12:00 Noon

Roll No. : …… **OMR Answer Sheet No. :** ……

Name of the Candidate (in capital letters) : ……

Candidate's Signature : …… **Invigilator's Signature :** ……

READ THE FOLLOWING INSTRUCTIONS CAREFULLY BEFORE WRITING ANYTHING ON THIS BOOKLET

1. Before commencing to answer, check that the Question Booklet has all the **above mentioned number of questions** and there is no misprinting, overprinting and/or any other shortcoming in it. If there is any shortcoming, intimate the same to your room invigilator and have it changed. Before answering you must ensure that you have got correct post code/discipline booklet. No complaint in this regard shall be entertained at a later stage.
2. Write with **Ball Point Pen** Your Name, Roll No. on this page (above); and **use Ball Point Pen for filling boxes** of the Answer Sheet in the space provided and sign on the OMR Answer Sheet by Ball Point Pen and **use Blue/Black Ball Point Pen to darken the ovals.**
3. This is an objective type test in which each objective question is followed by four responses serialled (A) to (D). Your task is to choose the correct/best response and mark your response in the OMR Answer Sheet and NOT in the Question Booklet.
4. **All questions are compulsory.**
5. **DO NOT scribble or do rough work or make any stray marks on the Answer Sheet. DO NOT wrinkle or fold or staple it.**
6. Answer sheet will be processed by Electronic means. Hence, invalidation of answer sheet resulting due to folding or putting stray marks on it or any damage to the answer sheet as well as incomplete/incorrect filling of the answer sheet will be the sole responsibility of the candidate.
7. Rough Work is to be done in any blank space in the booklet. No other paper will be allowed/provided.
8. Take care that you mark only one answer for each question. If more than one answer is given by you for any question, the same will not be evaluated. **Cutting/overwriting the answers are not allowed. Further question paper is bilingual (Hindi/English). In case of any variation in Hindi version, English version will be taken as final for evaluation purposes.**
9. Use of Calculators, Slide rules, Mobiles, calculator watches or any such devices and any other study/reference material is NOT allowed inside the examination hall.
10. Return OMR Answer Sheet to the invigilator on completion of the test. Do not take OMR Answer Sheet outside the examination room. Doing so is a punishable offence.

DIRECTIONS : (Question No. 1 to 15) Read the passages below and answer the questions by choosing the best option:

Golf Garden is an old locality, with rows of one-two-or three storey houses, separated by moss covered boundary walls, along which creepers like ivy and bougainvillea had found refuge. The houses, far from holding any _____ (1) interest, _____ (2) conspicuous by their lack of anything not strictly utilitarian. They were simple brick structures, that often _____ (3), right on the edge of the road, the entrances of which were _____ (4) by wrought iron grills or collapsible gates that _____ (5) open anytime a visitor arrived.

There was always something inexplicably _____ (6) about neighbourhoods of this sort. You _____ (7) the same people everyday, in shops and in markets, at the bus stops or in the hair-cutting _____ (8). In this _____ (9), it was not much _____ (10) from any other city neighbourhoods, perhaps. But the coziness came from the _____ (11) that these people – the ones you saw everyday, were not going to leave. The neighbourhood _____ (12) remain the same, _____ (13) so, over the years. Such localities in the city were rare these days. Builders and promoters pounced at every opportunity to _____ (14) old houses and erect towering multi-storied buildings in _____ (15) places.

1.
(A) structurally (B) design
(C) architectural (D) building

2.
(A) were (B) are
(C) is (D) has

3.
(A) arise (B) went
(C) rose (D) climb

4.
(A) held (B) cover
(C) decorate (D) guarded

5.
(A) clashed (B) trickled
(C) clanged (D) ajar

6.
(A) distracting (B) frightening
(C) absorbing (D) comforting

7.
(A) meet (B) will meet
(C) have met (D) met

8.
(A) boutique (B) saloon
(C) room (D) aperture

9.
(A) senses (B) business
(C) style (D) respect

10.
(A) diffident (B) different
(C) diverse (D) changed

11.
(A) assurance (B) insurance
(C) reassurances (D) remembrance

12.
(A) must (B) should
(C) can (D) would

13.
(A) inevitably (B) unvaryingly
(C) invariably (D) inaudibly

14.
(A) create (B) end
(C) demolish (D) extinguish

15.
(A) there (B) this
(C) it's (D) their

DIRECTIONS: (Question Nos. 16 & 17) In the following sentences one or two words are missing. Pick the choice which fits best with the sentence.

16. A ..... statement is an ..... comparison; it does not compare things explicitly but suggests a likeness between them:

(A) Sarcastic ..... Unfair
(B) Blatant ..... Overt
(C) Sanguine ..... Inherent
(D) Metaphorical ..... Implied

17. There are many lawyers who bring in so much ..... material into an argument, without reference to the case that it is ..... to get their point:

(A) Variegated ..... effortless
(B) Hypothetical ..... Superfluous
(C) Superficial ..... Irrelevant
(D) Extraneous ..... Difficult

DIRECTIONS: (Question Nos. 18 to 20) Pick the choices that will complete the sentence correctly as per requirements of grammar and English usage.

18. He was ..... when his friends teased him:

(A) Cut to quick (B) Cut to a quick
(C) Cut to the quick (D) Cut quick

19. He is determined to achieve his object ..... :

(A) By hook or by crook (B) By hook and crook
(C) By hook, by crook (D) By crook and hook

20. He is taller ..... in the class:

(A) To all the boys (B) Of all the boys
(C) Than all the boys (D) Than any other boy

DIRECTIONS : (Question No. 21 to 35) Read the passage and answer the questions that follow:

They did not have to go a thousand miles but the journey never seemed to end. They set out in utmost secrecy and took the country bus several miles away on the country road; this took them to the junction where they changed to a bus going north to the river; then by ferry across the river and by bullock cart north-east along the river over barren land with monstrous black basalt boulders strewn all around, as though demons had tried to build toy houses and failing had scattered their building blocks in disgust.

They arrived at the bride's village at dusk and were put up in a neat mud hut, away from the in-laws, on the other side of the village. The hut had freshly whitewashed walls decorated with floral patterns in red and blue chalk and the roof had the pleasant green smell of newly-cut palmyra fronds. The bride's people fussed over the two of them and plied them with the best food he had ever tasted: chicken fried in and dripping with butter, prawns that melted in one's mouth, mutton *pulav* made of the finest rice and mutton pieces as soft as cheese, flavoured with bark of cinnamon, garlic cloves, black pepper, cardamom, cloves, shredded onion and other spices he could not even identify. All cooked in pure ghee. There were sweetmeats, too, (*laddus*, the size of cannon shot), and fruit, even grapes, real grapes, and grapes the like of which he had seen only in the Raja's palace and that too in a picture hung on a wall. He felt like a prince.

The wedding itself was a wonderful spectacle. He wished several times that it could have taken place in his own village so that all the people there could have seen his good fortune, admired his bride and envied him.

The whole village turned up for the occasion [of the wedding]. Later, they put the couple in a palanquin and formed a wedding procession. Every family in the village behaved as though the wedding was in their own family, the bride their own daughter. They looked at him with eyes full of admiration and kept congratulating his uncle on arranging the match. There were no urchins with runny noses in this village and the mongrel dogs - not too many, he noticed -were well-behaved. There simply were no elders, everyone was like an elder, dressed in gold-bordered *dhoti* and silk tunic and gold-bordered turbans. But nobody was more gorgeously dressed than the bridegroom. The in-laws showed their wealth by providing him at once with six sets of Indian clothes and six sets of English clothes, shorts and shirts and even a necktie.

21. The journey mentioned in the first paragraph was:

(A) A distance of almost a thousand miles
(B) A distance that seemed very short
(C) A distance that seemed never ending
(D) None of the above

22. At the end of the meal, the unnamed protagonist mentions that he feels:

(A) like royalty
(B) very well fed
(C) proud
(D) offended

23. At the very beginning of the journey they travelled:

(A) On a small country road
(B) In a bus going north
(C) By ferry on the river
(D) In a bullock cart

24. In the sentence 'along the river over barren land' the word *barren* means:

(A) land on which entry is barred
(B) land on which nothing grows
(C) land on which large stones are found
(D) land which is along a river

25. In this sentence '... as though demons had tried to build toy houses and failing had scattered their building blocks in disgust', the suggestion is that:

(A) the landscape was frightening
(B) the place was haunted by demons
(C) huge rocks were strewn all over
(D) small houses could be seen here and there

26. When do the travellers arrive at the bride's village?

(A) The next day at sunrise
(B) The same day, at sunset
(C) After many days
(D) In a short while

27. The phrase 'mutton pieces as soft as cheese' is an example of:

(A) Metaphor
(B) Simile
(C) Symbol
(D) Metonym

28. How are the travellers treated when they arrive at the bride's village?

(A) As respected and favoured guests
(B) As unwanted guests, kept at a distance
(C) With great disdain
(D) With great affection

29. Why do you think the travelers are fed so well?

(A) Because in this village all guests are well looked after
(B) Because in this village the residents are all noble and rich
(C) Because the travellers are from the bride's party
(D) Because the travellers are the bridegroom and his friends

30. The style of narration in this extract is an example of:

(A) Autobiographical/ first person narrative
(B) Omniscient narrative
(C) Lyrical narrative
(D) Unreliable narrative

31. 'The wedding itself was a wonderful *spectacle*'. The italicized word means:

(A) A sight to behold
(B) Something to be viewed through glasses
(C) An amusing or ridiculous sight
(D) A sight which was unbelievable

32. The bridegroom wished the wedding had taken place in his village because:

(A) he wanted to be envied
(B) the wedding was a grand affair
(C) his bride was very beautiful
(D) all of the above

33. From the last paragraph, what impression do you get of the bride's village and its residents?

(A) The residents are well off
(B) The residents are stiff and formal
(C) The residents are arrogant
(D) The residents are urbane

34. From a reading of this extract what do you think about the status of the bridegroom?

(A) he is as rich as the bride's family
(B) he is richer than the bride's family
(C) he is poorer than the bride's family
(D) he is dependent on the bride's family

35. The emphasis on food and clothes shows that the bridegroom:

(A) is a connoisseur
(B) is enamoured of the pomp displayed
(C) is very jealous of the bride's family
(D) is very dejected

DIRECTIONS: (Question No. 36 & 37) In each of the following questions, choose the alternative which can replace the word printed in bold and italic without changing the meaning of the sentence.

36. When he returned he was accompanied by a *sprightly* young girl:

(A) Lively (B) Beautiful
(C) Sportive (D) Intelligent

37. The art movie I watched this evening has put me in a *pensive* mood:

(A) Confused
(B) Depressed
(C) Cheerful
(D) Reflective

DIRECTIONS : (Question No. 38 & 39) In each of the following questions, an idiomatic expression/a proverb has been given followed by some alternative. Choose the one which best expresses the meaning of the given idiom or proverb.

38. To keep the wolf away from the door:

(A) To keep alive
(B) To hold the difficulties and dangers in check
(C) To keep away from extreme poverty
(D) To keep off an unwanted and undesirable person

39. His boss was always breathing down his neck:

(A) Shouting loudly at him
(B) Giving him strenuous work
(C) Abusing and ill-treating him
(D) Watching all his actions closely

40. Reticent is to Talk , what:

(A) Abstemious is to Devour
(B) Tasteless is to Savor
(C) Likely is to Conjecture
(D) Cranky is to Conjecture

41. Quinquennial is ..... anniversary:

(A) 150^{th}
(B) 50^{th}
(C) 5^{th}
(D) 15^{th}

DIRESTIONS: (Question No. 42 to 45) Find the one word substitution in the following questions.

42. The act of violating the sanctity of the church is:

(A) Blasphemy
(B) Heresy
(C) Sacrilege
(D) Desecration

43. A child born after the death of his/her father is called:

(A) Orphan
(B) Postulant
(C) Postilion
(D) Posthumous

44. A school boy who cuts classes frequently is a:

(A) Defeatist
(B) Sycophant
(C) Truant
(D) Martinet

45. A person who creates disorder in a state:

(A) Rebel
(B) Militant
(C) Anarchist
(D) Fifth columnist

DIRESTIONS: (Question No. 46 to 48) Against each key word are given four suggested meanings. Choose the word or phrase which is most nearly the same to the keyword.

46. BOURGEOIS:

(A) Aristocratic (B) Animated
(C) Lively (D) Ordinary

47. ANIMADVERT:

(A) Needy (B) Hospitable
(C) Make Remarks (D) Notation

48. JOCUND:

(A) Filmsy
(B) Cheerful
(C) Cruel
(D) Laughable

DIRESTIONS: (Question No. 49 to 51) Against each key word are given four suggested meanings. Choose the word or phrase which is opposite in meaning to the key word.

49. JOCOSE:

(A) Humorous (B) Waggish
(C) Diseased (D) Dull

50. INCULPATE:

(A) Accuse (B) Exonerate
(C) Barbaric (D) Easily upset

51. FRUGAL:

(A) Enraged
(B) Extravagant
(C) Farcical
(D) Replete

DIRECTIONS: (Question No. 52 to 56) Choose the wrong spelt word.

52.

(A) Goitre (B) Glorious
(C) Gravitation (D) Greivous

53.

(A) Apposite (B) Apparent
(C) Apostrophy (D) Appellant

54.

(A) Appetite (B) Apathetic
(C) Appriasal (D) Aperture

55.

(A) Campaign (B) Camera
(C) Camouflage (D) Carborettor

56.

(A) Decesive (B) Decimal
(C) Decease (D) Deceive

DIRECTIONS: (Question No. 57 to 63) Choose the correct spelt word.

57.

(A) Deliberation
(B) Deleberation
(C) Deliberition
(D) Delaberation

58.

(A) Detereorate
(B) Deteriorate
(C) Detiriorate
(D) Detireorate

59.

(A) Exorbitant
(B) Exhorbitant
(C) Exorbetant
(D) Exohorbitant

60.

(A) Freivolous
(B) Frivelous
(C) Frevilous
(D) Frivolous

61.

(A) Hierarchy
(B) Heirarchy
(C) Hierarche
(D) Heirerchy

62.

(A) Surveillance
(B) Surviellance
(C) Survillance
(D) Survelliance

63.

(A) Quadriletaral
(B) Quadrilaterel
(C) Quadrilateral
(D) Quadriliteral

DIRECTIONS: (Question nos. 64 & 65) Choose the correct preposition and fill in blanks.

64. We have many other things in common, ... our liking for Indian Classical music:

(A) Beside
(B) Besides
(C) Despite
(D) Altogether

65. Ram killed the snake ..... a stone:

(A) By
(B) With
(C) From
(D) Through

DIRECTIONS: (Question No. 66 to 73) In each of these questions, a sentence is divided into three parts 1, 2, 3. If there is some error in any parts 1, 2 or 3, then this is your answer, otherwise answer is 4.

66. I advised (A)/ to him(B)/ to do his work properly (C)/ No error(D)

67. The teacher called Ram(A)/ and asked him (B)/ to describe about the incident (C)/ No error(D)

68. This pen writes (A)/ very well (B)/ but it costed me 100 rupees (C)/ No error(D)

69. The bomb caused (A)/ extensive damages (B)/ of the surrounding buildings (C)/ No error(D)

70. There were (A)/ hardly no trees left (B)/ just bare rocky land (C)/ No error(D)

71. The visitors complained at (A)/ the poor accomodation (B)/ they were given (C)/ No error(D)

72. You can not (A)/ prevent me (B)/ to go there (C)/ No error(D)

73. I would like you to (A)/ complete this assignment (B)/ before you leave for Mumbai (C)/ No error(D)

DIRECTIONS: (Question No. 74 to 77) In these questions fill in the blanks in the sentence with correct option.

74. They still think that women are inferior ..... men:

(A) To
(B) Than
(C) From
(D) By

75. The teacher was angry ..... me:

(A) To
(B) Upon
(C) At
(D) Against

76. If you ..... ice in warm water, it soon melts:

(A) Will place
(B) Place
(C) Would place
(D) Placed

77. When the post ....., I will bring it to your office:

(A) Will arrive
(B) Arrives
(C) Is arriving
(D) Is going to arrive

DIRECTIONS: (Question No. 78 to 81) In each of these questions in the given sentence below there is a blank. Choose the word or phrase which best completes the sentence.

78. The doctor prescribed tablets to help ..... the pain:

(A) Lighten
(B) Calm
(C) Relieve
(D) Rid

79. If you ..... in arriving late, I shall have to report to the manager.

(A) Persist
(B) Persevere
(C) Insist
(D) Prevail

80. The police decided to ..... the department store:

(A) Abandon
(B) Evacuate
(C) Evict
(D) Expel

81. Our hosts had prepared a ..... meal to celebrate our arrival:

(A) Generous
(B) Lavish
(C) Profuse
(D) Spendthrift

DIRECTIONS: (Question No. 82 to 84) Read the passage and answer the question based on it.

A faint picture of a maiden's life is reflected in the characterisation of Usha, the goddess of dawn, who has been described in many places as a maiden. In the earliest Mandalas, Usha is described as a pure and simple phenomenon of nature, sweeping away the darkness of night.

82. In this passage, Usha has been described as:

(A) A spinster
(B) A broom
(C) A gloomy maiden
(D) The symbol of ushering in of light

83. The expression 'a pure and simple phenomenon of nature' implies that 'Usha' is:

(A) A threat made by nature
(B) The beauty of nature
(C) A portent of nature
(D) Nothing but a benign aspect of nature

84. The function of Usha is to:

(A) Meet darkness and light
(B) Preside over day and night
(C) Remove darkness from the face of the Earth
(D) Counter light with darkness

DIRECTIONS: (Question No. 85 & 86) Each word given in the alternatives are matched with its synonym and antonym. One is not correctly matched. Find the one not correctly matched.

85.

	Word	Synonym	Antonym
(A)	Abscond	Flee	Remain
(B)	Abate	Suppress	Rise
(C)	Abash	Confused	Confident
(D)	Acquit	Convict	Exonerate

86.

(A)	Decease	Death	Birth
(B)	Demean	Humiliate	Respect
(C)	Defer	Advance	Postpone
(D)	Deem	Recon	Overlook

DIRECTIONS: (Question nos. 87 to 89) Choose the correct passive voice of the sentence given in the question.

87. Is the noise not disturbing the old man?

(A) Is the old man not being disturbed by the noise?
(B) Whether the old man is not being disturbed by the noise?
(C) Do the old man not being disturbed by the noise?
(D) Let the old man not be disturbed by the noise.

88. Could they not have helped the needy?

(A) Why can the needy be not helped by them?
(B) Could the needy not have been helped by them?
(C) Could the needy have not been helped by them?
(D) Why could the needy not be helped by them?

89. Ought we to make any false claims?

(A) Any false claims ought to be made by us .
(B) Ought any false claims to be made by us?
(C) Should any false claims to be made by us?
(D) Could any false claims to be made by us?

90. Choose the word pair that has the relationship that is most similar to that of the given pair:

vexation: disappointment

(A) peace : calm
(B) felicity : fear
(C) brave : coward
(D) kind : sympathy

91. The phrase 'a close call' means:

(A) to be happily married
(B) to be hardhearted
(C) to live nearby
(D) to have a narrow escape

92. Choose the right meaning for PANACEA:

(A) Great Fear
(B) A Cure For all
(C) Whole of Asia
(D) A Germ killer

DIRECTIONS: (Question nos. 93 & 94) Change the following sentences into reported speech.

93. I said, " will you stop that noise?" "No said the boy":

(A) I asked the boy if he would stop that noise and he replied that he would not (stop that noise).
(B) I told the boy if he would stop that noise and he said no
(C) I said to the boy if he will stop that noise and he said that he would not.
(D) I asked the boy whether he would stop this noise and he replied in negative.

94. She said, " how clever I am!":

(A) She told that she was very clever.
(B) She exclaimed that she was very clever.
(C) She applauded herself by saying that she was very clever.
(D) She said that how clever was she?

95. Complete the phrase: 'Burning the candle at both _____.'

(A) sides (B) ends
(C) tips (D) flames

96. Choose the correct option for the sentence: 'Many conjuring tricks depend upon optical _____'

(A) delusions (B) allusions
(C) illusions (D) resolution

97. What does 'to put one's best foot forward' mean?

(A) to give oneself up
(B) to disclose a secret
(C) to march in a straight line
(D) to make a good first impression

DIRECTIONS: (Question No. 98 to 100) The words of proverbs and sentences are given in a jumbled manner. If the words are arranged properly, they make a readable sentence. Pick a choice which gives the correct sequence of words.

98. Death, before, times, their, cowards, many, die

1 2 3 4 5 6 7

(A) 2431756 (B) 4657123
(C) 5763241 (D) 6375124

99. Memory, liar, a, a, good, needs:

1 2 3 4 5 6

(A) 326451 (B) 464251
(C) 524461 (D) 165234

100. Of, mind, face, is, index, the:

1 2 3 4 5 6

(A) 132456 (B) 634215
(C) 345162 (D) 534216