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Question Paper Name :	B TECH EA 25th Feb 2021 Shift 2
Subject Name :	B TECH EA
Creation Date :	2021-02-24 19:02:03
Duration :	180
Number of Questions :	90
Total Marks :	300
Display Marks:	Yes

B TECH EA

Group Number :	1
Group Id :	708191204
Group Maximum Duration :	0
Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	300
Is this Group for Examiner? :	No

Physics Section A

Section Id :	708191802
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 :	7081911082
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 70819118934 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If e is the electronic charge, c is the speed of light in free space and h is Planck's constant, the quantity $\frac{1}{4\pi\varepsilon_0}\frac{|e|^2}{\hbar c}$ has dimensions of :

Options :

70819161951. $[M\ L\ T^0]$

70819161952. $[M\ L\ T^{-1}]$

70819161953. $[M^0\ L^0\ T^0]$

70819161954. $[L\ C^{-1}]$

Question Number : 1 Question Id : 70819118934 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যদি বৈদ্যুতিক আধান e, শূন্য স্থানত পোহৰৰ গতিবেগ c, আৰু প্লাংকৰ ধ্ৰুৱক h হয়, তেন্তে $\frac{1}{4\pi\varepsilon_0}\frac{|e|^2}{\hbar c}$ ৰাশিটোৰ মাত্ৰা হ'ব :

Options :

70819161951. $[M\ L\ T^0]$

70819161952. $[M\ L\ T^{-1}]$

70819161953. $[M^0\ L^0\ T^0]$

70819161954. $[L\ C^{-1}]$

Question Number : 2 Question Id : 70819118935 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A stone is dropped from the top of a building. When it crosses a point 5 m below the top, another stone starts to fall from a point 25 m below the top. Both stones reach the bottom of building simultaneously. The height of the building is :

Options :

70819161955. 45 m

70819161956. 25 m

70819161957. 35 m

70819161958. 50 m

Question Number : 2 Question Id : 70819118935 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা অট্টালিকাৰ শীৰ্ষৰ পৰা এটা শিলগুটি পেলোৱা হৈছে। শিলগুটিটো শীৰ্ষৰ পৰা 5 m তলৰ এটা বিন্দু পাৰ হওঁতে, অন্য এটা শিলগুটিয়ে অট্টালিকাৰ শীৰ্ষবিন্দুৰ পৰা 25 m তলৰ অন্য এটা বিন্দুৰ পৰা গতি আৰম্ভ কৰে। দুইটা শিলগুটিয়ে একেলগে অট্টালিকাৰ তল পায়হি। অট্টালিকাটোৰ উচ্চতা হ'ল :

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Options :

70819161955. 45 m

70819161956. 25 m

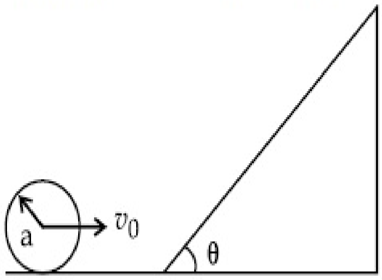
70819161957. 35 m

70819161958. 50 m

Question Number : 3 Question Id : 70819118936 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A sphere of radius 'a' and mass 'm' rolls along a horizontal plane with constant speed v_0. It encounters an inclined plane at angle θ and climbs upward. Assuming that it rolls without slipping, how far up the sphere will travel ?



Options :

70819161959. $\frac{v_0^2}{2g \sin\theta}$

70819161960. $\frac{v_0^2}{5g \sin\theta}$

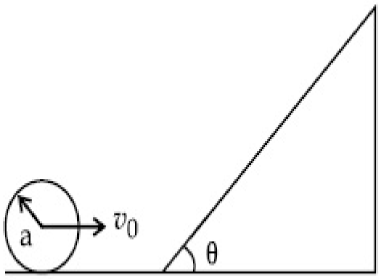
70819161961. $\frac{10v_0^2}{7g \sin\theta}$

70819161962. $\frac{2}{5}\ \frac{v_0^2}{g\ \sin\theta}$

Question Number : 3 Question Id : 70819118936 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

‘a’ ব্যাসার্ধ আৰু ‘m’ ভৰৰ এটা গোলকে এখন আনুভূমিক তলত v_0 স্থিৰ দ্ৰুতিৰে বাগৰি (rolls) আহিছে। ই θ কোণত হেলনীয়া হৈ থকা এখন তলৰ সন্মুখীন হৈছে আৰু ওপৰলৈ উঠি গৈছে। গোলকটোৱে নিপিছলাকৈ বাগৰিছে বুলি ধৰিলে, ই কিমান ওপৰলৈ গতি কৰিব ?



Options :

70819161959. $\frac{v_0^2}{2g\ \sin\theta}$

70819161960. $\frac{v_0^2}{5g\ \sin\theta}$

70819161961. $\frac{10v_0^2}{7g\ \sin\theta}$

70819161962. $\frac{2}{5}\ \frac{v_0^2}{g\ \sin\theta}$

Question Number : 4 Question Id : 70819118937 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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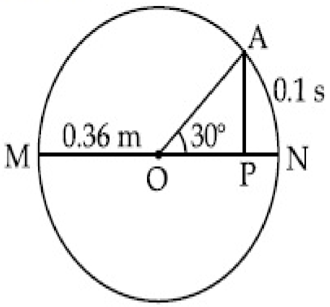
The point A moves with a uniform speed along the circumference of a circle of radius 0.36 m and covers 30° in 0.1 s. The perpendicular projection 'P' from 'A' on the diameter MN represents the simple harmonic motion of 'P'. The restoration force per unit mass when P touches M will be :



Options :

70819161963. 100 N

70819161964. 9.87 N

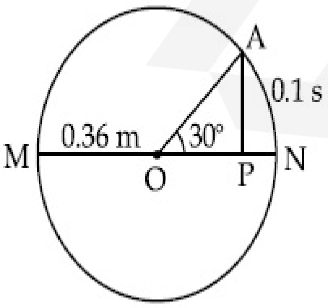
70819161965. 50 N

70819161966. 0.49 N

Question Number : 4 Question Id : 70819118937 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা বিন্দু A য়ে, 0.36 m ব্যাসাৰ্ধৰ এটা বৃত্তৰ পৰিধিত সুষম দ্ৰুতিৰে গতি কৰিছে আৰু 0.1 s ত 30° কোণ অতিক্ৰম কৰিছে। ব্যাস MN ৰ ওপৰত 'A' ৰ পৰা কৰা লম্ব প্ৰক্ষেপ্য 'P' য়ে 'P' বিন্দুৰ সৰল পৰ্যাবৃত্ত গতিক প্ৰতিনিধিত্ব কৰিছে। যেতিয়া P য়ে M বিন্দুত লগ লাগিব, তেতিয়া প্ৰতি একক ভৰৰ বাবে প্ৰত্যানয়নী বল হ'ব :



Options :

70819161963. 100 N

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70819161964. 9.87 N

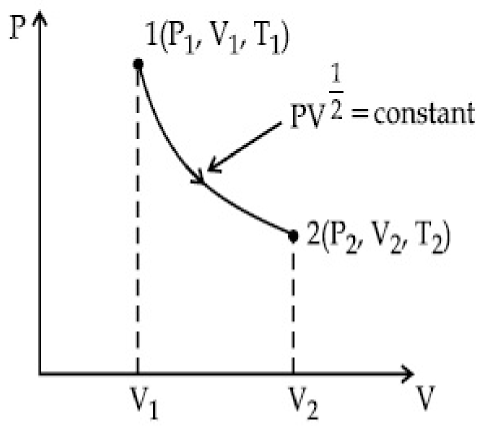
70819161965. 50 N

70819161966. 0.49 N

Question Number : 5 Question Id : 70819118938 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Thermodynamic process is shown below on a P-V diagram for one mole of an ideal gas. If $V_2 = 2V_1$ then the ratio of temperature T_2/T_1 is :



Options :

70819161967. $\frac{1}{\sqrt{2}}$

70819161968. $\sqrt{2}$

70819161969. $\frac{1}{2}$

70819161970. 2

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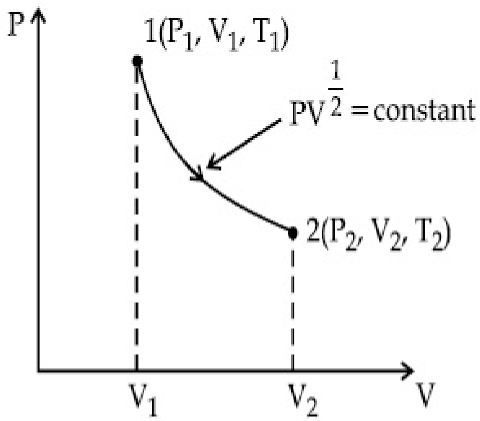
Question Number : 5 Question Id : 70819118938 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা আদৰ্শ গেছৰ 1 ম'লৰ বাবে চিত্ৰৰ P-V লেখচিত্ৰত এটা তাপগতীয় প্ৰক্ৰিয়া দেখুওৱা হৈছে। যদিহে $V_2 = 2V_1$ হয়, তেন্তে উষ্ণতাৰ অনুপাত T_2/T_1 হ'ব :



Options :

70819161967. $\frac{1}{\sqrt{2}}$

70819161968. $\sqrt{2}$

70819161969. $\frac{1}{2}$

70819161970. 2

Question Number : 6 Question Id : 70819118939 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : In a diatomic molecule, the rotational energy at a given temperature obeys Maxwell's distribution.

Statement II : In a diatomic molecule, the rotational energy at a given temperature equals the translational kinetic energy for each molecule.

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

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Options :

70819161971. Both Statement I and Statement II are true.

70819161972. Both Statement I and Statement II are false.

70819161973. Statement I is true but Statement II is false.

70819161974. Statement I is false but Statement II is true.

Question Number : 6 Question Id : 70819118939 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত দুটা উক্তি দিয়া হৈছে :

উক্তি I : এটা দ্বি-পাৰমাণৱিক অণুত, এক নির্দিষ্ট উষ্ণতাত ঘূর্ণন-শক্তিয়ে (Rotational energy) মেক্সৱেলৰ বন্টন (Maxwell's distribution) মানি চলে।

উক্তি II : এটা দ্বি-পাৰমাণৱিক অণুত, এক নির্দিষ্ট উষ্ণতাত, প্রতিটো অণুৰ বাবে ঘূর্ণন-শক্তি (Rotational energy) স্থানান্তৰণৰ গতিশক্তিৰ (translational K.E.) সমান।

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

Options :

70819161971. উক্তি I আৰু উক্তি II দুয়োটাই সঁচা।

70819161972. উক্তি I আৰু উক্তি II দুয়োটাই মিছা।

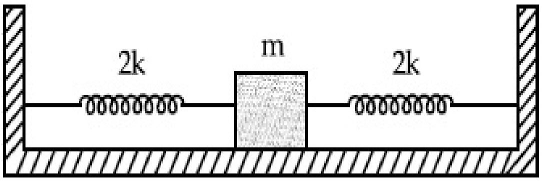
70819161973. উক্তি I সঁচা কিন্তু উক্তি II মিছা।

70819161974. উক্তি I মিছা কিন্তু উক্তি II সঁচা ।

Question Number : 7 Question Id : 70819118940 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Two identical springs of spring constant '2k' are attached to a block of mass m and to fixed support (see figure). When the mass is displaced from equilibrium position on either side, it executes simple harmonic motion. The time period of oscillations of this system is :



Options :

70819161975. $2\pi\sqrt{\frac{m}{2k}}$

70819161976. $2\pi\sqrt{\frac{m}{k}}$

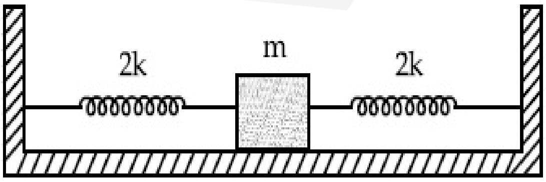
70819161977. $\pi\sqrt{\frac{m}{k}}$

70819161978. $\pi\sqrt{\frac{m}{2k}}$

Question Number : 7 Question Id : 70819118940 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

'm' ভৰৰ এটা ব্লকক দুডাল সাইলাখ একেই আৰু '2k' স্প্ৰিংধ্ৰুৱকৰ স্প্ৰিংৰ সহায়ত এটা দৃঢ় আলমত বান্ধি ৰখা হৈছে (চিত্ৰত দেখুওৱা ধৰণে)। যেতিয়া ব্লকটো তাৰ সাম্য অৱস্থানৰ পৰা যিকোনো এফালে আতঁৰাই দিয়া হয়, ই সৰল পৰ্যাবৃত্ত গতিত গতি কৰে। ব্যৱস্থাটোৰ দোলনৰ পৰ্যায়কাল হ'ব :



Options :

70819161975. $2\pi\sqrt{\frac{m}{2k}}$

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70819161976. $2\pi\sqrt{\frac{m}{k}}$

70819161977. $\pi\sqrt{\frac{m}{k}}$

70819161978. $\pi\sqrt{\frac{m}{2k}}$

Question Number : 8 Question Id : 70819118941 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$Y = A\sin(\omega t + \phi_0)$ is the time-displacement equation of a SHM. At $t = 0$ the displacement of the particle is $Y = \frac{A}{2}$ and it is moving along negative *x*-direction. Then the initial phase angle ϕ_0 will be :

Options :

70819161979. $\frac{\pi}{3}$

70819161980. $\frac{5\pi}{6}$

70819161981. $\frac{\pi}{6}$

70819161982. $\frac{2\pi}{3}$

Question Number : 8 Question Id : 70819118941 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা সৰল পৰ্যাবৃত্ত গতিৰ সময়-সৰণ সমীকৰণ $Y = A\sin(\omega t + \phi_0)$ । $t = 0$ সময়ত, কণাটোৰ সৰণ $Y = \frac{A}{2}$ আৰু ই x-অক্ষৰ ঋণাত্মক দিশত গতি কৰিছে। প্ৰাৰম্ভিক দশাকোণ ϕ_0 হ'ব :

Options :

70819161979. $\frac{\pi}{3}$

70819161980. $\frac{5\pi}{6}$

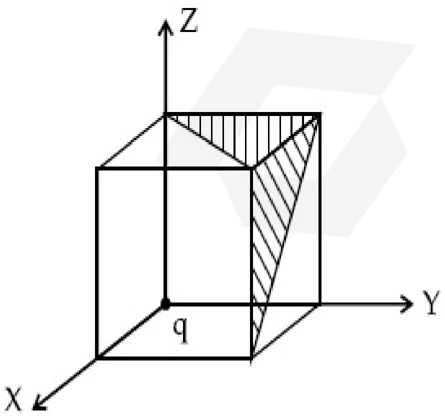
70819161981. $\frac{\pi}{6}$

70819161982. $\frac{2\pi}{3}$

Question Number : 9 Question Id : 70819118942 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A charge 'q' is placed at one corner of a cube as shown in figure. The flux of electrostatic field $\vec{E}$ through the shaded area is :



Options :

70819161983. $\frac{q}{48\varepsilon_0}$

70819161984. $\frac{q}{4\varepsilon_0}$

70819161985. $\frac{q}{8\varepsilon_0}$

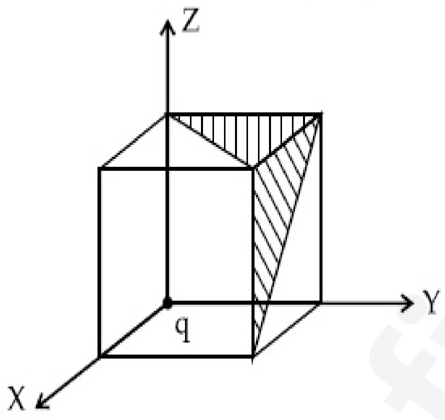
70819161986. $\frac{q}{24\varepsilon_0}$

Question Number : 9 Question Id : 70819118942 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

চিত্ৰত দেখুওৱা ধৰণে, এটা ঘনকৰ এটা কোণত এটা ‘q’ আধান ৰখা হৈছে। ছাঁ পৰা (shaded) অংশটোৰ মাজেদি স্থিতি

বৈদ্যুতিক ক্ষেত্ৰ $\vec{E}$ ৰ অভিৱাহ (flux) হ'ব :



Options :

70819161983. $\frac{q}{48\varepsilon_0}$

70819161984. $\frac{q}{4\varepsilon_0}$

70819161985. $\frac{q}{8\varepsilon_0}$

70819161986. $\frac{q}{24\varepsilon_0}$

Question Number : 10 Question Id : 70819118943 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

An electron with kinetic energy K_1 enters between parallel plates of a capacitor at an angle 'α' with the plates. It leaves the plates at angle 'β' with kinetic energy K_2. Then the ratio of kinetic energies $K_1 : K_2$ will be :

Options :

70819161987. $\frac{\cos\beta}{\cos\alpha}$

70819161988. $\frac{\cos\beta}{\sin\alpha}$

70819161989. $\frac{\sin^2\beta}{\cos^2\alpha}$

70819161990. $\frac{\cos^2\beta}{\cos^2\alpha}$

Question Number : 10 Question Id : 70819118943 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা সমান্তৰাল পাত ধাৰকৰ পাত দুখনৰ মাজত পাতদুখনৰ সৈতে 'α' কোণ কৰি K_1 গতি-শক্তিৰ এটা ইলেকট্ৰন প্ৰৱেশ কৰিছে। পাতদুখনৰ মাজৰ পৰা ই K_2 গতি-শক্তিৰে 'β' কোণ কৰি প্ৰস্থান কৰিছে। গতি শক্তিৰ অনুপাত $K_1 : K_2$ হ'ব :

Options :

70819161987. $\frac{\cos\beta}{\cos\alpha}$

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70819161988. $\frac{\cos\beta}{\sin\alpha}$

70819161989. $\frac{\sin^2\beta}{\cos^2\alpha}$

70819161990. $\frac{\cos^2\beta}{\cos^2\alpha}$

Question Number : 11 Question Id : 70819118944 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In a ferromagnetic material, below the curie temperature, a domain is defined as :

Options :

70819161991. a macroscopic region with zero magnetization.

70819161992. a macroscopic region with saturation magnetization.

70819161993. a macroscopic region with randomly oriented magnetic dipoles.

70819161994. a macroscopic region with consecutive magnetic dipoles oriented in opposite direction.

Question Number : 11 Question Id : 70819118944 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা লৌহ চুম্বকীয় পদাৰ্থত, কুৰী উষ্ণতা (curie temperature) ৰ তলত এটা ডমেইনৰ সংজ্ঞা হ'ব :

Options :

70819161991. শূন্য চুম্বকায়নৰ এক ক্ষুদ্ৰ অঞ্চল (macroscopic region)।

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70819161992. সংপৃক্ত চুম্বকায়নৰ (saturation magnetization) এক ক্ষুদ্ৰ অঞ্চল (macroscopic region) ।

70819161993. যাদৃচ্ছিকভাৱে অৱস্থিত (randomly oriented) চৌম্বিক দ্বিমেৰুৰ এক ক্ষুদ্ৰ অঞ্চল (macroscopic region) ।

70819161994. ক্ৰমানুসৰি কিন্তু বিপৰীত দিশত কৌণিক অৱস্থান (oriented) থকা চৌম্বিক দ্বিমেৰুৰ এক ক্ষুদ্ৰ অঞ্চল (macroscopic region) ।

Question Number : 12 Question Id : 70819118945 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

An LCR circuit contains resistance of 110 Ω and a supply of 220 V at 300 rad/s angular frequency. If only capacitance is removed from the circuit, current lags behind the voltage by 45°. If on the other hand, only inductor is removed the current leads by 45° with the applied voltage. The rms current flowing in the circuit will be :

Options :

70819161995. 1 A

70819161996. 1.5 A

70819161997. 2 A

70819161998. 2.5 A

Question Number : 12 Question Id : 70819118945 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা LCR বৰ্তনীত, 110 Ω ৰোধক আৰু 300 rad/s কৌণিক কম্পনাংকৰ এটা 220 V ৰ উৎস আছে। যদিহে বৰ্তনীটোৰ পৰা কেৱল ধাৰকটো আঁতৰাই দিয়া হয়, প্ৰৱাহ বিভৱতকৈ 45° পাছ পৰি ৰয়। অন্য হাতেদি যদিহে কেৱল আৱেশকটো (inductor) আঁতৰাই দিয়া হয়, প্ৰৱাহ প্ৰয়োগ কৰা বিভৱতকৈ 45° আগ বাঢ়ি ৰয়। বৰ্তনীটোৰ প্ৰৱাহিত প্ৰৱাহৰ গড় বৰ্গমূল (r.m.s.) মান হ'ব :

Options :

70819161995. 1 A

70819161996. 1.5 A

70819161997. 2 A

70819161998. 2.5 A

Question Number : 13 Question Id : 70819118946 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The stopping potential for electrons emitted from a photosensitive surface illuminated by light of wavelength 491 nm is 0.710 V. When the incident wavelength is changed to a new value, the stopping potential is 1.43 V. The new wavelength is :

Options :

70819161999. 309 nm

70819162000. 329 nm

70819162001. 382 nm

70819162002. 400 nm

Question Number : 13 Question Id : 70819118946 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

491 nm তৰংগদৈৰ্ঘ্যৰ পোহৰেৰে আলোকিত কৰা এখন আলোক সংবেদী পৃষ্ঠৰ পৰা নিৰ্গত ইলেকট্ৰনৰ প্ৰতিবন্ধক-বিভৱ 0.710 V। যেতিয়া আপতিত তৰংগদৈৰ্ঘ্য এটা নতুন মানলৈ সলনি হয়, প্ৰতিবন্ধক-বিভৱ হয় 1.43 V। এই নতুন তৰংগদৈৰ্ঘ্য হ'ব :

Options :

70819161999. 309 nm

70819162000. 329 nm

70819162001. 382 nm

70819162002. 400 nm

Question Number : 14 Question Id : 70819118947 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the diffraction pattern obtained from the sunlight incident on a pinhole of diameter 0.1 μm. If the diameter of the pinhole is slightly increased, it will affect the diffraction pattern such that :

Options :

70819162003. its size increases, and intensity increases

70819162004. its size increases, but intensity decreases

70819162005. its size decreases, but intensity increases

70819162006. its size decreases, and intensity decreases

Question Number : 14 Question Id : 70819118947 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

0.1 μm ব্যাসাৰ্ধৰ এটা পিনহোলত (pinhole) আপতিত হৈ সূৰ্য্যৰশ্মিয়ে উৎপন্ন কৰা অপৱৰ্তন চানেকিৰ উদাহৰণ লোৱা হ'ল। যদিহে পিনহোলটোৰ ব্যাসাৰ্ধ সামান্যভাৱে বঢ়োৱা যায়, ই অপৱৰ্তন চানেকিক প্ৰভাৱিত কৰিব যাতে :

Options :

70819162003. ইয়াৰ আকাৰ বৃদ্ধি পায়, আৰু তীব্ৰতা বৃদ্ধি পায়।

70819162004. ইয়াৰ আকাৰ বৃদ্ধি পায়, কিন্তু তীব্ৰতা হ্ৰাস পায়।

70819162005. ইয়াৰ আকাৰ হ্ৰাস পায়, কিন্তু তীব্ৰতা বৃদ্ধি পায়।

70819162006. ইয়াৰ আকাৰ হ্ৰাস পায়, আৰু তীব্ৰতা হ্ৰাস পায়।

Question Number : 15 Question Id : 70819118948 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

An electron of mass m_e and a proton of mass $m_p = 1836\ m_e$ are moving with the same speed.

The ratio of their de Broglie wavelength $\frac{\lambda_{electron}}{\lambda_{proton}}$ will be :

Options :

70819162007. 1

70819162008. 1836

70819162009. $\frac{1}{1836}$

70819162010. 918

Question Number : 15 Question Id : 70819118948 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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m_e ভৰৰ এটা ইলেকট্ৰন আৰু $m_p = 1836\ m_e$ ভৰৰ এটা প্ৰ'ট'নে একেই দ্ৰুতিত গতি কৰি আছে। [illegible]তৰ ডি ব্ৰগলি তৰংগদৈৰ্ঘ্যৰ অনুপাত $\frac{\lambda_{\text{ইলেক্ট্ৰন}}}{\lambda_{\text{প্ৰ'ট'ন}}}$ হ'ব :

Options :

70819162007. 1

70819162008. 1836

70819162009. $\frac{1}{1836}$

70819162010. 918

Question Number : 16 Question Id : 70819118949 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The wavelength of the photon emitted by a hydrogen atom when an electron makes a transition from $n=2$ to $n=1$ state is :

Options :

70819162011. 121.8 nm

70819162012. 194.8 nm

70819162013. 490.7 nm

70819162014. 913.3 nm

Question Number : 16 Question Id : 70819118949 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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এটা ইলেকট্ৰনৰ n=2 স্তৰৰ পৰা n=1 স্তৰলৈ হোৱা সংক্ৰমণ (transition) ৰ বাবে এটা হাইড্ৰ'জেন পৰমাণুৰ পৰা নিৰ্গত এটা ফ'ট'নৰ তৰংগদৈৰ্ঘ্য হ'ব :

Options :

70819162011. 121.8 nm

70819162012. 194.8 nm

70819162013. 490.7 nm

70819162014. 913.3 nm

Question Number : 17 Question Id : 70819118950 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If a message signal of frequency 'f_m' is amplitude modulated with a carrier signal of frequency 'f_c' and radiated through an antenna, the wavelength of the corresponding signal in air is :

Options :

70819162015. $\frac{c}{f_c - f_m}$

70819162016. $\frac{c}{f_c + f_m}$

70819162017. $\frac{c}{f_c}$

70819162018. $\frac{c}{f_m}$

Question Number : 17 Question Id : 70819118950 Question Type : MCQ Option Shuffling : Yes

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Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

‘f_m’ কম্পনাংকৰ এটা বাৰ্তা সংকেতক ‘f_c’ কম্পনাংকৰ এটা বাহক সংকেতৰ সৈতে বিস্তাৰ কলন কৰা হৈছে আৰু এডাল এন্টেনাৰ যোগেদি সম্প্ৰচাৰ কৰা হৈছে। আনুসঙ্গিক (corresponding) তৰংগটোৰ বায়ুত তৰংগদৈৰ্ঘ্য হ'ব :

Options :

70819162015. $\frac{c}{f_c - f_m}$

70819162016. $\frac{c}{f_c + f_m}$

70819162017. $\frac{c}{f_c}$

70819162018. $\frac{c}{f_m}$

Question Number : 18 Question Id : 70819118951 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

For extrinsic semiconductors; when doping level is increased;

Options :

70819162019. Fermi-level of p-type semiconductor will go upward and Fermi-level of n-type semiconductors will go downward.

70819162020. Fermi-level of p-type semiconductors will go downward and Fermi-level of n-type semiconductor will go upward.

70819162021. Fermi-level of p and n-type semiconductors will not be affected.

70819162022. Fermi-level of both p-type and n-type semiconductors will go upward for $T > T_F$ K and downward for $T < T_F$ K, where T_F is Fermi temperature.

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Question Number : 18 Question Id : 70819118951 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

বহিঃস্থ অৰ্ধপৰিবাহীৰ বাবে; যেতিয়া ডোপিংৰ মাত্ৰ বঢ়াই দিয়া হয় :

Options :

70819162019. p-জাতীয় অৰ্ধপৰিবাহীৰ ফাৰ্মি-স্তৰ উৰ্দ্ধমুখে যায় আৰু n-জাতীয় অৰ্ধপৰিবাহীৰ ফাৰ্মি স্তৰ অধোমুখে যায়।

70819162020. p-জাতীয় অৰ্ধপৰিবাহীৰ ফাৰ্মি-স্তৰ অধোমুখে যায় আৰু n-জাতীয় অৰ্ধপৰিবাহীৰ ফাৰ্মিস্তৰ উৰ্দ্ধমুখে যায়।

70819162021. p-আৰু n-জাতীয় অৰ্ধপৰিবাহীৰ ফাৰ্মি-স্তৰত কোনো প্ৰভাৱ নপৰে।

70819162022. $T > T_F$ K ৰ বাবে p-জাতীয় আৰু n-জাতীয় দুয়ো অৰ্ধপৰিবাহীৰ ফাৰ্মি-স্তৰ উৰ্দ্ধমুখে যাব আৰু $T < T_F$ K ৰ বাবে অধোমুখ যাব, য'ত T_F ফাৰ্মি উষ্ণতা (Fermi temperature) ।

Question Number : 19 Question Id : 70819118952 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)	Rectifier	(i)	Used either for stepping up or stepping down the a.c. voltage
(b)	Stabilizer	(ii)	Used to convert a.c. voltage into d.c. voltage
(c)	Transformer	(iii)	Used to remove any ripple in the rectified output voltage
(d)	Filter	(iv)	Used for constant output voltage even when the input voltage or load current change

Choose the correct answer from the options given below :

Options :

70819162023. (a)-(ii), (b)-(i), (c)-(iii), (d)-(iv)

70819162024. (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)

70819162025. (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)

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70819162026. (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)

Question Number : 19 Question Id : 70819118952 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)	সংদিশক	(i)	পৰিৱৰ্ত্তী প্ৰৱাহৰ বৰ্ধন বা হ্ৰাসকৰণৰ বাবে ব্যৱহৃত হয়।
(b)	ষ্টেবিলাইজাৰ (Stabilizer)	(ii)	পৰিৱৰ্ত্তী প্ৰৱাহক অপৰিৱৰ্ত্তী প্ৰৱাহলৈ সলনি কৰিবৰ বাবে ব্যৱহৃত হয়।
(c)	ৰূপান্তৰক	(iii)	সংদিশন আউটপুট বিভৱৰ যিকোনো উৰ্মিকা (ripple) আঁতৰাবৰ বাবে ব্যৱহৃত হয়।
(d)	ফিল্টাৰ (Filter)	(iv)	ইনপুট বিভৱৰ বা load প্ৰৱাহৰ (current) সলনি স্বত্তেও স্থিৰ আউটপুট বিভৱ পাবৰ বাবে ব্যৱহৃত হয়।

তলৰ বিকল্পৰ পৰা শুদ্ধ উত্তৰ চয়ন কৰা।

Options :

70819162023. (a)-(ii), (b)-(i), (c)-(iii), (d)-(iv)

70819162024. (a)-(ii), (b)-(iv), (c)-(i), (d)-(iii)

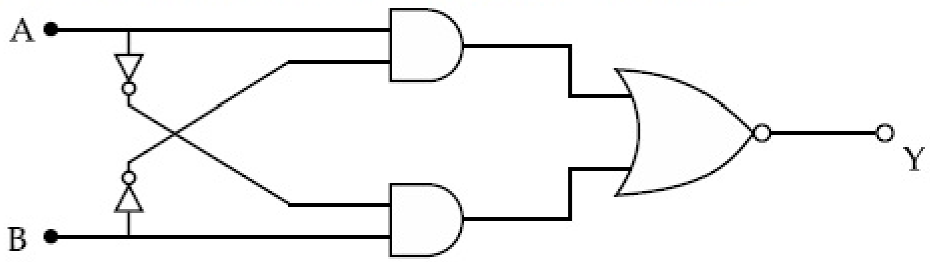
70819162025. (a)-(ii), (b)-(i), (c)-(iv), (d)-(iii)

70819162026. (a)-(iii), (b)-(iv), (c)-(i), (d)-(ii)

Question Number : 20 Question Id : 70819118953 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The truth table for the following logic circuit is :



Options :

70819162027.

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

70819162028.

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	1

70819162029.

A	B	Y
0	0	1
0	1	0
1	0	1
1	1	0

70819162030.

A	B	Y
0	0	0
0	1	1
1	0	0
1	1	1

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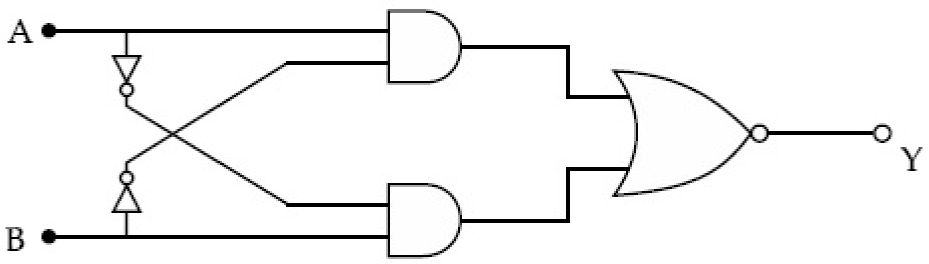
Question Number : 20 Question Id : 70819118953 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত দিয়া লজিক বৰ্তনীটোৰ বাবে ট্ৰুথটেবল হ'ব :



Options :

70819162027.

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

70819162028.

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	1

70819162029.

A	B	Y
0	0	1
0	1	0
1	0	1
1	1	0

70819162030.

A	B	Y
0	0	0
0	1	1
1	0	0
1	1	1

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Physics Section B

Section Id : 708191803

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 : 7081911083

Question Shuffling Allowed : Yes

Question Number : 21 Question Id : 70819118954 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Two particles having masses 4 g and 16 g respectively are moving with equal kinetic energies. The ratio of the magnitudes of their linear momentum is n : 2. The value of n will be ________.

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 : 70819118954 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ক্ৰমে 4 গ্ৰাঃ আৰু 16 গ্ৰাঃ ভৰৰ দুটা কণাই সমান গতি-শক্তিৰে গতি কৰিছে। যদিহে সিহঁতৰ ৰৈখিক ভৰবেগৰ মানৰ অনুপাত n : 2 হয়, n 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 : 22 Question Id : 70819118955 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The initial velocity v_i required to project a body vertically upward from the surface of the earth to reach a height of 10R, where R is the radius of the earth, may be described in terms of escape velocity v_e such that $v_i = \sqrt{\frac{x}{y}} \times v_e$. The value of x will be ________ .

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 : 70819118955 Question Type : SA

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Correct Marks : 4 Wrong Marks : 0

পৃথিৱীপৃষ্ঠৰ পৰা উলম্বদিশত 10R উচ্চতা পাবলৈ, য'ত R পৃথিৱীৰ ব্যাসাৰ্ধ হয়, এটা বস্তুক প্ৰক্ষেপণৰ বাবে প্ৰয়োজনীয় প্ৰাৰম্ভিক বেগ v_i ক, পলায়ন বেগ v_e দ্বাৰা এনেদৰে প্ৰকাশ কৰিব পাৰি $v_i = \sqrt{\frac{x}{y}} \times v_e$। 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 : 23 Question Id : 70819118956 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The percentage increase in the speed of transverse waves produced in a stretched string if the tension is increased by 4%, will be ________%.

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 : 70819118956 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

যদিহে টান 4% বঢ়াই দিয়া হয়, এডাল প্ৰসাৰিত ৰছী (string) ত উৎপন্ন হোৱা অনুপ্ৰস্থ তৰংগৰ দ্ৰুতিৰ শতকৰা বৃদ্ধি ________% 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 : 24 Question Id : 70819118957 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If $\vec{P} \times \vec{Q} = \vec{Q} \times \vec{P}$, the angle between $\vec{P}$ and $\vec{Q}$ is θ $(0° < \theta < 360°)$. The value of 'θ' will be ________°.

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 : 70819118957 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

যদি $\vec{P} \times \vec{Q} = \vec{Q} \times \vec{P}$ হয়, $\vec{P}$ আৰু $\vec{Q}$ ৰ মাজৰ কোণ θ $(0° < \theta < 360°)$ হয়। 'θ' 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

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Question Number : 25 Question Id : 70819118958 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A reversible heat engine converts one-fourth of the heat input into work. When the temperature of the sink is reduced by 52 K, its efficiency is doubled. The temperature in Kelvin of the source will be ________.

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 : 70819118958 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা পৰাবৰ্তনীয় তাপ ইঞ্জিনে গ্ৰহণ কৰা তাপৰ এক চতুৰ্থাংশ কাৰ্যলৈ পৰিৱৰ্তন কৰে। যেতিয়া কূপৰ তাপমাত্ৰা 52 K হ্ৰাস কৰা হয়, ইয়াৰ দক্ষতা দুগুণ হয়গৈ। কেলভিন এককত উৎসৰ কূপৰ তাপমাত্ৰা ________।

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 : 70819118959 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Two small spheres each of mass 10 mg are suspended from a point by threads 0.5 m long. They are equally charged and repel each other to a distance of 0.20 m. The charge on each of the sphere is $\frac{a}{21} \times 10^{-8}$ C. The value of 'a' will be ________.

[Given $g = 10\ ms^{-2}$]

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 : 26 Question Id : 70819118959 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা বিন্দুৰ পৰা প্ৰতিটো 10 mg ভৰৰ দুটা সৰু গোলক 0.5 m দৈৰ্ঘ্যৰ সূতাৰ সহায়ত ওলোমাই ৰখা হৈছে। দুয়োটাকে সমান আধানেৰে আহিত কৰা হৈছে আৰু ইটোৱে সিটোক 0.20 m দূৰত্বলৈ ঠেলি পঠিয়াইছে। প্ৰতিটো গোলকত থকা আধানৰ পৰিমাণ $\frac{a}{21} \times 10^{-8}$ C। 'a' ৰ মান হ'ব ________।

[দিয়া আছে : $g = 10\ ms^{-2}$]

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 : 27 Question Id : 70819118960 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Two identical conducting spheres with negligible volume have 2.1 nC and −0.1 nC charges, respectively. They are brought into contact and then separated by a distance of 0.5 m. The electrostatic force acting between the spheres is ________ $\times 10^{-9}$ N.

[Given : $4\pi\varepsilon_0 = \frac{1}{9 \times 10^9}$ SI unit]

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 : 70819118960 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

দুটা সাইলাখ একেই নগন্য আয়তনৰ পৰিৱাহী গোলকত থকা আধানৰ পৰিমাণ ক্ৰমে 2.1 nC আৰু -0.1 nC । দুয়োটাকে এবাৰ পৰস্পৰক স্পৰ্শ কৰোৱা হৈছে আৰু তাৰ পাছত 0.5 m দূৰত্বলৈ পৃথক কৰি দিয়া হৈছে। দুয়োটা গোলকৰ মাজত ক্ৰিয়া কৰা স্থৈতিক বিদ্যুৎ বলৰ পৰিমান ________ $\times 10^{-9}$ N।

[দিয়া আছে : $4\pi\varepsilon_0 = \frac{1}{9 \times 10^9}$ SI একক]

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 : 70819118961 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The peak electric field produced by the radiation coming from the 8 W bulb at a distance of 10 m is $\frac{x}{10}\sqrt{\frac{\mu_0 c}{\pi}}\frac{\text{V}}{\text{m}}$. The efficiency of the bulb is 10% and it is a point source. The 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 : 28 Question Id : 70819118961 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা 8 W বাল্বৰ পৰা 10 m দূৰত্বত, ইয়াৰ পৰা অহা বিকিৰণৰ পৰা উৎপন্ন হোৱা বিদ্যুৎ ক্ষেত্ৰৰ সৰ্বোচ্চ মান (peak electric field) $\frac{x}{10}\sqrt{\frac{\mu_0 c}{\pi}}\ \frac{V}{m}$ । বাল্বৰ দক্ষতা 10% আৰু ই এটা বিন্দুসম উৎস (point source)। x ৰ মান হ'ব ____________ ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

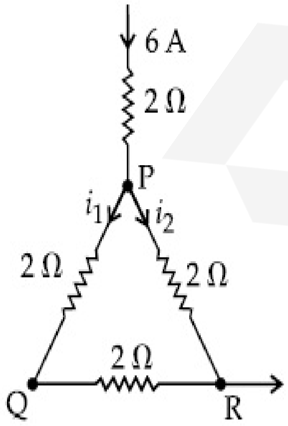
Possible Answers :

5 to 5.001

Question Number : 29 Question Id : 70819118962 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A current of 6 A enters one corner P of an equilateral triangle PQR having 3 wires of resistance 2 Ω each and leaves by the corner R. The currents i_1 in ampere is __________ .



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

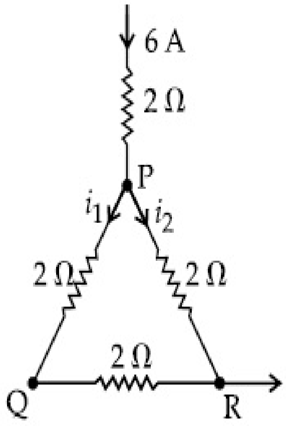
Possible Answers :

5 to 5.001

Question Number : 29 Question Id : 70819118962 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

তিনিওটা বাহুৰ প্ৰত্যেকটোত 2 Ω ৰোধকৰ তাঁৰ থকা এটা সমবাহু ত্ৰিভূজ PQR ৰ P কোণত 6 A ৰ এক বিদ্যুৎ প্ৰৱাহ প্ৰৱেশ কৰিছে আৰু R কোণেৰে ই প্ৰস্থান কৰিছে। প্ৰৱাহ i_1 ampere এককত ________।



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 : 70819118963 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The wavelength of an X-ray beam is 10 Å. The mass of a fictitious particle having the same energy as that of the X-ray photons is $\frac{x}{3}$h kg. The value of x is ________.

(h = Planck's constant)

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 : 70819118963 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা এক্সৰে ৰশ্মিপুঞ্জৰ তৰংগদৈৰ্ঘ্য 10 Å। এক্সৰে ফ'ট'নৰ সৈতে একেই শক্তিৰ এটা কাল্পনিক (fictitious) কণাৰ ভৰ হয় $\frac{x}{3}$h kg। x ৰ মান হ'ব ________ (h = প্লাংকৰ ধ্ৰুৱক)।

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 :	708191804
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80

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Mark As Answered Required? : Yes

Sub-Section Number : 1

Sub-Section Id : 7081911084

Question Shuffling Allowed : Yes

Question Number : 31 Question Id : 70819118964 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which among the following species has unequal bond lengths ?

Options :

70819162041. XeF_4

70819162042. SiF_4

70819162043. SF_4

70819162044. BF_4^-

Question Number : 31 Question Id : 70819118964 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

নিম্নলিখিত কোনটো প্ৰকাৰৰ (species) অসমান বান্ধনি দৈৰ্ঘ্য আছে ?

Options :

70819162041. XeF_4

70819162042. SiF_4

70819162043. SF_4

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70819162044. BF_4^-

Question Number : 32 Question Id : 70819118965 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The solubility of $Ca(OH)_2$ in water is :

[Given : The solubility product of $Ca(OH)_2$ in water $= 5.5 \times 10^{-6}$]

Options :

70819162045. 1.11×10^{-2}

70819162046. 1.11×10^{-6}

70819162047. 1.77×10^{-2}

70819162048. 1.77×10^{-6}

Question Number : 32 Question Id : 70819118965 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

পানীত $Ca(OH)_2$ ৰ দ্ৰাব্যতা :

[দিয়া আছে, পানীত $Ca(OH)_2$ ৰ দ্ৰাব্যতা গুণফল $= 5.5 \times 10^{-6}$]

Options :

70819162045. 1.11×10^{-2}

70819162046. 1.11×10^{-6}

70819162047. 1.77×10^{-2}

70819162048. 1.77×10^{-6}

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Question Number : 33 Question Id : 70819118966 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following statements is FALSE for hydrophilic sols ?

Options :

70819162049. They do not require electrolytes for stability.

70819162050. These sols are reversible in nature.

70819162051. Their viscosity is of the order of that of H_2O.

70819162052. The sols cannot be easily coagulated.

Question Number : 33 Question Id : 70819118966 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

জলঅনুৰাগী চলৰ বাবে নিম্নলিখিত কোনটো উক্তি অসত্য ?

Options :

70819162049. সিহঁতক স্থিৰতাৰ বাবে বিদ্যুৎবিশ্লেষ্যৰ দৰকাৰ নাই

70819162050. এই চলবোৰ প্ৰত্যাৱৰ্তী চৰিত্ৰৰ

70819162051. সিহঁতৰ সান্দ্ৰতা H_2O ৰ সান্দ্ৰতাৰ দৰে

70819162052. চলবোৰ সহজে আতঞ্চন কৰিব পৰা নাযায়

Question Number : 34 Question Id : 70819118967 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The correct order of bond dissociation enthalpy of halogens is :

Options :

70819162053. $F_2 > Cl_2 > Br_2 > I_2$

70819162054. $I_2 > Br_2 > Cl_2 > F_2$

70819162055. $Cl_2 > Br_2 > F_2 > I_2$

70819162056. $Cl_2 > F_2 > Br_2 > I_2$

Question Number : 34 Question Id : 70819118967 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

হেল’জেনৰ বান্ধনি বিয়োজন এনথালপিৰ শুদ্ধ ক্ৰম -

Options :

70819162053. $F_2 > Cl_2 > Br_2 > I_2$

70819162054. $I_2 > Br_2 > Cl_2 > F_2$

70819162055. $Cl_2 > Br_2 > F_2 > I_2$

70819162056. $Cl_2 > F_2 > Br_2 > I_2$

Question Number : 35 Question Id : 70819118968 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The method used for the purification of Indium is :

Options :

70819162057. van Arkel method

70819162058. liquation

70819162059. zone refining

70819162060. vapour phase refining

Question Number : 35 Question Id : 70819118968 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ইন্দিয়াম শুদ্ধিকৰণত ব্যৱহাৰ হোৱা পদ্ধতিটো হ'ল -

Options :

70819162057. ভান আৰ্কেল পদ্ধতি

70819162058. বিগলন

70819162059. মণ্ডল শোধন

70819162060. বাষ্প প্ৰাৱস্থা শোধন

Question Number : 36 Question Id : 70819118969 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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Water does not produce CO on reacting with :

Options :

70819162061. CH_4

70819162062. C

70819162063. CO_2

70819162064. C_3H_8

Question Number : 36 Question Id : 70819118969 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

পানীয়ে যাৰ সৈতে ক্ৰিয়া কৰি CO উৎপন্ন নকৰে -

Options :

70819162061. CH_4

70819162062. C

70819162063. CO_2

70819162064. C_3H_8

Question Number : 37 Question Id : 70819118970 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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Given below are two statements :

Statement I :

α and β forms of sulphur can change reversibly between themselves with slow heating or slow cooling.

Statement II :

At room temperature the stable crystalline form of sulphur is monoclinic sulphur.

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

Options :

70819162065. Both Statement I and Statement II are true.

70819162066. Both Statement I and Statement II are false.

70819162067. Statement I is true but Statement II is false.

70819162068. Statement I is false but Statement II is true.

Question Number : 37 Question Id : 70819118970 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত দুটা উক্তি দিয়া হ'ল -

উক্তি I :

α -ছালফাৰ আৰু β - ছালফাৰৰ ৰূপে সিহঁতৰ মাজত লাহে লাহে গৰম বা লাহে লাহে ঠাণ্ডা কৰি প্ৰত্যাৱৰ্তীভাৱে পৰিবৰ্তন কৰিব পাৰি ।

উক্তি II :

কোঠাৰ উষ্ণতাত, ছালফাৰৰ সুস্থিৰ স্ফটিক ৰূপটো হ'ল ম'ন'ক্লিনিক ছালফাৰ ।

ওপৰোক্ত উক্তিৰ আধাৰত, নিম্নলিখিত বিকল্পৰ পৰা শুদ্ধ উত্তৰটো চয়ন কৰা ।

Options :

70819162065. উক্তি I আৰু উক্তি II দুয়োটা সত্য

70819162066. উক্তি I আৰু উক্তি II দুয়োটা অসত্য

70819162067. উক্তি I সত্য কিন্তু উক্তি II অসত্য

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70819162068. উক্তি I অসত্য কিন্তু উক্তি II সত্য

Question Number : 38 Question Id : 70819118971 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The major components of German Silver are :

Options :

70819162069. Cu, Zn and Ag

70819162070. Cu, Zn and Ni

70819162071. Ge, Cu and Ag

70819162072. Zn, Ni and Ag

Question Number : 38 Question Id : 70819118971 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

জাৰ্মান ছিলভাৰৰ মুখ্য উপাদানবোৰ হ'ল -

Options :

70819162069. Cu, Zn আৰু Ag

70819162070. Cu, Zn আৰু Ni

70819162071. Ge, Cu আৰু Ag

70819162072. Zn, Ni আৰু Ag

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Question Number : 39 Question Id : 70819118972 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In which of the following order the given complex ions are arranged correctly with respect to their decreasing spin only magnetic moment ?

(i) $[FeF_6]^{3-}$ (ii) $[Co(NH_3)_6]^{3+}$ (iii) $[NiCl_4]^{2-}$ (iv) $[Cu(NH_3)_4]^{2+}$

Options :

70819162073. (i) > (iii) > (iv) > (ii)

70819162074. (ii) > (iii) > (i) > (iv)

70819162075. (iii) > (iv) > (ii) > (i)

70819162076. (ii) > (i) > (iii) > (iv)

Question Number : 39 Question Id : 70819118972 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

নিম্নলিখিত কোনটো ক্ৰমত জটিল আয়নসমূহক (complex) সিহঁতৰ ঘূৰ্ণনমাত্ৰ চুম্বকীয় ভ্ৰামকৰ ওপৰত ভিত্তি কৰি শুদ্ধ অধঃক্ৰমত সজোৱা হৈছে ?

(i) $[FeF_6]^{3-}$ (ii) $[Co(NH_3)_6]^{3+}$ (iii) $[NiCl_4]^{2-}$ (iv) $[Cu(NH_3)_4]^{2+}$

Options :

70819162073. (i) > (iii) > (iv) > (ii)

70819162074. (ii) > (iii) > (i) > (iv)

70819162075. (iii) > (iv) > (ii) > (i)

70819162076. (ii) > (i) > (iii) > (iv)

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Question Number : 40 Question Id : 70819118973 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I :

The pH of rain water is normally ~5.6.

Statement II :

If the pH of rain water drops below 5.6, it is called acid rain.

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

Options :

70819162077. Both Statement I and Statement II are true.

70819162078. Both Statement I and Statement II are false.

70819162079. Statement I is true but Statement II is false.

70819162080. Statement I is false but Statement II is true.

Question Number : 40 Question Id : 70819118973 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত দুটা উক্তি দিয়া হ'ল -

উক্তি I :

বৰষুণৰ পানীৰ pH সাধাৰণতে ~5.6,

উক্তি II :

যদি বৰষুণৰ পানীৰ pH 5.6 ত কৈ কমি যায়, ইয়াক কোৱা হয় এছিড বৰষুণ ।

ওপৰোক্ত উক্তিৰ আলমত, নিম্নলিখিত বিকল্পৰ পৰা শুদ্ধ বিকল্প চয়ন কৰা -

Options :

70819162077. উক্তি I আৰু উক্তি II দুয়োটা সত্য

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70819162078. উক্তি I আৰু উক্তি II দুয়োটা অসত্য

70819162079. উক্তি I সত্য কিন্তু উক্তি II অসত্য

70819162080. উক্তি I অসত্য কিন্তু উক্তি II সত্য

Question Number : 41 Question Id : 70819118974 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following compound is added to the sodium extract before addition of silver nitrate for testing of halogens ?

Options :

70819162081. Hydrochloric acid

70819162082. Sodium hydroxide

70819162083. Nitric acid

70819162084. Ammonia

Question Number : 41 Question Id : 70819118974 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

হেল'জেনৰ পৰীক্ষাৰ বাবে, ছিলভাৰ নাইট্ৰেট যোগ কৰাৰ আগতে নিম্নলিখিতৰ কোনটো যৌগ ছ'ডিয়াম আৰকত যোগ কৰা হয় ?

Options :

70819162081. হাইড্ৰক্লৰিক এছিড

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70819162082. ছ'ডিয়াম হাইড্ৰক্সাইড

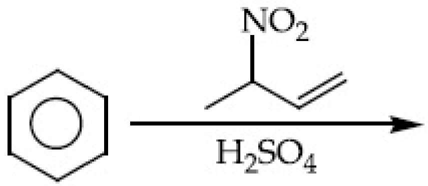
70819162083. নাইট্ৰিক এছিড

70819162084. এমোনিয়া

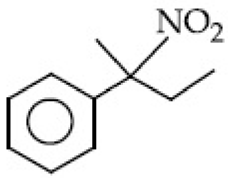
Question Number : 42 Question Id : 70819118975 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

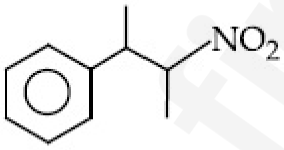
Correct Marks : 4 Wrong Marks : 1

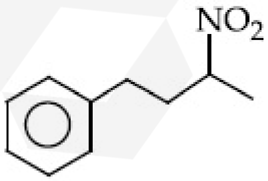
The major product of the following reaction is :

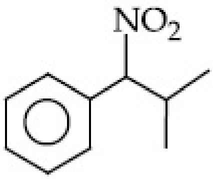


Options :

70819162085. 

70819162086. 

70819162087. 

70819162088. 

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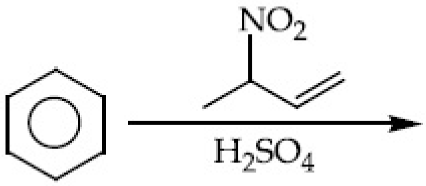
Question Number : 42 Question Id : 70819118975 Question Type : MCQ Option Shuffling : Yes

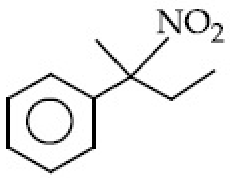
Is Question Mandatory : No

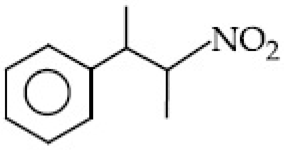
Correct Marks : 4 Wrong Marks : 1

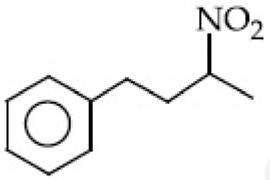
তলত দিয়া বিক্ৰিয়াটোৰ মুখ্য বিক্ৰিয়াজাত পদাৰ্থ -

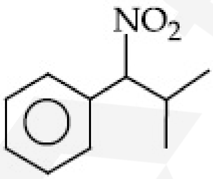


Options :

70819162085. 

70819162086. 

70819162087. 

70819162088. 

Question Number : 43 Question Id : 70819118976 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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The major product of the following reaction is :

$$CH_3CH_2CH{=}CH_2 \xrightarrow[\text{Rh catalyst}]{H_2/CO}$$

Options :

70819162089. $CH_3CH_2CH_2CH_2CHO$

70819162090. $CH_3CH_2CH_2CHO$

70819162091. $CH_3CH_2CH{=}CH{-}CHO$

70819162092. $CH_3CH_2C(CHO){=}CH_2$

Question Number : 43 Question Id : 70819118976 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত দিয়া বিক্ৰিয়াটোৰ মুখ্য বিক্ৰিয়াজাত পদাৰ্থ -

$$CH_3CH_2CH{=}CH_2 \xrightarrow[\text{Rh অনুঘটক}]{H_2/CO}$$

Options :

70819162089. $CH_3CH_2CH_2CH_2CHO$

70819162090. $CH_3CH_2CH_2CHO$

70819162091. $CH_3CH_2CH{=}CH{-}CHO$

70819162092. $CH_3CH_2C(CHO){=}CH_2$

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Question Number : 44 Question Id : 70819118977 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The correct sequence of reagents used in the preparation of 4-bromo-2-nitroethyl benzene from benzene is :

Options :

70819162093. $CH_3COCl/AlCl_3$, $Br_2/AlBr_3$, HNO_3/H_2SO_4, Zn/HCl

70819162094. $CH_3COCl/AlCl_3$, $Zn\text{-}Hg/HCl$, $Br_2/AlBr_3$, HNO_3/H_2SO_4

70819162095. $Br_2/AlBr_3$, $CH_3COCl/AlCl_3$, HNO_3/H_2SO_4, Zn/HCl

70819162096. HNO_3/H_2SO_4, $Br_2/AlCl_3$, $CH_3COCl/AlCl_3$, $Zn\text{-}Hg/HCl$

Question Number : 44 Question Id : 70819118977 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

বেনজিনৰ পৰা 4-ব্ৰ'ম'-2-নাইট্ৰ'ইথাইল বেনজিন প্ৰস্তুতিত শুদ্ধ বিকাৰক ক্ৰমটো হ'ল -

Options :

70819162093. $CH_3COCl/AlCl_3$, $Br_2/AlBr_3$, HNO_3/H_2SO_4, Zn/HCl

70819162094. $CH_3COCl/AlCl_3$, $Zn\text{-}Hg/HCl$, $Br_2/AlBr_3$, HNO_3/H_2SO_4

70819162095. $Br_2/AlBr_3$, $CH_3COCl/AlCl_3$, HNO_3/H_2SO_4, Zn/HCl

70819162096. HNO_3/H_2SO_4, $Br_2/AlCl_3$, $CH_3COCl/AlCl_3$, $Zn\text{-}Hg/HCl$

Question Number : 45 Question Id : 70819118978 Question Type : MCQ Option Shuffling : Yes

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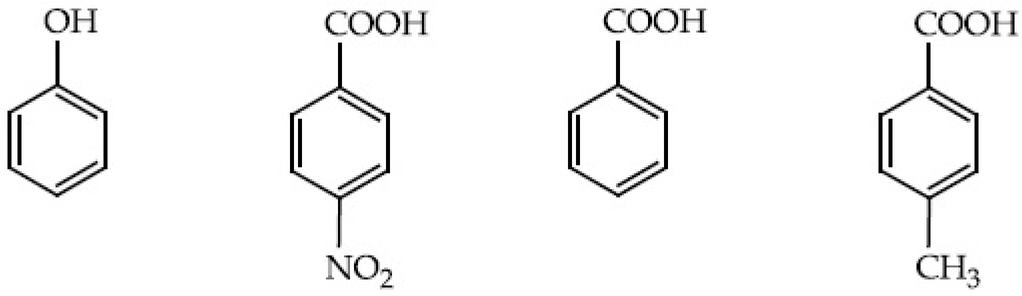
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The correct order of acid character of the following compounds is :



I II III IV

Options :

70819162097. I > II > III > IV

70819162098. III > II > I > IV

70819162099. II > III > IV > I

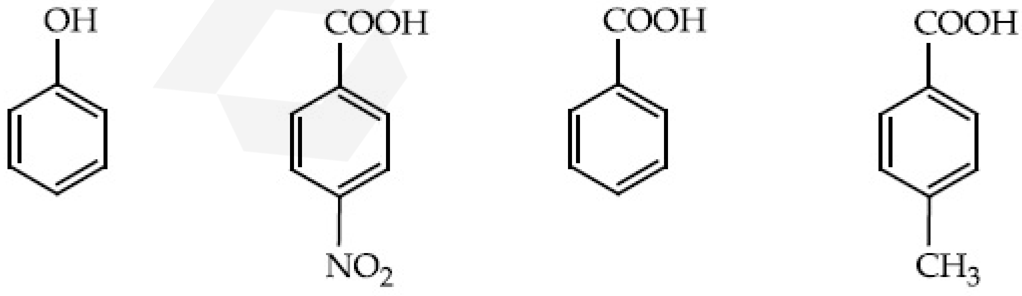
70819162100. IV > III > II > I

Question Number : 45 Question Id : 70819118978 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত দিয়া যৌগবোৰৰ আম্লিকতা সাপেক্ষে শুদ্ধ ক্ৰমটো হ'ল -



I II III IV

Options :

70819162097. I > II > III > IV

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70819162098. III > II > I > IV

70819162099. II > III > IV > I

70819162100. IV > III > II > I

Question Number : 46 Question Id : 70819118979 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

What is 'X' in the given reaction ?

$$\begin{array}{l} CH_2OH \\ | \\ CH_2OH \end{array} + \text{oxalic acid} \xrightarrow{210^\circ C} \underset{\text{(major product)}}{X}$$

Options :

70819162101. $\begin{array}{l} CHO \\ | \\ CHO \end{array}$

70819162102. $\begin{array}{l} CH_2OH \\ | \\ CHO \end{array}$

70819162103. $\begin{array}{l} CH_2 \\ \| \\ CH_2 \end{array}$

70819162104. $\begin{array}{l} CH—OH \\ \| \\ CH_2 \end{array}$

Question Number : 46 Question Id : 70819118979 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

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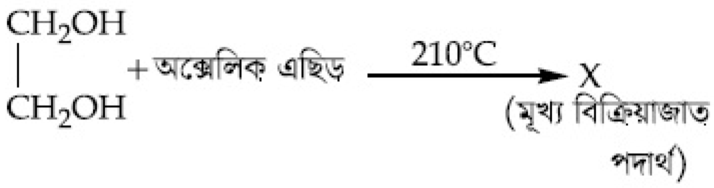
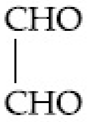
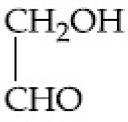
Correct Marks : 4 Wrong Marks : 1

প্ৰদত্ত বিক্ৰিয়াটোত ‘X’ কি ?

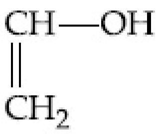


Options :

70819162101. 

70819162102. 

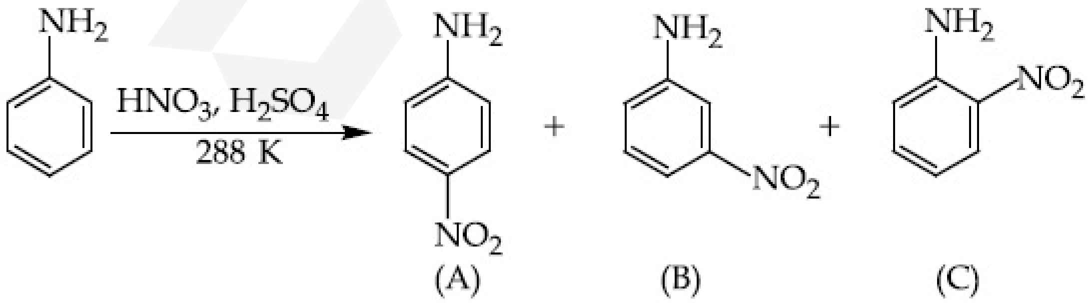
70819162103.

70819162104. 

Question Number : 47 Question Id : 70819118980 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



Correct statement about the given chemical reaction is :

Options :

70819162105. $-\ddot{N}H_2$ group is *ortho* and *para* directive, so product (B) is not possible.

70819162106. Reaction is possible and compound (B) will be the major product.

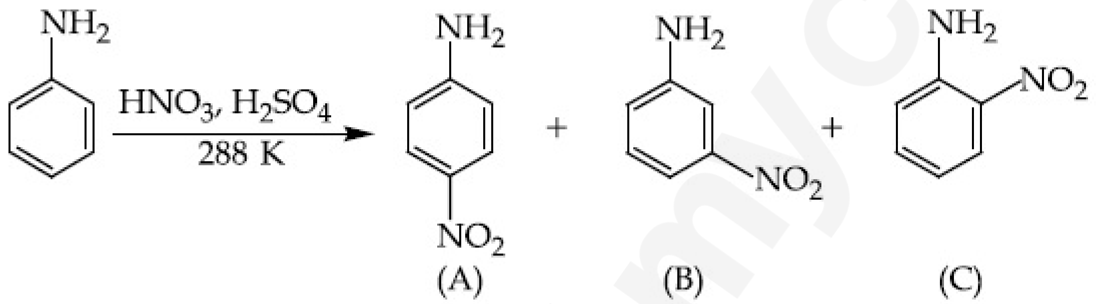
70819162107. The reaction will form sulphonated product instead of nitration.

70819162108. Reaction is possible and compound (A) will be major product.

Question Number : 47 Question Id : 70819118980 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



প্ৰদত্ত ৰাসায়নিক বিক্ৰিয়াৰ বাবে শুদ্ধ উক্তি -

Options :

70819162105. $-\ddot{N}H_2$ থুপ *অৰ্থ* আৰু *পেৰা* নিৰ্দেশক, সেয়েহে জাতদ্ৰব্য (B) সম্ভৱ নহয় ।

70819162106. বিক্ৰিয়াটো সম্ভৱ আৰু যৌগ (B) টো মুখ্য বিক্ৰিয়াজাত পদাৰ্থ ।

70819162107. নাইট্ৰেছনৰ সলনি বিক্ৰিয়াটোৱে ছালফ'নেটেড বিক্ৰিয়াজাত পদাৰ্থ উৎপাদন কৰে।

70819162108. বিক্ৰিয়াটো সম্ভৱ আৰু যৌগ (A) মুখ্য বিক্ৰিয়াজাত পদাৰ্থ।

Question Number : 48 Question Id : 70819118981 Question Type : MCQ Option Shuffling : Yes

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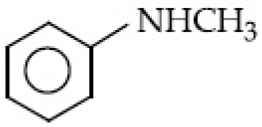
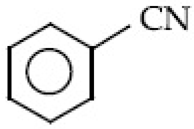
Is Question Mandatory : No

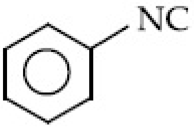
Correct Marks : 4 Wrong Marks : 1

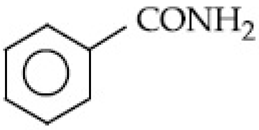
Carbylamine test is used to detect the presence of primary amino group in an organic compound. Which of the following compound is formed when this test is performed with aniline ?

Options :

70819162109. 

70819162110. 

70819162111. 

70819162112. 

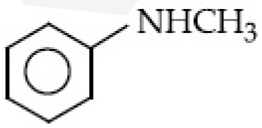
Question Number : 48 Question Id : 70819118981 Question Type : MCQ Option Shuffling : Yes

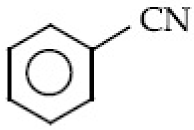
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা জৈৱ যৌগত থকা প্ৰাইমেৰী এমাইনক বিছাৰি উলিওৱাৰ কাৰণে কাৰবিলেমাইন পৰীক্ষা ব্যৱহাৰ কৰা হয় । যেতিয়া এই পৰীক্ষাটো এনিলিনৰ লগত ঘটোৱা হয় তেতিয়া নিম্নলিখিত কোনটো যৌগ উৎপন্ন হ'ব ?

Options :

70819162109. 

70819162110. 

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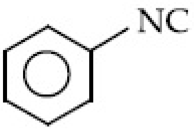
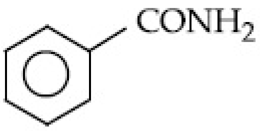
70819162111. 

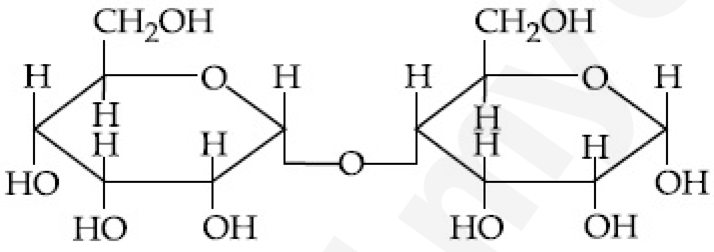
70819162112. 

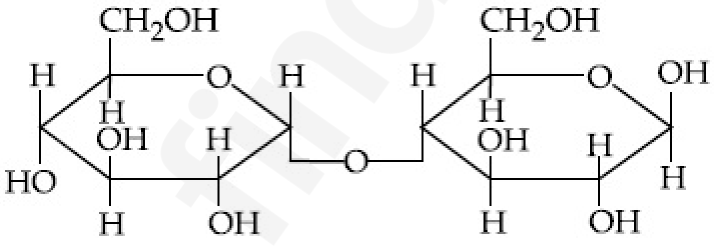
Question Number : 49 Question Id : 70819118982 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

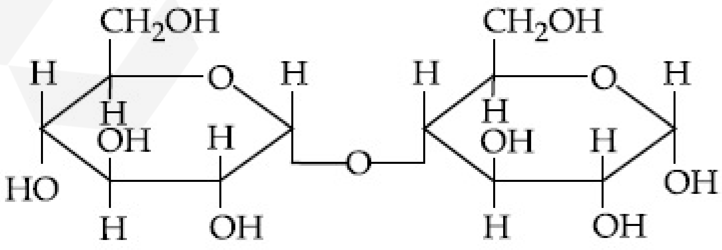
Correct Marks : 4 Wrong Marks : 1

Which of the following is correct structure of α-anomer of maltose ?

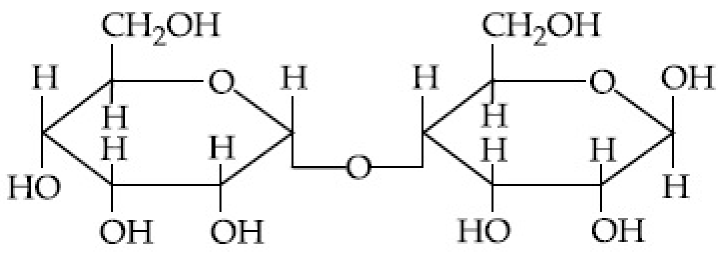
Options :

70819162113. 

70819162114. 

70819162115. 

70819162116.



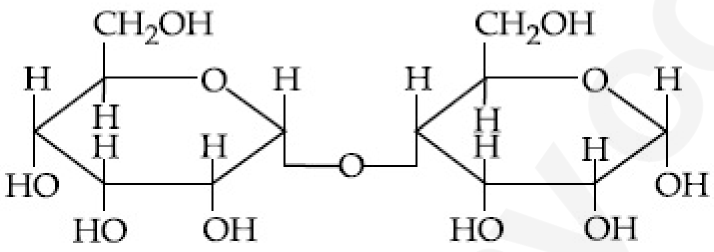
Question Number : 49 Question Id : 70819118982 Question Type : MCQ Option Shuffling : Yes

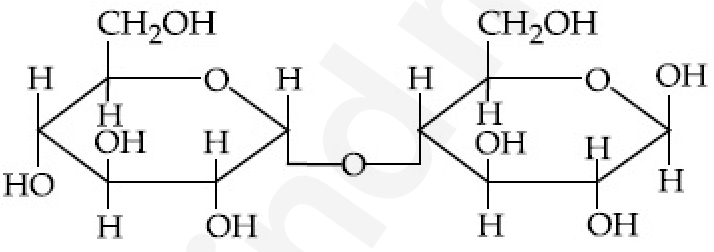
Is Question Mandatory : No

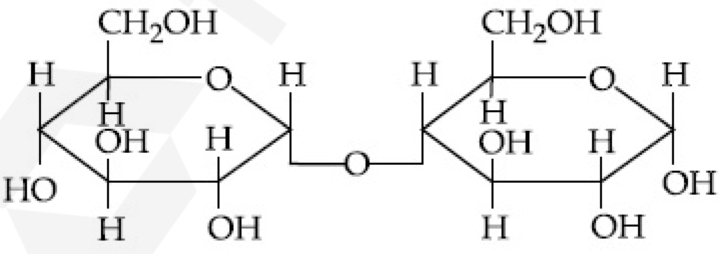
Correct Marks : 4 Wrong Marks : 1

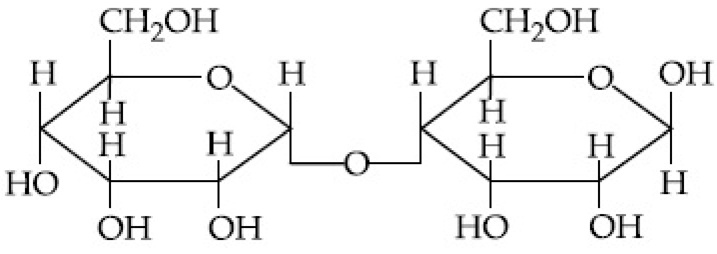
মল্ট'জৰ α-এন'মাৰ ৰ শুদ্ধ গঠন নিম্নলিখিতৰ ভিতৰত কোনটো ?

Options :

70819162113. 

70819162114. 

70819162115. 

70819162116. 

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Question Number : 50 Question Id : 70819118983 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I :

The identification of Ni^{2+} is carried out by dimethyl glyoxime in the presence of NH_4OH.

Statement II :

The dimethyl glyoxime is a bidentate neutral ligand.

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

Options :

70819162117. Both Statement I and Statement II are true.

70819162118. Both Statement I and Statement II are false.

70819162119. Statement I is true but Statement II is false.

70819162120. Statement I is false but Statement II is true.

Question Number : 50 Question Id : 70819118983 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত দুটা উক্তি দিয়া হৈছে -

উক্তি I :

Ni^{2+} ৰ চিনাক্তকৰণ কৰা হয় NH_4OH ৰ উপস্থিতিত ডাইমিঠাইল গ্লাইঅক্সাইমৰ দ্বাৰা ।

উক্তি II :

ডাইমিঠাইল গ্লাইঅক্সাইম এটা দ্বিদন্তীয় উদাসীন লিগাণ্ড (ligand)।

ওপৰোক্ত উক্তিৰ আধাৰত, তলত দিয়া বিকল্পৰ পৰা শুদ্ধ উত্তৰ চয়ন কৰা ।

Options :

70819162117. উক্তি I আৰু উক্তি II দুয়োটা সত্য

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70819162118. উক্তি I আৰু উক্তি II দুয়োটা অসত্য

70819162119. উক্তি I সত্য কিন্তু উক্তি II অসত্য

70819162120. উক্তি I অসত্য কিন্তু উক্তি II সত্য

Chemistry Section B

Section Id :	708191805
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 :	7081911085
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 70819118984 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Consider titration of NaOH solution versus 1.25 M oxalic acid solution. At the end point following burette readings were obtained.

(i) 4.5 mL (ii) 4.5 mL (iii) 4.4 mL

(iv) 4.4 mL (v) 4.4 mL

If the volume of oxalic acid taken was 10.0 mL then the molarity of the NaOH solution is ________ M. (Rounded-off to the nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

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Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 51 Question Id : 70819118984 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ধৰা, অনুমাপন NaOH দ্ৰৱ বনাম (VS) 1.25 M অক্সালিক অম্ল দ্ৰৱ। শেষ বিন্দুত নিম্নোক্ত বুৰেট পাঠ পোৱা যায়।

(i) 4.5 mL (ii) 4.5 mL (iii) 4.4 mL

(iv) 4.4 mL (v) 4.4 mL

যদি অক্সালিক অম্লৰ আয়তন 10.0 mL লোৱা হৈছিল, তেনেহলে NaOH দ্ৰৱৰ ম'লাৰিটি ________ Mত। (নিকটতম অখণ্ড সংখ্যা)

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 : 70819118985 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The unit cell of copper corresponds to a face centered cube of edge length 3.596 Å with one copper atom at each lattice point. The calculated density of copper in kg/m^3 is ______.
[Molar mass of Cu : 63.54 g ; Avogadro Number $= 6.022 \times 10^{23}$]

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 : 70819118985 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

কপাৰৰ একক কোষ এটা পৃষ্ঠকেন্দ্ৰিক ঘনকীয় একক কোষৰ, য'ত দাঁতি দৈৰ্ঘ্য 3.596 Å আৰু প্ৰত্যেক লেটিছ বিন্দুত এটা কপাৰ পৰমাণু থাকে। ক'পাৰৰ ঘনত্ব kg/m^3 ত গণনা কৰা _______।

[ম'লাৰ ভৰ Cu ৰ $= 63.54$ g ; এভ'গেড্ৰ সংখ্যা $= 6.022 \times 10^{23}$]

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 : 70819118986 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Electromagnetic radiation of wavelength 663 nm is just sufficient to ionise the atom of metal A. The ionization energy of metal A in kJ mol^{-1} is _______. (Rounded-off to the nearest integer)

[$h = 6.63 \times 10^{-34}$ Js, $c = 3.00 \times 10^8$ ms^{-1}, $N_A = 6.02 \times 10^{23}$ 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 : 53 Question Id : 70819118986 Question Type : SA

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Correct Marks : 4 Wrong Marks : 0

ধাতু A ৰ পৰমাণু আয়নীত কৰাৰ কাৰণে 663 nm তৰংগদৈৰ্ঘ্যৰ তড়িৎ চুম্বকীয় বিকিৰণ যথেষ্ট মাত্ৰ। ধাতু A ৰ আয়নীকৰণ শক্তি kJ mol^{-1} ত হ'ল _______। (নিকটবৰ্তী অখণ্ড সংখ্যালৈ)

[$h = 6.63 \times 10^{-34}$ Js, $c = 3.00 \times 10^8$ ms^{-1}, $N_A = 6.02 \times 10^{23}$ ম'ল$^{-1}$]

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 : 70819118987 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Five moles of an ideal gas at 293 K is expanded isothermally from an initial pressure of 2.1 MPa to 1.3 MPa against at constant external pressure 4.3 MPa. The heat transferred in this process is _______ kJ mol^{-1}. (Rounded-off to the nearest integer)

[Use $R = 8.314$ J $mol^{-1}K^{-1}$]

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 : 70819118987 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

4.3 MPa স্থিৰ বাহ্যিক চাপত, এটা আদৰ্শ গেছৰ 5 mole 293 K উষ্ণতাত 2.1 MPa প্ৰাৰম্ভিক চাপৰ পৰা 1.3 MPa চাপলৈ সমোষ্ণীভাৱে সম্প্ৰসাৰিত কৰা হ'ল। এই প্ৰক্ৰিয়াত সম্পন্ন হোৱা তাপৰ স্থানান্তৰণ kJ mol^{-1} এককত হ'ল _______। (নিকটতম অখণ্ড সংখ্যাত)

[ব্যৱহাৰ কৰা $R = 8.314$ J $mol^{-1}K^{-1}$]

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 : 55 Question Id : 70819118988 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If a compound AB dissociates to the extent of 75% in an aqueous solution, the molality of the solution which shows a 2.5 K rise in the boiling point of the solution is ________ molal. (Rounded-off to the nearest integer)

[K_b =0.52 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 : 70819118988 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

যদি এটা যৌগ AB পানীৰ দ্ৰৱত 75% লৈ বিয়োজন হয়, দ্ৰৱটোৰ ম'লালিটি যিয়ে উতলাংকৰ 2.5 K উত্থান দেখুৱায়, হ'ব ________ ম'লাল। (নিকটতম অখণ্ড সংখ্যাত)

[K_b =0.52 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 : 56 Question Id : 70819118989 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Copper reduces NO_3^- into NO and NO_2 depending upon the concentration of HNO_3 in solution. (Assuming fixed $[Cu^{2+}]$ and $P_{NO} = P_{NO_2}$), the HNO_3 concentration at which the thermodynamic tendency for reduction of NO_3^- into NO and NO_2 by copper is same is 10^x M. The value of $2x$ is ________. (Rounded-off to the nearest integer)

[Given, $E^o_{Cu^{2+}/Cu} = 0.34$ V, $E^o_{NO_3^-/NO} = 0.96$ V, $E^o_{NO_3^-/NO_2} = 0.79$ V and at 298 K,

$\frac{RT}{F}(2.303) = 0.059$]

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 : 70819118989 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

দ্ৰৱত HNO_3 ৰ গাঢ়তাৰ ওপৰত নিৰ্ভৰ কৰি ক'পাৰে NO_3^- ক NO আৰু NO_2 লৈ বিজাৰিত কৰে। (ধৰি লোৱা নিৰ্দিষ্ট $[Cu^{2+}]$ আৰু $P_{NO} = P_{NO_2}$), HNO_3 ৰ নিৰ্দিষ্ট গাঢ়তা, য'ত NO_3^- আয়নক NO আৰু NO_2 লৈ বিজাৰণ কৰাৰ ক'পাৰৰ তাপগতীয় প্ৰৱণতা সমান, হ'ল 10^x M। $2x$ ৰ মান হ'ল ________। (নিকটতম অখণ্ড সংখ্যাত)

[দিয়া আছি, $E^o_{Cu^{2+}/Cu} = 0.34$ V, $E^o_{NO_3^-/NO} = 0.96$ V, $E^o_{NO_3^-/NO_2} = 0.79$ V আৰু 298 K ত,

$\frac{RT}{F}(2.303) = 0.059$]

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 : 70819118990 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The rate constant of a reaction increases by five times on increase in temperature from 27°C to 52°C. The value of activation energy in kJ mol^{-1} is ________. (Rounded-off to the nearest integer)

$[R = 8.314\ J\ K^{-1}\ mol^{-1}]$

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 : 70819118990 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

উষ্ণতা 27°C ৰ পৰা 52°C লৈ বৃদ্ধি কৰিলে বিক্ৰিয়াটোৰ গতি ধ্ৰুৱকৰ মান পাঁচ গুণ বাঢ়ে। সক্ৰিয়ণ শক্তিৰ মান kJ mol^{-1} ত ________। (নিকটতম অখণ্ড সংখ্যাত)

$[R = 8.314\ J\ K^{-1}\ mol^{-1}]$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

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Possible Answers :

5 to 5.001

Question Number : 58 Question Id : 70819118991 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Among the following, number of metal/s which can be used as electrodes in the photoelectric cell is ________. (Integer answer)

(A) Li (B) Na (C) Rb (D) Cs

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 : 70819118991 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

তলত দিয়াবোৰৰ, তৰিৎ আলোক কোষত ইলেক্ট্ৰ'ড হিচাবে ব্যৱহাৰ কৰিব পাৰা ধাতুৰ সংখ্যা হ'ল ________।
(উত্তৰ অখণ্ড সংখ্যাত)

(A) Li (B) Na (C) Rb (D) Cs

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 : 70819118992 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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The spin only magnetic moment of a divalent ion in aqueous solution (atomic number 29) is ________ BM.

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 : 70819118992 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

পানীৰ দ্ৰৱত ঘূৰ্ণন মাত্ৰ চুম্বকীয় ভ্ৰামকৰ মান এটা দ্বিযোজী আয়নৰ (পাৰমাণৱিক সংখ্যা 29) বাবে ________ BM ত।

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 : 70819118993 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The number of compound/s given below which contain/s —COOH group is ________.
(Integer answer)

(A) Sulphanilic acid
(B) Picric acid
(C) Aspirin
(D) Ascorbic acid

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

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Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 60 Question Id : 70819118993 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

তলত দিয়া যৌগৰ ভিতৰত যিয়ে —COOH মূলক বহন কৰে, তাৰ সংখ্যা ________ । (পূৰ্ণ সংখ্যা উত্তৰত)

(A) ছালফানিলিক এছিড (B) পিকৰিক এছিড

(C) এছপিৰিন (D) এছক'ৰবিক এছিড

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 :	708191806
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 :	7081911086

Question Shuffling Allowed : Yes

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Question Number : 61 Question Id : 70819118994 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If for the matrix, $A = \begin{bmatrix} 1 & -\alpha \\ \alpha & \beta \end{bmatrix}$, $AA^T = I_2$, then the value of $\alpha^4 + \beta^4$ is :

Options :

70819162131. 4

70819162132. 1

70819162133. 2

70819162134. 3

Question Number : 61 Question Id : 70819118994 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যদি $A = \begin{bmatrix} 1 & -\alpha \\ \alpha & \beta \end{bmatrix}$, মৌলকক্ষটোৰ বাবে $AA^T = I_2$ হয়, তেন্তে $\alpha^4 + \beta^4$ ৰ মান হ'ব :

Options :

70819162131. 4

70819162132. 1

70819162133. 2

70819162134. 3

Question Number : 62 Question Id : 70819118995 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let A be a 3×3 matrix with $\det(A) = 4$. Let R_i denote the i^{th} row of A. If a matrix B is obtained by performing the operation $R_2 \rightarrow 2R_2 + 5R_3$ on 2A, then det(B) is equal to :

Options :

70819162135. 16

70819162136. 80

70819162137. 64

70819162138. 128

Question Number : 62 Question Id : 70819118995 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ধৰা হ'ল A এটা 3×3 ঘাতৰ মৌলকক্ষ আৰু $\det(A) = 4$। ধৰা হ'ল A ৰ i তম শাৰী হ'ল R_i । যদি 2A মৌলকক্ষত $R_2 \rightarrow 2R_2 + 5R_3$ প্ৰক্ৰিয়া প্ৰয়োগ কৰি এটা মৌলকক্ষ B পোৱা যায়, তেন্তে det(B) ৰ সমান হ'ব :

Options :

70819162135. 16

70819162136. 80

70819162137. 64

70819162138. 128

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Question Number : 63 Question Id : 70819118996 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The following system of linear equations

$$2x + 3y + 2z = 9$$
$$3x + 2y + 2z = 9$$
$$x - y + 4z = 8$$

Options :

70819162139. does not have any solution

70819162140. has a unique solution

70819162141. has infinitely many solutions

70819162142. has a solution (α, β, γ) satisfying $\alpha + \beta^2 + \gamma^3 = 12$

Question Number : 63 Question Id : 70819118996 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

নিম্নলিখিত ৰৈখিক সমীকৰণ প্ৰণালীটোৰ

$$2x + 3y + 2z = 9$$
$$3x + 2y + 2z = 9$$
$$x - y + 4z = 8$$

Options :

70819162139. কোনো সমাধান নাথাকে।

70819162140. এটা অদ্বিতীয় সমাধান আছে।

70819162141. অসীম সংখ্যক সমাধান আছে।

70819162142. (α, β, γ) এটা সমাধান যি $\alpha + \beta^2 + \gamma^3 = 12$ ক সিদ্ধ কৰে।

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Question Number : 64 Question Id : 70819118997 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If $I_n = \int_{\frac{\pi}{4}}^{\frac{\pi}{2}} \cot^n x \, dx$, then :

Options :

70819162143. $\frac{1}{I_2 + I_4}, \frac{1}{I_3 + I_5}, \frac{1}{I_4 + I_6}$ are in A.P.

70819162144. $I_2+I_4, I_3+I_5, I_4+I_6$ are in A.P.

70819162145. $\frac{1}{I_2 + I_4}, \frac{1}{I_3 + I_5}, \frac{1}{I_4 + I_6}$ are in G.P.

70819162146. $I_2+I_4, (I_3+I_5)^2, I_4+I_6$ are in G.P.

Question Number : 64 Question Id : 70819118997 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যদি $I_n = \int_{\frac{\pi}{4}}^{\frac{\pi}{2}} \cot^n x \, dx$, তেন্তে :

য'ত A.P. মানে সমান্তৰ প্ৰগতি।

G.P. মানে গুণোত্তৰ প্ৰগতি।

Options :

70819162143. $\frac{1}{I_2 + I_4}, \frac{1}{I_3 + I_5}, \frac{1}{I_4 + I_6}$, A.P. ত থাকে।

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70819162144. $I_2 + I_4, I_3 + I_5, I_4 + I_6$, A.P. তে থাকে।

70819162145. $\frac{1}{I_2 + I_4}, \frac{1}{I_3 + I_5}, \frac{1}{I_4 + I_6}$, G.P. তে থাকে।

70819162146. $I_2 + I_4, (I_3 + I_5)^2, I_4 + I_6$, G.P. তে থাকে।

Question Number : 65 Question Id : 70819118998 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A function $f(x)$ is given by $f(x) = \frac{5^x}{5^x + 5}$, then the sum of the series

$$f\left(\frac{1}{20}\right) + f\left(\frac{2}{20}\right) + f\left(\frac{3}{20}\right) + \ldots\ldots + f\left(\frac{39}{20}\right)$$

is equal to :

Options :

70819162147. $\frac{29}{2}$

70819162148. $\frac{49}{2}$

70819162149. $\frac{39}{2}$

70819162150. $\frac{19}{2}$

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Question Number : 65 Question Id : 70819118998 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যদি $f(x) = \dfrac{5^x}{5^x + 5}$ $f(x)$ এটা ফলন হয়,

তেন্তে $f\left(\dfrac{1}{20}\right) + f\left(\dfrac{2}{20}\right) + f\left(\dfrac{3}{20}\right) + \ldots\ldots + f\left(\dfrac{39}{20}\right)$ শ্ৰেণীটোৰ সমষ্টি হ'ব :

Options :

70819162147. $\dfrac{29}{2}$

70819162148. $\dfrac{49}{2}$

70819162149. $\dfrac{39}{2}$

70819162150. $\dfrac{19}{2}$

Question Number : 66 Question Id : 70819118999 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let α and β be the roots of $x^2 - 6x - 2 = 0$. If $a_n = \alpha^n - \beta^n$ for $n \geq 1$, then the value of $\dfrac{a_{10} - 2a_8}{3a_9}$ is :

Options :

70819162151. 4

70819162152. 3

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70819162153. 2

70819162154. 1

Question Number : 66 Question Id : 70819118999 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ধৰা হ'ল $x^2 - 6x - 2 = 0$ সমীকৰণটোৰ মূল দুটা α আৰু β। যদি $a_n = \alpha^n - \beta^n$ $n \geqslant 1$ ৰ কাৰণে, তেন্তে

$\frac{a_{10} - 2a_8}{3a_9}$ ৰ মান হ'ব :

Options :

70819162151. 4

70819162152. 3

70819162153. 2

70819162154. 1

Question Number : 67 Question Id : 70819119000 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The minimum value of $f(x) = a^{a^x} + a^{1 - a^x}$, where a, $x \in$ R and a > 0, is equal to :

Options :

70819162155. $a + 1$

70819162156. $a + \frac{1}{a}$

70819162157. $2\sqrt{a}$

70819162158. $2a$

Question Number : 67 Question Id : 70819119000 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$f(x) = a^{a^x} + a^{1-a^x}$, য'ত $a, x \in \mathbb{R}$, আৰু $a > 0$, ফলনটোৰ সৰ্বনিম্ন মান হ'ব :

Options :

70819162155. $a + 1$

70819162156. $a + \frac{1}{a}$

70819162157. $2\sqrt{a}$

70819162158. $2a$

Question Number : 68 Question Id : 70819119001 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The integral $\int \frac{e^{3\log_e 2x} + 5e^{2\log_e 2x}}{e^{4\log_e x} + 5e^{3\log_e x} - 7e^{2\log_e x}} dx$, $x > 0$, is equal to :

(where c is a constant of integration)

Options :

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70819162159. $\log_e|x^2+5x-7|+c$

70819162160. $4\log_e|x^2+5x-7|+c$

70819162161. $\frac{1}{4}\log_e|x^2+5x-7|+c$

70819162162. $\log_e\sqrt{x^2+5x-7}+c$

Question Number : 68 Question Id : 70819119001 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$$\int \frac{e^{3\log_e 2x} + 5e^{2\log_e 2x}}{e^{4\log_e x} + 5e^{3\log_e x} - 7e^{2\log_e x}}\,dx\,,\ x > 0$$

অনুকলনটোৰ মান হ'ব :

(য'ত c এটা অনুকলন ধ্ৰুৱক)

Options :

70819162159. $\log_e|x^2+5x-7|+c$

70819162160. $4\log_e|x^2+5x-7|+c$

70819162161. $\frac{1}{4}\log_e|x^2+5x-7|+c$

70819162162. $\log_e\sqrt{x^2+5x-7}+c$

Question Number : 69 Question Id : 70819119002 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If $\alpha, \beta \in \mathbb{R}$ are such that $1-2i$ (here $i^2=-1$) is a root of $z^2+\alpha z+\beta=0$, then $(\alpha-\beta)$ is equal to :

Options :

70819162163. 3

70819162164. -3

70819162165. 7

70819162166. -7

Question Number : 69 Question Id : 70819119002 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যদি $\alpha, \beta \in \mathbb{R}$ যাতে $z^2+\alpha z+\beta=0$ সমীকৰণটোৰ $1-2i$ (ইয়াত $i^2=-1$) এটা মূল, তেন্তে $(\alpha-\beta)$ সমান হ'ব :

Options :

70819162163. 3

70819162164. -3

70819162165. 7

70819162166. -7

Question Number : 70 Question Id : 70819119003 Question Type : MCQ Option Shuffling : Yes

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Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If the curve $x^2+2y^2=2$ intersects the line $x+y=1$ at two points P and Q, then the angle subtended by the line segment PQ at the origin is :

Options :

70819162167. $\frac{\pi}{2}+\tan^{-1}\left(\frac{1}{4}\right)$

70819162168. $\frac{\pi}{2}-\tan^{-1}\left(\frac{1}{4}\right)$

70819162169. $\frac{\pi}{2}+\tan^{-1}\left(\frac{1}{3}\right)$

70819162170. $\frac{\pi}{2}-\tan^{-1}\left(\frac{1}{3}\right)$

Question Number : 70 Question Id : 70819119003 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যদি $x^2+2y^2=2$ বক্ৰটোৱে $x+y=1$ ৰেখাডালক দুটা বিন্দু P আৰু Q ত ছেদ কৰে, তেন্তে PQ, ৰেখাই মূলবিন্দুৰ সৈতে উৎপন্ন কৰা কোণটো হ'ব :

Options :

70819162167. $\frac{\pi}{2}+\tan^{-1}\left(\frac{1}{4}\right)$

70819162168. $\frac{\pi}{2}-\tan^{-1}\left(\frac{1}{4}\right)$

70819162169.

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$\frac{\pi}{2}+\tan^{-1}\left(\frac{1}{3}\right)$

70819162170. $\frac{\pi}{2}-\tan^{-1}\left(\frac{1}{3}\right)$

Question Number : 71 Question Id : 70819119004 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The shortest distance between the line $x-y=1$ and the curve $x^2=2y$ is :

Options :

70819162171. $\frac{1}{\sqrt{2}}$

70819162172. $\frac{1}{2\sqrt{2}}$

70819162173. 0

70819162174. $\frac{1}{2}$

Question Number : 71 Question Id : 70819119004 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$x^2=2y$ বক্ৰটো আৰু $x-y=1$ ৰেখাডালৰ মাজৰ হ্ৰস্বতম দূৰত্ব হ'ব :

Options :

70819162171.

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

70819162172. $\frac{1}{2\sqrt{2}}$

70819162173. 0

70819162174. $\frac{1}{2}$

Question Number : 72 Question Id : 70819119005 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A hyperbola passes through the foci of the ellipse $\frac{x^2}{25} + \frac{y^2}{16} = 1$ and its transverse and conjugate axes coincide with major and minor axes of the ellipse, respectively. If the product of their eccentricities is one, then the equation of the hyperbola is :

Options :

70819162175. $\frac{x^2}{9} - \frac{y^2}{16} = 1$

70819162176. $\frac{x^2}{9} - \frac{y^2}{4} = 1$

70819162177. $\frac{x^2}{9} - \frac{y^2}{25} = 1$

70819162178. $x^2 - y^2 = 9$

Question Number : 72 Question Id : 70819119005 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা পৰাবৃত্তই $\frac{x^2}{25}+\frac{y^2}{16}=1$ উপবৃত্তৰ নাভিদ্বয়ৰ মাজেৰে পাৰ হয় আৰু পৰাবৃত্তটোৰ অনুবদ্ধ আৰু সংযুগ্মী অক্ষ দুডাল ক্ৰমে উপবৃত্তটোৰ মুখ্য অক্ষ আৰু গৌণ অক্ষৰ সৈতে মিলি যায়। যদি সিহঁতৰ উৎকেন্দ্ৰ কেইটাৰ পূৰণফল এক (1) হয়, তেন্তে পৰাবৃত্তটোৰ সমীকৰণ হ'ব :

Options :

70819162175. $\frac{x^2}{9}-\frac{y^2}{16}=1$

70819162176. $\frac{x^2}{9}-\frac{y^2}{4}=1$

70819162177. $\frac{x^2}{9}-\frac{y^2}{25}=1$

70819162178. $x^2-y^2=9$

Question Number : 73 Question Id : 70819119006 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A plane passes through the points A(1, 2, 3), B(2, 3, 1) and C(2, 4, 2). If O is the origin and P is (2, −1, 1), then the projection of $\overrightarrow{OP}$ on this plane is of length :

Options :

70819162179. $\sqrt{\frac{2}{3}}$

70819162180.

$\sqrt{\frac{2}{11}}$

70819162181. $\sqrt{\frac{2}{7}}$

70819162182. $\sqrt{\frac{2}{5}}$

Question Number : 73 Question Id : 70819119006 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এখন সমতল A(1, 2, 3), B(2, 3, 1) আৰু C(2, 4, 2) বিন্দুৰে পাৰ হৈ যায়। যদি O মূলবিন্দু আৰু P (2, −1, 1) হয় তেন্তে সমতলখনৰ ওপৰত $\overrightarrow{OP}$ ৰ অভিক্ষেপৰ দৈৰ্ঘ্য হ'ব :

Options :

70819162179. $\sqrt{\frac{2}{3}}$

70819162180. $\sqrt{\frac{2}{11}}$

70819162181. $\sqrt{\frac{2}{7}}$

70819162182. $\sqrt{\frac{2}{5}}$

Question Number : 74 Question Id : 70819119007 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

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Correct Marks : 4 Wrong Marks : 1

$$\lim_{n\to\infty}\left[\frac{1}{n}+\frac{n}{(n+1)^2}+\frac{n}{(n+2)^2}+\,\ldots\ldots\ldots+\frac{n}{(2n-1)^2}\right]$$ is equal to :

Options :

70819162183. 1

70819162184. $\frac{1}{2}$

70819162185. $\frac{1}{3}$

70819162186. $\frac{1}{4}$

Question Number : 74 Question Id : 70819119007 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$$\lim_{n\to\infty}\left[\frac{1}{n}+\frac{n}{(n+1)^2}+\frac{n}{(n+2)^2}+\,\ldots\ldots\ldots+\frac{n}{(2n-1)^2}\right]$$ ৰ মান হ'ব :

Options :

70819162183. 1

70819162184. $\frac{1}{2}$

70819162185. $\frac{1}{3}$

70819162186.

$\frac{1}{4}$

Question Number : 75 Question Id : 70819119008 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In a group of 400 people, 160 are smokers and non-vegetarian; 100 are smokers and vegetarian and the remaining 140 are non-smokers and vegetarian. Their chances of getting a particular chest disorder are 35%, 20% and 10% respectively. A person is chosen from the group at random and is found to be suffering from the chest disorder. The probability that the selected person is a smoker and non-vegetarian is :

Options :

70819162187. $\frac{7}{45}$

70819162188. $\frac{8}{45}$

70819162189. $\frac{28}{45}$

70819162190. $\frac{14}{45}$

Question Number : 75 Question Id : 70819119008 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

400 জনীয়া মানুহৰ গোট এটাত 160 জনে ধুমপান কৰে আৰু আমিষভোজী; 100 জনে ধুমপান কৰে আৰু নিৰামিষভোজী আৰু অৱশিষ্ট 140 জনে ধুমপান নকৰে আৰু নিৰামিষভোজী। সিহঁতৰ বুকুৰ বেমাৰ হোৱাৰ সম্ভাৱিতা ক্ৰমে 35%, 20% আৰু 10%। গোটটোৰ পৰা এজন ব্যক্তিক বাছনি কৰা হ'ল আৰু দেখাগ'ল যে তেওঁ বুকুৰ বেমাৰত কষ্ট ভোগী আছে। বাছনি কৰা ব্যক্তিজন ধুমপান কৰা আৰু আমিষভোজী হোৱাৰ সম্ভাৱিতা হ'ব :

Options :

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70819162187. $\frac{7}{45}$

70819162188. $\frac{8}{45}$

70819162189. $\frac{28}{45}$

70819162190. $\frac{14}{45}$

Question Number : 76 Question Id : 70819119009 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let A be a set of all 4-digit natural numbers whose exactly one digit is 7. Then the probability that a randomly chosen element of A leaves remainder 2 when divided by 5 is :

Options :

70819162191. $\frac{1}{5}$

70819162192. $\frac{2}{9}$

70819162193. $\frac{97}{297}$

70819162194. $\frac{122}{297}$

Question Number : 76 Question Id : 70819119009 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ধৰা হ'ল সকলো 4 অংকীয়া স্বাভাৱিক সংখ্যাৰ সংহতি A যাৰ এটা মাত্ৰ অংক 7। যদি 5 বে হৰণ কৰাত ভাগশেষ 2 থকা কোনো এটা মৌল A ৰ পৰা যাদৃচ্ছিকভাৱে বাছনি কৰা হয়, তেন্তে তেনে মৌলৰ সম্ভাৱিতা হ'ব :

Options :

70819162191. $\frac{1}{5}$

70819162192. $\frac{2}{9}$

70819162193. $\frac{97}{297}$

70819162194. $\frac{122}{297}$

Question Number : 77 Question Id : 70819119010 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If $0 < x, y < \pi$ and $\cos x + \cos y - \cos(x + y) = \frac{3}{2}$, then $\sin x + \cos y$ is equal to :

Options :

70819162195. $\frac{1}{2}$

70819162196. $\frac{\sqrt{3}}{2}$

70819162197. $\frac{1 - \sqrt{3}}{2}$

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70819162198. $\frac{1+\sqrt{3}}{2}$

Question Number : 77 Question Id : 70819119010 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যদি $0 < x, y < \pi$ আৰু $\cos x + \cos y - \cos(x+y) = \frac{3}{2}$, তেন্তে $\sin x + \cos y$ সমান হ'ব :

Options :

70819162195. $\frac{1}{2}$

70819162196. $\frac{\sqrt{3}}{2}$

70819162197. $\frac{1-\sqrt{3}}{2}$

70819162198. $\frac{1+\sqrt{3}}{2}$

Question Number : 78 Question Id : 70819119011 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let x denote the total number of one-one functions from a set A with 3 elements to a set B with 5 elements and y denote the total number of one-one functions from the set A to the set $A \times B$. Then :

Options :

70819162199. $2y = 91x$

70819162200. $2y = 273x$

70819162201. $y = 91x$

70819162202. $y = 273x$

Question Number : 78 Question Id : 70819119011 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ধৰা হ'ল x য়ে A ৰ পৰা A লৈ থকা মুঠ একৈকী ফলনৰ সংখ্যা বুজায়, য'ত A ত তিনিটা মৌল আছে, আৰু y এ A ৰ পৰা $A \times B$ লৈ থকা মুঠ একৈকী ফলনৰ সংখ্যা বুজায়, য'ত B ত 5 টা মৌল আছে, তেন্তে :

Options :

70819162199. $2y = 91x$

70819162200. $2y = 273x$

70819162201. $y = 91x$

70819162202. $y = 273x$

Question Number : 79 Question Id : 70819119012 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$\operatorname{cosec}\left[2\cot^{-1}(5) + \cos^{-1}\left(\frac{4}{5}\right)\right]$ is equal to :

Options :

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70819162203. $\frac{56}{33}$

70819162204. $\frac{65}{33}$

70819162205. $\frac{65}{56}$

70819162206. $\frac{75}{56}$

Question Number : 79 Question Id : 70819119012 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$\operatorname{cosec}\left[2\cot^{-1}(5)+\cos^{-1}\left(\frac{4}{5}\right)\right]$ সমান হ'ব :

Options :

70819162203. $\frac{56}{33}$

70819162204. $\frac{65}{33}$

70819162205. $\frac{65}{56}$

70819162206. $\frac{75}{56}$

Question Number : 80 Question Id : 70819119013 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The contrapositive of the statement "If you will work, you will earn money" is :

Options :

70819162207. To earn money, you need to work

70819162208. You will earn money, if you will not work

70819162209. If you will not earn money, you will not work

70819162210. If you will earn money, you will work

Question Number : 80 Question Id : 70819119013 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

''যদি তুমি কাম কৰা, তেন্তে তুমি টকা উপাৰ্জন কৰিবা'' উক্তিটোৰ বিপৰীত ধনাত্মক উক্তি হ'ব :

Options :

70819162207. টকা উপাৰ্জন কৰিবলৈ হলে তুমি কাম কৰিব লাগিব।

70819162208. টকা উপাৰ্জন কৰিবা, যদি তুমি কাম নকৰা।

70819162209. যদি তুমি টকা উপাৰ্জন নকৰা তেন্তে তুমি কাম নকৰিবা।

70819162210. যদি তুমি টকা উপাৰ্জন কৰিবা তেন্তে তুমি কাম কৰিবা।

Mathematics Section B

Section Id : 708191807

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 : 7081911087

Question Shuffling Allowed : Yes

Question Number : 81 Question Id : 70819119014 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A function f is defined on $[-3, 3]$ as

$$f(x) = \begin{cases} \min\{|x|, 2 - x^2\}, & -2 \le x \le 2 \\ [|x|], & 2 < |x| \le 3 \end{cases}$$

where $[x]$ denotes the greatest integer $\le x$. The number of points, where f is not differentiable in $(-3, 3)$ 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 : 81 Question Id : 70819119014 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$[-3, 3]$ অন্তৰাল f ফলনটো তলত দিয়া ধৰণে বৰ্ণিত আছে যাতে,

$$f(x) = \begin{cases} \min\{|x|, 2 - x^2\}, & -2 \le x \le 2 \\ [|x|] & , \quad 2 < |x| \le 3 \end{cases}$$

য'ত $[x]$ = গৰিষ্ঠ অখণ্ড সংখ্যা $\le x$ । তেন্তে $(-3, 3)$ অন্তৰালত f ফলনটো অৱকলনীয় নোহোৱাৰ 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 : 82 Question Id : 70819119015 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If the curve, $y = y(x)$ represented by the solution of the differential equation $(2xy^2 - y)dx + xdy = 0$, passes through the intersection of the lines, $2x - 3y = 1$ and $3x + 2y = 8$, then $|y(1)|$ 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 : 82 Question Id : 70819119015 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

যদি $(2xy^2 - y)dx + xdy = 0$, অৱকলনীয় সমীকৰণৰ সমাধানৰ দ্বাৰা বুজোৱা বক্ৰ $y = y(x)$ য়ে $2x - 3y = 1$ আৰু $3x + 2y = 8$ ৰেখাদুডালৰ ছেদবিন্দুৰে পাৰ হৈ যায়, তেন্তে, $|y(1)|$ 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 : 83 Question Id : 70819119016 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The total number of two digit numbers 'n', such that $3^n + 7^n$ is a multiple of 10, 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 : 83 Question Id : 70819119016 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

যদি $3^n + 7^n$, 10 ৰ এটা গুণিতক হয় তেন্তে দুই অংকীয়া সৰ্বমুঠ সংখ্যা 'n' 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

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Question Number : 84 Question Id : 70819119017 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If $\lim_{x \to 0} \frac{ax - (e^{4x} - 1)}{ax(e^{4x} - 1)}$ exists and is equal to b, then the value of $a - 2b$ 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 : 70819119017 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

যদি $\lim_{x \to 0} \frac{ax - (e^{4x} - 1)}{ax(e^{4x} - 1)}$ স্থিত আৰু ‘b’ ৰ সমান হয়, তেন্তে $a - 2b$ 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 : 85 Question Id : 70819119018 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If the curves $x = y^4$ and $xy = k$ cut at right angles, then $(4k)^6$ 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 : 85 Question Id : 70819119018 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

যদি $x = y^4$ আৰু $xy = k$ বক্ৰ দুটাই লম্বভাৱে কটাকটি কৰে, তেন্তে $(4k)^6$ 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 : 86 Question Id : 70819119019 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The value of $\int_{-2}^{2} |3x^2 - 3x - 6| \, dx$ 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

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Question Number : 86 Question Id : 70819119019 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$\int_{-2}^{2} |3x^2 - 3x - 6|\, dx$ অনুকলনটোৰ 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 : 87 Question Id : 70819119020 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If the remainder when x is divided by 4 is 3, then the remainder when $(2020+x)^{2022}$ is divided by 8 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 : 87 Question Id : 70819119020 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

যদি x ক 4 ৰে হৰণ কৰাত ভাগশেষ 3 হয়, তেন্তে $(2020+x)^{2022}$ ক 8 ৰে হৰণ কৰিলে ভাগশেষ 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 : 70819119021 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A line 'l' passing through origin is perpendicular to the lines

$$l_1 : \vec{r} = (3 + t)\hat{i} + (-1 + 2t)\hat{j} + (4 + 2t)\hat{k}$$

$$l_2 : \vec{r} = (3 + 2s)\hat{i} + (3 + 2s)\hat{j} + (2 + s)\hat{k}$$

If the co-ordinates of the point in the first octant on 'l_2' at a distance of $\sqrt{17}$ from the point of intersection of 'l' and 'l_1' are (a, b, c), then $18(a+b+c)$ 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 : 70819119021 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

মূলবিন্দুৰে যোৱা 'l' সৰলৰেখাডাল

$$l_1 : \vec{r} = (3 + t)\hat{i} + (-1 + 2t)\hat{j} + (4 + 2t)\hat{k}$$

$$l_2 : \vec{r} = (3 + 2s)\hat{i} + (3 + 2s)\hat{j} + (2 + s)\hat{k}$$

ৰেখাদুডালৰ ওপৰত লম্ব। 'l' আৰু 'l_1' ৰেখাদুডালৰ ছেদবিন্দুৰ পৰা $\sqrt{17}$ দূৰত্বত থকা 'l_2' ৰেখাৰ ১ম অষ্টাংশত থকা বিন্দুটোৰ স্থানাংক (a, b, c) হ'লে, $18(a+b+c)$ 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 : 70819119022 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A line is a common tangent to the circle $(x-3)^2+y^2=9$ and the parabola $y^2=4x$. If the two points of contact (a, b) and (c, d) are distinct and lie in the first quadrant, then $2(a+c)$ 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 : 89 Question Id : 70819119022 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$(x-3)^2+y^2=9$ বৃত্ত আৰু $y^2=4x$ অধিবৃত্তৰ সাধাৰণ স্পৰ্শকডাল এডাল ৰেখা। যদি দুটা ভিন্ন স্পৰ্শ বিন্দু (a, b) আৰু (c, d) ১ম চোকত থাকে তেন্তে, $2(a+c)$ 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

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Question Number : 90 Question Id : 70819119023 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Let $\vec{a} = \hat{i} + \alpha\hat{j} + 3\hat{k}$ and $\vec{b} = 3\hat{i} - \alpha\hat{j} + \hat{k}$. If the area of the parallelogram whose adjacent sides are represented by the vectors $\vec{a}$ and $\vec{b}$ is $8\sqrt{3}$ square units, then $\vec{a} \cdot \vec{b}$ 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 : 70819119023 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ধৰা হ'ল $\vec{a} = \hat{i} + \alpha\hat{j} + 3\hat{k}$ আৰু $\vec{b} = 3\hat{i} - \alpha\hat{j} + \hat{k}$ দুটা ভেক্টৰ। যদি $\vec{a}$ আৰু $\vec{b}$ ভেক্টৰ দুটাই সন্নিহিত বাহু বুজোৱা এটা সামন্তৰিকৰ কালি $8\sqrt{3}$ বৰ্গ একক হয়, তেন্তে $\vec{a} \cdot \vec{b}$ 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