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B TECH EA

Group Number :	1
Group Id :	708191191
Group Maximum Duration :	0
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Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	300
Is this Group for Examiner? :	No

Physics Section A

Section Id :	708191724
Section Number :	1
Section type :	Online

Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	7081911004
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 70819117764 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements : one is labelled as Assertion A and the other is labelled as Reason R.

Assertion A : The escape velocities of planet A and B are same. But A and B are of unequal mass.

Reason R : The product of their mass and radius must be same. $M_1R_1 = M_2R_2$

In the light of the above statements, choose the most appropriate answer from the options given below :

Options :

70819158441. Both A and R are correct and R is the correct explanation of A

70819158442. Both A and R are correct but R is NOT the correct explanation of A

70819158443. A is correct but R is not correct

70819158444. A is not correct but R is correct

Question Number : 1 Question Id : 70819117764 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত দুটা উক্তি দিয়া আছে : এটাক বিবৃতি A আৰু আনটোক কাৰণ R ৰূপে নামাকৰণ কৰা হৈছে।

বিবৃতি A : গ্ৰহ A আৰু B ৰ পলায়নবেগ একেই। কিন্তু A আৰু B ৰ ভৰ অসমান।

কাৰণ R : সিহঁতৰ ভৰ আৰু ব্যাসাৰ্ধৰ গুণফল একে হ'ব লাগিব।

$$M_1 R_1 = M_2 R_2$$

উপৰোক্ত উক্তিৰ সহায়ত, সৰ্বোত্তম যুক্তিযুক্ত উত্তৰ তলৰ বিকল্পৰ পৰা চয়ন কৰা।

Options :

70819158441. A আৰু R দুয়োটাই শুদ্ধ আৰু R, A ৰ শুদ্ধ ব্যাখ্যা।

70819158442. A আৰু R দুয়োটাই শুদ্ধ কিন্তু R, A ৰ শুদ্ধ ব্যাখ্যা নহয়।

70819158443. A শুদ্ধ কিন্তু R অশুদ্ধ।

70819158444. A অশুদ্ধ কিন্তু R শুদ্ধ।

Question Number : 2 Question Id : 70819117765 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Match List - I with List - II :

List - I	List - II
(a) h (Planck's constant)	(i) $[M L T^{-1}]$
(b) E (kinetic energy)	(ii) $[M L^2 T^{-1}]$
(c) V (electric potential)	(iii) $[M L^2 T^{-2}]$
(d) P (linear momentum)	(iv) $[M L^2 I^{-1} T^{-3}]$

Choose the correct answer from the options given below :

Options :

70819158445. (a) $\rightarrow$ (i), (b) $\rightarrow$ (ii), (c) $\rightarrow$ (iv), (d) $\rightarrow$ (iii)

70819158446. (a) $\rightarrow$ (iii), (b) $\rightarrow$ (iv), (c) $\rightarrow$ (ii), (d) $\rightarrow$ (i)

70819158447. (a) $\rightarrow$ (ii), (b) $\rightarrow$ (iii), (c) $\rightarrow$ (iv), (d) $\rightarrow$ (i)

70819158448. (a) $\rightarrow$ (iii), (b) $\rightarrow$ (ii), (c) $\rightarrow$ (iv), (d) $\rightarrow$ (i)

Question Number : 2 Question Id : 70819117765 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তালিকা - I ৰ সৈতে তালিকা - II মিলোৱা।

তালিকা - I	তালিকা - II
(a) h (প্লাংকৰ ধ্ৰুৱক)	(i) $[M L T^{-1}]$
(b) E (গতি-শক্তি)	(ii) $[M L^2 T^{-1}]$
(c) V (বৈদ্যুতিক বিভৱ)	(iii) $[M L^2 T^{-2}]$
(d) P (ৰৈখিক ভৰবেগ)	(iv) $[M L^2 I^{-1} T^{-3}]$

তলৰ বিকল্পৰ পৰা শুদ্ধ উত্তৰ চয়ন কৰা।

Options :

70819158445. (a) $\rightarrow$ (i), (b) $\rightarrow$ (ii), (c) $\rightarrow$ (iv), (d) $\rightarrow$ (iii)

70819158446. (a) $\rightarrow$ (iii), (b) $\rightarrow$ (iv), (c) $\rightarrow$ (ii), (d) $\rightarrow$ (i)

70819158447. (a) $\rightarrow$ (ii), (b) $\rightarrow$ (iii), (c) $\rightarrow$ (iv), (d) $\rightarrow$ (i)

70819158448. (a) $\rightarrow$ (iii), (b) $\rightarrow$ (ii), (c) $\rightarrow$ (iv), (d) $\rightarrow$ (i)

Question Number : 3 Question Id : 70819117766 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If the time period of a two meter long simple pendulum is 2 s, the acceleration due to gravity at the place where pendulum is executing S.H.M. is :

Options :

70819158449. 16 m/s^2

70819158450. $\pi^2 \text{ ms}^{-2}$

70819158451. 9.8 ms^{-2}

70819158452. $2\pi^2 \text{ ms}^{-2}$

Question Number : 3 Question Id : 70819117766 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যদিহে এটা 2 m দীঘল সৰল দোলকৰ পৰ্যায়কাল 2 s হয়, দোলকটোৱে সৰল পৰ্যাবৃত্ত গতি সাব্যস্ত কৰা অংশত মধ্যাকৰ্ষণিক ত্বৰণ হ'ব :

Options :

70819158449. 16 m/s^2

70819158450. $\pi^2 \text{ ms}^{-2}$

70819158451. 9.8 ms^{-2}

70819158452. $2\pi^2 \text{ ms}^{-2}$

Question Number : 4 Question Id : 70819117767 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A student is performing the experiment of resonance column. The diameter of the column tube is 6 cm. The frequency of the tuning fork is 504 Hz. Speed of the sound at the given temperature is 336 m/s. The zero of the metre scale coincides with the top end of the resonance column tube. The reading of the water level in the column when the first resonance occurs is :

Options :

70819158453. 16.6 cm

70819158454. 18.4 cm

70819158455. 14.8 cm

70819158456. 13 cm

Question Number : 4 Question Id : 70819117767 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এজন ছাত্ৰই অনুনাদ স্তম্ভৰ পৰীক্ষাটো কৰিছে। স্তম্ভনলীৰ ব্যাস 6 cm । সুৰ শলাৰ কম্পনাংক 504 Hz । উল্লিখিত উষ্ণতাত শব্দৰ দ্ৰুতি 336 m/s । মিটাৰ স্কেলৰ শূন্যঘাত অনুনাদ স্তম্ভনলীৰ শীৰ্ষ মূৰৰ সৈতে মিলি আছে। যেতিয়া প্ৰথম অনুনাদ হয়, জলপৃষ্ঠই স্তম্ভটোত দেখুওৱা পাঠ হ'ব :

Options :

70819158453. 16.6 cm

70819158454. 18.4 cm

70819158455. 14.8 cm

70819158456. 13 cm

Question Number : 5 Question Id : 70819117768 Question Type : MCQ Option Shuffling : Yes Is

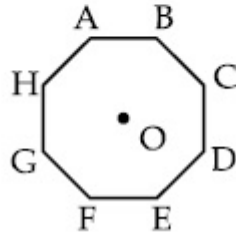
Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In an octagon ABCDEFGH of equal side, what is the sum of

$$\vec{AB} + \vec{AC} + \vec{AD} + \vec{AE} + \vec{AF} + \vec{AG} + \vec{AH},$$

if, $\vec{AO} = 2\hat{i} + 3\hat{j} - 4\hat{k}$



Options :

70819158457. $16\hat{i} + 24\hat{j} + 32\hat{k}$

70819158458. $-16\hat{i} - 24\hat{j} + 32\hat{k}$

70819158459. $16\hat{i} - 24\hat{j} + 32\hat{k}$

70819158460. $16\hat{i} + 24\hat{j} - 32\hat{k}$

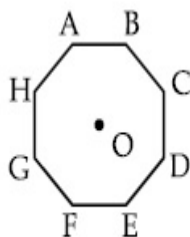
Question Number : 5 Question Id : 70819117768 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

সমান ভূজৰ এটা অষ্টভূজ ABCDEFGH ৰ $\vec{AB} + \vec{AC} + \vec{AD} + \vec{AE} + \vec{AF} + \vec{AG} + \vec{AH}$ ৰ যোগফল কি হ'ব, যদি

$$\vec{AO} = 2\hat{i} + 3\hat{j} - 4\hat{k} \text{।}$$



Options :

70819158457. $16\hat{i} + 24\hat{j} + 32\hat{k}$

70819158458. $-16\hat{i} - 24\hat{j} + 32\hat{k}$

70819158459. $16\hat{i} - 24\hat{j} + 32\hat{k}$

70819158460. $16\hat{i} + 24\hat{j} - 32\hat{k}$

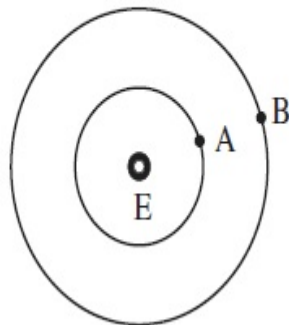
Question Number : 6 Question Id : 70819117769 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Two satellites A and B of masses 200 kg and 400 kg are revolving round the earth at height of 600 km and 1600 km respectively.

If T_A and T_B are the time periods of A and B respectively then the value of $T_B - T_A$:



[Given : radius of earth = 6400 km, mass of earth = 6×10^{24} kg]

Options :

70819158461. 1.33×10^3 s

70819158462. 4.24×10^3 s

70819158463. 4.24×10^2 s

70819158464. 3.33×10^2 s

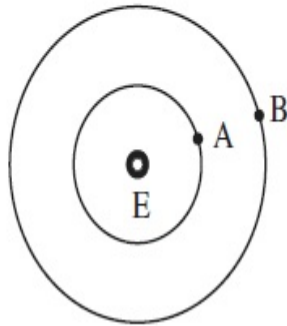
Question Number : 6 Question Id : 70819117769 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

600 km আৰু 1600 km উচ্চতাত ক্ৰমে 200 kg আৰু 400 kg ভৰৰ দুটা উপগ্রহ A আৰু B য়ে পৃথিৱীৰ চাৰিওফালে পৰিভ্ৰমণ কৰি আছে।

যদি T_A আৰু T_B ক্ৰমে A আৰু B ৰ পৰ্যায়কাল হয় তেন্তে $T_B - T_A$ ৰ মান:

(দিয়া আছে পৃথিৱীৰ ব্যাসার্ধ : 6400 km, পৃথিৱীৰ ভৰ = 6×10^{24} kg)



Options :

70819158461. 1.33×10^3 s

70819158462. 4.24×10^3 s

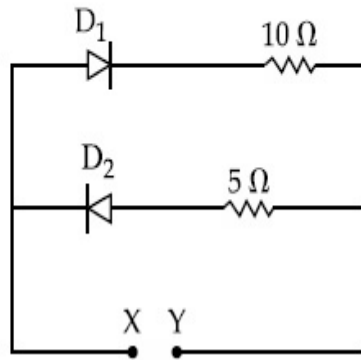
70819158463. 4.24×10^2 s

70819158464. 3.33×10^2 s

Question Number : 7 Question Id : 70819117770 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A 5 V battery is connected across the points X and Y. Assume D_1 and D_2 to be normal silicon diodes. Find the current supplied by the battery if the +ve terminal of the battery is connected to point X.



Options :

70819158465. $\sim 0.5 \text{ A}$

70819158466. $\sim 0.43 \text{ A}$

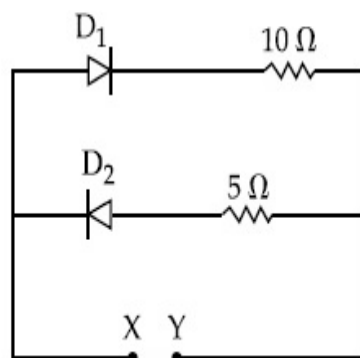
70819158467. $\sim 0.86 \text{ A}$

70819158468. $\sim 1.5 \text{ A}$

Question Number : 7 Question Id : 70819117770 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

X আৰু Y বিন্দুৰ মাজত এটা 5 V ৰ বেটাৰী সংযোগ কৰা হৈছে। ধৰি লোৱা D_1 আৰু D_2 দুটা সাধাৰণ ছিলিকন (silicon) ডায়াড। বেটাৰীটোৱে যোগান ধৰা বিদ্যুৎৰ পৰিমাণ নিৰ্দ্ধাৰণ কৰা যদিহে বেটাৰীৰ ধনাত্মক মূৰটো X বিন্দুত সংলগ্ন হৈ আছে।



Options :

70819158465. ~ 0.5 A

70819158466. ~ 0.43 A

70819158467. ~ 0.86 A

70819158468. ~ 1.5 A

Question Number : 8 Question Id : 70819117771 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : A speech signal of 2 kHz is used to modulate a carrier signal of 1 MHz. The bandwidth requirement for the signal is 4 kHz.

Statement II : The side band frequencies are 1002 kHz and 998 kHz.

In the light of the above statements, choose the correct answer from the options given below :

Options :

70819158469. Both Statement I and Statement II are true

70819158470. Both Statement I and Statement II are false

70819158471. Statement I is true but Statement II is false

70819158472. Statement I is false but Statement II is true

Question Number : 8 Question Id : 70819117771 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত দুটা উক্তি দিয়া আছে :

উক্তি I : 1 MHz ৰ এটা বাহক তৰংগক কলন কৰিবৰ বাবে 2 kHz ৰ এটা শব্দ সংকেত (speech signal) ব্যৱহাৰ কৰা হৈছে। সংকেতটোৰ বাবে প্ৰয়োজনীয় পটভেদ 4 kHz।

উক্তি II : পাৰ্শ্বপট (side band) কম্পনাংক 1002 kHz আৰু 998 kHz।

উপৰোক্ত উক্তিৰ সহায়ত, তলৰ বিকল্পৰ পৰা শুদ্ধ উত্তৰ চয়ন কৰা।

Options :

70819158469. উক্তি I আৰু উক্তি II দুয়োটাই সঁচা।

70819158470. উক্তি I আৰু উক্তি II দুয়োটাই মিছা।

70819158471. উক্তি I সঁচা কিন্তু উক্তি II মিছা।

70819158472. উক্তি I মিছা কিন্তু উক্তি II সঁচা।

Question Number : 9 Question Id : 70819117772 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements : one is labelled as Assertion A and the other is labelled as Reason R.

Assertion A : When a rod lying freely is heated, no thermal stress is developed in it.

Reason R : On heating, the length of the rod increases.

In the light of the above statements, choose the correct answer from the options given below :

Options :

70819158473. Both A and R are true and R is the correct explanation of A

70819158474. Both A and R are true but R is NOT the correct explanation of A

70819158475. A is true but R is false

70819158476. A is false but R is true

Question Number : 9 Question Id : 70819117772 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত দুটা উক্তি দিয়া আছে : এটাক বিবৃতি A আৰু আনটোক কাৰণ R ৰূপে নামাকৰণ কৰা হৈছে।

বিবৃতি A : মুক্তভাৱে পৰি থকা এডাল দণ্ড যেতিয়া গৰম কৰা হয়, কোনোধৰণৰ তাপীয় প্ৰতিচাপ ইয়াত সৃষ্টি নহয়।

কাৰণ R : গৰম কৰাৰ ফলত, দণ্ডৰ দৈৰ্ঘ্য বৃদ্ধি পায়।

উপৰোক্ত দুই উক্তিৰ আলমত, তলৰ বিকল্পৰ পৰা শুদ্ধ উত্তৰ চয়ন কৰা।

Options :

70819158473. A আৰু R দুয়োটাৰে সঁচা আৰু R, A ৰ শুদ্ধ ব্যাখ্যা হয়।

70819158474. A আৰু R দুয়োটাৰে সঁচা কিন্তু R, A ৰ শুদ্ধ ব্যাখ্যা নহয়।

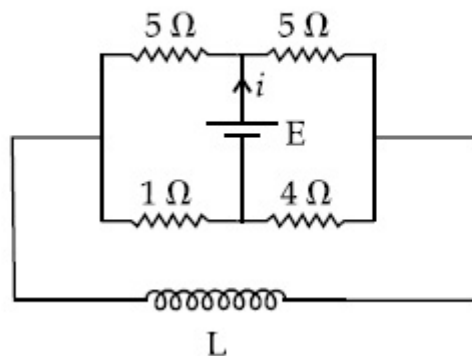
70819158475. A সঁচা কিন্তু R মিছা।

70819158476. A মিছা কিন্তু R সঁচা।

Question Number : 10 Question Id : 70819117773 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The current (i) at time $t=0$ and $t=\infty$ respectively for the given circuit is :



Options :

70819158477. $\frac{18E}{55}, \frac{5E}{18}$

70819158478. $\frac{5E}{18}, \frac{18E}{55}$

70819158479. $\frac{10E}{33}, \frac{5E}{18}$

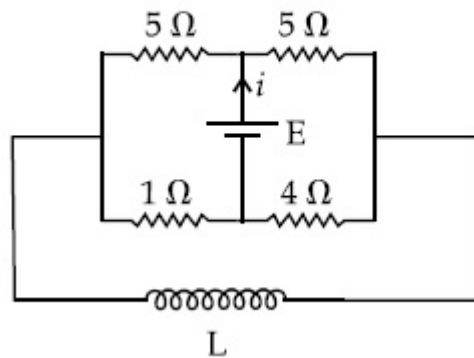
70819158480. $\frac{5E}{18}, \frac{10E}{33}$

Question Number : 10 Question Id : 70819117773 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

দিয়া বর্তনীটোত $t=0$ সময়ত আৰু $t=\infty$ সময়ত বিদ্যুৎ (i) নিৰ্দ্ধাৰণ কৰা।



Options :

70819158477. $\frac{18E}{55}, \frac{5E}{18}$

70819158478. $\frac{5E}{18}, \frac{18E}{55}$

70819158479. $\frac{10E}{33}, \frac{5E}{18}$

70819158480. $\frac{5E}{18}, \frac{10E}{33}$

Question Number : 11 Question Id : 70819117774 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The pitch of the screw gauge is 1 mm and there are 100 divisions on the circular scale. When nothing is put in between the jaws, the zero of the circular scale lies 8 divisions below the reference line. When a wire is placed between the jaws, the first linear scale division is clearly visible while 72nd division on circular scale coincides with the reference line. The radius of the wire is :

Options :

70819158481. 1.64 mm

70819158482. 0.90 mm

70819158483. 0.82 mm

70819158484. 1.80 mm

Question Number : 11 Question Id : 70819117774 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা স্ক্ৰু-গজৰ পিট্চ 1 mm আৰু বৃত্তাকাৰ স্কেলত 100 ভাগ আছে। যেতিয়া স্ক্ৰু-গজৰ মুখৰ মাজত (between the jaws) একো বস্তু নহয়, তেতিয়া বৃত্তাকাৰ স্কেলৰ শূন্যাংক, সূচক রেখাৰ (reference line) 8 ভাগ তলত থাকে। যেতিয়া স্ক্ৰু-গজৰ মুখত এডাল তাঁৰ দিয়া হয়, বৃত্তাকাৰ স্কেলৰ 72 ভাগ সূচক রেখাৰ সৈতে মিলিত হয় আৰু বৈখিক স্কেলৰ প্ৰথম ঘাত স্পষ্টকৈ দেখা যায়। তাঁৰডালৰ ব্যাসাৰ্ধ হ'ব :

Options :

70819158481. 1.64 mm

70819158482. 0.90 mm

70819158483. 0.82 mm

70819158484. 1.80 mm

Question Number : 12 Question Id : 70819117775 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

An α particle and a proton are accelerated from rest by a potential difference of 200 V. After

this, their de Broglie wavelengths are λ_α and λ_p respectively. The ratio $\frac{\lambda_p}{\lambda_\alpha}$ is :

Options :

70819158485. 2.8

70819158486. 8

70819158487. 7.8

70819158488. 3.8

Question Number : 12 Question Id : 70819117775 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

দুইৰ অৱস্থাত পৰা এটা α -কণা আৰু এটা প্ৰ'ট'নক এক 200 V ৰ বিভৱভেদৰ সহায়ত ত্বৰান্বিত কৰা হৈছে। ইয়াৰ

পাছত, সিহঁতৰ ডা-ব্ৰয়ৰ তৰংগদৈৰ্ঘ্য ক্ৰমে λ_α আৰু λ_p । অনুপাত $\frac{\lambda_p}{\lambda_\alpha}$ হ'ব :

Options :

70819158485. 2.8

70819158486. 8

70819158487. 7.8

70819158488. 3.8

Question Number : 13 Question Id : 70819117776 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Two coherent light sources having intensity in the ratio $2x$ produce an interference pattern.

The ratio $\frac{I_{\max} - I_{\min}}{I_{\max} + I_{\min}}$ will be :

Options :

70819158489. $\frac{\sqrt{2x}}{2x+1}$

70819158490. $\frac{2\sqrt{2x}}{2x+1}$

70819158491. $\frac{\sqrt{2x}}{x+1}$

70819158492. $\frac{2\sqrt{2x}}{x+1}$

Question Number : 13 Question Id : 70819117776 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তীব্রতা $2x$ অনুপাতত থকা দুটা সংস্কৃত পোহৰ উৎসই এক সমাবোপণ চানেকি সৃষ্টি কৰে। অনুপাত $\frac{I_{\max} - I_{\min}}{I_{\max} + I_{\min}}$

হ'ব :

Options :

70819158489. $\frac{\sqrt{2x}}{2x+1}$

70819158490. $\frac{2\sqrt{2x}}{2x+1}$

70819158491. $\frac{\sqrt{2x}}{x+1}$

70819158492. $\frac{2\sqrt{2x}}{x+1}$

Question Number : 14 Question Id : 70819117777 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

An engine of a train, moving with uniform acceleration, passes the signal-post with velocity u and the last compartment with velocity v . The velocity with which middle point of the train passes the signal post is :

Options :

70819158493. $\frac{u+v}{2}$

70819158494. $\frac{v-u}{2}$

70819158495. $\sqrt{\frac{v^2+u^2}{2}}$

70819158496. $\sqrt{\frac{v^2-u^2}{2}}$

Question Number : 14 Question Id : 70819117777 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

সুযম দ্বৰণেৰে গতি কৰি থকা এখন ৰেলগাড়ীৰ ইঞ্জিনটোৱে u বেগেৰে সংকেত-স্তম্ভটো (signal-post) পাৰ কৰে আৰু ট্ৰেইনৰ শেষ ডবাটোৱে বেগ v ৰে সংকেত-স্তম্ভটো পাৰ কৰে। ৰেলগাড়ীখনৰ মধ্যবিন্দুটোৱে কি বেগেৰে সংকেত-স্তম্ভটো পাৰ কৰিব :

Options :

70819158493. $\frac{u+v}{2}$

70819158494. $\frac{v-u}{2}$

70819158495. $\sqrt{\frac{v^2+u^2}{2}}$

70819158496. $\sqrt{\frac{v^2-u^2}{2}}$

Question Number : 15 Question Id : 70819117778 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A proton, a deuteron and an α particle are moving with same momentum in a uniform magnetic field. The ratio of magnetic forces acting on them is _____ and their speed is _____, in the ratio.

Options :

70819158497. $4 : 2 : 1$ and $2 : 1 : 1$

70819158498. $2 : 1 : 1$ and $4 : 2 : 1$

70819158499. $1 : 2 : 4$ and $1 : 1 : 2$

70819158500. $1 : 2 : 4$ and $2 : 1 : 1$

Question Number : 15 Question Id : 70819117778 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এখন সুযম চৌম্বিক ক্ষেত্রত এটা প্র'ট'ন, এটা ডয়টেৰিয়াম আৰু এটা α -কণাই একেই ভৰবেগত গতি কৰি আছে।
সিহঁতৰ ওপৰত ক্ৰিয়া কৰি থকা চৌম্বিক বল সমূহৰ অনুপাত _____ আৰু সিহঁতৰ দ্ৰুতি _____,
একাদিক্ৰমে।

Options :

70819158497. $4 : 2 : 1$ আৰু $2 : 1 : 1$

70819158498. $2 : 1 : 1$ আৰু $4 : 2 : 1$

70819158499. $1 : 2 : 4$ আৰু $1 : 1 : 2$

70819158500. $1 : 2 : 4$ আৰু $2 : 1 : 1$

Question Number : 16 Question Id : 70819117779 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Magnetic fields at two points on the axis of a circular coil at a distance of 0.05 m and 0.2 m
from the centre are in the ratio 8 : 1. The radius of coil is _____.

Options :

70819158501. 0.1 m

70819158502. 0.15 m

70819158503. 0.2 m

70819158504. 1.0 m

Question Number : 16 Question Id : 70819117779 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এডাল বৃত্তাকাৰ কুণ্ডলী (coil) ৰ অক্ষত, কেন্দ্ৰৰ পৰা ক্ৰমে 0.05 m আৰু 0.2 m দূৰত্বত দুটা বিন্দুত চৌম্বিক ক্ষেত্ৰৰ অনুপাত 8 : 1। কুণ্ডলীৰ ব্যাসার্ধ হ'ব _____।

Options :

70819158501. 0.1 m

70819158502. 0.15 m

70819158503. 0.2 m

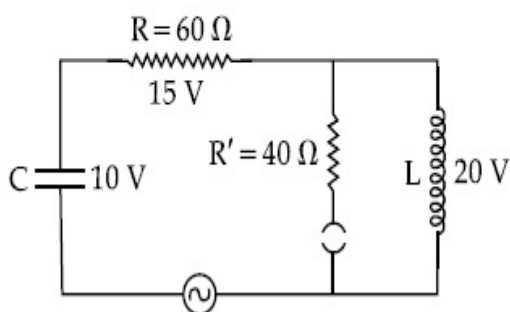
70819158504. 1.0 m

Question Number : 17 Question Id : 70819117780 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The angular frequency of alternating current in a L-C-R circuit is 100 rad/s. The components connected are shown in the figure. Find the value of inductance of the coil and capacity of condenser.



Options :

70819158505. 1.33 H and 250 μ F

70819158506. 1.33 H and 150 μ F

70819158507. 0.8 H and 150 μ F

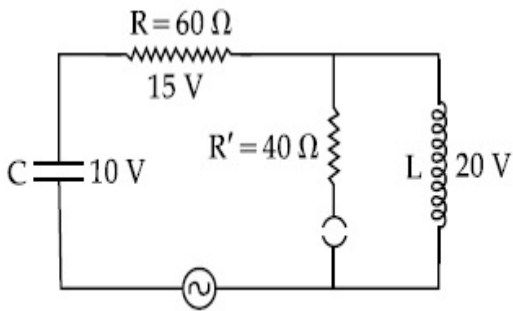
70819158508. 0.8 H and 250 μ F

Question Number : 17 Question Id : 70819117780 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা L-C-R বর্তনীত প্রবাহিত পৰিৱৰ্তী প্ৰৱাহৰ কৌণিক কম্পনাংক 100 rad/s। বৰ্তনীটোত সংযোগ কৰা অংশসমূহ চিত্ৰত দেখুওৱা হৈছে। কুণ্ডলীটোৰ আৱেশ আৰু বিদ্যুৎ সঞ্চয়ক উপকৰণটোৰ (condenser) ধাৰিতা (capacity) নিৰ্ণয় কৰা।



Options :

70819158505. 1.33 H আৰু 250 μ F

70819158506. 1.33 H আৰু 150 μ F

70819158507. 0.8 H আৰু 150 μ F

70819158508. 0.8 H আৰু 250 μ F

Question Number : 18 Question Id : 70819117781 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A diatomic gas, having $C_p = \frac{7}{2}R$ and $C_v = \frac{5}{2}R$, is heated at constant pressure. The ratio $dU : dQ : dW$:

Options :

70819158509. 5 : 7 : 2

70819158510. 3 : 7 : 2

70819158511. 3 : 5 : 2

70819158512. 5 : 7 : 3

Question Number : 18 Question Id : 70819117781 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

দ্বি-চাপত, $C_p = \frac{7}{2}R$ আৰু $C_v = \frac{5}{2}R$ সম্পন্ন এটা দ্বি-পাৰমাণৱিক গেছ উত্তপ্ত কৰা হৈছে। অনুপাত $dU : dQ : dW$ হ'ব :

Options :

70819158509. 5 : 7 : 2

70819158510. 3 : 7 : 2

70819158511. 3 : 5 : 2

70819158512. 5 : 7 : 3

Question Number : 19 Question Id : 70819117782 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Two radioactive substances X and Y originally have N_1 and N_2 nuclei respectively. Half life of X is half of the half life of Y. After three half lives of Y, number of nuclei of both are equal.

The ratio $\frac{N_1}{N_2}$ will be equal to :

Options :

70819158513. $\frac{3}{1}$

70819158514. $\frac{1}{3}$

70819158515. $\frac{8}{1}$

70819158516. $\frac{1}{8}$

**Question Number : 19 Question Id : 70819117782 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

দুটা তেজস্ক্রিয় পদার্থ X আৰু Y ৰ প্ৰাৰম্ভিক নিউক্লিয়াছৰ সংখ্যা ক্ৰমে N_1 আৰু N_2 । X ৰ অৰ্ধায়ু, Y ৰ অৰ্ধায়ুৰ আধা।

Y ৰ ক্ৰমে তিনিটা অৰ্ধায়ুৰ পাছত দুয়োটা পদাৰ্থতে থকা নিউক্লিয়াছৰ সংখ্যা সমান। $\frac{N_1}{N_2}$ ৰ অনুপাত হ'ব :

Options :

70819158513. $\frac{3}{1}$

70819158514. $\frac{1}{3}$

70819158515. $\frac{8}{1}$

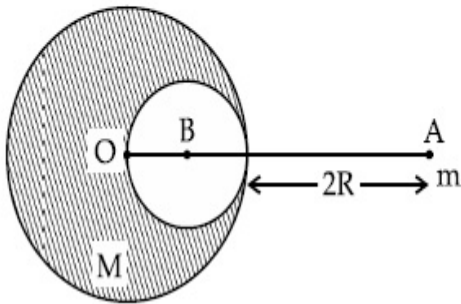
70819158516. $\frac{1}{8}$

Question Number : 20 Question Id : 70819117783 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A solid sphere of radius R gravitationally attracts a particle placed at $3R$ from its centre with a force F_1 . Now a spherical cavity of radius $\left(\frac{R}{2}\right)$ is made in the sphere (as shown in figure) and the force becomes F_2 . The value of $F_1 : F_2$ is :



Options :

70819158517. 41 : 50

70819158518. 50 : 41

70819158519. 36 : 25

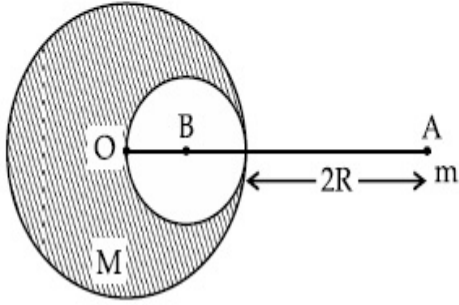
70819158520. 25 : 36

Question Number : 20 Question Id : 70819117783 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

F_1 বলেৰে R ব্যাসাৰ্ধৰ এটা গোটা গোলকে ইয়াৰ কেন্দ্ৰৰ পৰা $3R$ দূৰত্বত থকা এটা কণাক মধ্যাকৰ্ষণিকভাৱে আকৰ্ষণ কৰিছে। এতিয়া চিত্ৰত দেখুওৱা ধৰণে, $\left(\frac{R}{2}\right)$ ব্যাসাৰ্ধৰ এটা গোলাকাৰ ছিদ্ৰ গোলকটোত বনোৱা হ'ল আৰু বলৰ পৰিমাণ F_2 হয়গৈ। $F_1 : F_2$ ৰ মান হ'ব :



Options :

70819158517. 41 : 50

70819158518. 50 : 41

70819158519. 36 : 25

70819158520. 25 : 36

Physics Section B

Section Id :	708191725
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20
Mark As Answered Required? :	Yes
Sub-Section Number :	1

Sub-Section Id :

7081911005

Question Shuffling Allowed :

Yes

Question Number : 21 Question Id : 70819117784 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A monoatomic gas of mass 4.0 u is kept in an insulated container. Container is moving with velocity 30 m/s. If container is suddenly stopped then change in temperature of the gas

(R = gas constant) is $\frac{x}{3R}$. Value of x is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 21 Question Id : 70819117784 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা তাপীয়ভাৱে বহিকৃত (insulated) পাত্ৰত এটা 4.0 u ভৰৰ এক পৰমাণৱিক গেছ ৰখা হৈছে। পাত্ৰটো 30 m/s

বেগত গতি কৰি আছে। যদি পাত্ৰটো হঠাতে ৰখাই দিয়া হয়, তেতিয়া গেছটোৰ উষ্ণতাৰ পৰিবৰ্তন হয় $\frac{x}{3R}$ (R = গেছীয় ধ্ৰুৱক), x ৰ মান _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 22 Question Id : 70819117785 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

512 identical drops of mercury are charged to a potential of 2 V each. The drops are joined to form a single drop. The potential of this drop is _____ V.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 22 Question Id : 70819117785 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

512 সংখ্যক সইলাখ একে পাৰাৰ টোপালৰ প্ৰতিটোকে 2 V বিভৱলৈ আহিত কৰা হৈছে। টোপালসমূহক একেলগ কৰি এটা টোপাল কৰা হ'ল। এই টোপালটোৰ বিভৱ হয় _____ V।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 23 Question Id : 70819117786 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A coil of inductance 2 H having negligible resistance is connected to a source of supply whose voltage is given by $V = 3t$ volt. (where t is in second). If the voltage is applied when $t = 0$, then the energy stored in the coil after 4 s is _____ J.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 23 Question Id : 70819117786 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

নগ্না বোধৰ 2 H আৱেশকৰ এডাল কুণ্ডলী এটা উৎসৰ সৈতে সংযোগ কৰা হৈছে আৰু উৎসটোৰ বিভৱ দিয়া আছে $V = 3t$ volt, (য'ত t second এককত আছে)। যদিহে $t = 0$ সময়ত বিভৱ প্ৰয়োগ কৰা হয়, তেন্তে 4 ছেকেণ্ডৰ পাছত কুণ্ডলীটোত সঞ্চয় হোৱা শক্তি হ'ব _____ J।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 24 Question Id : 70819117787 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A small bob tied at one end of a thin string of length 1 m is describing a vertical circle so that the maximum and minimum tension in the string are in the ratio 5 : 1. The velocity of the bob at the highest position is _____ m/s. (Take $g = 10 \text{ m/s}^2$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 24 Question Id : 70819117787 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

1 m দৈৰ্ঘ্যৰ এডাল পাতল বহিৰ এটা মূৰে বান্ধি থোৱা এটা সৰু গোলক উলম্বদিশত বৃত্তাকাৰে ঘূৰিছে যাতে বহিৰডালৰ সৰ্বোচ্চ আৰু সৰ্বনিম্ন টানৰ অনুপাত 5 : 1 হয়। সৰ্বোচ্চ অৱস্থানত গোলকটোৰ বেগ হ'ব _____ m/s।
($g = 10 \text{ m/s}^2$ লোৱা)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 25 Question Id : 70819117788 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The potential energy (U) of a diatomic molecule is a function dependent on r (interatomic distance) as

$$U = \frac{\alpha}{r^{10}} - \frac{\beta}{r^5} - 3$$

where, α and β are positive constants. The equilibrium distance between two atoms will be

$$\left(\frac{2\alpha}{\beta} \right)^{\frac{a}{b}}, \text{ where } a = \underline{\hspace{2cm}}.$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 25 Question Id : 70819117788 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা দ্বি-পাৰমাণৱিক অণুৰ স্থিতি-শক্তি (U), r (আন্তঃ পাৰমাণৱিক দূৰত্ব) ৰ ফলন হয়,

$$U = \frac{\alpha}{r^{10}} - \frac{\beta}{r^5} - 3$$

য'ত, α আৰু β দুটা ধনাত্মক ধ্ৰুৱক। দুয়োটা পৰমাণুৰ মাজৰ সাম্যৱস্থাৰ দূৰত্ব $\left(\frac{2\alpha}{\beta}\right)^{\frac{a}{b}}$ য'ত, $a = \underline{\hspace{2cm}}$ ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 26 Question Id : 70819117789 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The electric field in a region is given by $\vec{E} = \left(\frac{3}{5}E_0\hat{i} + \frac{4}{5}E_0\hat{j}\right)\frac{N}{C}$. The ratio of flux of reported field through the rectangular surface of area 0.2 m^2 (parallel to $y-z$ plane) to that of the surface of area 0.3 m^2 (parallel to $x-z$ plane) is $a : b$, where $a = \underline{\hspace{2cm}}$.

[Here $\hat{i}$, $\hat{j}$ and $\hat{k}$ are unit vectors along x , y and z -axes respectively]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 26 Question Id : 70819117789 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা অঞ্চলত বৈদ্যুতিক ক্ষেত্ৰৰ মান দিয়া আছে $\vec{E} = \left(\frac{3}{5} E_0 \hat{i} + \frac{4}{5} E_0 \hat{j} \right) \frac{N}{C}$ । 0.2 মিঃ^2 কালিৰ এক আয়তকাৰ পৃষ্ঠ

$(y-z \text{ তলৰ সমান্তৰাল})$ ৰ সৈতে 0.3 মিঃ^2 কালি $(x-z \text{ তলৰ সমান্তৰাল})$ ৰ আন এক পৃষ্ঠৰ মাজেদি যোৱা উপৰোক্ত বৈদ্যুতিক ক্ষেত্ৰখনৰ অভিবাহৰ অনুপাত হ'ল $a : b$, য'ত $a = \underline{\hspace{2cm}}$ ।

(ইয়াত $\hat{i}$, $\hat{j}$ আৰু $\hat{k}$ ক্ৰমে x , y আৰু z অক্ষৰ দিশে একক ভেক্টৰ)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 27 Question Id : 70819117790 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A transmitting station releases waves of wavelength 960 m . A capacitor of $2.56 \mu\text{F}$ is used in the resonant circuit. The self inductance of coil necessary for resonance is $\underline{\hspace{2cm}} \times 10^{-8} \text{ H}$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 27 Question Id : 70819117790 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা প্ৰেৰক ষ্টেচনে (transmitting station) তৰংগদৈৰ্ঘ্য 960 m ৰ তৰংগ এৰি আছে। অনুনাদী বৰ্তনীত এটা 2.56 μF ৰ ধাৰক ব্যৱহৃত হৈছে। অনুনাদৰ বাবে প্ৰয়োজনীয়, কুণ্ডলীৰ স্ফুৰমাৰ্শক হ'ব _____ $\times 10^{-8} \text{ H}$ ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 28 **Question Id :** 70819117791 **Question Type :** SA

Correct Marks : 4 **Wrong Marks :** 0

The same size images are formed by a convex lens when the object is placed at 20 cm or at 10 cm from the lens. The focal length of convex lens is _____ cm.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 28 **Question Id :** 70819117791 **Question Type :** SA

Correct Marks : 4 **Wrong Marks :** 0

এটা লক্ষ্যবস্তুৰ লেন্সৰ পৰা দূৰত্ব ক্ৰমে 20 cm বা 10 cm ৰ বাবে এখন উত্তল লেন্সে সমান আকাৰৰ প্ৰতিবিম্ব গঠন কৰে। উত্তল লেন্সখনৰ নাভি দৈৰ্ঘ্য হ'ব _____ cm ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 29 Question Id : 70819117792 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

In a certain thermodynamical process, the pressure of a gas depends on its volume as kV^3 . The work done when the temperature changes from 100°C to 300°C will be _____ nR, where n denotes number of moles of a gas.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 29 Question Id : 70819117792 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা নিৰ্দিষ্ট তাপগতিক প্ৰক্ৰিয়াত, এটা গেছৰ চাপ তাৰ আয়তনৰ ওপৰত kV^3 ধৰণে নিৰ্ভৰ কৰে। যেতিয়া উষ্ণতা 100°C ৰ পৰা 300°C লৈ সলনি হয়, সম্পাদিত কাৰ্য্যৰ পৰিমাণ হ'ব _____ nR ।
য'ত n য়ে গেছৰ ম'লৰ সংখ্যা সূচায়ছে।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

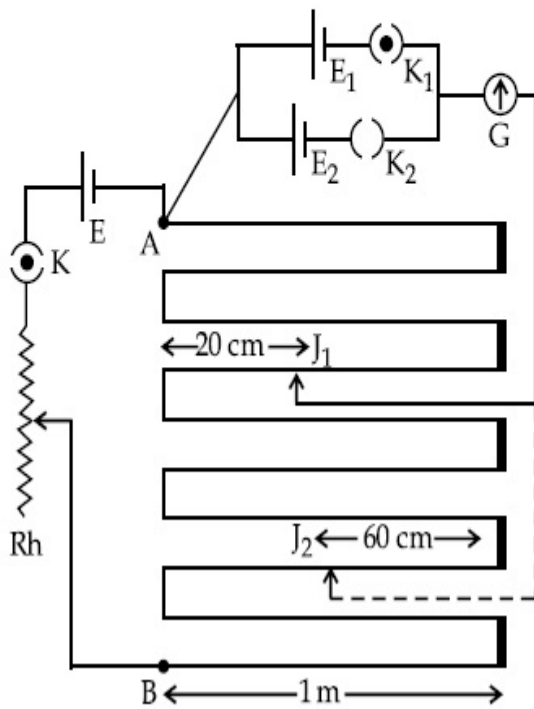
5 to 5.001

Question Number : 30 Question Id : 70819117793 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

In the given circuit of potentiometer, the potential difference E across AB (10 m length) is larger than E_1 and E_2 as well. For key K_1 (closed), the jockey is adjusted to touch the wire at point J_1 so that there is no deflection in the galvanometer. Now the first battery (E_1) is replaced by second battery (E_2) for working by making K_1 open and K_2 closed. The galvanometer

gives then null deflection at J_2 . The value of $\frac{E_1}{E_2}$ is $\frac{a}{b}$, where $a = \underline{\hspace{2cm}}$.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

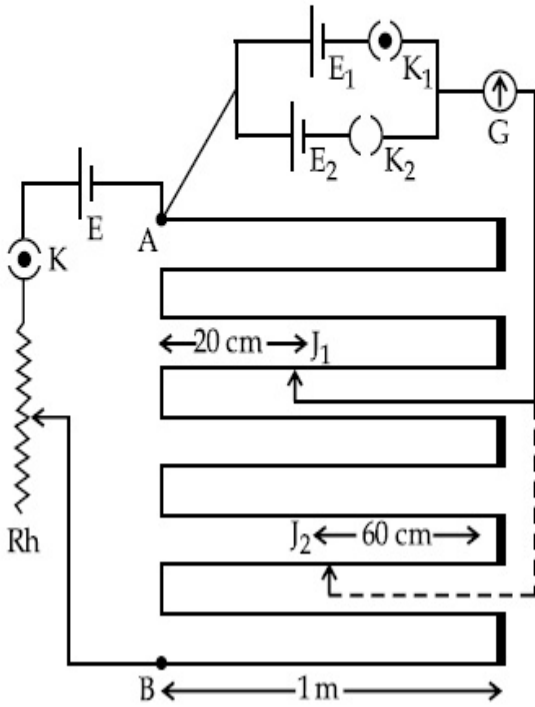
Possible Answers :

5 to 5.001

Question Number : 30 Question Id : 70819117793 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা পটেন্সিয়'মিটাৰৰ বৰ্তনীত, AB (দৈৰ্ঘ্য 10 m) ৰ দুই মূৰৰ বিভৱভেদ E, E_1 আৰু E_2 তকৈ বেছি। চাবি K_1 ৰ বন্ধ অৱস্থাত, জকিৰ (jockey) স্পৰ্শবিন্দুটো তাঁৰডালৰ এটা বিন্দু J_1 ত স্পৰ্শ কৰোৱা হৈছে যাতে গেলভেনমিটাৰত কোনো বিচ্যুতি নহয়। এতিয়া প্ৰথম বেটাৰী (E_1) ক দ্বিতীয়টো বেটাৰী (E_2) ৰে সলনি কৰা হৈছে, K_1 খোলা ৰাখি আৰু K_2 বন্ধ কৰি। তেতিয়া J_2 বিন্দুত গেলভেনমিটাৰে সম্বলন বিন্দু দেখুৱাইছে। $\frac{E_1}{E_2}$ ৰ মান $\frac{a}{b}$, য'ত $a = \underline{\hspace{2cm}}$ ।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Chemistry Section A

Section Id :	708191726
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20

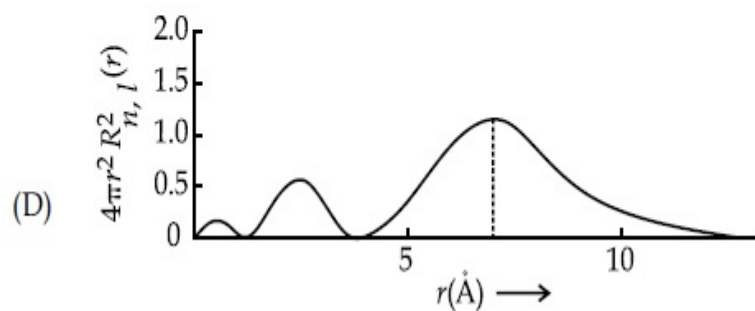
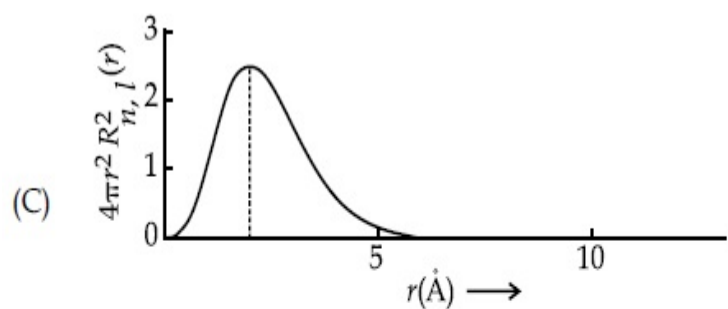
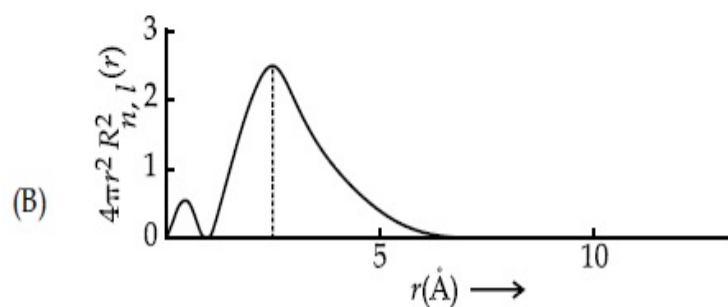
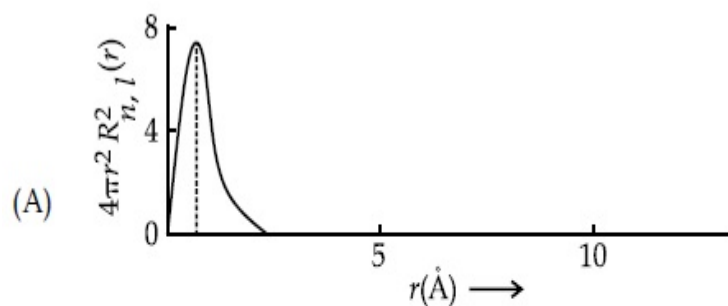
Number of Questions to be attempted :	20
Section Marks :	80
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	7081911006
Question Shuffling Allowed :	Yes

Question Number : 31 Question Id : 70819117794 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The plots of radial distribution functions for various orbitals of hydrogen atom against ' r ' are given below :



The correct plot for 3s orbital is :

Options :

70819158531. (A)

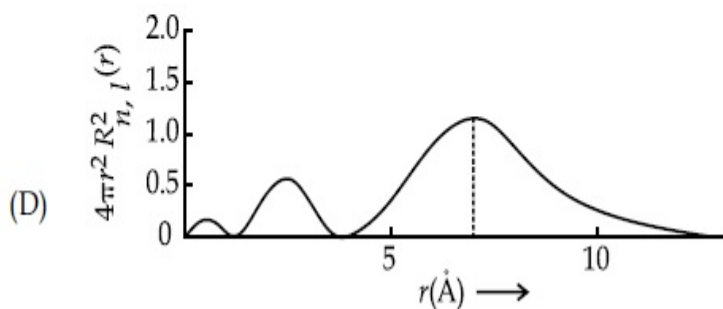
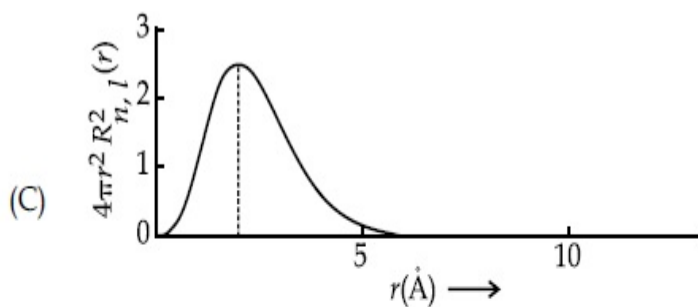
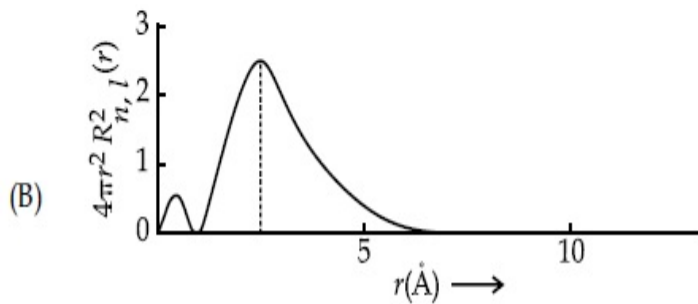
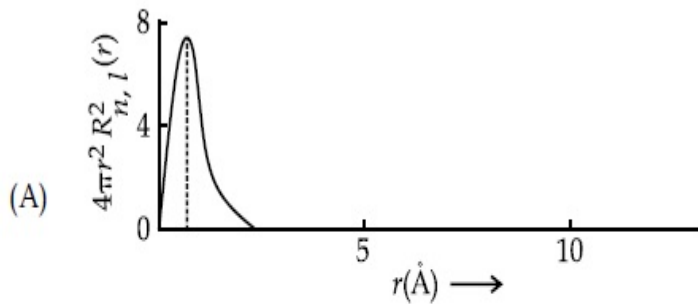
70819158532. (B)

70819158533. (C)

Question Number : 31 Question Id : 70819117794 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

হাইড্র'জেন পৰমাণুৰ 'r' ৰ বিপৰীতে বিভিন্ন কক্ষকৰ(অৰবিটেল)বাবে ব্যাসদ্বিগুণ বিতৰণ ফলন (radial distribution functions) ৰ লেখ তলত দিয়া হ'ল :



3s কক্ষকৰ (অৰবিটেল) বাবে শুদ্ধ লেখটো হ'ল :

Options :

70819158531. (A)

70819158532. (B)

70819158533. (C)

70819158534. (D)

Question Number : 32 Question Id : 70819117795 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

According to molecular orbital theory, the species among the following that does not exist is :

Options :

70819158535. O_2^{2-}

70819158536. He_2^-

70819158537. Be_2

70819158538. He_2^+

Question Number : 32 Question Id : 70819117795 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

আগৰিক কক্ষক(অৰবিটেল) তত্ত্বমতে, তলত দিয়া নমুনা সমূহৰ অস্তিত্বহীন নমুনাটো হ'ল :

Options :

70819158535. O_2^{2-}

70819158536. He_2^-

70819158537. Be_2

70819158538. He_2^+

Question Number : 33 Question Id : 70819117796 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The solubility of AgCN in a buffer solution of pH=3 is x . The value of x is :
[Assume : No cyano complex is formed ; $K_{sp}(\text{AgCN}) = 2.2 \times 10^{-16}$ and $K_a(\text{HCN}) = 6.2 \times 10^{-10}$]

Options :

70819158539. 0.625×10^{-6}

70819158540. 1.6×10^{-6}

70819158541. 2.2×10^{-16}

70819158542. 1.9×10^{-5}

Question Number : 33 Question Id : 70819117796 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

pH=3 ৰ বাফাৰ দ্ৰৱ এটাত AgCN ৰ দ্ৰাৱ্যতা হ'ল x । x ৰ মান হ'ল :

[খৰি লোৱা, ছয়ান' জটিল যৌগ গঠন হোৱা নাই; $K_{sp}(\text{AgCN}) = 2.2 \times 10^{-16}$ আৰু $K_a(\text{HCN}) = 6.2 \times 10^{-10}$]

Options :

70819158539. 0.625×10^{-6}

70819158540. 1.6×10^{-6}

70819158541. 2.2×10^{-16}

70819158542. 1.9×10^{-5}

**Question Number : 34 Question Id : 70819117797 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

In Freundlich adsorption isotherm at moderate pressure, the extent of adsorption $\left(\frac{x}{m}\right)$ is directly proportional to P^x . The value of x is :

Options :

70819158543. 1

70819158544. zero

70819158545. ∞

70819158546. $\frac{1}{n}$

**Question Number : 34 Question Id : 70819117797 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

মধ্যমীয়া চাপত ফ্রেণ্ডলিক অধিশোষণ সমোষ্ণীত অধিশোষণৰ মাত্রা $\left(\frac{x}{m}\right)$, P^x ৰ সমানুপাতিক। x ৰ মান হ'ল :

Options :

70819158543. 1

70819158544. শূন্য

70819158545. ∞

70819158546. $\frac{1}{n}$

Question Number : 35 Question Id : 70819117798 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Ellingham diagram is a graphical representation of :

Options :

70819158547. ΔG vs T

70819158548. ΔH vs T

70819158549. ΔG vs P

70819158550. $(\Delta G - T\Delta S)$ vs T

Question Number : 35 Question Id : 70819117798 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এলিংহাম চিত্র হ'ল লেখ্য প্রতিনিধিত্ব :

Options :

70819158547. ΔG বনাম T ব

70819158548. ΔH বনাম T ৰ

70819158549. ΔG বনাম P ৰ

70819158550. $(\Delta G - T\Delta S)$ বনাম T ৰ

Question Number : 36 Question Id : 70819117799 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following equation depicts the oxidizing nature of H_2O_2 ?

Options :

70819158551. $KIO_4 + H_2O_2 \rightarrow KIO_3 + H_2O + O_2$

70819158552. $I_2 + H_2O_2 + 2OH^- \rightarrow 2I^- + 2H_2O + O_2$

70819158553. $2I^- + H_2O_2 + 2H^+ \rightarrow I_2 + 2H_2O$

70819158554. $Cl_2 + H_2O_2 \rightarrow 2HCl + O_2$

Question Number : 36 Question Id : 70819117799 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলৰ কোনটো সমীকৰণে H_2O_2 ৰ জাৰক প্ৰকৃতি চিত্ৰিত কৰে ?

Options :

70819158551. $KIO_4 + H_2O_2 \rightarrow KIO_3 + H_2O + O_2$

70819158552. $I_2 + H_2O_2 + 2OH^- \rightarrow 2I^- + 2H_2O + O_2$

70819158553. $2\text{I}^- + \text{H}_2\text{O}_2 + 2\text{H}^+ \rightarrow \text{I}_2 + 2\text{H}_2\text{O}$

70819158554. $\text{Cl}_2 + \text{H}_2\text{O}_2 \rightarrow 2\text{HCl} + \text{O}_2$

Question Number : 37 Question Id : 70819117800 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The correct statement about B_2H_6 is :

Options :

70819158555. All B—H—B angles are of 120° .

70819158556. The two B—H—B bonds are not of same length.

70819158557. Terminal B—H bonds have less p -character when compared to bridging bonds.

70819158558. Its fragment, BH_3 , behaves as a Lewis base.

Question Number : 37 Question Id : 70819117800 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

B_2H_6 ৰ বিষয়ে শুদ্ধ উক্তিটো হ'ল :

Options :

70819158555. আটাইবোৰ B—H—B কোণ 120° ৰ।

70819158556. B—H—B বান্ধনি দুটা একে দৈৰ্ঘ্যৰ নহয়।

70819158557. সেতু বান্ধনিৰ তুলনাত প্ৰান্তীয় B—H বান্ধনিৰ p -চৰিত্ৰ কম।

70819158558. ইয়াৰ টুকুৰা, BH_3 এ লুইছ ক্ষাৰক হিচাবে আচৰণ কৰে।

Question Number : 38 Question Id : 70819117801 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : CeO_2 can be used for oxidation of aldehydes and ketones.

Statement II : Aqueous solution of EuSO_4 is a strong reducing agent.

In the light of the above statements, choose the correct answer from the options given below :

Options :

70819158559. Both Statement I and Statement II are true

70819158560. Both Statement I and Statement II are false

70819158561. Statement I is true but Statement II is false

70819158562. Statement I is false but Statement II is true

Question Number : 38 Question Id : 70819117801 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত দুটা উক্তি দিয়া হ'ল :

উক্তি I : এলডিহাইড আৰু কিট'নৰ জাৰণৰ বাবে CeO_2 ব্যৱহাৰ কৰিব পাৰি।

উক্তি II : EuSO_4 ৰ জলীয় দ্ৰৱ এটা তীব্ৰ বিজাৰণ অভিৰতা।

ওপৰোক্ত উক্তি দুটাৰ আধাৰত, তলত দিয়া বিকল্পবোৰৰ পৰা শুদ্ধ উত্তৰটো বাছি উলিওৱা।

Options :

70819158559. উক্তি I আৰু উক্তি II ৰ দুয়োটাই সত্য।

70819158560. উক্তি I আৰু উক্তি II ৰ দুয়োটাই অসত্য।

70819158561. উক্তি I সত্য কিন্তু উক্তি II অসত্য।

70819158562. উক্তি I অসত্য কিন্তু উক্তি II সত্য।

Question Number : 39 Question Id : 70819117802 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In which of the following pairs, the outer most electronic configuration will be the same ?

Options :

70819158563. V^{2+} and Cr^{+}

70819158564. Cr^{+} and Mn^{2+}

70819158565. Ni^{2+} and Cu^{+}

70819158566. Fe^{2+} and Co^{+}

Question Number : 39 Question Id : 70819117802 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলৰ কোনটো যোৰত বহিৰতম ইলেক্ট্ৰনীয় বিন্যাস একে হ'ব ?

Options :

70819158563. V^{2+} আৰু Cr^{+}

70819158564. Cr^{+} আৰু Mn^{2+}

70819158565. Ni^{2+} আৰু Cu^{+}

70819158566. Fe^{2+} আৰু Co^{+}

Question Number : 40 Question Id : 70819117803 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The hybridization and magnetic nature of $[\text{Mn}(\text{CN})_6]^{4-}$ and $[\text{Fe}(\text{CN})_6]^{3-}$, respectively are :

Options :

70819158567. d^2sp^3 and paramagnetic

70819158568. sp^3d^2 and diamagnetic

70819158569. d^2sp^3 and diamagnetic

70819158570. sp^3d^2 and paramagnetic

Question Number : 40 Question Id : 70819117803 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$[\text{Mn}(\text{CN})_6]^{4-}$ আৰু $[\text{Fe}(\text{CN})_6]^{3-}$ ত সংকৰণ আৰু চুম্বকীয় প্ৰকৃতি হ'ল যথাক্ৰমে :

Options :

70819158567. d^2sp^3 আৰু অনুচুম্বকীয়

70819158568. sp^3d^2 আৰু অপচুম্বকীয়

70819158569. d^2sp^3 আৰু অপচুম্বকীয়

70819158570. sp^3d^2 আৰু অনুচুম্বকীয়

Question Number : 41 Question Id : 70819117804 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : An allotrope of oxygen is an important intermediate in the formation of reducing smog.

Statement II : Gases such as oxides of nitrogen and sulphur present in troposphere contribute to the formation of photochemical smog.

In the light of the above statements, choose the correct answer from the options given below :

Options :

70819158571. Both Statement I and Statement II are true

70819158572. Both Statement I and Statement II are false

70819158573. Statement I is true but Statement II is false

70819158574. Statement I is false but Statement II is true

Question Number : 41 Question Id : 70819117804 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত দুটা উক্তি দিয়া হৈছে :

উক্তি I : বিজাৰক ধূৱলী গঠনত অক্সিজেনৰ এটা অৱৰূপ হ'ল এটা প্ৰয়োজনীয় মধ্যৱৰ্তী যৌগ।

উক্তি II : ট্ৰ'প'স্ফিঅ'ৰত থকা গেছ যেনে, নাইট্ৰ'জেন আৰু ছালফাৰৰ অক্সাইডবোৰে আলোকৰাসায়নিক ধূৱলী গঠনত অবিহনা যোগায়।

ওপৰৰ উক্তিসমূহৰ ভিত্তিত, তলত দিয়া বিকল্পসমূহৰ পৰা শুদ্ধ উত্তৰটো বাছি উলিওৱা।

Options :

70819158571. উক্তি I আৰু উক্তি II ৰ দুয়োটাই সত্য।

70819158572. উক্তি I আৰু উক্তি II ৰ দুয়োটাই অসত্য।

70819158573. উক্তি I সত্য কিন্তু উক্তি II অসত্য।

70819158574. উক্তি I অসত্য কিন্তু উক্তি II সত্য।

Question Number : 42 Question Id : 70819117805 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Complete combustion of 1.80 g of an oxygen containing compound ($C_xH_yO_z$) gave 2.64 g of CO_2 and 1.08 g of H_2O . The percentage of oxygen in the organic compound is :

Options :

70819158575. 50.33

70819158576. 53.33

70819158577. 63.53

70819158578. 51.63

Question Number : 42 Question Id : 70819117805 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা অক্সিজেন যুক্ত যৌগ ($C_xH_yO_z$) ৰ 1.80 g ৰ সম্পূৰ্ণ দহনৰ ফলত 2.64 g CO_2 আৰু 1.08 g H_2O উৎপন্ন হয়।
জৈৱযৌগটোত অক্সিজেনৰ শতকৰা পৰিমাণ হ'ল :

Options :

70819158575. 50.33

70819158576. 53.33

70819158577. 63.53

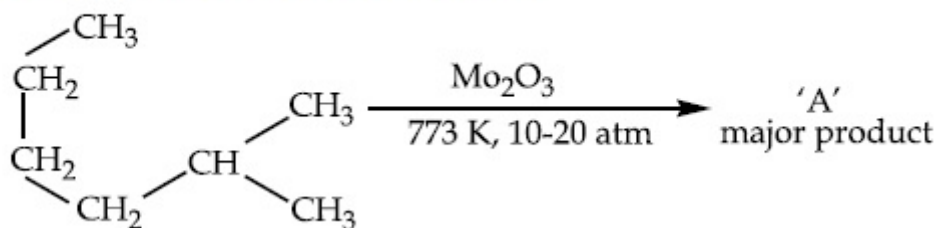
70819158578. 51.63

Question Number : 43 Question Id : 70819117806 Question Type : MCQ Option Shuffling : Yes

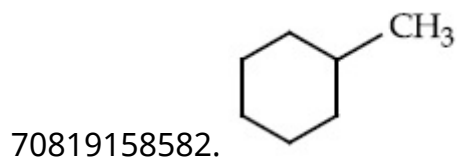
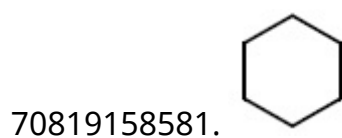
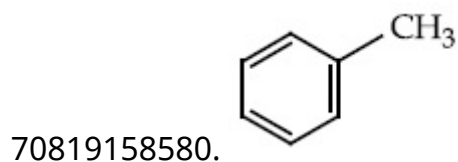
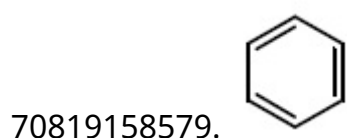
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Identify A in the given chemical reaction.



Options :

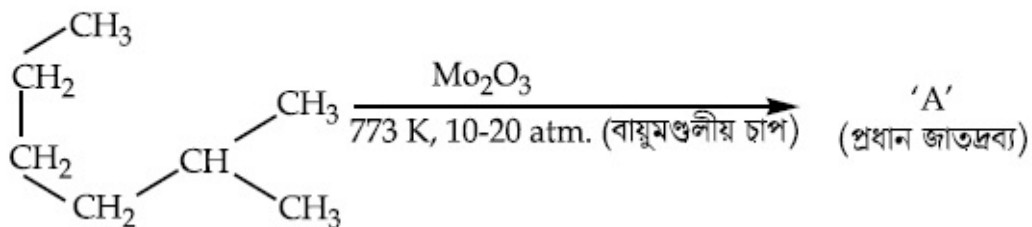


Question Number : 43 Question Id : 70819117806 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

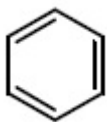
Correct Marks : 4 Wrong Marks : 1

প্রদত্ত রাসায়নিক বিক্রিয়াটোত A চিনাক্ত করা :

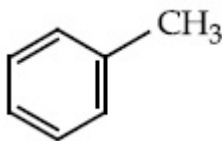


Options :

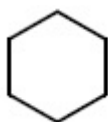
70819158579.



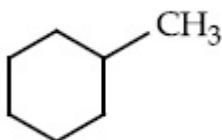
70819158580.



70819158581.



70819158582.

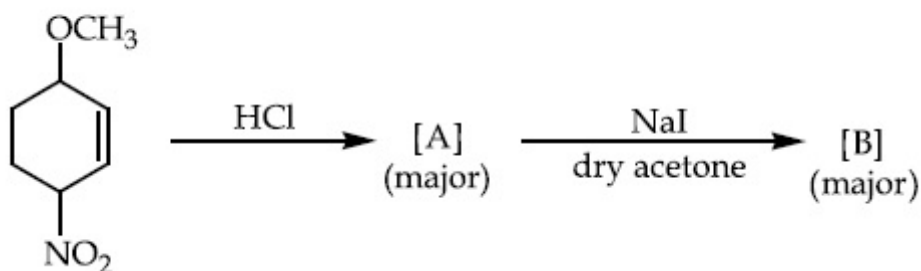


Question Number : 44 Question Id : 70819117807 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

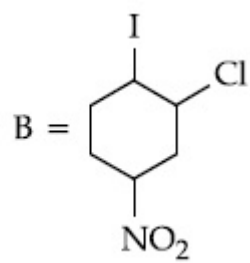
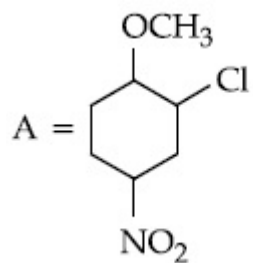
Correct Marks : 4 Wrong Marks : 1

Identify A and B in the chemical reaction.

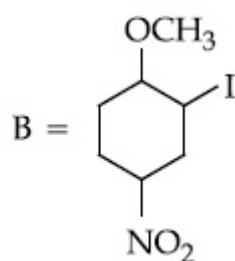
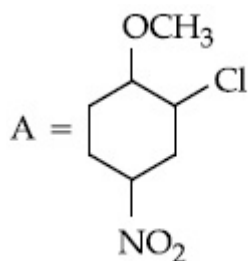


Options :

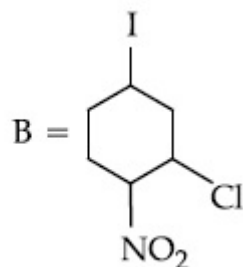
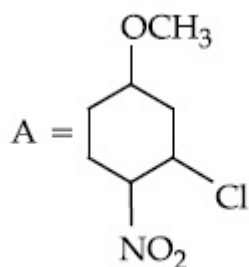
70819158583.



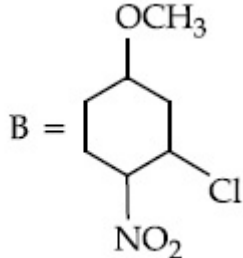
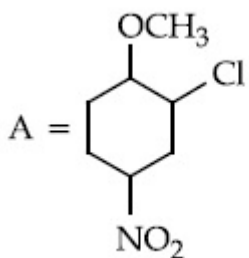
70819158584.



70819158585.



70819158586.

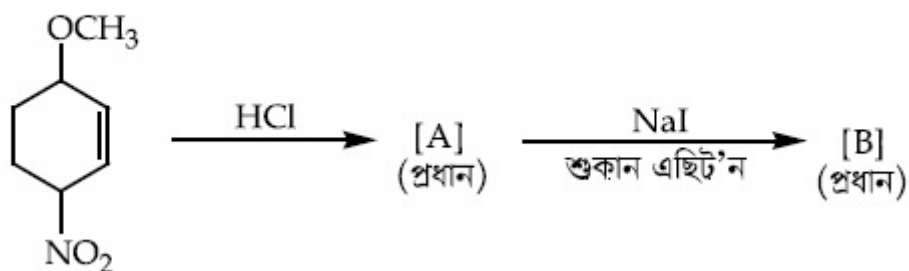


Question Number : 44 Question Id : 70819117807 Question Type : MCQ Option Shuffling : Yes

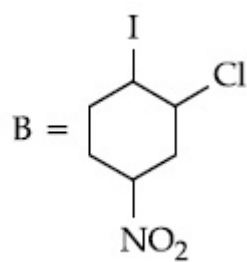
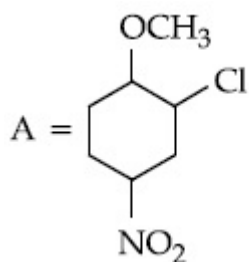
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

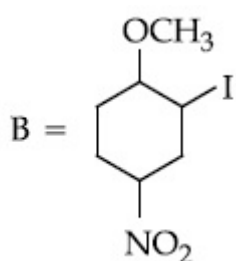
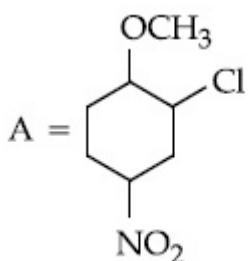
রাসায়নিক বিক্রিয়াটোত A আৰু B চিনাক্ত কৰা :



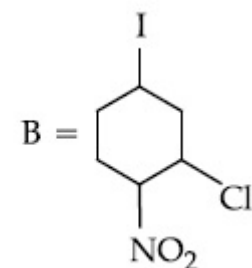
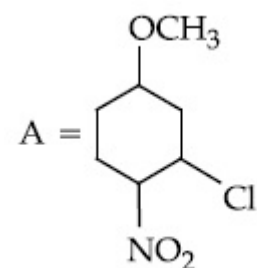
Options :



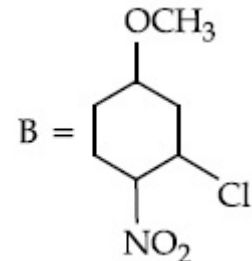
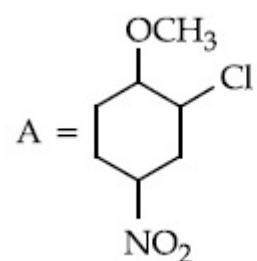
70819158583.



70819158584.



70819158585.



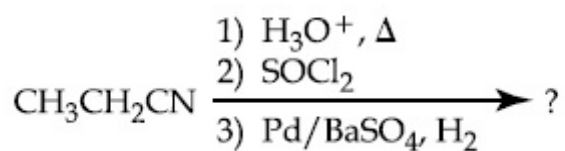
70819158586.

Question Number : 45 Question Id : 70819117808 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The major product of the following chemical reaction is :



Options :

70819158587. $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$

70819158588. $(\text{CH}_3\text{CH}_2\text{CO})_2\text{O}$

70819158589. $\text{CH}_3\text{CH}_2\text{CH}_3$

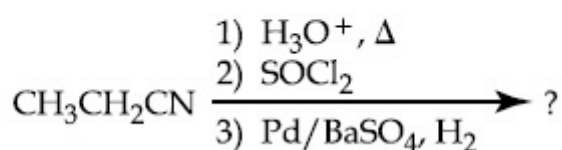
70819158590. $\text{CH}_3\text{CH}_2\text{CHO}$

Question Number : 45 Question Id : 70819117808 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

নিম্নলিখিত ৰাসায়নিক বিক্ৰিয়াটোৰ প্ৰধান জাতদ্রব্য হ'ল :



Options :

70819158587. $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$

70819158588. $(\text{CH}_3\text{CH}_2\text{CO})_2\text{O}$

70819158589. $\text{CH}_3\text{CH}_2\text{CH}_3$

70819158590. $\text{CH}_3\text{CH}_2\text{CHO}$

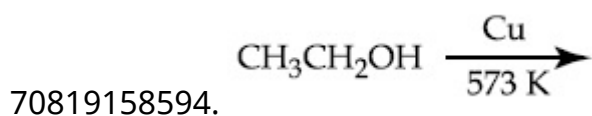
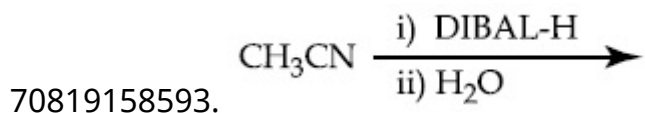
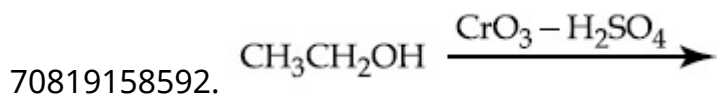
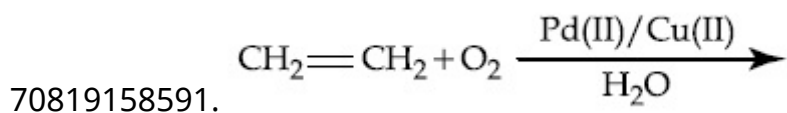
Question Number : 46 Question Id : 70819117809 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following reactions will not form acetaldehyde ?

Options :



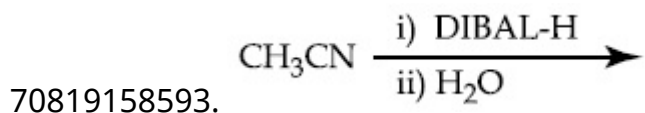
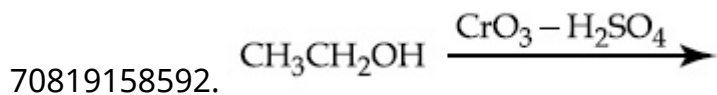
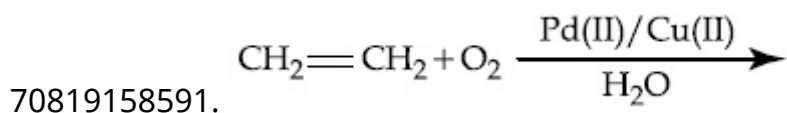
Question Number : 46 Question Id : 70819117809 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলৰ কোনটো বিক্ৰিয়াই এছিটেলডিহাইড উৎপন্ন নকৰে ?

Options :

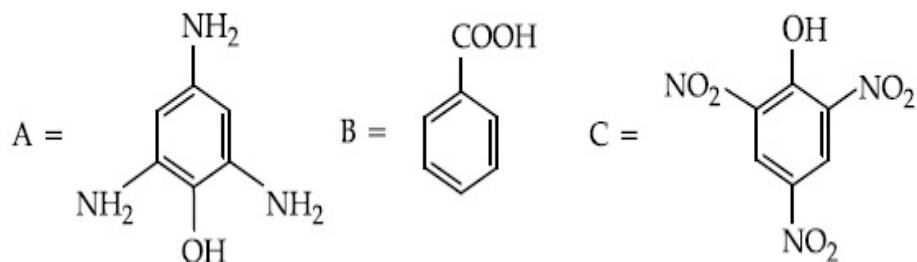


Question Number : 47 Question Id : 70819117810 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Compound(s) which will liberate carbon dioxide with sodium bicarbonate solution is/are :



Options :

70819158595. A and B only

70819158596. C only

70819158597. B and C only

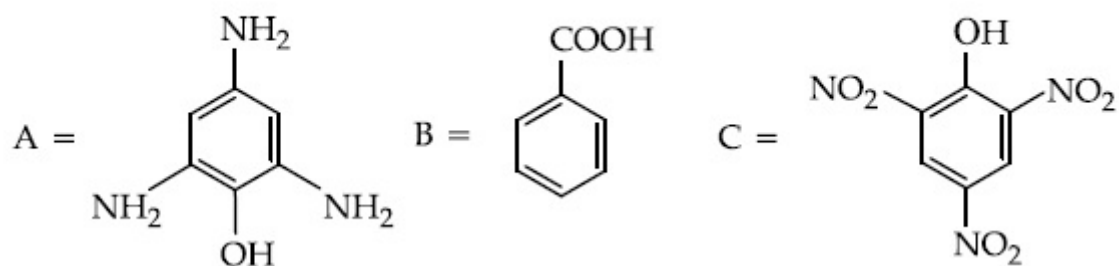
70819158598. B only

Question Number : 47 Question Id : 70819117810 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যৌগ/যৌগবোৰ যিয়ে ছ'ডিয়াম বাইকাৰ্ব'নেট দ্ৰৱৰ সৈতে কাৰ্বন ডাইঅক্সাইড এৰি দিয়ে :



Options :

70819158595. A আৰু B মাত্ৰ

70819158596. C মাত্ৰ

70819158597. B আৰু C মাত্ৰ

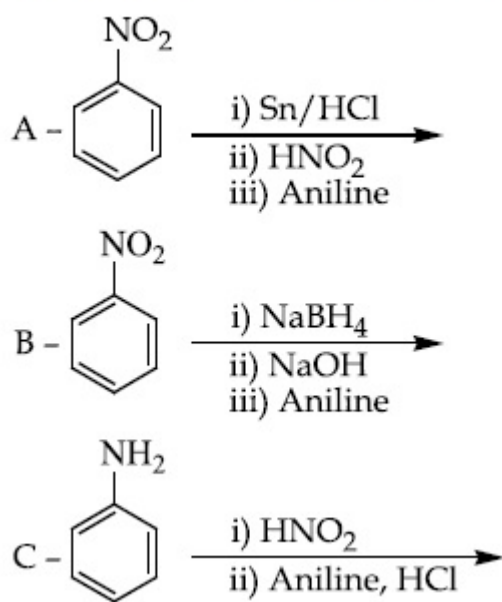
70819158598. B মাত্ৰ

Question Number : 48 Question Id : 70819117811 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following reaction/s will not give *p*-aminoazobenzene ?



Options :

70819158599. A only

70819158600. C only

70819158601. B only

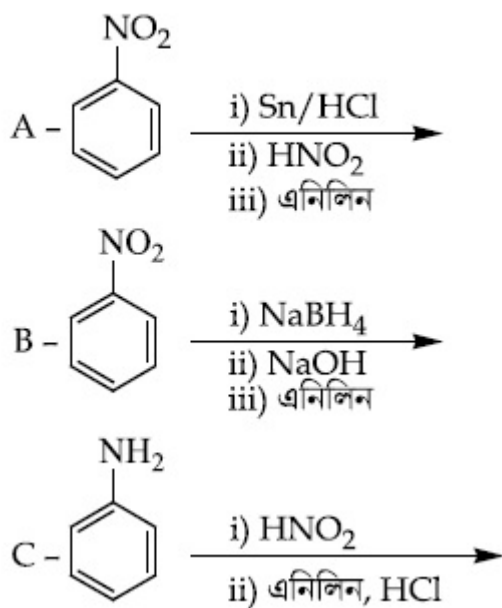
70819158602. A and B

Question Number : 48 Question Id : 70819117811 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলৰ কোনটো বিক্ৰিয়াই/বিক্ৰিয়াবোৰে *p*-এমিন'এ'ৰ'বেনযিন নিদিয়ে ?



Options :

70819158599. A মাত্ৰ

70819158600. C মাত্ৰ

70819158601. B মাত্ৰ

70819158602. A আৰু B

Question Number : 49 Question Id : 70819117812 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which statement is correct ?

Options :

70819158603. Buna-N is a natural polymer.

70819158604. Buna-S is a synthetic and linear thermosetting polymer.

70819158605. Neoprene is an addition copolymer used in plastic bucket manufacturing.

70819158606. Synthesis of Buna-S needs nascent oxygen.

Question Number : 49 Question Id : 70819117812 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

কোনটো উক্তি শুদ্ধ ?

Options :

70819158603. বুনা-N এটা প্রাকৃতিক বহুযোগী।

70819158604. বুনা-S হ'ল এটা সাংশ্লেষিক আৰু সবলবৈখিক থাৰ্ম'ছেটিং বহুযোগী।

70819158605. নিওপ্ৰিন হ'ল এটা যোগাত্মক বহুযোগী যাক প্লাষ্টিকৰ বাকেট উৎপাদনত ব্যৱহাৰ কৰা হয়।

70819158606. বুনা-S ৰ সংশ্লেষণত জন্মমান অক্সিজেনৰ প্ৰয়োজন হয়।

Question Number : 50 Question Id : 70819117813 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the glycosidic linkage between galactose and glucose is present in lactose ?

Options :

70819158607. C-1 of galactose and C-4 of glucose

70819158608. C-1 of galactose and C-6 of glucose

70819158609. C-1 of glucose and C-4 of galactose

70819158610. C-1 of glucose and C-6 of galactose

Question Number : 50 Question Id : 70819117813 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

গেলেক্ট'জ আৰু গ্লুক'জৰ মাজত থকা কোনটো গ্লাইক'চাইডিক সংযোগ লেক্ট'জত থাকে ?

Options :

70819158607. গেলেক্ট'জৰ C-1 আৰু গ্লুক'জৰ C-4

70819158608. গেলেক্ট'জৰ C-1 আৰু গ্লুক'জৰ C-6

70819158609. গ্লুক'জৰ C-1 আৰু গেলেক্ট'জৰ C-4

70819158610. গ্লুক'জৰ C-1 আৰু গেলেক্ট'জৰ C-6

Chemistry Section B

Section Id : 708191727

Section Number : 4

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 10

Number of Questions to be attempted : 5

Section Marks : 20

Mark As Answered Required? : Yes

Sub-Section Number : 1

Sub-Section Id : 7081911007

Question Shuffling Allowed :

Yes

Question Number : 51 Question Id : 70819117814 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

0.4 g mixture of NaOH, Na₂CO₃ and some inert impurities was first titrated with $\frac{N}{10}$ HCl using phenolphthalein as an indicator, 17.5 mL of HCl was required at the end point. After this methyl orange was added and titrated. 1.5 mL of same HCl was required for the next end point. The weight percentage of Na₂CO₃ in the mixture is _____. (Rounded-off to the nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 51 Question Id : 70819117814 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

NaOH, Na₂CO₃ আৰু কিছু নিষ্ক্ৰিয় অশুদ্ধিৰ এটা মিশ্ৰণ 0.4 g, ফেনলপ্থেলিন সূচক ব্যৱহাৰ কৰি $\frac{N}{10}$ HCl ৰ লগত প্ৰথমে অনুমাপিত (titrated) কৰা হ'ল, য'ত অন্তিম বিন্দুলৈ 17.5 mL HCl ৰ প্ৰয়োজন হ'ল। ইয়াৰ পাছত মিথাইল অৰেঞ্জ যোগ কৰা হ'ল আৰু পিছৰ অন্তবিন্দুলৈ 1.5 mL পৰিমাণৰ একে HCl প্ৰয়োজন হ'ল। মিশ্ৰণটোত Na₂CO₃ ভৰ শতাংশ হ'ল _____. (নিকটতম অখণ্ড সংখ্যাত)।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 52 Question Id : 70819117815 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A car tyre is filled with nitrogen gas at 35 psi at 27°C. It will burst if pressure exceeds 40 psi. The temperature in °C at which the car tyre will burst is _____. (Rounded-off to the nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 52 Question Id : 70819117815 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা গাড়ীৰ টায়াৰ নাইট্ৰ'জেন গেছেৰে 27°C আৰু 35 psi ত পূৰোৱা হ'ল। যদিহে চাপ 40 psi ত কৈ বেছি হয়, ই বিস্ফোৰিত হ'ব। যি উষ্ণতাত টায়াৰটো বিস্ফোৰিত হ'ব, °C স্কেলত সেই উষ্ণতাটো হ'ব _____ (নিকটতম অখণ্ড সংখ্যাত)।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

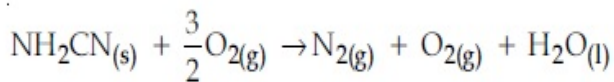
Possible Answers :

5 to 5.001

Question Number : 53 Question Id : 70819117816 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The reaction of cyanamide, $\text{NH}_2\text{CN}_{(s)}$ with oxygen was run in a bomb calorimeter and ΔU was found to be $-742.24 \text{ kJ mol}^{-1}$. The magnitude of ΔH_{298} for the reaction



is _____ kJ. (Rounded off to the nearest integer)

[Assume ideal gases and $R = 8.314 \text{ J mol}^{-1} \text{ K}^{-1}$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 53 **Question Id :** 70819117816 **Question Type :** SA

Correct Marks : 4 **Wrong Marks :** 0

ছয়ানাইড, $\text{NH}_2\text{CN}_{(s)}$ ৰ অক্সিজেনৰ সৈতে এটা বিক্ৰিয়া বোম্ব কেলব্রিমেটৰত সম্পন্ন কৰা হ'ল য'ত ΔU পোৱা হ'ল $-742.24 \text{ kJ mol}^{-1}$ ।

বিক্ৰিয়া :

$\text{NH}_2\text{CN}_{(s)} + \frac{3}{2}\text{O}_{2(g)} \rightarrow \text{N}_{2(g)} + \text{O}_{2(g)} + \text{H}_2\text{O}_{(l)}$ ৰ ΔH_{298} ৰ মান হ'ব _____ kJ (নিকটতম অখণ্ড সংখ্যাত)।

[ধৰি লোৱা, আদৰ্শ গেছ আৰু $R = 8.314 \text{ J mol}^{-1} \text{ K}^{-1}$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 54 **Question Id :** 70819117817 **Question Type :** SA

Correct Marks : 4 **Wrong Marks :** 0

1 molal aqueous solution of an electrolyte A_2B_3 is 60% ionised. The boiling point of the solution at 1 atm is _____ K. (Rounded-off to the nearest integer)

[Given K_b for $(H_2O) = 0.52 \text{ K kg mol}^{-1}$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 54 Question Id : 70819117817 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা বিদ্যুৎবিশ্লেষ্য A_2B_3 ৰ 1 ম'লেল জলীয় দ্ৰৱ 60% আয়নিত। 1 বায়ুমণ্ডলীয় চাপত দ্ৰৱটোৰ উতলাংক হ'ল _____ K (নিকটতম অখণ্ড সংখ্যাত কৰা)

[দিয়া আছে, K_b (H_2O) ৰ বাবে $= 0.52 \text{ K kg mol}^{-1}$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 55 Question Id : 70819117818 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

In basic medium CrO_4^{2-} oxidises $S_2O_3^{2-}$ to form SO_4^{2-} and itself changes into $Cr(OH)_4^-$.

The volume of 0.154 M CrO_4^{2-} required to react with 40 mL of 0.25 M $S_2O_3^{2-}$ is _____ mL. (Rounded-off to the nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 55 Question Id : 70819117818 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ক্ষাৰকীয় মাধ্যমত CrO_4^{2-} এ $\text{S}_2\text{O}_3^{2-}$ ক জাৰিত কৰি SO_4^{2-} গঠন কৰে আৰু নিজে $\text{Cr}(\text{OH})_4^-$ লৈ পৰিৱৰ্তিত হয়। $\text{S}_2\text{O}_3^{2-}$ ৰ 0.25 M 40 mL দ্ৰৱৰ সৈতে বিক্ৰিয়া কৰিবলৈ প্ৰয়োজন হোৱা 0.154 M CrO_4^{2-} দ্ৰৱৰ আয়তন হ'ল _____ mL। (নিকটতম অখণ্ড সংখ্যাত)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

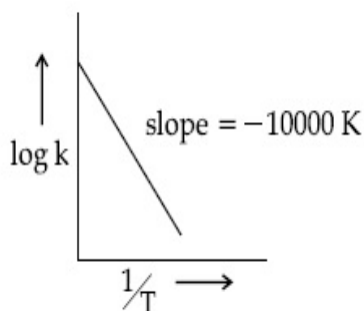
Possible Answers :

5 to 5.001

Question Number : 56 Question Id : 70819117819 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

For the reaction, $aA + bB \rightarrow cC + dD$, the plot of $\log k$ vs $\frac{1}{T}$ is given below :



The temperature at which the rate constant of the reaction is 10^{-4} s^{-1} is _____ K.
(Rounded-off to the nearest integer)

[Given : The rate constant of the reaction is 10^{-5} s^{-1} at 500 K.]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

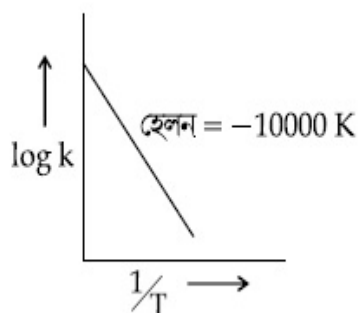
Possible Answers :

5 to 5.001

Question Number : 56 Question Id : 70819117819 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$aA + bB \rightarrow cC + dD$ বিক্রিয়াৰ বাবে $\frac{1}{T}$ ৰ বিপৰীতে $\log k$ ৰ লেখ তলত দিয়া হ'ল :



যি উষ্ণতাত বিক্ৰিয়াটোৰ গতিপ্ৰৱক 10^{-4} s^{-1} হয়, সেইটো হ'ল _____ K। (নিকটতম অখণ্ড সংখ্যাত)
[দিয়া আছে : 500 K ত বিক্ৰিয়াটোৰ গতিপ্ৰৱক 10^{-5} s^{-1}]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 57 Question Id : 70819117820 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The ionization enthalpy of Na^+ formation from $\text{Na}_{(g)}$ is $495.8 \text{ kJ mol}^{-1}$, while the electron gain enthalpy of Br is $-325.0 \text{ kJ mol}^{-1}$. Given the lattice enthalpy of NaBr is $-728.4 \text{ kJ mol}^{-1}$. The energy for the formation of NaBr ionic solid is $(-)______ \times 10^{-1} \text{ kJ mol}^{-1}$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 57 Question Id : 70819117820 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$\text{Na}_{(g)}$ ৰ পৰা Na^+ গঠন হওঁতে আয়নীকৰণ এন্থালপি হ'ল $495.8 \text{ kJ mol}^{-1}$, আনহাতে Br ৰ ইলেক্ট্ৰন গ্ৰহণ এন্থালপি হ'ল $-325.0 \text{ kJ mol}^{-1}$ । দিয়া হ'ল NaBr ৰ লেটিচ এন্থালপি $-728.4 \text{ kJ mol}^{-1}$ । NaBr আয়নীয় কঠিন গঠনৰ শক্তি হ'ল $(-)______ \times 10^{-1} \text{ kJ mol}^{-1}$ ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 58 Question Id : 70819117821 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Among the following, the number of halide(s) which is/are inert to hydrolysis is _____.

(A) BF_3 (B) SiCl_4 (C) PCl_5 (D) SF_6

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 58 Question Id : 70819117821 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

তলত দিয়া বোৰৰ, জনবিশ্লেষণ নিষ্ক্ৰিয় হেলাইডৰ/হেলাইডবোৰৰ সংখ্যা হ'ল _____।

(A) BF_3 (B) SiCl_4 (C) PCl_5 (D) SF_6

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

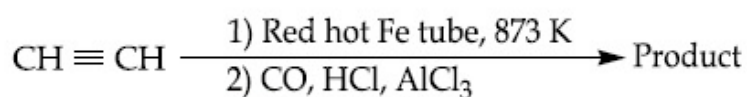
Possible Answers :

5 to 5.001

Question Number : 59 Question Id : 70819117822 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Consider the following chemical reaction.



The number of sp^2 hybridized carbon atom(s) present in the product is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 59 Question Id : 70819117822 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

তলত দিয়া ৰাসায়নিক বিক্ৰিয়াটো লোৱা :



জাতদ্ৰব্যটোত থকা sp^2 সংকৰিত কাৰ্বন পৰমাণুৰ সংখ্যা হ'ল _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 60 Question Id : 70819117823 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Using the provided information in the following paper chromatogram :

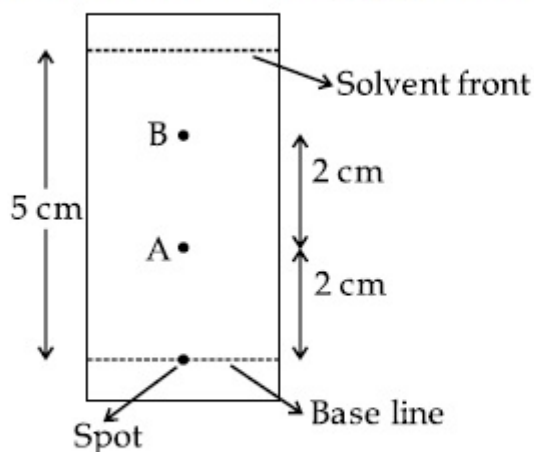


Fig : Paper chromatography for compounds A and B.
the calculated R_f value of A _____ $\times 10^{-1}$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

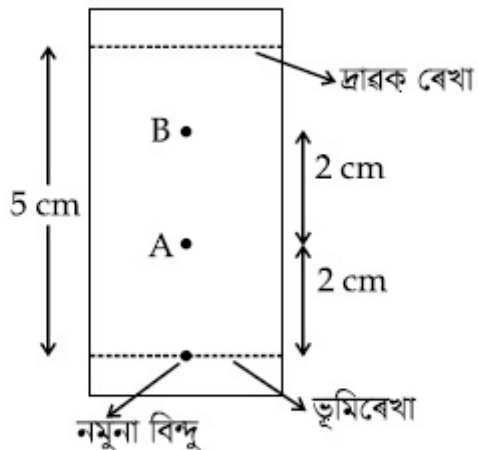
Possible Answers :

5 to 5.001

Question Number : 60 Question Id : 70819117823 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

প্ৰদত্ত তথ্য ব্যৱহাৰ কৰি তলত দিয়া পত্ৰপৃষ্ঠ বৰ্ণলেখত



চিত্ৰ : যৌগ A আৰু B ৰ পত্ৰপৃষ্ঠ বৰ্ণলেখত

A ৰ R_f মান $\times 10^{-1}$ ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Mathematics Section A

Section Id : 708191728

Section Number : 5

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	7081911008
Question Shuffling Allowed :	Yes

Question Number : 61 Question Id : 70819117824 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let $f, g : \mathbb{N} \rightarrow \mathbb{N}$ such that $f(n+1) = f(n) + f(1) \forall n \in \mathbb{N}$ and g be any arbitrary function. Which of the following statements is NOT true ?

Options :

70819158621. If f is onto, then $f(n) = n \forall n \in \mathbb{N}$

70819158622. f is one-one

70819158623. If g is onto, then $f \circ g$ is one-one

70819158624. If $f \circ g$ is one-one, then g is one-one

Question Number : 61 Question Id : 70819117824 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ধরা হ'ল $f, g : \mathbb{N} \rightarrow \mathbb{N}$ দুটা ফলন যাতে $f(n+1) = f(n) + f(1) \forall n \in \mathbb{N}$ আৰু g যিকোনো এটা ফলন। তেন্তে তলৰ কোনটো উক্তি সত্য নহয় ?

Options :

70819158621. যদি f আচ্ছাদক, তেন্তে $f(n) = n \forall n \in \mathbb{N}$

70819158622. f একৈকী

70819158623. যদি g আচ্ছাদক, তেন্তে $f \circ g$ একৈকী

70819158624. যদি $f \circ g$ একৈকী, তেন্তে g একৈকী

Question Number : 62 Question Id : 70819117825 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let the lines $(2 - i)z = (2 + i)\bar{z}$ and $(2 + i)z + (i - 2)\bar{z} - 4i = 0$, (here $i^2 = -1$) be normal to a circle C . If the line $iz + \bar{z} + 1 + i = 0$ is tangent to this circle C , then its radius is :

Options :

70819158625. $3\sqrt{2}$

70819158626. $\frac{1}{2\sqrt{2}}$

70819158627. $\frac{3}{2\sqrt{2}}$

70819158628. $\frac{3}{\sqrt{2}}$

Question Number : 62 Question Id : 70819117825 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ধৰা হ'ল $(2 - i)z = (2 + i)\bar{z}$ আৰু $(2 + i)z + (i - 2)\bar{z} - 4i = 0$, ($i^2 = -1$) ৰেখা দুডাল C বৃত্তৰ ওপৰত অভিলম্ব। যদি $iz + \bar{z} + 1 + i = 0$ ৰেখাটো C বৃত্তৰ ওপৰত স্পৰ্শক হয়, তেন্তে বৃত্তটোৰ ব্যাসৰ্দ্ধ হ'ব :

Options :

70819158625. $3\sqrt{2}$

70819158626. $\frac{1}{2\sqrt{2}}$

70819158627. $\frac{3}{2\sqrt{2}}$

70819158628. $\frac{3}{\sqrt{2}}$

Question Number : 63 Question Id : 70819117826 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The integer 'k', for which the inequality $x^2 - 2(3k - 1)x + 8k^2 - 7 > 0$ is valid for every x in $\mathbb{R}$, is :

Options :

70819158629. 2

70819158630. 3

70819158631. 4

70819158632. 0

Question Number : 63 Question Id : 70819117826 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$\mathbb{R}$ ৰ ভিতৰৰ প্ৰত্যেক x ৰ বাবে, $x^2 - 2(3k - 1)x + 8k^2 - 7 > 0$ অসমিকটো বৈধ (valid) হোৱাকে 'k' ৰ অখণ্ড মান হ'ব :

Options :

70819158629. 2

70819158630. 3

70819158631. 4

70819158632. 0

Question Number : 64 Question Id : 70819117827 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If $0 < \theta, \phi < \frac{\pi}{2}$, $x = \sum_{n=0}^{\infty} \cos^{2n} \theta$, $y = \sum_{n=0}^{\infty} \sin^{2n} \phi$ and $z = \sum_{n=0}^{\infty} \cos^{2n} \theta \cdot \sin^{2n} \phi$ then :

Options :

70819158633. $xy - z = (x + y)z$

70819158634. $xy + z = (x + y)z$

70819158635. $xy + yz + zx = z$

70819158636. $xyz = 4$

Question Number : 64 Question Id : 70819117827 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যদি $0 < \theta, \phi < \frac{\pi}{2}$, $x = \sum_{n=0}^{\infty} \cos^{2n} \theta$, $y = \sum_{n=0}^{\infty} \sin^{2n} \phi$ আৰু $z = \sum_{n=0}^{\infty} \cos^{2n} \theta \cdot \sin^{2n} \phi$, তেন্তে :

Options :

70819158633. $xy - z = (x + y)z$

70819158634. $xy + z = (x + y)z$

70819158635. $xy + yz + zx = z$

70819158636. $xyz = 4$

**Question Number : 65 Question Id : 70819117828 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

If Rolle's theorem holds for the function $f(x) = x^3 - ax^2 + bx - 4$, $x \in [1, 2]$ with $f'\left(\frac{4}{3}\right) = 0$,

then ordered pair (a, b) is equal to :

Options :

70819158637. (5, 8)

70819158638. (5, -8)

70819158639. (-5, 8)

70819158640. (-5, -8)

**Question Number : 65 Question Id : 70819117828 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

যদি $f(x) = x^3 - ax^2 + bx - 4$, $x \in [1, 2]$ য'ত $f'\left(\frac{4}{3}\right) = 0$ ফলনটোত ব'লৰ (Rolle's) উপপাদ্য খাটে, তেন্তে

(a, b) ক্রমিত যোৰটো সমান হ'ব :

Options :

70819158637. (5, 8)

70819158638. (5, -8)

70819158639. (-5, 8)

70819158640. (-5, -8)

Question Number : 66 Question Id : 70819117829 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$$\lim_{n \rightarrow \infty} \left(1 + \frac{1 + \frac{1}{2} + \dots + \frac{1}{n}}{n^2} \right)^n$$
 is equal to :

Options :

70819158641. 0

70819158642. $\frac{1}{2}$

70819158643. $\frac{1}{e}$

70819158644. 1

Question Number : 66 Question Id : 70819117829 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$$\lim_{n \rightarrow \infty} \left(1 + \frac{1 + \frac{1}{2} + \dots + \frac{1}{n}}{n^2} \right)^n \text{ সমান হ'ব :}$$

Options :

70819158641. 0

70819158642. $\frac{1}{2}$

70819158643. $\frac{1}{e}$

70819158644. 1

Question Number : 67 Question Id : 70819117830 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The value of the integral

$$\int \frac{\sin \theta \cdot \sin 2\theta (\sin^6 \theta + \sin^4 \theta + \sin^2 \theta) \sqrt{2\sin^4 \theta + 3\sin^2 \theta + 6}}{1 - \cos 2\theta} d\theta \text{ is :}$$

(where c is a constant of integration)

Options :

70819158645. $\frac{1}{18} [9 - 2\sin^6 \theta - 3\sin^4 \theta - 6\sin^2 \theta]^{\frac{3}{2}} + c$

70819158646. $\frac{1}{18} [9 - 2\cos^6 \theta - 3\cos^4 \theta - 6\cos^2 \theta]^{\frac{3}{2}} + c$

70819158647. $\frac{1}{18} [11 - 18\sin^2 \theta + 9\sin^4 \theta - 2\sin^6 \theta]^{\frac{3}{2}} + c$

70819158648. $\frac{1}{18} \left[11 - 18\cos^2\theta + 9\cos^4\theta - 2\cos^6\theta \right]^{\frac{3}{2}} + c$

Question Number : 67 Question Id : 70819117830 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$\int \frac{\sin\theta \cdot \sin 2\theta (\sin^6\theta + \sin^4\theta + \sin^2\theta) \sqrt{2\sin^4\theta + 3\sin^2\theta + 6}}{1 - \cos 2\theta} d\theta$ অনুকলনটোৰ মান হ'ব :

(য'ত c এটা অনুকলন ধ্রুবক)

Options :

70819158645. $\frac{1}{18} \left[9 - 2\sin^6\theta - 3\sin^4\theta - 6\sin^2\theta \right]^{\frac{3}{2}} + c$

70819158646. $\frac{1}{18} \left[9 - 2\cos^6\theta - 3\cos^4\theta - 6\cos^2\theta \right]^{\frac{3}{2}} + c$

70819158647. $\frac{1}{18} \left[11 - 18\sin^2\theta + 9\sin^4\theta - 2\sin^6\theta \right]^{\frac{3}{2}} + c$

70819158648. $\frac{1}{18} \left[11 - 18\cos^2\theta + 9\cos^4\theta - 2\cos^6\theta \right]^{\frac{3}{2}} + c$

Question Number : 68 Question Id : 70819117831 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The value of $\int_{-1}^1 x^2 e^{[x^3]} dx$, where $[t]$ denotes the greatest integer $\leq t$, is :

Options :

70819158649. $\frac{e+1}{3}$

70819158650. $\frac{1}{3e}$

70819158651. $\frac{e-1}{3e}$

70819158652. $\frac{e+1}{3e}$

Question Number : 68 Question Id : 70819117831 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$\int_{-1}^1 x^2 e^{\lfloor x^3 \rfloor} dx$, য'ত $\lfloor t \rfloor =$ গৰিষ্ঠ অখণ্ড সংখ্যা $\leq t$, অনুকলনটোৰ মান হ'ব :

Options :

70819158649. $\frac{e+1}{3}$

70819158650. $\frac{1}{3e}$

70819158651. $\frac{e-1}{3e}$

70819158652. $\frac{e+1}{3e}$

Question Number : 69 Question Id : 70819117832 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If a curve passes through the origin and the slope of the tangent to it at any point (x, y) is

$\frac{x^2 - 4x + y + 8}{x - 2}$, then this curve also passes through the point :

Options :

70819158653. (4, 5)

70819158654. (5, 5)

70819158655. (5, 4)

70819158656. (4, 4)

Question Number : 69 Question Id : 70819117832 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যদি এটা বক্ৰই মূলবিন্দুৰে যায় আৰু বক্ৰৰ যিকোনো বিন্দু (x, y) ত টাঙ্গা স্পৰ্শকৰ প্ৰৱণতা $\frac{x^2 - 4x + y + 8}{x - 2}$ হয়,

তেন্তে বক্ৰটোৱে পাৰ হৈ যোৱা আৰু এটা বিন্দু হ'ব :

Options :

70819158653. (4, 5)

70819158654. (5, 5)

70819158655. (5, 4)

70819158656. (4, 4)

Question Number : 70 Question Id : 70819117833 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The image of the point (3, 5) in the line $x - y + 1 = 0$, lies on :

Options :

70819158657. $(x - 4)^2 + (y + 2)^2 = 16$

70819158658. $(x - 2)^2 + (y - 4)^2 = 4$

70819158659. $(x - 4)^2 + (y - 4)^2 = 8$

70819158660. $(x - 2)^2 + (y - 2)^2 = 12$

Question Number : 70 Question Id : 70819117833 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$x - y + 1 = 0$ রেখাডালত (3, 5) বিন্দুটোৰ প্ৰতিবিস্ম থকা বৃত্তটো হ'ব :

Options :

70819158657. $(x - 4)^2 + (y + 2)^2 = 16$

70819158658. $(x - 2)^2 + (y - 4)^2 = 4$

70819158659. $(x - 4)^2 + (y - 4)^2 = 8$

70819158660. $(x - 2)^2 + (y - 2)^2 = 12$

Question Number : 71 Question Id : 70819117834 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A tangent is drawn to the parabola $y^2=6x$ which is perpendicular to the line $2x+y=1$. Which of the following points does NOT lie on it ?

Options :

70819158661. (0, 3)

70819158662. (-6, 0)

70819158663. (5, 4)

70819158664. (4, 5)

Question Number : 71 Question Id : 70819117834 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$y^2=6x$ অধিবৃত্ত টনা স্পর্শকডাল $2x+y=1$ ৰেখাৰ ওপৰত লম্ব। তেন্তে তলৰ কোনটো বিন্দু ইয়াৰ ওপৰত নাথাকিব ?

Options :

70819158661. (0, 3)

70819158662. (-6, 0)

70819158663. (5, 4)

70819158664. (4, 5)

Question Number : 72 Question Id : 70819117835 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If the curves, $\frac{x^2}{a} + \frac{y^2}{b} = 1$ and $\frac{x^2}{c} + \frac{y^2}{d} = 1$ intersect each other at an angle of 90° , then which of the following relations is TRUE ?

Options :

70819158665. $a + b = c + d$

70819158666. $a - b = c - d$

70819158667. $ab = \frac{c + d}{a + b}$

70819158668. $a - c = b + d$

Question Number : 72 Question Id : 70819117835 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যদি $\frac{x^2}{a} + \frac{y^2}{b} = 1$ আৰু $\frac{x^2}{c} + \frac{y^2}{d} = 1$ বক্ৰ দুটাই পৰস্পৰে 90° কোণত কটাকটি কৰে, তেন্তে তলৰ কোনটো সম্পৰ্ক সত্য ?

Options :

70819158665. $a + b = c + d$

70819158666. $a - b = c - d$

70819158667. $ab = \frac{c + d}{a + b}$

70819158668. $a - c = b + d$

Question Number : 73 Question Id : 70819117836 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let α be the angle between the lines whose direction cosines satisfy the equations $l+m-n=0$ and $l^2+m^2-n^2=0$. Then the value of $\sin^4\alpha + \cos^4\alpha$ is :

Options :

70819158669. $\frac{5}{8}$

70819158670. $\frac{3}{8}$

70819158671. $\frac{1}{2}$

70819158672. $\frac{3}{4}$

Question Number : 73 Question Id : 70819117836 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যিবোৰ বেখাৰ দিশাংকই $l+m-n=0$ আৰু $l^2+m^2-n^2=0$ সমীকৰণ দুটা সিদ্ধ কৰে তেনে বেখাৰ মাজৰ কোণ α হ'লে, $\sin^4\alpha + \cos^4\alpha$ ৰ মান হ'ব :

Options :

70819158669. $\frac{5}{8}$

70819158670. $\frac{3}{8}$

70819158671. $\frac{1}{2}$

70819158672. $\frac{3}{4}$

Question Number : 74 Question Id : 70819117837 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The equation of the line through the point (0, 1, 2) and perpendicular to the line

$$\frac{x-1}{2} = \frac{y+1}{3} = \frac{z-1}{-2} \text{ is:}$$

Options :

70819158673. $\frac{x}{3} = \frac{y-1}{4} = \frac{z-2}{-3}$

70819158674. $\frac{x}{-3} = \frac{y-1}{4} = \frac{z-2}{3}$

70819158675. $\frac{x}{3} = \frac{y-1}{-4} = \frac{z-2}{3}$

70819158676. $\frac{x}{3} = \frac{y-1}{4} = \frac{z-2}{3}$

Question Number : 74 Question Id : 70819117837 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

(0, 1, 2) বিন্দুৰে যোৱা আৰু $\frac{x-1}{2} = \frac{y+1}{3} = \frac{z-1}{-2}$ ৰেখাডালৰ লম্ব হোৱা ৰেখাডালৰ সমীকৰণ হ'ল :

Options :

70819158673. $\frac{x}{3} = \frac{y-1}{4} = \frac{z-2}{-3}$

70819158674.

$$\frac{x}{-3} = \frac{y-1}{4} = \frac{z-2}{3}$$

70819158675. $\frac{x}{3} = \frac{y-1}{-4} = \frac{z-2}{3}$

70819158676. $\frac{x}{3} = \frac{y-1}{4} = \frac{z-2}{3}$

Question Number : 75 Question Id : 70819117838 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

When a missile is fired from a ship, the probability that it is intercepted is $\frac{1}{3}$ and the probability that the missile hits the target, given that it is not intercepted, is $\frac{3}{4}$. If three missiles are fired independently from the ship, then the probability that all three hit the target, is :

Options :

70819158677. $\frac{1}{27}$

70819158678. $\frac{1}{8}$

70819158679. $\frac{3}{8}$

70819158680. $\frac{3}{4}$

Question Number : 75 Question Id : 70819117838 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এখন জাহাজৰ পৰা এটা ফ্লেপগান্স ফুটোৱা হ'ল। ফ্লেপগান্সটো ফুটাৰ সম্ভাৱিতা $\frac{1}{3}$ আৰু ফ্লেপগান্সটো নুফুটুকাকৈ লক্ষ্যবস্তু ভেদ কৰাৰ সম্ভাৱিতা $\frac{3}{4}$ । যদি জাহাজখনৰ পৰা তিনিটা ফ্লেপগান্স স্বতন্ত্ৰভাৱে ফুটোৱা হয়, তেন্তে তিনিওটা ফ্লেপগান্সয়ে লক্ষ্যবস্তু ভেদ কৰাৰ সম্ভাৱিতা হ'ব :

Options :

70819158677. $\frac{1}{27}$

70819158678. $\frac{1}{8}$

70819158679. $\frac{3}{8}$

70819158680. $\frac{3}{4}$

Question Number : 76 Question Id : 70819117839 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The coefficients a , b and c of the quadratic equation, $ax^2 + bx + c = 0$ are obtained by throwing a dice three times. The probability that this equation has equal roots is :

Options :

70819158681. $\frac{1}{36}$

70819158682. $\frac{1}{54}$

70819158683. $\frac{1}{72}$

70819158684. $\frac{5}{216}$

Question Number : 76 Question Id : 70819117839 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা পাশতি তিনিবাৰকৈ দলিয়াই $ax^2+bx+c=0$ দ্বিঘাত সমীকৰণটোৰ সহগবোৰ a, b আৰু c পোৱা গ'ল। তেন্তে উক্ত দ্বিঘাত সমীকৰণটোৰ সমান মূল থকাৰ সম্ভাৱিতা হ'ব :

Options :

70819158681. $\frac{1}{36}$

70819158682. $\frac{1}{54}$

70819158683. $\frac{1}{72}$

70819158684. $\frac{5}{216}$

Question Number : 77 Question Id : 70819117840 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

All possible values of $\theta \in [0, 2\pi]$ for which $\sin 2\theta + \tan 2\theta > 0$ lie in :

Options :

70819158685. $\left(0, \frac{\pi}{2}\right) \cup \left(\pi, \frac{3\pi}{2}\right)$

70819158686. $\left(0, \frac{\pi}{4}\right) \cup \left(\frac{\pi}{2}, \frac{3\pi}{4}\right) \cup \left(\frac{3\pi}{2}, \frac{11\pi}{6}\right)$

70819158687. $\left(0, \frac{\pi}{2}\right) \cup \left(\frac{\pi}{2}, \frac{3\pi}{4}\right) \cup \left(\pi, \frac{7\pi}{6}\right)$

70819158688. $\left(0, \frac{\pi}{4}\right) \cup \left(\frac{\pi}{2}, \frac{3\pi}{4}\right) \cup \left(\pi, \frac{5\pi}{4}\right) \cup \left(\frac{3\pi}{2}, \frac{7\pi}{4}\right)$

Question Number : 77 Question Id : 70819117840 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$\theta \in [0, 2\pi]$ ৰ সম্ভাৱ্য মানৰ বাবে, $\sin 2\theta + \tan 2\theta > 0$ অসমিকাকটো সিদ্ধ হোৱাকৈ θ থকা অন্তৰালটো হ'ব :

Options :

70819158685. $\left(0, \frac{\pi}{2}\right) \cup \left(\pi, \frac{3\pi}{2}\right)$

70819158686. $\left(0, \frac{\pi}{4}\right) \cup \left(\frac{\pi}{2}, \frac{3\pi}{4}\right) \cup \left(\frac{3\pi}{2}, \frac{11\pi}{6}\right)$

70819158687. $\left(0, \frac{\pi}{2}\right) \cup \left(\frac{\pi}{2}, \frac{3\pi}{4}\right) \cup \left(\pi, \frac{7\pi}{6}\right)$

70819158688. $\left(0, \frac{\pi}{4}\right) \cup \left(\frac{\pi}{2}, \frac{3\pi}{4}\right) \cup \left(\pi, \frac{5\pi}{4}\right) \cup \left(\frac{3\pi}{2}, \frac{7\pi}{4}\right)$

Question Number : 78 Question Id : 70819117841 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The total number of positive integral solutions (x, y, z) such that $xyz = 24$ is :

Options :

70819158689. 24

70819158690. 30

70819158691. 36

70819158692. 45

Question Number : 78 Question Id : 70819117841 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$xyz = 24$ সমীকৰণটোৰ সৰ্বমুঠ ধনাত্মক অখণ্ড সমাধান (x, y, z) ৰ সংখ্যা হ'ব :

Options :

70819158689. 24

70819158690. 30

70819158691. 36

70819158692. 45

Question Number : 79 Question Id : 70819117842 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A man is observing, from the top of a tower, a boat speeding towards the tower from a certain point A, with uniform speed. At that point, angle of depression of the boat with the man's eye is 30° (Ignore man's height). After sailing for 20 seconds, towards the base of the tower (which is at the level of water), the boat has reached a point B, where the angle of depression is 45° . Then the time taken (in seconds) by the boat from B to reach the base of the tower is :

Options :

70819158693. 10

70819158694. $10(\sqrt{3} + 1)$

70819158695. $10\sqrt{3}$

70819158696. $10(\sqrt{3} - 1)$

Question Number : 79 Question Id : 70819117842 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এজন মানুহে এটা স্তম্ভৰ শীৰ্ষবিন্দুৰ পৰা পৰ্যবেক্ষণ কৰিলে যে এখন নাও সমদ্রুতিত কোনোবা এটা বিন্দু A ৰ পৰা স্তম্ভটোৰ পিনে গতি কৰি আছে। মানুহজনৰ চকুৰ সৈতে সেই বিন্দুত নাওখনৰ পতন কোণ 30° (মানুহজনৰ উচ্চতা বাদ দি) নাওখন 20 ছেকেণ্ড সময় স্তম্ভটোৰ ভূমিৰ পিনে তাহি অহাৰ পিছত (স্তম্ভৰ ভূমি পানীৰ স্তৰৰ সৈতে থাকে), নাওখন আন এটা বিন্দু B পালেৰে পতন কোণ 45° । B বিন্দুৰ পৰা স্তম্ভৰ ভূমি পাওঁতে নাওখনৰ সময় (ছেকেণ্ডত) লাগিব :

Options :

70819158693. 10

70819158694. $10(\sqrt{3} + 1)$

70819158695. $10\sqrt{3}$

70819158696. $10(\sqrt{3} - 1)$

Question Number : 80 Question Id : 70819117843 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The statement $A \rightarrow (B \rightarrow A)$ is equivalent to :

Options :

70819158697. $A \rightarrow (A \rightarrow B)$

70819158698. $A \rightarrow (A \vee B)$

70819158699. $A \rightarrow (A \wedge B)$

70819158700. $A \rightarrow (A \leftrightarrow B)$

Question Number : 80 Question Id : 70819117843 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$A \rightarrow (B \rightarrow A)$ উক্তিটোৰ সমতুল্য উক্তিটো হ'ব :

Options :

70819158697. $A \rightarrow (A \rightarrow B)$

70819158698. $A \rightarrow (A \vee B)$

70819158699. $A \rightarrow (A \wedge B)$

70819158700. $A \rightarrow (A \leftrightarrow B)$

Mathematics Section B

Section Id :	708191729
Section Number :	6
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5

Section Marks :	20
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	7081911009
Question Shuffling Allowed :	Yes

Question Number : 81 Question Id : 70819117844 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If $A = \begin{bmatrix} 0 & -\tan\left(\frac{\theta}{2}\right) \\ \tan\left(\frac{\theta}{2}\right) & 0 \end{bmatrix}$ and $(I_2 + A) (I_2 - A)^{-1} = \begin{bmatrix} a & -b \\ b & a \end{bmatrix}$, then $13(a^2 + b^2)$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 81 Question Id : 70819117844 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

যদি $A = \begin{bmatrix} 0 & -\tan\left(\frac{\theta}{2}\right) \\ \tan\left(\frac{\theta}{2}\right) & 0 \end{bmatrix}$ আৰু $(I_2 + A) (I_2 - A)^{-1} = \begin{bmatrix} a & -b \\ b & a \end{bmatrix}$ হয়, তেন্তে $13(a^2 + b^2)$ সমান হ'ব _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 82 Question Id : 70819117845 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Let $A = \begin{bmatrix} x & y & z \\ y & z & x \\ z & x & y \end{bmatrix}$, where x, y and z are real numbers such that $x + y + z > 0$ and $xyz = 2$.

If $A^2 = I_3$, then the value of $x^3 + y^3 + z^3$ is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 82 Question Id : 70819117845 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ধৰা হ'ল $A = \begin{bmatrix} x & y & z \\ y & z & x \\ z & x & y \end{bmatrix}$, য'ত x, y, z বাস্তৱ সংখ্যা য'ত $x + y + z > 0$ আৰু $xyz = 2$ ।

যদি $A^2 = I_3$, তেন্তে $x^3 + y^3 + z^3$ ৰ মান হ'ব _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 83 Question Id : 70819117846 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If the system of equations

$$kx + y + 2z = 1$$

$$3x - y - 2z = 2$$

$$-2x - 2y - 4z = 3$$

has infinitely many solutions, then k is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 83 Question Id : 70819117846 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

যদি $kx + y + 2z = 1$

$$3x - y - 2z = 2$$

$$-2x - 2y - 4z = 3,$$

সমীকরণ প্রণালীটোৰ অসীম সংখ্যক সমাধান থাকে, তেন্তে k সমান হ'ব _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 84 Question Id : 70819117847 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The total number of numbers, lying between 100 and 1000 that can be formed with the digits 1, 2, 3, 4, 5, if the repetition of digits is not allowed and numbers are divisible by either 3 or 5, is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 84 Question Id : 70819117847 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

যদি অংকবোৰৰ পুনৰাবৃত্তি নহয় আৰু সংখ্যাবোৰ 3 বা 5 ৰে বিভাজ্য হয়, তেন্তে 1, 2, 3, 4, 5 ৰে গঠিত হোৱা 100 আৰু 1000 ৰ মাজত মুঠ সংখ্যা হ'ব _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 85 Question Id : 70819117848 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Let $A_1, A_2, A_3, \dots$ be squares such that for each $n \geq 1$, the length of the side of A_n equals the length of diagonal of A_{n+1} . If the length of A_1 is 12 cm, then the smallest value of n for which area of A_n is less than one, is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 85 Question Id : 70819117848 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ধৰা হ'ল $A_1, A_2, A_3, \dots$ বোৰ বৰ্গ যাতে প্ৰত্যেকটো $n \geq 1$ ৰ বাবে, A_n বৰ্গৰ বাহুৰ দৈৰ্ঘ্য, A_{n+1} বৰ্গৰ কৰ্ণৰ দৈৰ্ঘ্যৰ সমান হয়। যদি A_1 ৰ দৈৰ্ঘ্য 12 cm হয়, তেন্তে n ৰ সৰ্বনিম্ন মান যাৰ বাবে A_n ৰ কালি 1 তকৈ কম হয়, _____ হ'ব।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 86 Question Id : 70819117849 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The number of points, at which the function $f(x) = |2x+1| - 3|x+2| + |x^2+x-2|$, $x \in \mathbb{R}$ is not differentiable, is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 86 Question Id : 70819117849 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$f(x) = |2x+1| - 3|x+2| + |x^2+x-2|$, $x \in \mathbb{R}$ ফলনটো অৱকলনীয় নোহোৱাকৈ থকা বিন্দুৰ সংখ্যা হ'ব _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 87 **Question Id :** 70819117850 **Question Type :** SA

Correct Marks : 4 **Wrong Marks :** 0

Let $f(x)$ be a polynomial of degree 6 in x , in which the coefficient of x^6 is unity and it has extrema at $x = -1$ and $x = 1$. If $\lim_{x \rightarrow 0} \frac{f(x)}{x^3} = 1$, then $5 \cdot f(2)$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 87 **Question Id :** 70819117850 **Question Type :** SA

Correct Marks : 4 **Wrong Marks :** 0

ধৰা হ'ল $f(x)$ এটা x ৰ 6 ঘাতৰ বহুপদ ৰাশি য'ত x^6 ৰ সহগ 1 আৰু $x = -1$ আৰু $x = 1$ ত বহুপদটোৰ চৰম মান আছে। যদি $\lim_{x \rightarrow 0} \frac{f(x)}{x^3} = 1$ হয়, তেন্তে $5 \cdot f(2)$ সমান হ'ব _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 88 Question Id : 70819117851 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The graphs of sine and cosine functions, intersect each other at a number of points and between two consecutive points of intersection, the two graphs enclose the same area A. Then A^4 is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 88 Question Id : 70819117851 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

sine আৰু cosine ফলন দুটাৰ লেখে কিছুমান বিন্দুত ছেদিত হয়, আৰু দুটা ক্ৰমিক ছেদবিন্দুৰ মাজত ফলন দুটাৰ লেখৰ সমকালি A আবৃত হৈ থাকে। তেন্তে A^4 সমান হ'ব _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 89 Question Id : 70819117852 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The locus of the point of intersection of the lines $(\sqrt{3})kx + ky - 4\sqrt{3} = 0$ and $\sqrt{3}x - y - 4(\sqrt{3})k = 0$ is a conic, whose eccentricity is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 89 Question Id : 70819117852 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

যদি $(\sqrt{3})kx + ky - 4\sqrt{3} = 0$ আৰু $\sqrt{3}x - y - 4(\sqrt{3})k = 0$ ৰেখা দুডালৰ ছেদবিন্দুৰ সঞ্চাৰ পথ এটা শংকু হয়, তেন্তে সেই শংকুৰ উৎকেন্দ্ৰতা হ'ব _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 90 Question Id : 70819117853 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Let $\vec{a} = \hat{i} + 2\hat{j} - \hat{k}$, $\vec{b} = \hat{i} - \hat{j}$ and $\vec{c} = \hat{i} - \hat{j} - \hat{k}$ be three given vectors. If $\vec{r}$ is a vector such that $\vec{r} \times \vec{a} = \vec{c} \times \vec{a}$ and $\vec{r} \cdot \vec{b} = 0$, then $\vec{r} \cdot \vec{a}$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 90 **Question Id :** 70819117853 **Question Type :** SA

Correct Marks : 4 **Wrong Marks :** 0

ধরা হ'ল $\vec{a} = \hat{i} + 2\hat{j} - \hat{k}$, $\vec{b} = \hat{i} - \hat{j}$ আৰু $\vec{c} = \hat{i} - \hat{j} - \hat{k}$ তিনিটা ভেক্টৰ। যদি $\vec{r}$ এনে এটা ভেক্টৰ
যাতে, $\vec{r} \times \vec{a} = \vec{c} \times \vec{a}$ আৰু $\vec{r} \cdot \vec{b} = 0$ তেন্তে $\vec{r} \cdot \vec{a}$ সমান হ'ব _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001