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B TECH EA

Group Number :	1
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Physics Section A

Section Id :	708191880
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 :	7081911160
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 70819120104 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In a typical combustion engine the workdone by a gas molecule is given by $W = \alpha^2 \beta e^{\frac{-\beta x^2}{kT}}$, where x is the displacement, k is the Boltzmann constant and T is the temperature. If α and β are constants, dimensions of α will be :

Options :

70819165461. $[M L T^{-2}]$

70819165462. $[M^0 L T^0]$

70819165463. $[M L T^{-1}]$

70819165464. $[M^2 L T^{-2}]$

Question Number : 1 Question Id : 70819120104 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা সাধাৰণ দহন ইঞ্জিনত গেছৰ এটা অণুৱে কৰা কাৰ্য্যৰ পৰিমাণ, $W = \alpha^2 \beta e^{\frac{-\beta x^2}{kT}}$, য'ত x সৰণ, k বল্টজমেন
 ধ্ৰুৱক (Boltzmann constant) আৰু T উষ্ণতা। যদি α আৰু β দুটা ধ্ৰুৱক হয়, α ৰ মাত্ৰা হ'ব :

Options :

70819165461. $[M L T^{-2}]$

70819165462. $[M^0 L T^0]$

70819165463. $[M L T^{-1}]$

70819165464. $[M^2 L T^{-2}]$

**Question Number : 2 Question Id : 70819120105 Question Type : MCQ Option Shuffling : Yes Is
 Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

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

Assertion A : Body 'P' having mass M moving with speed ' u ' has head-on collision elastically with another body 'Q' having mass ' m ' initially at rest. If $m \ll M$, body 'Q' will have a maximum speed equal to ' $2u$ ' after collision.

Reason R : During elastic collision, the momentum and kinetic energy are both conserved.

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

Options :

70819165465. Both A and R are correct and R is the correct explanation of A.

70819165466. Both A and R are correct but R is NOT the correct explanation of A.

70819165467. A is correct but R is not correct.

70819165468. A is not correct but R is correct.

Question Number : 2 Question Id : 70819120105 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত দুটা উক্তি দিয়া হৈছে। এটাক বক্তব্য A আৰু আনটোক কাৰণ R ৰূপে নামাকৰণ কৰা হৈছে।

বক্তব্য A : M ভৰৰ 'u' দ্ৰুতিৰে গতি কৰা এটা বস্তু 'P' ৰ সৈতে প্ৰাৰম্ভিকতে স্থিৰ অৱস্থাত থকা 'm' ভৰৰ অন্য এটা বস্তু 'Q' ৰ মুখা-মুখি স্থিতিস্থাপক সংঘৰ্ষ হয়। যদিহে $m \ll M$ হয়, সংঘৰ্ষৰ পাছত 'Q' বস্তুটোৰ সৰ্বোচ্চ দ্ৰুতি হ'ব '2u'।

কাৰণ R : স্থিতিস্থাপক সংঘৰ্ষত, ভৰবেগ আৰু গতিশক্তি দুয়োটাই সংৰক্ষিত হৈ থাকে।

উপৰোক্ত উক্তিৰ আলমত, সৰ্বোচ্চ যুক্তিযুক্ত উত্তৰ তলৰ বিকল্পৰ পৰা চয়ন কৰা।

Options :

70819165465. A আৰু R দুয়োটাৰে সঁচা আৰু R, A ৰ শুদ্ধ বাখ্যা।

70819165466. A আৰু R দুয়োটাৰে সঁচা কিন্তু R, A ৰ শুদ্ধ বাখ্যা নহয়।

70819165467. A সঁচা কিন্তু R মিছা।

70819165468. A মিছা কিন্তু R সঁচা।

Question Number : 3 Question Id : 70819120106 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A planet revolving in elliptical orbit has :

- A. a constant velocity of revolution.
- B. has the least velocity when it is nearest to the sun.
- C. its areal velocity is directly proportional to its velocity.
- D. areal velocity is inversely proportional to its velocity.
- E. to follow a trajectory such that the areal velocity is constant.

Choose the correct answer from the options given below :

Options :

70819165469. A only

70819165470. C only

70819165471. D only

70819165472. E only

Question Number : 3 Question Id : 70819120106 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

উপবৃত্তাকাৰ কক্ষত পৰিভ্ৰমণ কৰি থকা এটা গ্ৰহৰ :

- A. পৰিভ্ৰমণৰ বেগ ধ্ৰুৱক।
- B. সূৰ্য্যৰ নিকটতম বিন্দুত ইয়াৰ বেগ নিম্নতম।
- C. ইয়াৰ ক্ষেত্ৰিক বেগ (areal velocity) বেগৰ সমানুপাতিক।
- D. ইয়াৰ ক্ষেত্ৰিক বেগ (areal velocity) বেগৰ ব্যস্তানুপাতিক।
- E. এক গতিপথ লয় যাতে ক্ষেত্ৰিক বেগ (areal velocity) ধ্ৰুৱক হয়।

তলৰ বিকল্পৰ পৰা শুদ্ধ উত্তৰ চয়ন কৰা :

Options :

70819165469. কেৱল A

70819165470. কেৱল C

70819165471. কেৱল D

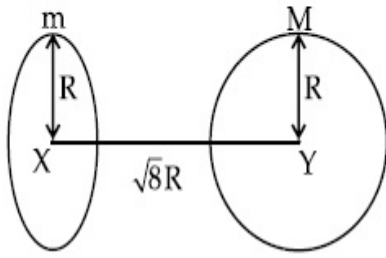
70819165472. কেৱল E

Question Number : 4 Question Id : 70819120107 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Find the gravitational force of attraction between the ring and sphere as shown in the diagram, where the plane of the ring is perpendicular to the line joining the centres. If $\sqrt{8}R$ is the distance between the centres of a ring (of mass 'm') and a sphere (mass 'M') where both have equal radius 'R'.



Options :

70819165473. $\frac{\sqrt{8}}{27} \cdot \frac{GmM}{R^2}$

70819165474. $\frac{\sqrt{8}}{9} \cdot \frac{GmM}{R}$

70819165475. $\frac{1}{3\sqrt{8}} \cdot \frac{GMm}{R^2}$

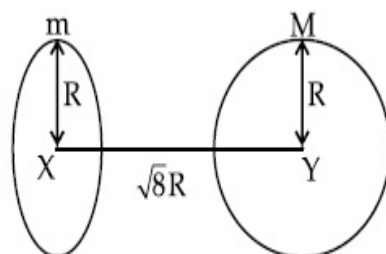
70819165476. $\frac{2\sqrt{2}}{3} \cdot \frac{GMm}{R^2}$

Question Number : 4 Question Id : 70819120107 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যদিহে সমান ব্যাসার্ধ 'R' ব এটা আঙুঠি ('m' ভৰৰ) আৰু এটা গোলক ('M' ভৰৰ) ব কেন্দ্ৰ দুটাৰ মাজৰ দূৰত্ব $\sqrt{8}R$ হয়, তেন্তে চিত্ৰত দেখুওৱা অনুসৰি আঙুঠি আৰু গোলকটোৰ মাজৰ আকৰ্ষণ বল নিৰ্দ্ধাৰণ কৰা, য'ত আঙুঠিৰ তল দুয়োৰে কেন্দ্ৰবিন্দু সংযোগ কৰা ৰেখাৰ লম্বদিশত আছে।



Options :

70819165473. $\frac{\sqrt{8}}{27} \cdot \frac{GmM}{R^2}$

70819165474. $\frac{\sqrt{8}}{9} \cdot \frac{GmM}{R}$

70819165475. $\frac{1}{3\sqrt{8}} \cdot \frac{GMm}{R^2}$

70819165476. $\frac{2\sqrt{2}}{3} \cdot \frac{GMm}{R^2}$

Question Number : 5 Question Id : 70819120108 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Four identical solid spheres each of mass 'm' and radius 'a' are placed with their centres on the four corners of a square of side 'b'. The moment of inertia of the system about one side of square where the axis of rotation is parallel to the plane of the square is :

Options :

70819165477. $\frac{4}{5}ma^2 + 2mb^2$

70819165478. $\frac{8}{5}ma^2 + 2mb^2$

70819165479. $\frac{8}{5}ma^2 + mb^2$

70819165480. $\frac{4}{5}ma^2$

Question Number : 5 Question Id : 70819120108 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

‘a’ ব্যাসার্ধ আৰু ‘m’ ভৰৰ চাৰিটা সাইলাখ একেই গোলকক, সিহঁতৰ কেন্দ্ৰ বিন্দু ‘b’ বাহুৰ এটা বৰ্গৰ চাৰিও কোণত থকাকৈ স্থাপন কৰা হৈছে। বৰ্গটোৰ এটা বাহু (side) সাপেক্ষে, য’ত ঘূৰ্ণন অক্ষ বৰ্গৰ তলৰ সমান্তৰাল, নিকায়টোৰ জড় ভ্ৰামক হ’ব :

Options :

70819165477. $\frac{4}{5}ma^2 + 2mb^2$

70819165478. $\frac{8}{5}ma^2 + 2mb^2$

70819165479. $\frac{8}{5}ma^2 + mb^2$

70819165480. $\frac{4}{5}ma^2$

Question Number : 6 Question Id : 70819120109 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A large number of water drops, each of radius r , combine to have a drop of radius R . If the surface tension is T and mechanical equivalent of heat is J , the rise in heat energy per unit volume will be :

Options :

70819165481. $\frac{2T}{J}\left(\frac{1}{r} - \frac{1}{R}\right)$

70819165482. $\frac{3T}{J}\left(\frac{1}{r} - \frac{1}{R}\right)$

70819165483.

$$\frac{3T}{rJ}$$

70819165484. $\frac{2T}{rJ}$

Question Number : 6 Question Id : 70819120109 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

r ব্যাসাৰ্ধৰ বৃহৎ সংখ্যক পানীৰ টোপালক একেলগ কৰি এটা 'R' ব্যাসাৰ্ধৰ টোপাল সৃষ্টি কৰা হৈছে। যদিহে পৃষ্ঠটান T হয়, আৰু তাপৰ যান্ত্ৰিক তুল্যাংক J হয়, প্ৰতি একক আয়তনৰ বাবে তাপ শক্তি বৃদ্ধিৰ পৰিমাণ হ'ব :

Options :

70819165481. $\frac{2T}{J} \left(\frac{1}{r} - \frac{1}{R} \right)$

70819165482. $\frac{3T}{J} \left(\frac{1}{r} - \frac{1}{R} \right)$

70819165483. $\frac{3T}{rJ}$

70819165484. $\frac{2T}{rJ}$

Question Number : 7 Question Id : 70819120110 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The normal density of a material is ρ and its bulk modulus of elasticity is K. The magnitude of increase in density of material, when a pressure P is applied uniformly on all sides, will be :

Options :

70819165485.

$$\frac{\rho P}{K}$$

$$70819165486. \frac{K}{\rho P}$$

$$70819165487. \frac{\rho K}{P}$$

$$70819165488. \frac{PK}{\rho}$$

Question Number : 7 Question Id : 70819120110 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা পদাৰ্থৰ ঘনত্ব ρ আৰু ইয়াৰ স্থিতিস্থাপকতাৰ আয়তন গুণাংক K । যেতিয়া P চাপ সুষমভাৱে চাৰিও দিশে প্ৰয়োগ কৰা হয়, পদাৰ্থৰ ঘনত্বৰ বৃদ্ধিৰ মান :

Options :

$$70819165485. \frac{\rho P}{K}$$

$$70819165486. \frac{K}{\rho P}$$

$$70819165487. \frac{\rho K}{P}$$

$$70819165488. \frac{PK}{\rho}$$

Question Number : 8 Question Id : 70819120111 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Assume that a tunnel is dug along a chord of the earth, at a perpendicular distance ($R/2$) from the earth's centre, where 'R' is the radius of the Earth. The wall of the tunnel is frictionless. If a particle is released in this tunnel, it will execute a simple harmonic motion with a time period :

Options :

70819165489. $\frac{2\pi R}{g}$

70819165490. $2\pi \sqrt{\frac{R}{g}}$

70819165491. $\frac{1}{2\pi} \sqrt{\frac{g}{R}}$

70819165492. $\frac{g}{2\pi R}$

Question Number : 8 Question Id : 70819120111 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ধৰি লোৱা, পৃথিৱীৰ কেন্দ্ৰৰ পৰা ($R/2$) উলম্বিক দূৰত্বত, য'ত 'R' পৃথিৱীৰ ব্যাসাৰ্ধ, পৃথিৱীৰ এডাল কৰ্ড (chord) ৰ দিশত এটা সুৰঙ্গ খন্দা হৈছে। সুৰঙ্গটোৰ দেৱালসমূহ ঘৰ্ষণহীন। যদিহে এই সুৰঙ্গটোত এটা কণা এৰি দিয়া হয়, ই সৰল পৰ্যাবৃত্ত গতি সম্পাদন কৰিব যাৰ পৰ্যায়কাল :

Options :

70819165489. $\frac{2\pi R}{g}$

70819165490. $2\pi \sqrt{\frac{R}{g}}$

70819165491.

$$\frac{1}{2\pi} \sqrt{\frac{g}{R}}$$

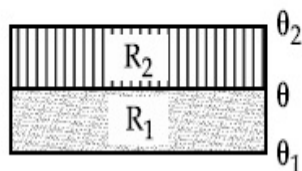
70819165492. $\frac{g}{2\pi R}$

Question Number : 9 Question Id : 70819120112 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The temperature θ at the junction of two insulating sheets, having thermal resistances R_1 and R_2 as well as top and bottom temperatures θ_1 and θ_2 (as shown in figure) is given by :



Options :

70819165493. $\frac{\theta_1 R_2 + \theta_2 R_1}{R_1 + R_2}$

70819165494. $\frac{\theta_1 R_1 + \theta_2 R_2}{R_1 + R_2}$

70819165495. $\frac{\theta_1 R_2 - \theta_2 R_1}{R_2 - R_1}$

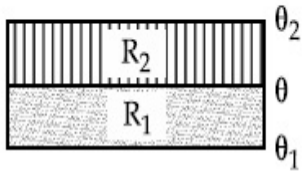
70819165496. $\frac{\theta_2 R_2 - \theta_1 R_1}{R_2 - R_1}$

Question Number : 9 Question Id : 70819120112 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

চিত্রত দেখুওৱা ধৰণে, R_1 আৰু R_2 তাপীয় ৰোধসম্পন্ন তথা শীৰ্ষত θ_1 আৰু তলত θ_2 উষ্ণতাত থকা দুখন অপৰিবাহী (insulating) পাত (sheets) ৰ সন্ধিস্থলৰ উষ্ণতা θ ৰ মান হ'ব :



Options :

70819165493. $\frac{\theta_1 R_2 + \theta_2 R_1}{R_1 + R_2}$

70819165494. $\frac{\theta_1 R_1 + \theta_2 R_2}{R_1 + R_2}$

70819165495. $\frac{\theta_1 R_2 - \theta_2 R_1}{R_2 - R_1}$

70819165496. $\frac{\theta_2 R_2 - \theta_1 R_1}{R_2 - R_1}$

Question Number : 10 Question Id : 70819120113 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A particle is moving with uniform speed along the circumference of a circle of radius R under the action of a central fictitious force F which is inversely proportional to R^3 . Its time period of revolution will be given by :

Options :

70819165497. $T \propto R^{\frac{3}{2}}$

70819165498. $T \propto R^{\frac{4}{3}}$

70819165499. $T \propto R^2$

70819165500. $T \propto R^{\frac{5}{2}}$

Question Number : 10 Question Id : 70819120113 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

R ব্যাসার্ধৰ এটা বৃত্তৰ পৰিধিত, R^3 ৰ ব্যাস্তানুপাতিক এক কেন্দ্ৰীয় কাল্পনিক বল (central fictitious force) F ৰ ক্ৰিয়াৰ ফলত এটা কণাই সুস্থম দ্ৰুতিৰে গতি কৰি আছে। ইয়াৰ পৰিভ্ৰমণৰ পৰ্যায়কাল হ'ব :

Options :

70819165497. $T \propto R^{\frac{3}{2}}$

70819165498. $T \propto R^{\frac{4}{3}}$

70819165499. $T \propto R^2$

70819165500. $T \propto R^{\frac{5}{2}}$

Question Number : 11 Question Id : 70819120114 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If two similar springs each of spring constant K_1 are joined in series, the new spring constant and time period would be changed by a factor :

Options :

70819165501. $\frac{1}{2}, \sqrt{2}$

70819165502. $\frac{1}{4}, 2\sqrt{2}$

70819165503. $\frac{1}{2}, 2\sqrt{2}$

70819165504. $\frac{1}{4}, \sqrt{2}$

Question Number : 11 Question Id : 70819120114 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

প্ৰত্যেকৰে স্প্ৰিং ধ্ৰুৱক K_1 বিশিষ্ট দুডাল সাইলাথ একেই স্প্ৰিংক শ্ৰেণীবদ্ধভাৱে সংযোগ কৰা হৈছে। নতুন স্প্ৰিং ধ্ৰুৱক আৰু পৰ্যায়কালৰ সলনিৰ মান হ'ব :

Options :

70819165501. $\frac{1}{2}, \sqrt{2}$

70819165502. $\frac{1}{4}, 2\sqrt{2}$

70819165503. $\frac{1}{2}, 2\sqrt{2}$

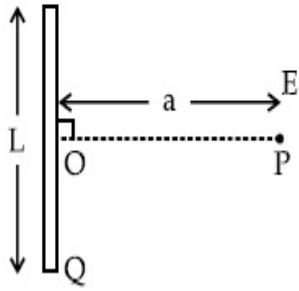
70819165504. $\frac{1}{4}, \sqrt{2}$

Question Number : 12 Question Id : 70819120115 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Find the electric field at point P (as shown in figure) on the perpendicular bisector of a uniformly charged thin wire of length L carrying a charge Q. The distance of the point P from the centre of the rod is $a = \frac{\sqrt{3}}{2} L$.



Options :

70819165505. $\frac{Q}{3\pi\epsilon_0 L^2}$

70819165506. $\frac{Q}{4\pi\epsilon_0 L^2}$

70819165507. $\frac{\sqrt{3}Q}{4\pi\epsilon_0 L^2}$

70819165508. $\frac{Q}{2\sqrt{3}\pi\epsilon_0 L^2}$

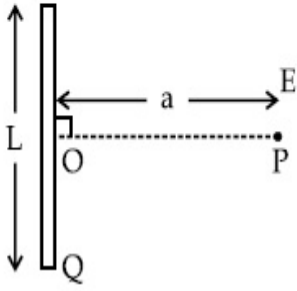
Question Number : 12 Question Id : 70819120115 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

‘L’ দৈৰ্ঘ্যৰ আৰু ‘Q’ আধানযুক্ত এডাল সুক্ষমভাৱে আহিত পাতল তাঁৰক উলম্বভাৱে দ্বিখণ্ডিত কৰা দ্বিখণ্ডক ডালৰ এটা বিন্দু ‘P’ ত (চিত্ৰত দেখুওৱা ধৰণে) বৈদ্যুতিক ক্ষেত্ৰৰ মান নিৰ্দ্ধাৰণ কৰা। তাঁৰ ডালৰ কেন্দ্ৰৰ পৰা P বিন্দুৰ দূৰত্ব,

$$a = \frac{\sqrt{3}}{2} L$$



Options :

70819165505. $\frac{Q}{3\pi\epsilon_0 L^2}$

70819165506. $\frac{Q}{4\pi\epsilon_0 L^2}$

70819165507. $\frac{\sqrt{3}Q}{4\pi\epsilon_0 L^2}$

70819165508. $\frac{Q}{2\sqrt{3}\pi\epsilon_0 L^2}$

Question Number : 13 Question Id : 70819120116 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the combination of 2 capacitors C_1 and C_2 , with $C_2 > C_1$, when connected in parallel, the equivalent capacitance is $\frac{15}{4}$ times the equivalent capacitance of the same connected in series. Calculate the ratio of capacitors, $\frac{C_2}{C_1}$.

Options :

70819165509.

$$\frac{29}{15}$$

$$70819165510. \frac{15}{11}$$

$$70819165511. \frac{15}{4}$$

$$70819165512. \frac{111}{80}$$

Question Number : 13 Question Id : 70819120116 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

দুটা ধৰক C_1 আৰু C_2 ব, $C_2 > C_1$, এটা সজ্জা লোৱা। যেতিয়া সমান্তৰালভাৱে সংযোগ কৰা হয় তেতিয়া সিহঁতৰ সমতুল্য ধাৰকত্ব, সিহঁতক শ্ৰেণীবদ্ধ সজ্জাত সংযোগ কৰি পোৱা সমতুল্য ধাৰকত্বতকৈ $\frac{15}{4}$ গুণ অধিক হয়। ধাৰক দুটাৰ অনুপাত $\frac{C_2}{C_1}$ গণনা কৰা।

Options :

$$70819165509. \frac{29}{15}$$

$$70819165510. \frac{15}{11}$$

$$70819165511. \frac{15}{4}$$

$$70819165512. \frac{111}{80}$$

Question Number : 14 Question Id : 70819120117 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

An alternating current is given by the equation $i = i_1 \sin \omega t + i_2 \cos \omega t$. The rms current will be :

Options :

70819165513. $\frac{1}{\sqrt{2}} (i_1 + i_2)$

70819165514. $\frac{1}{\sqrt{2}} (i_1 + i_2)^2$

70819165515. $\frac{1}{\sqrt{2}} (i_1^2 + i_2^2)^{\frac{1}{2}}$

70819165516. $\frac{1}{2} (i_1^2 + i_2^2)^{\frac{1}{2}}$

Question Number : 14 Question Id : 70819120117 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$i = i_1 \sin \omega t + i_2 \cos \omega t$ সমীকরণটোরে এক পরিবর্তী প্রবাহক সূচায়ছে। গড় বর্গমূল (r.m.s.) প্রবাহ হ'ব :

Options :

70819165513. $\frac{1}{\sqrt{2}} (i_1 + i_2)$

70819165514. $\frac{1}{\sqrt{2}} (i_1 + i_2)^2$

70819165515.

$$\frac{1}{\sqrt{2}} (i_1^2 + i_2^2)^{\frac{1}{2}}$$

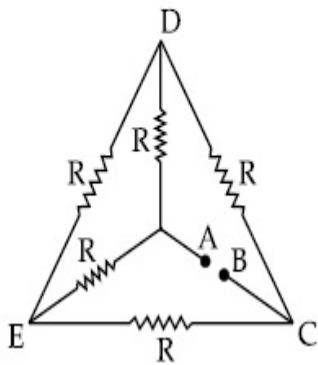
70819165516. $\frac{1}{2} (i_1^2 + i_2^2)^{\frac{1}{2}}$

Question Number : 15 Question Id : 70819120118 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Five equal resistances are connected in a network as shown in figure. The net resistance between the points A and B is :



Options :

70819165517. $2R$

70819165518. $\frac{R}{2}$

70819165519. R

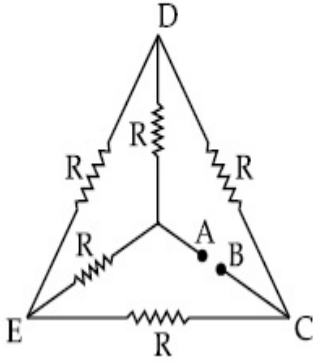
70819165520. $\frac{3R}{2}$

Question Number : 15 Question Id : 70819120118 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

চিত্রত দেখুওৱা ধৰণে, ৫টা সমান ৰোধক এটা জালিকাত সংযোগ কৰা হৈছে। বিন্দু A আৰু B ৰ মাজৰ সমুদায় ৰোধ হ'ব :



Options :

70819165517. $2R$

70819165518. $\frac{R}{2}$

70819165519. R

70819165520. $\frac{3R}{2}$

Question Number : 16 Question Id : 70819120119 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A short straight object of height 100 cm lies before the central axis of a spherical mirror whose focal length has absolute value $|f| = 40$ cm. The image of object produced by the mirror is of height 25 cm and has the same orientation of the object. One may conclude from the information :

Options :

70819165521. Image is virtual, opposite side of concave mirror.

70819165522. Image is real, same side of concave mirror.

70819165523. Image is virtual, opposite side of convex mirror.

70819165524. Image is real, same side of convex mirror.

Question Number : 16 Question Id : 70819120119 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এখন গোলাকাৰ দাপোণৰ, যাৰ নাভি দৈৰ্ঘ্যৰ পৰম মান $|f| = 40$ cm, কেন্দ্ৰীয় অক্ষৰ সম্মুখত 100 cm উচ্চতাৰ এটা থিয় চাপৰ লক্ষ্যবস্তু ৰখা হৈছে। দাপোণখনে সৃষ্টি কৰা প্ৰতিবিস্মটোৰ উচ্চতা 25 cm আৰু ই লক্ষ্যবস্তুটোৰ সৈতে একেই কৌণিক অৱস্থানত (orientation) আছে। উপৰোক্ত তথ্যৰ পৰা সামৰণি মাৰিব পৰা যায় :

Options :

70819165521. প্ৰতিবিস্মটো অসং, অৱতল দাপোণৰ বিপৰীত দিশত।

70819165522. প্ৰতিবিস্মটো সং, অৱতল দাপোণৰ একেই দিশত।

70819165523. প্ৰতিবিস্মটো অসং, উত্তল দাপোণৰ বিপৰীত দিশত।

70819165524. প্ৰতিবিস্মটো সং, উত্তল দাপোণৰ একে দিশত।

Question Number : 17 Question Id : 70819120120 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In a Young's double slit experiment two slits are separated by 2 mm and the screen is placed one meter away. When a light of wavelength 500 nm is used, the fringe separation will be :

Options :

70819165525. 1 mm

70819165526. 0.75 mm

70819165527. 0.50 mm

70819165528. 0.25 mm

Question Number : 17 Question Id : 70819120120 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ইয়াঙৰ দ্বি-ছিদ্র পরীক্ষাত, 2 mm দূৰত্বত দুটা ছিদ্র ৰখা হৈছে আৰু পৰ্দাখন তাৰ পৰা 1 m দূৰত্বত স্থাপন কৰা হৈছে।
যেতিয়া 500 nm তৰংগদৈৰ্ঘ্যৰ এক পোহৰ ব্যৱহাৰ কৰা হয়, পট্টৰ ফাঁক (fringe separation) হ'ব :

Options :

70819165525. 1 mm

70819165526. 0.75 mm

70819165527. 0.50 mm

70819165528. 0.25 mm

Question Number : 18 Question Id : 70819120121 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Assertion A : An electron microscope can achieve better resolving power than an optical microscope.

Reason R : The de Broglie's wavelength of the electrons emitted from an electron gun is much less than wavelength of visible light.

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

Options :

70819165529. Both A and R are true and R is the correct explanation of A.

70819165530. Both A and R are true but R is NOT the correct explanation of A.

70819165531. A is true but R is false.

70819165532. A is false but R is true.

Question Number : 18 Question Id : 70819120121 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

বক্তব্য A : এটা ইলেকট্ৰন মাইক্ৰ’স্ক’পে এটা আলোক (optical) মাইক্ৰ’স্ক’পতকৈ বেছি বিভেদন ক্ষমতা পাব পাৰে।

কাৰণ R : এটা ইলেকট্ৰন বন্দুক (electron gun) ৰ পৰা নিৰ্গত ইলেকট্ৰনৰ দ্য-ব্ৰয়ৰ তৰংগদৈৰ্ঘ্য, দৃশ্যমান (visible) পোহৰৰ তৰংগদৈৰ্ঘ্যতকৈ বহুত কম।

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

Options :

70819165529. A আৰু R দুয়োটাই সঁচা আৰু R, A ৰ শুদ্ধ ব্যাখ্যা।

70819165530. A আৰু R দুয়োটাই সঁচা কিন্তু R, A ৰ শুদ্ধ ব্যাখ্যা নহয়।

70819165531. A সঁচা কিন্তু R মিছা।

70819165532. A মিছা কিন্তু R সঁচা।

Question Number : 19 Question Id : 70819120122 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If λ_1 and λ_2 are the wavelengths of the third member of Lyman and first member of the Paschen series respectively, then the value of $\lambda_1 : \lambda_2$ is :

Options :

70819165533. 7 : 108

70819165534. 7 : 135

70819165535. 1 : 3

70819165536. 1 : 9

**Question Number : 19 Question Id : 70819120122 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

যদিহে লিমেন শ্ৰেণীৰ তৃতীয় সদস্য আৰু পাৰ্চেচন শ্ৰেণীৰ প্ৰথম সদস্যৰ তৰংগদৈৰ্ঘ্য ক্ৰমে λ_1 আৰু λ_2 হয়, তেন্তে $\lambda_1 : \lambda_2$ ৰ মান হ'ব :

Options :

70819165533. 7 : 108

70819165534. 7 : 135

70819165535. 1 : 3

70819165536. 1 : 9

**Question Number : 20 Question Id : 70819120123 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

LED is constructed from Ga-As-P semiconducting material. The energy gap of this LED is 1.9 eV. Calculate the wavelength of light emitted and its colour.

[$h = 6.63 \times 10^{-34}$ Js and $c = 3 \times 10^8$ ms⁻¹]

Options :

70819165537. 654 nm and red colour

70819165538. 654 nm and orange colour

70819165539. 1046 nm and blue colour

70819165540. 1046 nm and red colour

Question Number : 20 Question Id : 70819120123 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Ga-As-P অৰ্ধপৰিবাহী পদাৰ্থৰে পোহৰ দিয়া ডায়'ড (LED) বনোৱা হয়। এই LED টোৰ শক্তি পটি অন্তৰাল (energy gap) 1.9 eV। ইয়াৰ পৰা নিৰ্গত পোহৰৰ তৰংগদৈৰ্ঘ্য আৰু ৰঙ উলিওৱা।

[$h = 6.63 \times 10^{-34}$ Js & $c = 3 \times 10^8$ ms⁻¹]

Options :

70819165537. 654 nm আৰু ৰঙা ৰঙৰ।

70819165538. 654 nm আৰু কমলা ৰঙৰ।

70819165539. 1046 nm আৰু নীলা ৰঙৰ।

70819165540. 1046 nm আৰু ৰঙা ৰঙৰ।

Physics Section B

Section Id :	708191881
Section Number :	2
Section type :	Online

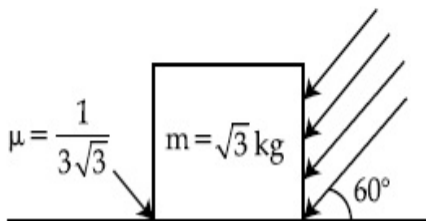
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	7081911161
Question Shuffling Allowed :	Yes

Question Number : 21 Question Id : 70819120124 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

As shown in the figure, a block of mass $\sqrt{3}$ kg is kept on a horizontal rough surface of coefficient of friction $\frac{1}{3\sqrt{3}}$. The critical force to be applied on the vertical surface as shown at an angle 60° with horizontal such that it does not move, will be $3x$. The value of x will be _____.

$$[g = 10 \text{ m/s}^2 ; \sin 60^\circ = \frac{\sqrt{3}}{2} ; \cos 60^\circ = \frac{1}{2}]$$



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

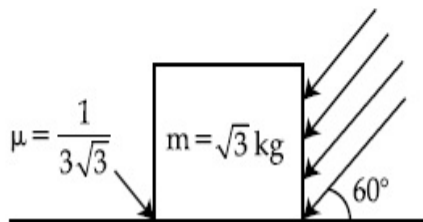
Question Number : 21 Question Id : 70819120124 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ঘর্ষণ গুণাংক $\frac{1}{3\sqrt{3}}$ ৰ এখন অমসৃণ আনুভূমিক তলত এটা $\sqrt{3}$ kg ভৰৰ ব্লক চিত্ৰত দেখুওৱা ধৰণে ৰখা হৈছে।

ব্লকটোৰ উলম্ব পৃষ্ঠত, আনুভূমিক দিশৰ সৈতে 60° কোণত, চিত্ৰত দেখুওৱা ধৰণে, যাতে ব্লকটোৱে লৰচৰ নকৰে, দিবলগীয়া ক্ৰান্তিক বল (Critical force) F ৰ পৰিমাণ $3x$ । x ৰ মান হ'ব _____।

$$[g = 10 \text{ m/s}^2; \sin 60^\circ = \frac{\sqrt{3}}{2}; \cos 60^\circ = \frac{1}{2}]$$



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 : 22 **Question Id :** 70819120125 **Question Type :** SA

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

A boy pushes a box of mass 2 kg with a force $\vec{F} = (20\hat{i} + 10\hat{j}) \text{ N}$ on a frictionless surface.

If the box was initially at rest, then _____ m is displacement along the x -axis after 10 s.

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 : 70819120125 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এখন ঘর্ষণহীন তলত, এজন ল'ৰাই 2 kg ভৰৰ বাকচ এটা $\vec{F} = (20\hat{i} + 10\hat{j})\text{N}$ বল প্ৰয়োগ কৰি ঠেলি আছে।

যদিহে বাকচটো প্ৰাৰম্ভিকভাৱে স্থিৰ অৱস্থাত আছিলে, তেন্তে 10 s ৰ পাছত x -অক্ষৰ দিশত বাকচটোৰ সৰণ হ'ব _____ m।

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 : 70819120126 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A person standing on a spring balance inside a stationary lift measures 60 kg. The weight of that person if the lift descends with uniform downward acceleration of 1.8 m/s^2 will be _____ N. [$g = 10\text{ m/s}^2$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 23 Question Id : 70819120126 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা স্থিৰ লিফ্টৰ (lift) ভিতৰৰ এখন স্প্ৰিং তুলাত থিয় হৈ থকা এজন মানুহৰ ভৰ 60 kg পোৱা গৈছে। যদিহে লিফ্টখন সুস্থম দ্বৰণ 1.8 m/s^2 ৰে তললৈ নামি আহে তেন্তে মনুহজনৰ ওজন হ'ব _____ N। [$g = 10\text{ m/s}^2$]

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 24 Question Id : 70819120127 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The mass per unit length of a uniform wire is 0.135 g/cm . A transverse wave of the form $y = -0.21 \sin(x + 30t)$ is produced in it, where x is in meter and t is in second. Then, the expected value of tension in the wire is $x \times 10^{-2} \text{ N}$. Value of x is _____. (Round-off to the nearest integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 24 Question Id : 70819120127 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এডাল সুষম তাঁৰৰ প্ৰতি একক দৈৰ্ঘ্যত ভৰৰ পৰিমাণ 0.135 g/cm । $y = -0.21 \sin(x + 30t)$ ৰ ধৰণৰ এটা অনুপ্রস্থ তৰংগ ইয়াত উৎপন্ন কৰা হৈছে, য'ত x meter এককত আৰু t second এককত আছে। তাঁৰডালত ক্ৰিয়া কৰা টানৰ প্ৰত্যাশিত মান $x \times 10^{-2} \text{ N}$ । x ৰ মান _____। (নিকটতম পূৰ্ণসংখ্যালৈ প্ৰকাশ কৰা)

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 : 70819120128 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A container is divided into two chambers by a partition. The volume of first chamber is 4.5 litre and second chamber is 5.5 litre. The first chamber contain 3.0 moles of gas at pressure 2.0 atm and second chamber contain 4.0 moles of gas at pressure 3.0 atm. After the partition is removed and the mixture attains equilibrium, then, the common equilibrium pressure existing in the mixture is $x \times 10^{-1}$ atm. 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 : 25 Question Id : 70819120128 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা পাত্ৰক এখন বিভাজকৰ সহায়ত দুটা চেম্বাৰত ভাগ কৰা হৈছে। প্ৰথম চেম্বাৰটোৰ আয়তন 4.5 litre আৰু দ্বিতীয় চেম্বাৰটোৰ আয়তন 5.5 litre। প্ৰথম চেম্বাৰটোত 3.0 ম'ল গেছ 2.0 atm চাপত আছে আৰু দ্বিতীয় চেম্বাৰটোত 4.0 ম'ল গেছ 3.0 atm চাপত আছে। বিভাজকখন আঁতৰাই দিয়াৰ পাছত আৰু মিশ্ৰণটোৱে সাম্যাৱস্থা পোৱাৰ পাছত, মিশ্ৰণটোৰ সাম্যাৱস্থাৰ চাপ $x \times 10^{-1}$ atm। 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 : 26 Question Id : 70819120129 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A radiation is emitted by 1000 W bulb and it generates an electric field and magnetic field at P, placed at a distance of 2 m. The efficiency of the bulb is 1.25%. The value of peak electric field at P is $x \times 10^{-1}$ V/m. Value of x is _____. (Rounded-off to the nearest integer)

[Take $\epsilon_0 = 8.85 \times 10^{-12} \text{ C}^2 \text{ N}^{-1} \text{ m}^{-2}$, $c = 3 \times 10^8 \text{ ms}^{-1}$]

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 : 26 Question Id : 70819120129 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা 1000 W ৰ বাস্তৱ পৰা বিকিৰণ নিৰ্গত হৈছে আৰু ই 2 m দূৰত্বত এটা বিন্দু P ত বিদ্যুৎ ক্ষেত্ৰ আৰু চৌম্বিক ক্ষেত্ৰৰ সৃষ্টি কৰিছে। বাস্তৱটোৰ দক্ষতা 1.25%। P বিন্দুত বিদ্যুৎ ক্ষেত্ৰৰ শীৰ্ষ মান হ'ব $x \times 10^{-1}$ V/m। x ৰ মান হ'ব _____। (নিকটতম পূৰ্ণসংখ্যালৈ প্ৰকাশ কৰা)

[দিয়া আছে : $\epsilon_0 = 8.85 \times 10^{-12} \text{ C}^2 \text{ N}^{-1} \text{ m}^{-2}$, $c = 3 \times 10^8 \text{ ms}^{-1}$]

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 : 27 Question Id : 70819120130 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

In an electrical circuit, a battery is connected to pass 20 C of charge through it in a certain given time. The potential difference between two plates of the battery is maintained at 15 V. The workdone by the battery is _____ J.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 27 **Question Id :** 70819120130 **Question Type :** SA

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

এটা বৈদ্যুতিক বর্তনীত, এক নির্দিষ্ট সময়ত 20 C আধান পাৰ হোৱাকৈ এটা বেটেৰী সংযোগ কৰা হৈছে। বেটেৰীৰ দুই পাতৰ মাজত 15 V বিভবভেদ ৰখা হৈছে। বেটেৰীটোৱে সম্পাদন কৰা কাৰ্য হ'ব _____ J।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

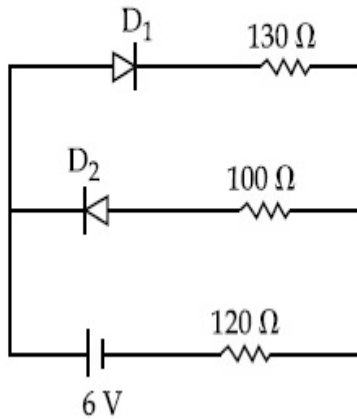
Possible Answers :

5 to 5.001

Question Number : 28 **Question Id :** 70819120131 **Question Type :** SA

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

The circuit contains two diodes each with a forward resistance of $50\ \Omega$ and with infinite reverse resistance. If the battery voltage is 6 V , the current through the $120\ \Omega$ resistance is _____ mA.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

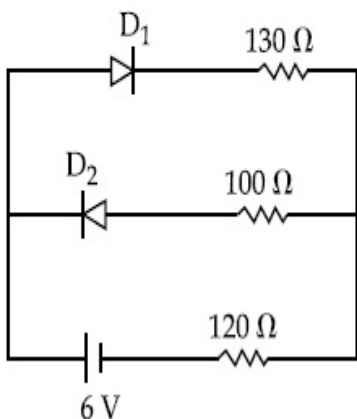
Possible Answers :

5 to 5.001

Question Number : 28 **Question Id :** 70819120131 **Question Type :** SA

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

বৰ্তনীটোত প্ৰত্যেকেই $50\ \Omega$ অগ্ৰবৰ্তী (forward) বোধসম্পন্ন আৰু অসীম পশ্চাবৰ্তী (Reverse) বোধসম্পন্ন দুটা ডায়া'ড আছে। যদিহে বেটেৰীৰ বিভৱ 6 V হয়, $120\ \Omega$ বোধৰ মাজেদি প্ৰৱাহিত বিদ্যুৎৰ মান হ'ল _____ mA।



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 : 70819120132 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The maximum and minimum amplitude of an amplitude modulated wave is 16 V and 8 V respectively. The modulation index for this amplitude modulated wave is $x \times 10^{-2}$. 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 : 29 Question Id : 70819120132 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা বিস্তাৰ কলিত তৰংগৰ সৰ্বোচ্চ আৰু সৰ্বনিম্ন বিস্তাৰ ক্ৰমে 16 V আৰু 8 V। এই বিস্তাৰ কলিত তৰংগৰ বাবে কলন সূচক হ'ল $x \times 10^{-2}$ । 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 : 30 Question Id : 70819120133 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

In a series LCR resonant circuit, the quality factor is measured as 100. If the inductance is increased by two fold and resistance is decreased by two fold, then the quality factor after this change 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 : 30 Question Id : 70819120133 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা শ্রেণীবদ্ধ LCR অনুবাদ বর্তনীৰ বাবে গুণক বাশি পোৱা গৈছে 100। যদি আৱেশক দুগুণ বঢ়াই দিয়া হয় আৰু ৰোধক দুগুণ হ্ৰাস কৰা হয়, তেন্তে এই পৰিবৰ্তনৰ পাছত বৰ্তনীটোৰ গুণক বাশি 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

Chemistry Section A

Section Id : 708191882

Section Number : 3

Section type : Online

Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	7081911162
Question Shuffling Allowed :	Yes

Question Number : 31 Question Id : 70819120134 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The orbital having two radial as well as two angular nodes is :

Options :

70819165551. $3p$

70819165552. $4d$

70819165553. $4f$

70819165554. $5d$

Question Number : 31 Question Id : 70819120134 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

দুটা ব্যাসার্ধীয় ন'ড আৰু দুটা কৌণিক ন'ড থকা অৰবিটেলটো হ'ল :

Options :

70819165551. $3p$

70819165552. 4d

70819165553. 4f

70819165554. 5d

Question Number : 32 Question Id : 70819120135 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Assertion A : Dipole-dipole interactions are the only non-covalent interactions, resulting in hydrogen bond formation.

Reason R : Fluorine is the most electronegative element and hydrogen bonds in HF are symmetrical.

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

Options :

70819165555. Both A and R are true and R is the correct explanation of A

70819165556. Both A and R are true but R is NOT the correct explanation of A

70819165557. A is true but R is false

70819165558. A is false but R is true

Question Number : 32 Question Id : 70819120135 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত দুটা উক্তি দিয়া আছে : এটা নিশ্চয়োক্তি A আৰু আনটো কাৰণ R হিচাপে সূচকপত্ৰ কৰা হৈছে।

নিশ্চয়োক্তি A : দ্বিমেক-দ্বিমেক আন্তঃক্ৰিয়াই একমাত্ৰ অসহযোগী আন্তঃক্ৰিয়া যাৰ ফলত হাইড্ৰজেন বান্ধনি উৎপন্ন হয়।

কাৰণ R : ফ্লুৰিন আৰ্টাইটকৈ বেছি বিদ্যুৎ ঋণাত্মক মৌল আৰু HF ত থকা হাইড্ৰজেন বান্ধনি সমমিত (চিমেট্ৰিকেল)।

উপৰোক্ত উক্তিৰ আধাৰত, নিম্নোক্তৰ পৰা শুদ্ধ উত্তৰ চয়ন কৰা।

Options :

70819165555. A আৰু R দুয়োটা সত্য আৰু R হ'ল A ৰ শুদ্ধ ব্যাখ্যা।

70819165556. A আৰু R দুয়োটা সত্য কিন্তু R, A ৰ শুদ্ধ ব্যাখ্যা নহয়।

70819165557. A সত্য কিন্তু R অসত্য।

70819165558. A অসত্য কিন্তু R সত্য।

Question Number : 33 Question Id : 70819120136 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
Electronic configuration of elements	$\Delta_f H$ in kJ mol^{-1}
(a) $1s^2 2s^2$	(i) 801
(b) $1s^2 2s^2 2p^4$	(ii) 899
(c) $1s^2 2s^2 2p^3$	(iii) 1314
(d) $1s^2 2s^2 2p^1$	(iv) 1402

Choose the most appropriate answer from the options given below :

Options :

70819165559. (a) $\rightarrow$ (i), (b) $\rightarrow$ (iv), (c) $\rightarrow$ (iii), (d) $\rightarrow$ (ii)

70819165560. (a) $\rightarrow$ (iv), (b) $\rightarrow$ (i), (c) $\rightarrow$ (ii), (d) $\rightarrow$ (iii)

70819165561. (a) $\rightarrow$ (ii), (b) $\rightarrow$ (iii), (c) $\rightarrow$ (iv), (d) $\rightarrow$ (i)

70819165562. (a) → (i), (b) → (iii), (c) → (iv), (d) → (ii)

Question Number : 33 Question Id : 70819120136 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তালিকা-I আৰু তালিকা-II মিলন কৰা :

তালিকা-I (মৌলৰ ইলেক্ট্ৰনীয় সজ্জা)	তালিকা-II ($\Delta_f H$, kJ mol ⁻¹ এককত)
(a) $1s^2 2s^2$	(i) 801
(b) $1s^2 2s^2 2p^4$	(ii) 899
(c) $1s^2 2s^2 2p^3$	(iii) 1314
(d) $1s^2 2s^2 2p^1$	(iv) 1402

তলত দিয়া বিকল্পৰ পৰা শুদ্ধ উত্তৰ চয়ন কৰা :

Options :

70819165559. (a) → (i), (b) → (iv), (c) → (iii), (d) → (ii)

70819165560. (a) → (iv), (b) → (i), (c) → (ii), (d) → (iii)

70819165561. (a) → (ii), (b) → (iii), (c) → (iv), (d) → (i)

70819165562. (a) → (i), (b) → (iii), (c) → (iv), (d) → (ii)

Question Number : 34 Question Id : 70819120137 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Match List-I with List-II.

List-I (Ore)	List-II (Element Present)
(a) Kernite	(i) Tin
(b) Cassiterite	(ii) Boron
(c) Calamine	(iii) Fluorine
(d) Cryolite	(iv) Zinc

Choose the most appropriate answer from the options given below :

Options :

70819165563. (a) $\rightarrow$ (ii), (b) $\rightarrow$ (i), (c) $\rightarrow$ (iv), (d) $\rightarrow$ (iii)

70819165564. (a) $\rightarrow$ (iii), (b) $\rightarrow$ (i), (c) $\rightarrow$ (ii), (d) $\rightarrow$ (iv)

70819165565. (a) $\rightarrow$ (ii), (b) $\rightarrow$ (iv), (c) $\rightarrow$ (i), (d) $\rightarrow$ (iii)

70819165566. (a) $\rightarrow$ (i), (b) $\rightarrow$ (iii), (c) $\rightarrow$ (iv), (d) $\rightarrow$ (ii)

Question Number : 34 Question Id : 70819120137 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তালিকা-I ৰ সৈতে তালিকা-II ৰ মিলন কৰা :

তালিকা-I (আকৰ্ষিক)	তালিকা-II (উপস্থিত মৌল)
(a) কেৰনাইট	(i) টিন
(b) কেছিটেৰাইট	(ii) ব'ৰ'ন
(c) কেলোমাইন	(iii) ফ্লুৰিন
(d) ক্ৰাইওলাইট	(iv) জিংক

তলত দিয়া বিকল্পৰ পৰা শুদ্ধ বিকল্প চয়ন কৰা :

Options :

70819165563. (a) $\rightarrow$ (ii), (b) $\rightarrow$ (i), (c) $\rightarrow$ (iv), (d) $\rightarrow$ (iii)

70819165564. (a) $\rightarrow$ (iii), (b) $\rightarrow$ (i), (c) $\rightarrow$ (ii), (d) $\rightarrow$ (iv)

70819165565. (a) $\rightarrow$ (ii), (b) $\rightarrow$ (iv), (c) $\rightarrow$ (i), (d) $\rightarrow$ (iii)

70819165566. (a) $\rightarrow$ (i), (b) $\rightarrow$ (iii), (c) $\rightarrow$ (iv), (d) $\rightarrow$ (ii)

Question Number : 35 Question Id : 70819120138 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Statements about heavy water are given below.

- A. Heavy water is used in exchange reactions for the study of reaction mechanisms.
- B. Heavy water is prepared by exhaustive electrolysis of water.
- C. Heavy water has higher boiling point than ordinary water.
- D. Viscosity of H_2O is greater than D_2O .

Choose the most appropriate answer from the options given below :

Options :

70819165567. A and B only

70819165568. A and C only

70819165569. A and D only

70819165570. A, B and C only

Question Number : 35 Question Id : 70819120138 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

গধুৰ পানীৰ বিষয়ে কিছুমান উক্তি তলত দিয়া হ'ল।

- A. গধুৰ পানী ব্যৱহাৰ কৰা হয় বিনিময় প্ৰক্ৰিয়াত ক্ৰিয়া বিধি অধ্যয়ন কৰাৰ বাবে।
- B. গধুৰ পানী প্ৰস্তুত কৰা হয় পানীৰ সম্পূৰ্ণ বিদ্যুৎ বিশ্লেষণৰ দ্বাৰা।
- C. গধুৰ পানীৰ উতলাংক সাধাৰণ পানীতকৈ বেছি।
- D. H_2O ৰ সান্দ্ৰতা D_2O তকৈ বেছি।

তলত দিয়া বিকল্পৰ পৰা শুদ্ধ উত্তৰ বাছি উলিওৱা :

Options :

70819165567. A আৰু B মাত্ৰ

70819165568. A আৰু C মাত্ৰ

70819165569. A আৰু D মাত্ৰ

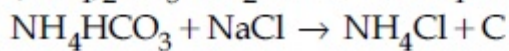
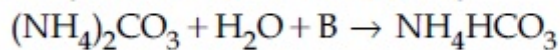
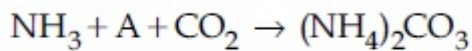
70819165570. A, B আৰু C মাত্ৰ

Question Number : 36 Question Id : 70819120139 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Find A, B and C in the following reactions :



Options :

70819165571. A – H₂O ; B – O₂ ; C – Na₂CO₃

70819165572. A – H₂O ; B – O₂ ; C – NaHCO₃

70819165573. A – H₂O ; B – CO₂ ; C – NaHCO₃

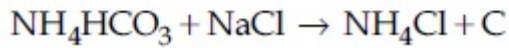
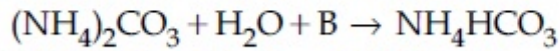
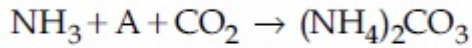
70819165574. A – O₂ ; B – CO₂ ; C – Na₂CO₃

Question Number : 36 Question Id : 70819120139 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত দিয়া বিক্ৰিয়াৰ পৰা A, B আৰু C বাছি উলিওৱা :



Options :

70819165571. A – H₂O ; B – O₂ ; C – Na₂CO₃

70819165572. A – H₂O ; B – O₂ ; C – NaHCO₃

70819165573. A – H₂O ; B – CO₂ ; C – NaHCO₃

70819165574. A – O₂ ; B – CO₂ ; C – Na₂CO₃

Question Number : 37 Question Id : 70819120140 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Compound A used as a strong oxidizing agent is amphoteric in nature. It is the part of lead storage batteries. Compound A is :

Options :

70819165575. PbO

70819165576. PbO₂

70819165577. Pb₃O₄

70819165578. PbSO₄

Question Number : 37 Question Id : 70819120140 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যৌগ A ক ব্যৱহাৰ কৰা হয় শক্তিশালী জাৰণ কৰ্তা হিচাবে, যাৰ ধৰ্ম উভয়ধৰ্মী। এইটো লেড ষ্ট'ৰেজ বেটাৰীৰ অংশ।
যৌগ A হ'ল :

Options :

70819165575. PbO

70819165576. PbO_2

70819165577. Pb_3O_4

70819165578. PbSO_4

Question Number : 38 Question Id : 70819120141 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following lanthanoids does not form MO_2 ?

[M is lanthanoid metal]

Options :

70819165579. Nd

70819165580. Dy

70819165581. Pr

70819165582. Yb

Question Number : 38 Question Id : 70819120141 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলৰ কোনটো লেছেনয়ডে MO_2 গঠন নকৰে ?

[M হ'ল লেছেনয়ড ধাতু]

Options :

70819165579. Nd

70819165580. Dy

70819165581. Pr

70819165582. Yb

Question Number : 39 Question Id : 70819120142 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The presence of ozone in troposphere :

Options :

70819165583. protects us from the UV radiation

70819165584. protects us from the X-ray radiation

70819165585. generates photochemical smog

70819165586. protects us from greenhouse effect

Question Number : 39 Question Id : 70819120142 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

টু'প'ক্ষিয়াৰত থকা অ'জনৰ উপস্থিতিয়ে :

Options :

70819165583. আমাক UV বিকিৰণৰ পৰা ৰক্ষা কৰে
70819165584. আমাক ৰঞ্জন বশ্মি বিকিৰণৰ পৰা ৰক্ষা কৰে
70819165585. আলোক ৰাসায়নিক ধুৱঁলী উৎপন্ন কৰে
70819165586. আমাক সেউজ গৃহ প্ৰভাৱৰ পৰা ৰক্ষা কৰে

Question Number : 40 Question Id : 70819120143 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : A mixture of chloroform and aniline can be separated by simple distillation.

Statement II : When separating aniline from a mixture of aniline and water by steam distillation aniline boils below its boiling point.

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

Options :

70819165587. Both Statement I and Statement II are true
70819165588. Both Statement I and Statement II are false
70819165589. Statement I is true but Statement II is false
70819165590. Statement I is false but Statement II is true

Question Number : 40 Question Id : 70819120143 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত দুটা উক্তি দিয়া হৈছে :

উক্তি I: ক্ল'ৰোফৰ্ম আৰু এনিলিনৰ মিশ্ৰ এটা সাধাৰণ পাতনৰ দ্বাৰা পৃথক কৰিব পাৰি।

উক্তি II: যেতিয়া এনিলিনক বাষ্প পাতনৰ দ্বাৰা এনিলিন আৰু পানীৰ মিশ্ৰ এটাৰপৰা পৃথক কৰা হয়, এনিলিনে ইয়াৰ উতলাংকৰ তলত উতলে।

উপৰোক্ত উক্তিৰ আধাৰত, শুদ্ধ উত্তৰটো তলৰ বিকল্পৰ পৰা চয়ন কৰা :

Options :

70819165587. উক্তি I আৰু উক্তি II দুয়োটা সত্য

70819165588. উক্তি I আৰু উক্তি II দুয়োটা অসত্য

70819165589. উক্তি I সত্য কিন্তু উক্তি II অসত্য

70819165590. উক্তি I অসত্য কিন্তু উক্তি II সত্য

Question Number : 41 Question Id : 70819120144 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following is 'a' FALSE statement ?

Options :

70819165591. Carius tube is used in the estimation of sulphur in an organic compound.

70819165592. Carius method is used for the estimation of nitrogen in an organic compound.

70819165593. Kjeldahl's method is used for the estimation of nitrogen in an organic compound.

70819165594. Phosphoric acid produced on oxidation of phosphorus present in an organic compound is precipitated as $Mg_2P_2O_7$ by adding magnesia mixture.

Question Number : 41 Question Id : 70819120144 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলৰ উক্তিৰ কোনটো অসত্য ?

Options :

70819165591. এটা জৈৱ যৌগত ছালফাৰৰ পৰিমাণ মাপ কৰিবলৈ কেৰিয়াছ (Carius) নলী ব্যৱহাৰ কৰা হয়।

70819165592. এটা জৈৱ যৌগত নাইট্ৰ'জেনৰ পৰিমাণ মাপ কৰিবলৈ কেৰিয়াছ পদ্ধতি ব্যৱহাৰ কৰা হয়।

70819165593. এটা জৈৱ যৌগত নাইট্ৰ'জেনৰ পৰিমাণ মাপ কৰিবলৈ জেলড'ল পদ্ধতি ব্যৱহাৰ কৰা হয়।

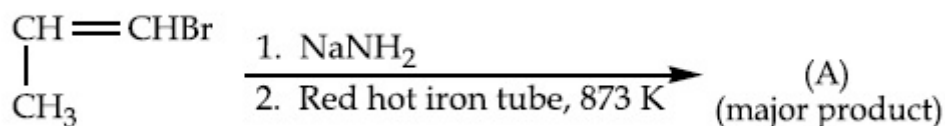
70819165594. এটা জৈৱ যৌগত থকা ফছফাৰ জাৰণত ফছফৰিক এছিড উৎপন্ন হয়, যিটো মেগনেছিয়া মিশ্ৰৰ সংযোগত, $Mg_2P_2O_7$ হিচাবে অধঃক্ষিপ্ত হয়।

Question Number : 42 Question Id : 70819120145 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

For the given reaction :

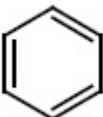


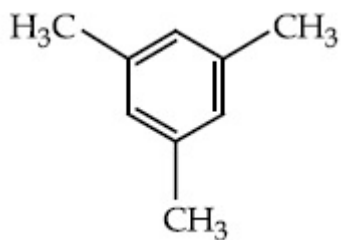
What is 'A' ?

Options :

70819165595. $\begin{array}{c} \text{CH}=\text{CH}-\text{NH}_2 \\ | \\ \text{CH}_3 \end{array}$

70819165596. $\text{CH}_3\text{CH}_2\text{CH}_2\text{NH}_2$

70819165597. 



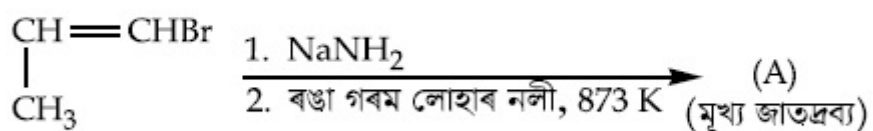
70819165598.

Question Number : 42 Question Id : 70819120145 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

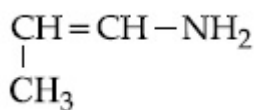
Correct Marks : 4 Wrong Marks : 1

প্ৰদত্ত বিক্ৰিয়াটোৰ বাবে :

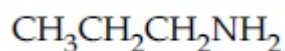


‘A’ কি ?

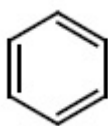
Options :



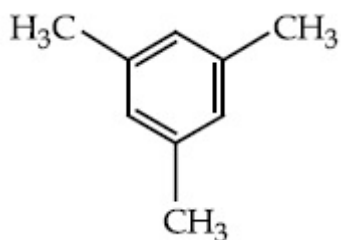
70819165595.



70819165596.



70819165597.



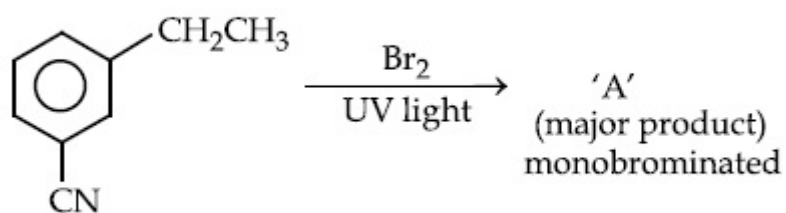
70819165598.

Question Number : 43 Question Id : 70819120146 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

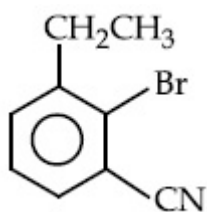
Correct Marks : 4 Wrong Marks : 1

For the given reaction :

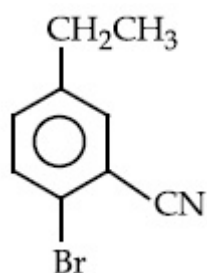


What is 'A'?

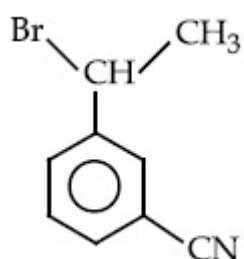
Options :



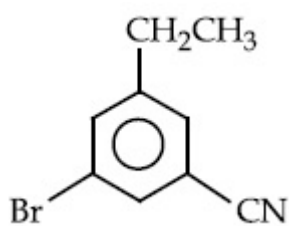
70819165599.



70819165600.



70819165601.

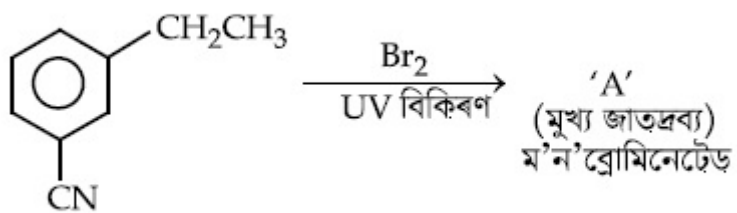


70819165602.

Is Question Mandatory : No

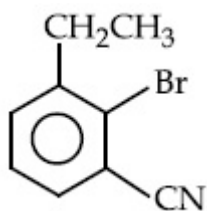
Correct Marks : 4 Wrong Marks : 1

প্রদত্ত বিক্রিয়াটোৰ বাবে :

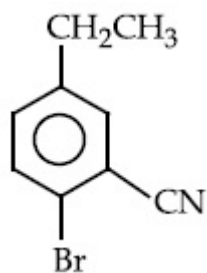


'A' কি ?

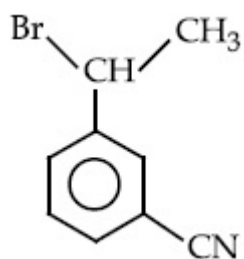
Options :



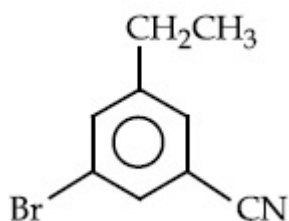
70819165599.



70819165600.



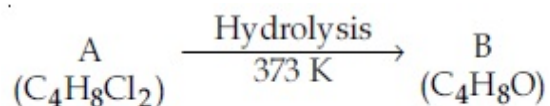
70819165601.



70819165602.

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



B reacts with Hydroxyl amine but does not give Tollen's test. Identify A and B.

Options :

70819165603. 1,1-Dichlorobutane and Butanal

70819165604. 2,2-Dichlorobutane and Butanal

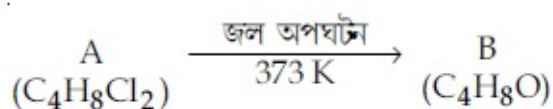
70819165605. 1,1-Dichlorobutane and 2-Butanone

70819165606. 2,2-Dichlorobutane and Butan-2-one

Question Number : 44 Question Id : 70819120147 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



B এ হাইড্র'ক্সিল এমাইনৰ লগত বিক্ৰিয়া কৰে কিন্তু টলেন্স পৰীক্ষা নিদিয়ৈ। A আৰু B চিনাক্ত কৰা।

Options :

70819165603. 1, 1-ডাইক্লোৰোবিউটেন আৰু বিউটানেল

70819165604. 2, 2-ডাইক্লোৰোবিউটেন আৰু বিউটানেল

70819165605. 1, 1-ডাইক্লোৰোবিউটেন আৰু 2-বিউটানোন

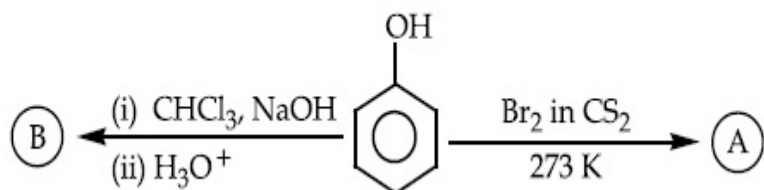
70819165606. 2, 2-ডাইক্লোৰোবিউটেন আৰু বিউটেন-2-অ'ন

Question Number : 45 Question Id : 70819120148 Question Type : MCQ Option Shuffling : Yes

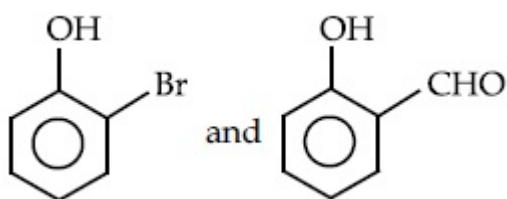
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

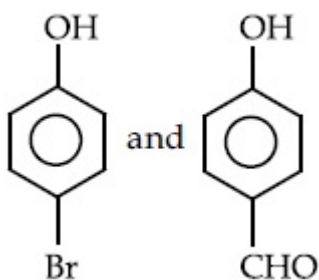
Identify the major products A and B respectively in the following reactions of phenol :



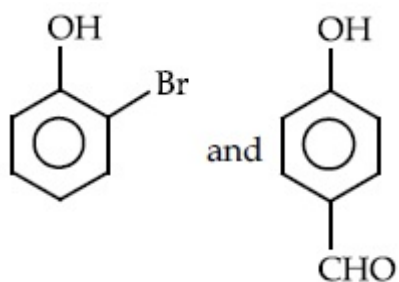
Options :



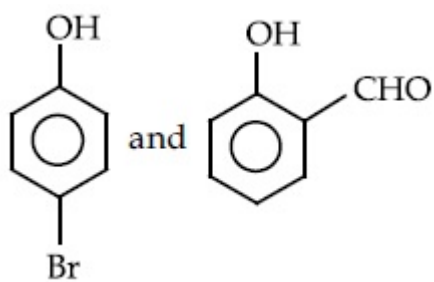
70819165607.



70819165608.



70819165609.



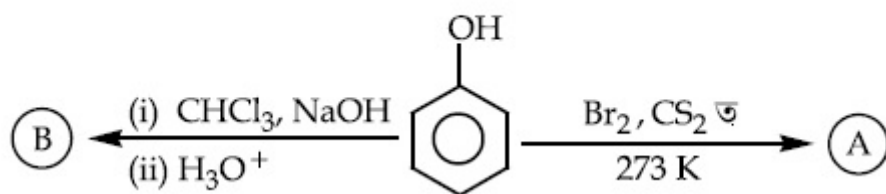
70819165610.

Question Number : 45 Question Id : 70819120148 Question Type : MCQ Option Shuffling : Yes

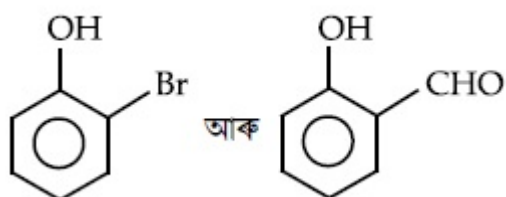
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

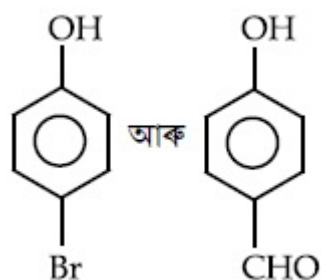
ফিনলৰ নিম্ন প্ৰদত্ত বিক্ৰিয়াত মুখ্য জাতদ্রব্য যথাক্ৰমে A আৰু B চিনাক্ত কৰা।



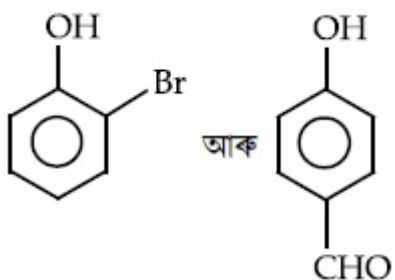
Options :



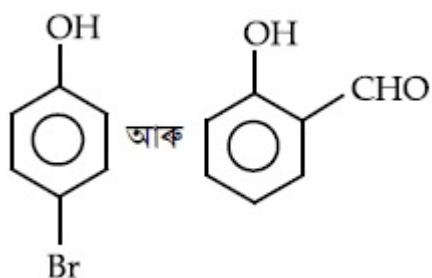
70819165607.



70819165608.



70819165609.



70819165610.

Question Number : 46 Question Id : 70819120149 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statement I : *o*-Nitrophenol is steam volatile due to intramolecular hydrogen bonding.

Statement II : *o*-Nitrophenol has high melting due to hydrogen bonding.

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

Options :

70819165611. Both Statement I and Statement II are true

70819165612. Both Statement I and Statement II are false

70819165613. Statement I is true but Statement II is false

70819165614. Statement I is false but Statement II is true

Question Number : 46 Question Id : 70819120149 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত দুটা উক্তি দিয়া হৈছে :

উক্তি I : অন্তঃআণবিক (intramolecular) হাইড্র'জেন বান্ধনিৰ বাবে *o*-নাইট্র'ফেনল বাষ্প উদ্বায়ী।

উক্তি II : হাইড্র'জেন বান্ধনিৰ বাবে *o*-নাইট্র'ফেনল উচ্চ গলনাংক বিশিষ্ট।

উপৰোক্ত উক্তিৰ আলমত, শুদ্ধ উত্তৰটো চয়ন কৰা :

Options :

70819165611. উক্তি I আৰু উক্তি II দুয়োটা সত্য

70819165612. উক্তি I আৰু উক্তি II দুয়োটা অসত্য

70819165613. উক্তি I সত্য কিন্তু উক্তি II অসত্য

70819165614. উক্তি I অসত্য কিন্তু উক্তি II সত্য

Question Number : 47 Question Id : 70819120150 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

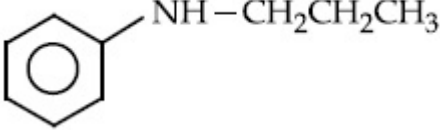
Correct Marks : 4 Wrong Marks : 1

An amine on reaction with benzenesulphonyl chloride produces a compound insoluble in alkaline solution. This amine can be prepared by ammonolysis of ethyl chloride. The correct structure of amine is :

Options :

70819165615. $\text{CH}_3\text{CH}_2\text{CH}_2\text{NHCH}_3$

70819165616. $\text{CH}_3\text{CH}_2\text{CH}_2\overset{\text{H}}{\text{N}}-\text{CH}_2\text{CH}_3$

70819165617. 

70819165618. $\text{CH}_3\text{CH}_2\text{NH}_2$

Question Number : 47 Question Id : 70819120150 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

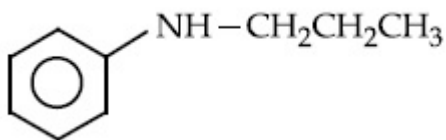
এটা এমাইনে বেনজিনছালফেনিল ক্ল'ৰাইডৰ লগত বিক্ৰিয়াত এটা ক্ষাৰকীয় দ্ৰৱত অদ্রৱণীয় যৌগ উৎপন্ন কৰে। ইথাইল ক্ল'ৰাইডৰ এমোনোলাইছিছৰ দ্বাৰা এই এমাইনটো প্ৰস্তুত কৰিব পৰা যায়। এমাইনটোৰ শুদ্ধ গঠন হ'ল :

Options :

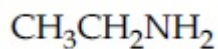
70819165615. $\text{CH}_3\text{CH}_2\text{CH}_2\text{NHCH}_3$

70819165616. $\text{CH}_3\text{CH}_2\text{CH}_2\overset{\text{H}}{\text{N}}-\text{CH}_2\text{CH}_3$

70819165617.



70819165618.



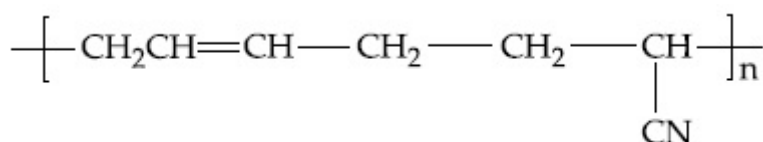
Question Number : 48 Question Id : 70819120151 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

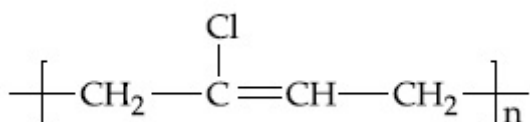
The structure of Neoprene is :

Options :

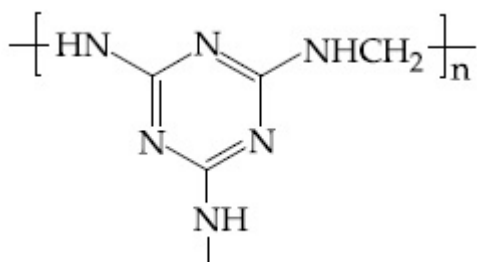
70819165619.



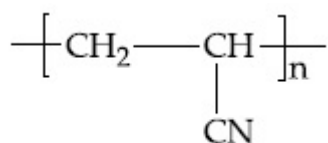
70819165620.



70819165621.



70819165622.



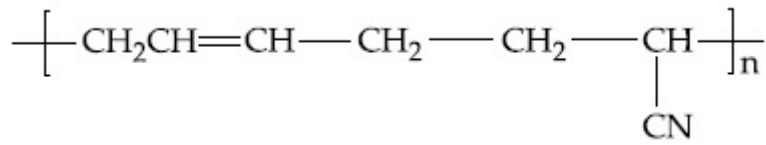
Question Number : 48 Question Id : 70819120151 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

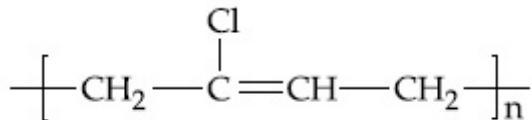
Correct Marks : 4 Wrong Marks : 1

নিউপ্ৰিনৰ গঠন হ'ল :

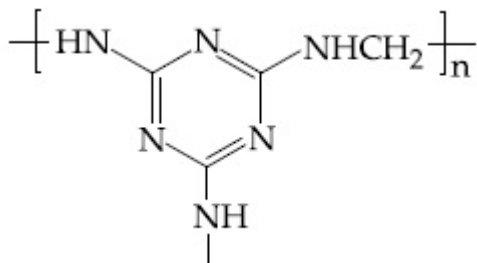
Options :



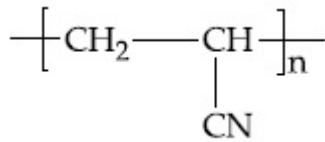
70819165619.



70819165620.



70819165621.



70819165622.

Question Number : 49 Question Id : 70819120152 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following vitamin is helpful in delaying the blood clotting ?

Options :

70819165623. Vitamin B

70819165624. Vitamin C

70819165625. Vitamin E

70819165626. Vitamin K

Question Number : 49 Question Id : 70819120152 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলৰ কোনটো ভিটামিন তেজৰ চেকুৰা ধৰাত পলম কৰাত সহায়ক ?

Options :

70819165623. ভিটামিন B

70819165624. ভিটামিন C

70819165625. ভিটামিন E

70819165626. ভিটামিন K

Question Number : 50 Question Id : 70819120153 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

On treating a compound with warm dil. H_2SO_4 , gas X is evolved which turns $\text{K}_2\text{Cr}_2\text{O}_7$ paper acidified with dil. H_2SO_4 to a green compound Y. X and Y respectively are :

Options :

70819165627. $\text{X}=\text{SO}_3$, $\text{Y}=\text{Cr}_2(\text{SO}_4)_3$

70819165628. $\text{X}=\text{SO}_2$, $\text{Y}=\text{Cr}_2\text{O}_3$

70819165629. $\text{X}=\text{SO}_3$, $\text{Y}=\text{Cr}_2\text{O}_3$

70819165630. $X = \text{SO}_2$, $Y = \text{Cr}_2(\text{SO}_4)_3$

Question Number : 50 Question Id : 70819120153 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

গৰম লঘু H_2SO_4 ৰ লগত এটা যৌগই বিক্ৰিয়া কৰিলে এটা গেছ X উৎপন্ন হয়, যিয়ে অম্লযুক্ত লঘু H_2SO_4 ৰ লগত ক্ৰিয়া কৰি $\text{K}_2\text{Cr}_2\text{O}_7$ ৰ কাগজত সেউজীয়া যৌগ Y উৎপন্ন কৰে। X আৰু Y যথাক্ৰমে হ'ল :

Options :

70819165627. $X = \text{SO}_3$, $Y = \text{Cr}_2(\text{SO}_4)_3$

70819165628. $X = \text{SO}_2$, $Y = \text{Cr}_2\text{O}_3$

70819165629. $X = \text{SO}_3$, $Y = \text{Cr}_2\text{O}_3$

70819165630. $X = \text{SO}_2$, $Y = \text{Cr}_2(\text{SO}_4)_3$

Chemistry Section B

Section Id :	708191883
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 : 7081911163
Question Shuffling Allowed : Yes

Question Number : 51 Question Id : 70819120154 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

The number of significant figures in 50000.020×10^{-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 : 51 Question Id : 70819120154 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

50000.020×10^{-3} ত থকা তাৎপর্যপূৰ্ণ অংকৰ সংখ্যা হ'ল _____।

Response Type : Numeric
Evaluation Required For SA : Yes
Show Word Count : Yes

Answers Type : Range
Text Areas : PlainText

Possible Answers :
5 to 5.001

Question Number : 52 Question Id : 70819120155 Question Type : SA
Correct Marks : 4 Wrong Marks : 0

A certain gas obeys $P(V_m - b) = RT$. The value of $\left(\frac{\partial Z}{\partial P}\right)_T$ is $\frac{xb}{RT}$. The value of x is _____.

(Integer answer) (Z : compressibility factor)

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 : 70819120155 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা নির্দিষ্ট গেছে $P(V_m - b) = RT$ মানি চলে। $\left(\frac{\partial Z}{\partial P}\right)_T$ ব মান হ'ল $\frac{xb}{RT}$ । x ব মান হ'ল _____। (উত্তর

পূর্ণ সংখ্যাত) (Z : সংকোচন গুণাংক)

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 : 70819120156 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

For a chemical reaction $A + B \rightleftharpoons C + D$

($\Delta_r H^\ominus = 80 \text{ kJ mol}^{-1}$) the entropy change $\Delta_r S^\ominus$ depends on the temperature T (in K) as $\Delta_r S^\ominus = 2T \text{ (J K}^{-1}\text{mol}^{-1}\text{)}$.

Minimum temperature at which it will become spontaneous is _____ K. (Integer)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 53 Question Id : 70819120156 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা বাসায়নিক বিক্রিয়া $A + B \rightleftharpoons C + D$ ৰ বাবে ($\Delta_r H^\ominus = 80 \text{ kJ mol}^{-1}$), এনট্র'পী পৰিবৰ্তন $\Delta_r S^\ominus$, উষ্ণতা $T(K)$ ৰ ওপৰত নিৰ্ভৰ কৰে, য'ত $\Delta_r S^\ominus = 2T \text{ (J K}^{-1}\text{mol}^{-1})$
সৰ্বনিম্ন উষ্ণতা, য'ত বিক্ৰিয়াটো স্বতঃস্ফূৰ্ত হ'ব, হ'ল _____ K। (পূৰ্ণ 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 : 54 Question Id : 70819120157 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

224 mL of $\text{SO}_2(g)$ at 298 K and 1 atm is passed through 100 mL of 0.1 M NaOH solution. The non-volatile solute produced is dissolved in 36 g of water. The lowering of vapour pressure of solution (assuming the solution is dilute) ($P_{(\text{H}_2\text{O})}^\ominus = 24 \text{ mm of Hg}$) is $x \times 10^{-2} \text{ mm of Hg}$, the value of x is _____. (Integer answer)

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 : 70819120157 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

298 K আৰু 1 atm ত $\text{SO}_2(\text{g})$ ৰ 224 mL 100 mL 0.1 M NaOH ৰ মাজেদি পাৰ হ'ব দিয়া হ'ল। উৎপন্ন হোৱা অনুদ্বায়ী পদাৰ্থটো 36 g পানীত দ্ৰৱীভূত কৰা হ'ল। দ্ৰৱটোৰ বাষ্পচাপৰ হ্ৰাস (দ্ৰৱটো লঘু বুলি ধৰি) $(P_{\text{H}_2\text{O}}^\circ = 24 \text{ mm Hg})$ হ'ল $x \times 10^{-2} \text{ mmHg}$, x ৰ মান হ'ল ____। (উত্তৰ পূৰ্ণ সংখ্যাত)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 55 Question Id : 70819120158 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

A homogeneous ideal gaseous reaction $\text{AB}_{2(\text{g})} \rightleftharpoons \text{A}_{(\text{g})} + 2\text{B}_{(\text{g})}$ is carried out in a 25 litre flask at 27°C . The initial amount of AB_2 was 1 mole and the equilibrium pressure was 1.9 atm. The value of K_p is $x \times 10^{-2}$. The value of x is _____. (Integer answer)
[$R = 0.08206 \text{ dm}^3\text{atm K}^{-1} \text{ mol}^{-1}$]

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 : 70819120158 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা সমসত্ত্ব আদৰ্শ গেছীয় বিক্রিয়া $AB_{2(g)} \rightleftharpoons A_{(g)} + 2B_{(g)}$ এটা 25 লিটাৰ ফ্লাস্ক ত 27°C ত সম্পন্ন কৰা হয়। AB_2 ৰ প্ৰাৰম্ভিক পৰিমাণ আছিল 1 mol আৰু সাম্য চাপ আছিল 1.9 atm। K_p ৰ মান হ'ল $x \times 10^{-2}$ । x ৰ মান হ'ল _____। (উত্তৰ পূৰ্ণ সংখ্যাত)

[$R = 0.08206 \text{ dm}^3\text{atm K}^{-1} \text{ mol}^{-1}$]

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 : 70819120159 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Consider the following reaction



The quantity of electricity required in Faraday to reduce five moles of MnO_4^- is _____.
(Integer answer)

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 : 70819120159 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

নিম্নোক্ত বিক্রিয়াৰ সহায়ত :



পাঁচ (5) ম'ল MnO_4^- বিজাৰিত কৰিবলৈ প্ৰয়োজন হোৱা বিদ্যুৎৰ (ফেৰাডে ত) পৰিমাণ হ'ল ____। (উত্তৰ পূৰ্ণ সংখ্যাত)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 57 Question Id : 70819120160 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

An exothermic reaction $X \rightarrow Y$ has an activation energy 30 kJ mol^{-1} . If energy change ΔE during the reaction is -20 kJ , then the activation energy for the reverse reaction in kJ is _____. (Integer answer)

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 : 70819120160 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

এটা তাপবৰ্জী বিক্ৰিয়া $X \rightarrow Y$ ৰ সক্ৰিয়ণ শক্তি হ'ল 30 kJ/ম'ল । যদি বিক্ৰিয়াটোৰ শক্তি পৰিবৰ্তন ΔE হ'ল -20 kJ , তেন্তে ওলোটা বিক্ৰিয়াটোৰ সক্ৰিয়ণ শক্তি kJ ত হ'ব ____। (উত্তৰ অখণ্ড সংখ্যাত)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 58 Question Id : 70819120161 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

3.12 g of oxygen is adsorbed on 1.2 g of platinum metal. The volume of oxygen adsorbed per gram of the adsorbent at 1 atm and 300 K in L is _____.

[R=0.0821 L atm 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 : 58 Question Id : 70819120161 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

1.2 g প্লেটিনাম ধাতুত 3.12 g অক্সিজেন অধিশোষিত কৰা হ'ল। 300 K আৰু 1 atm ত প্ৰতি গ্ৰাম অধিশোষকত, অধিশোষিত হোৱা অক্সিজেনৰ আয়তন L এককত হ'ল _____। [R=0.0821 L atm 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 : 59 Question Id : 70819120162 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Dichromate ion is treated with base, the oxidation number of Cr in the product formed is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 59 Question Id : 70819120162 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ডাইক্রোমেট আয়নক ক্ষাৰক লগত বিক্ৰিয়া কৰিবলৈ দিয়া হ'ল, বিক্ৰিয়াজাত পদাৰ্থত Cr ৰ জাৰণ 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 : 60 Question Id : 70819120163 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Number of bridging CO ligands in $[\text{Mn}_2(\text{CO})_{10}]$ 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 : 60 **Question Id :** 70819120163 **Question Type :** SA

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

[Mn₂(CO)₁₀] ত সেতুবন্ধ (bridging) CO লিগাণ্ডৰ সংখ্যা হ'ল _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Mathematics Section A

Section Id :	708191884
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 :	7081911164
Question Shuffling Allowed :	Yes

Question Number : 61 Question Id : 70819120164 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If $\vec{a}$ and $\vec{b}$ are perpendicular, then $\vec{a} \times (\vec{a} \times (\vec{a} \times (\vec{a} \times \vec{b})))$ is equal to :

Options :

70819165641. $\vec{0}$

70819165642. $\frac{1}{2} |\vec{a}|^4 \vec{b}$

70819165643. $|\vec{a}|^4 \vec{b}$

70819165644. $\vec{a} \times \vec{b}$

Question Number : 61 Question Id : 70819120164 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যদি $\vec{a}$ আৰু $\vec{b}$ পৰস্পৰ লম্ব হয়, তেন্তে $\vec{a} \times (\vec{a} \times (\vec{a} \times (\vec{a} \times \vec{b})))$ সমান হ'ব :

Options :

70819165641. $\vec{0}$

70819165642. $\frac{1}{2} |\vec{a}|^4 \vec{b}$

70819165643. $|\vec{a}|^4 \vec{b}$

70819165644. $\vec{a} \times \vec{b}$

Question Number : 62 Question Id : 70819120165 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If $(1, 5, 35)$, $(7, 5, 5)$, $(1, \lambda, 7)$ and $(2\lambda, 1, 2)$ are coplanar, then the sum of all possible values of λ is :

Options :

70819165645. $\frac{39}{5}$

70819165646. $-\frac{39}{5}$

70819165647. $-\frac{44}{5}$

70819165648. $\frac{44}{5}$

Question Number : 62 Question Id : 70819120165 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যদি $(1, 5, 35)$, $(7, 5, 5)$, $(1, \lambda, 7)$ আৰু $(2\lambda, 1, 2)$ বিন্দুকেইটা একেসমতলীয় হয়, তেন্তে λ ৰ সকলোবোৰ সম্ভাৱ্য মানৰ যোগফল হ'ব :

Options :

70819165645. $\frac{39}{5}$

70819165646. $-\frac{39}{5}$

70819165647. $-\frac{44}{5}$

70819165648. $\frac{44}{5}$

Question Number : 63 Question Id : 70819120166 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The intersection of three lines $x - y = 0$, $x + 2y = 3$ and $2x + y = 6$ is a :

Options :

70819165649. Right angled triangle

70819165650. Isosceles triangle

70819165651. Equilateral triangle

70819165652. None of the above

Question Number : 63 Question Id : 70819120166 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$x - y = 0$, $x + 2y = 3$ আৰু $2x + y = 6$ ৰেখা তিনিডালৰ ছেদনটো এটা :

Options :

70819165649. সমকোণী ত্ৰিভুজ

70819165650. সমদ্বিবাহু ত্ৰিভুজ

70819165651. সমবাহু ত্রিভুজ

70819165652. ওপৰৰ এটাও নহয়

Question Number : 64 Question Id : 70819120167 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The value of $\begin{vmatrix} (a+1)(a+2) & a+2 & 1 \\ (a+2)(a+3) & a+3 & 1 \\ (a+3)(a+4) & a+4 & 1 \end{vmatrix}$ is :

Options :

70819165653. $(a+1)(a+2)(a+3)$

70819165654. $(a+2)(a+3)(a+4)$

70819165655. -2

70819165656. 0

Question Number : 64 Question Id : 70819120167 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$\begin{vmatrix} (a+1)(a+2) & a+2 & 1 \\ (a+2)(a+3) & a+3 & 1 \\ (a+3)(a+4) & a+4 & 1 \end{vmatrix}$ ৰ মান হ'ব :

Options :

70819165653. $(a+1)(a+2)(a+3)$

70819165654. $(a+2)(a+3)(a+4)$

70819165655. -2

70819165656. 0

Question Number : 65 Question Id : 70819120168 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The rate of growth of bacteria in a culture is proportional to the number of bacteria present and the bacteria count is 1000 at initial time $t=0$. The number of bacteria is increased by

20% in 2 hours. If the population of bacteria is 2000 after $\frac{k}{\log_e\left(\frac{6}{5}\right)}$ hours, then $\left(\frac{k}{\log_e 2}\right)^2$ is equal to :

Options :

70819165657. 2

70819165658. 4

70819165659. 8

70819165660. 16

Question Number : 65 Question Id : 70819120168 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা প্ৰণালীত থকা বেক্টেৰিয়াবোৰৰ বৃদ্ধিৰ হাৰ তাত থকা বেক্টেৰিয়াবোৰৰ সংখ্যাৰ লগত সমানুপাতিক আৰু প্ৰাথমিক সময় $t=0$ ত বেক্টেৰিয়াবোৰৰ গাণনিক মান 1000 পোৱা গ'ল। 2 ঘণ্টাত বেক্টেৰিয়াৰ সংখ্যা 20% বৰ্দ্ধিত হয়। যদি

$\frac{k}{\log_e\left(\frac{6}{5}\right)}$ ঘণ্টাৰ পিছত বেক্টেৰিয়াৰ থূপটোত থকা বেক্টেৰিয়াৰ সংখ্যা 2000 হয়, তেন্তে $\left(\frac{k}{\log_e 2}\right)^2$ সমান হ'ব :

Options :

70819165657. 2

70819165658. 4

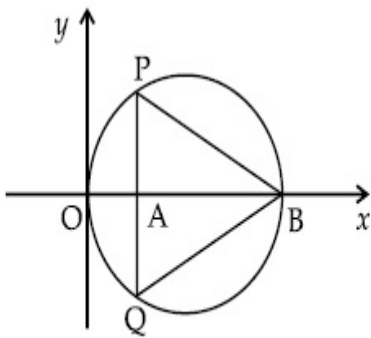
70819165659. 8

70819165660. 16

Question Number : 66 Question Id : 70819120169 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In the circle given below, let $OA = 1$ unit, $OB = 13$ unit and $PQ \perp OB$. Then, the area of the triangle PQB (in square units) is :



Options :

70819165661. $24\sqrt{2}$

70819165662. $24\sqrt{3}$

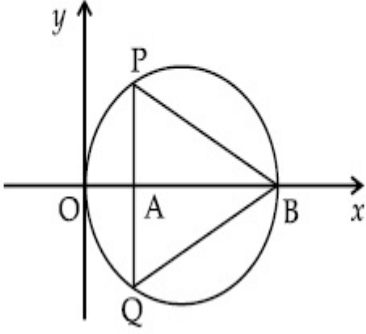
70819165663. $26\sqrt{2}$

70819165664. $26\sqrt{3}$

Question Number : 66 Question Id : 70819120169 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

তলত উল্লেখ কৰা বৃত্তটোত, ধৰা হ'ল $OA = 1$ একক, $OB = 13$ একক আৰু $PQ \perp OB$ । তেন্তে PQB ত্ৰিভুজটোৰ কালি (বৰ্গ এককত) হ'ব :



Options :

70819165661. $24\sqrt{2}$

70819165662. $24\sqrt{3}$

70819165663. $26\sqrt{2}$

70819165664. $26\sqrt{3}$

Question Number : 67 Question Id : 70819120170 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The value of $\lim_{h \rightarrow 0} 2 \left\{ \frac{\sqrt{3} \sin\left(\frac{\pi}{6} + h\right) - \cos\left(\frac{\pi}{6} + h\right)}{\sqrt{3}h(\sqrt{3}\cos h - \sin h)} \right\}$ is :

Options :

70819165665. $\frac{2}{3}$

70819165666. $\frac{4}{3}$

70819165667.

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

70819165668. $\frac{3}{4}$

Question Number : 67 Question Id : 70819120170 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$$\lim_{h \rightarrow 0} 2 \left\{ \frac{\sqrt{3} \sin\left(\frac{\pi}{6} + h\right) - \cos\left(\frac{\pi}{6} + h\right)}{\sqrt{3}h(\sqrt{3}\cos h - \sin h)} \right\} \text{ ব মান হ'ব :}$$

Options :

70819165665. $\frac{2}{3}$

70819165666. $\frac{4}{3}$

70819165667. $\frac{2}{\sqrt{3}}$

70819165668. $\frac{3}{4}$

Question Number : 68 Question Id : 70819120171 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The maximum slope of the curve $y = \frac{1}{2}x^4 - 5x^3 + 18x^2 - 19x$ occurs at the point :

Options :

70819165669. (0, 0)

70819165670. (2, 2)

70819165671. $\left(3, \frac{21}{2}\right)$

70819165672. (2, 9)

Question Number : 68 Question Id : 70819120171 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$y = \frac{1}{2}x^4 - 5x^3 + 18x^2 - 19x$ বক্রটোৰ সৰ্বাধিক প্ৰৱণতা থকা বিন্দুটো হ'ব :

Options :

70819165669. (0, 0)

70819165670. (2, 2)

70819165671. $\left(3, \frac{21}{2}\right)$

70819165672. (2, 9)

Question Number : 69 Question Id : 70819120172 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The value of $\int_{-\pi/2}^{\pi/2} \frac{\cos^2 x}{1 + 3^x} dx$ is :

Options :

70819165673. $\frac{\pi}{2}$

70819165674. 2π

70819165675. $\frac{\pi}{4}$

70819165676. 4π

Question Number : 69 Question Id : 70819120172 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$\int_{-\pi/2}^{\pi/2} \frac{\cos^2 x}{1 + 3^x} dx$ ৰ মান হ'ব :

Options :

70819165673. $\frac{\pi}{2}$

70819165674. 2π

70819165675. $\frac{\pi}{4}$

70819165676. 4π

Question Number : 70 Question Id : 70819120173 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The number of seven digit integers with sum of the digits equal to 10 and formed by using the digits 1, 2 and 3 only is :

Options :

70819165677. 42

70819165678. 35

70819165679. 77

70819165680. 82

**Question Number : 70 Question Id : 70819120173 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

কেৱলমাত্ৰ 1, 2 আৰু 3 অংককেইটা ব্যৱহাৰ কৰি আৰু অংককেইটাৰ যোগফল 10 ৰ সমান হোৱাকৈ গঠন কৰিব পৰা
সাত অংকীয়া অখণ্ড সংখ্যাবোৰৰ সংখ্যা হ'ব :

Options :

70819165677. 42

70819165678. 35

70819165679. 77

70819165680. 82

**Question Number : 71 Question Id : 70819120174 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

The maximum value of the term independent of 't' in the expansion of $\left(tx^{\frac{1}{5}} + \frac{(1-x)^{\frac{1}{10}}}{t} \right)^{10}$

where $x \in (0, 1)$ is :

Options :

70819165681. $\frac{10!}{\sqrt{3}(5!)^2}$

70819165682. $\frac{2 \cdot 10!}{3\sqrt{3}(5!)^2}$

70819165683. $\frac{2 \cdot 10!}{3(5!)^2}$

70819165684. $\frac{10!}{3(5!)^2}$

Question Number : 71 Question Id : 70819120174 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$\left(tx^{\frac{1}{5}} + \frac{(1-x)^{\frac{1}{10}}}{t} \right)^{10}$ ৰ প্ৰসাৰণত (য'ত $x \in (0, 1)$), t ৰ লগত স্বতন্ত্ৰৰহিত হৈ থকা পদটোৰ গৰিষ্ঠমান হ'ব :

Options :

70819165681. $\frac{10!}{\sqrt{3}(5!)^2}$

70819165682. $\frac{2 \cdot 10!}{3\sqrt{3}(5!)^2}$

70819165683. $\frac{2 \cdot 10!}{3(5!)^2}$

70819165684. $\frac{10!}{3(5!)^2}$

Question Number : 72 Question Id : 70819120175 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let $R = \{(P, Q) \mid P \text{ and } Q \text{ are at the same distance from the origin}\}$ be a relation, then the equivalence class of $(1, -1)$ is the set :

Options :

70819165685. $S = \{(x, y) \mid x^2 + y^2 = 4\}$

70819165686. $S = \{(x, y) \mid x^2 + y^2 = 2\}$

70819165687. $S = \{(x, y) \mid x^2 + y^2 = 1\}$

70819165688. $S = \{(x, y) \mid x^2 + y^2 = \sqrt{2}\}$

Question Number : 72 Question Id : 70819120175 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ধৰা হ'ল $R = \{(P, Q) \mid P \text{ আৰু } Q \text{ মূলবিন্দুৰ পৰা সমদূৰত্বত অৱস্থিত}\}$ এটা সম্বন্ধ। তেন্তে $(1, -1)$ ৰ সমতুল্য শ্ৰেণীটো বুজোৱা সংহতিটো হ'ব :

Options :

70819165685. $S = \{(x, y) \mid x^2 + y^2 = 4\}$

70819165686. $S = \{(x, y) \mid x^2 + y^2 = 2\}$

70819165687. $S = \{(x, y) \mid x^2 + y^2 = 1\}$

70819165688. $S = \{(x, y) \mid x^2 + y^2 = \sqrt{2}\}$

Question Number : 73 Question Id : 70819120176 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let A be a symmetric matrix of order 2 with integer entries. If the sum of the diagonal elements of A^2 is 1, then the possible number of such matrices is :

Options :

70819165689. 1

70819165690. 4

70819165691. 6

70819165692. 12

Question Number : 73 Question Id : 70819120176 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ধৰা হ'ল A এটা 2 ঘাতৰ সমমিত মৌলকক্ষ যাৰ মৌলবোৰ অখণ্ড সংখ্যা। যদি A^2 ৰ বিকৰ্ণ মৌলবোৰৰ যোগফল 1 হয়, তেন্তে তেনে মৌলকক্ষবোৰৰ সম্ভাৱ্য সংখ্যা হ'ব :

Options :

70819165689. 1

70819165690. 4

70819165691. 6

70819165692. 12

Question Number : 74 Question Id : 70819120177 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let f be any function defined on $\mathbb{R}$ and let it satisfy the condition :

$$|f(x) - f(y)| \leq |x - y|^2, \forall (x, y) \in \mathbb{R}$$

If $f(0) = 1$, then :

Options :

70819165693. $f(x) > 0, \forall x \in \mathbb{R}$

70819165694. $f(x) < 0, \forall x \in \mathbb{R}$

70819165695. $f(x) = 0, \forall x \in \mathbb{R}$

70819165696. $f(x)$ can take any value in $\mathbb{R}$

Question Number : 74 Question Id : 70819120177 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ধরা হ'ল $\mathbb{R}$ ব ওপরত সংজ্ঞাবদ্ধ f যিকোনো এটা ফলন আৰু ই $|f(x) - f(y)| \leq |x - y|^2, \forall (x, y) \in \mathbb{R}$ চৰ্তটোক সিদ্ধ কৰে। যদি $f(0) = 1$, তেন্তে :

Options :

70819165693. $f(x) > 0, \forall x \in \mathbb{R}$

70819165694. $f(x) < 0, \forall x \in \mathbb{R}$

70819165695. $f(x) = 0, \forall x \in \mathbb{R}$

70819165696. $f(x)$ য়ে $\mathbb{R}$ ত যিকোনো মান ল'ব পাৰে

Question Number : 75 Question Id : 70819120178 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A fair coin is tossed a fixed number of times. If the probability of getting 7 heads is equal to probability of getting 9 heads, then the probability of getting 2 heads is :

Options :

70819165697. $\frac{15}{2^8}$

70819165698. $\frac{15}{2^{12}}$

70819165699. $\frac{15}{2^{13}}$

70819165700. $\frac{15}{2^{14}}$

Question Number : 75 Question Id : 70819120178 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা নিখুঁত মুদ্রা এটা নির্দিষ্টবাবলৈ টছ (toss) কৰা হ'ল। যদি 7টা মুণ্ড পোৱাৰ সম্ভাৱিতাটো 9টা মুণ্ড পোৱাৰ সম্ভাৱিতাৰ সমান হয়, তেন্তে 2টা মুণ্ড পোৱাৰ সম্ভাৱিতা হ'ব :

Options :

70819165697. $\frac{15}{2^8}$

70819165698. $\frac{15}{2^{12}}$

70819165699. $\frac{15}{2^{13}}$

70819165700. $\frac{15}{2^{14}}$

Question Number : 76 Question Id : 70819120179 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If $\frac{\sin^{-1} x}{a} = \frac{\cos^{-1} x}{b} = \frac{\tan^{-1} y}{c}$; $0 < x < 1$, then the value of $\cos\left(\frac{\pi c}{a+b}\right)$ is :

Options :

70819165701. $1 - y^2$

70819165702. $\frac{1 - y^2}{y\sqrt{y}}$

70819165703. $\frac{1 - y^2}{1 + y^2}$

70819165704. $\frac{1 - y^2}{2y}$

Question Number : 76 Question Id : 70819120179 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

যদি $\frac{\sin^{-1} x}{a} = \frac{\cos^{-1} x}{b} = \frac{\tan^{-1} y}{c}$; $0 < x < 1$, তেন্তে $\cos\left(\frac{\pi c}{a+b}\right)$ ৰ মান হ'ব :

Options :

70819165701. $1 - y^2$

70819165702. $\frac{1 - y^2}{y\sqrt{y}}$

70819165703. $\frac{1 - y^2}{1 + y^2}$

70819165704. $\frac{1 - y^2}{2y}$

Question Number : 77 Question Id : 70819120180 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In an increasing geometric series, the sum of the second and the sixth term is $\frac{25}{2}$ and the product of the third and fifth term is 25. Then, the sum of 4th, 6th and 8th terms is equal to :

Options :

70819165705. 26

70819165706. 30

70819165707. 32

70819165708. 35

Question Number : 77 Question Id : 70819120180 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

এটা বর্ধিত গুণোত্তর শ্রেণীৰ দ্বিতীয় আৰু ষষ্ঠ পদৰ যোগফল $\frac{25}{2}$ আৰু তৃতীয় আৰু পঞ্চম পদৰ গুণফল 25 হয়। তেন্তে,

4-তম, 6-তম, আৰু 8-তম পদ কেইটাৰ যোগফল হ'ব :

Options :

70819165705. $\frac{26}{3}$

70819165706. $\frac{30}{3}$

70819165707. $\frac{32}{3}$

70819165708. $\frac{35}{3}$

Question Number : 78 Question Id : 70819120181 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The sum of the infinite series $1 + \frac{2}{3} + \frac{7}{3^2} + \frac{12}{3^3} + \frac{17}{3^4} + \frac{22}{3^5} + \dots$ is equal to :

Options :

70819165709. $\frac{9}{4}$

70819165710. $\frac{11}{4}$

70819165711. $\frac{13}{4}$

70819165712. $\frac{15}{4}$

Question Number : 78 Question Id : 70819120181 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$1 + \frac{2}{3} + \frac{7}{3^2} + \frac{12}{3^3} + \frac{17}{3^4} + \frac{22}{3^5} + \dots$ অসীম শ্রেণীটোৰ যোগফল হ'ব :

Options :

70819165709. $\frac{9}{4}$

70819165710. $\frac{11}{4}$

70819165711. $\frac{13}{4}$

70819165712. $\frac{15}{4}$

Question Number : 79 Question Id : 70819120182 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the three planes

$$P_1 : 3x + 15y + 21z = 9,$$

$$P_2 : x - 3y - z = 5, \text{ and}$$

$$P_3 : 2x + 10y + 14z = 5$$

Then, which one of the following is true ?

Options :

70819165713. P_1 and P_2 are parallel.

70819165714. P_1 and P_3 are parallel.

70819165715. P_1, P_2 and P_3 all are parallel.

70819165716. P_2 and P_3 are parallel.

Question Number : 79 Question Id : 70819120182 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ধৰা হ'ল,

$$P_1 : 3x + 15y + 21z = 9,$$

$$P_2 : x - 3y - z = 5 \text{ আৰু}$$

$$P_3 : 2x + 10y + 14z = 5$$

তিনিখন সমতল।

তেন্তে, তলৰ কোনটো সত্য ?

Options :

70819165713. P_1 আৰু P_2 সমান্তৰাল।

70819165714. P_1 আৰু P_3 সমান্তৰাল।

70819165715. P_1, P_2 আৰু P_3 আটাইকেইখন সমান্তৰাল।

70819165716. P_2 আৰু P_3 সমান্তৰাল।

Question Number : 80 Question Id : 70819120183 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The value of $\sum_{n=1}^{100} \int_{n-1}^n e^{x-[x]} dx$, where $[x]$ is the greatest integer $\leq x$, is :

Options :

70819165717. $100(1 - e)$

70819165718. $100(1 + e)$

70819165719. $100e$

70819165720. $100(e - 1)$

Question Number : 80 Question Id : 70819120183 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$\sum_{n=1}^{100} \int_{n-1}^n e^{x-[x]} dx$, (য'ত $[x]$ য়ে বুজাইছে গৰিষ্ঠ অখণ্ড সংখ্যা $\leq x$) ৰ মান হ'ব :

Options :

70819165717. $100(1 - e)$

70819165718. $100(1 + e)$

70819165719. $100e$

70819165720. $100(e - 1)$

Mathematics Section B

Section Id : 708191885

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 :

7081911165

Question Shuffling Allowed :

Yes

Question Number : 81 Question Id : 70819120184 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The difference between degree and order of a differential equation that represents the family of curves given by $y^2 = a \left(x + \frac{\sqrt{a}}{2} \right)$, $a > 0$ 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 : 70819120184 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$y^2 = a \left(x + \frac{\sqrt{a}}{2} \right)$, $a > 0$ বক্রটোৰ পৰিয়ালটোক বুজোৱা অৱকল সমীকৰণ এটাৰ মাত্ৰা আৰু ক্ৰমৰ পাৰ্থক্য 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 : 70819120185 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The sum of 162th power of the roots of the equation $x^3 - 2x^2 + 2x - 1 = 0$ is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 82 Question Id : 70819120185 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$x^3 - 2x^2 + 2x - 1 = 0$ সমীকৰণটোৰ মূলবোৰৰ 162-তম ঘাতৰ মূলবোৰৰ যোগফল 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 : 70819120186 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The area bounded by the lines $y = ||x - 1| - 2|$ 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 : 70819120186 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$y = ||x-1|-2|$ ৰেখাবোৰৰ দ্বাৰা আবদ্ধ ক্ষেত্ৰখনৰ কালি হ'ব _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 84 Question Id : 70819120187 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

If $y=y(x)$ is the solution of the equation $e^{\sin y} \cos y \frac{dy}{dx} + e^{\sin y} \cos x = \cos x$, $y(0)=0$; then

$1 + y\left(\frac{\pi}{6}\right) + \frac{\sqrt{3}}{2}y\left(\frac{\pi}{3}\right) + \frac{1}{\sqrt{2}}y\left(\frac{\pi}{4}\right)$ 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 : 84 Question Id : 70819120187 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

যদি $e^{\sin y} \cos y \frac{dy}{dx} + e^{\sin y} \cos x = \cos x$, $y(0)=0$; অৱকল সমীকৰণটোৰ $y=y(x)$ সমাধান হয়, তেন্তে

$1 + y\left(\frac{\pi}{6}\right) + \frac{\sqrt{3}}{2}y\left(\frac{\pi}{3}\right) + \frac{1}{\sqrt{2}}y\left(\frac{\pi}{4}\right)$ 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 : 85 **Question Id :** 70819120188 **Question Type :** SA

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

The number of solutions of the equation $\log_4(x-1) = \log_2(x-3)$ 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 : 85 **Question Id :** 70819120188 **Question Type :** SA

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

$\log_4(x-1) = \log_2(x-3)$ সমীকৰণটোৰ সমাধানৰ 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 : 86 Question Id : 70819120189 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The number of integral values of 'K' for which the equation $3\sin x + 4\cos x = k + 1$ has a solution, $k \in \mathbb{R}$ is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 86 Question Id : 70819120189 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$3\sin x + 4\cos x = k + 1, k \in \mathbb{R}$ সমীকৰণটোৰ এটা সমাধান থাকিলে 'K' ৰ অখণ্ড মানৰ সংখ্যা হ'ব _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 87 Question Id : 70819120190 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Let $(\lambda, 2, 1)$ be a point on the plane which passes through the point $(4, -2, 2)$. If the plane is perpendicular to the line joining the points $(-2, -21, 29)$ and $(-1, -16, 23)$, then

$\left(\frac{\lambda}{11}\right)^2 - \frac{4\lambda}{11} - 4$ is equal to _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 87 **Question Id :** 70819120190 **Question Type :** SA

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

ধৰা হ'ল, $(4, -2, 2)$ বিন্দুটোৰে পাৰ হৈ যোৱা সমতলখনৰ ওপৰত $(\lambda, 2, 1)$ এটা বিন্দু। যদি সমতলখন

$(-2, -21, 29)$ আৰু $(-1, -16, 23)$ বিন্দুকেইটা সংযোগী ৰেখাডালৰ ওপৰত লম্ব, তেন্তে, $\left(\frac{\lambda}{11}\right)^2 - \frac{4\lambda}{11} - 4$

সমান হ'ব _____।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 88 **Question Id :** 70819120191 **Question Type :** SA

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

The value of the integral $\int_0^{\pi} |\sin 2x| dx$ 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

Question Number : 88 **Question Id :** 70819120191 **Question Type :** SA

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

$\int_0^{\pi} |\sin 2x| dx$ 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 : 89 **Question Id :** 70819120192 **Question Type :** SA

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

If $\sqrt{3}(\cos^2 x) = (\sqrt{3} - 1)\cos x + 1$, the number of solutions of the given equation when $x \in \left[0, \frac{\pi}{2}\right]$ is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 89 Question Id : 70819120192 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

যদি $\sqrt{3}(\cos^2 x) = (\sqrt{3} - 1)\cos x + 1$ এটা সমীকৰণ হয়, তেন্তে $x \in \left[0, \frac{\pi}{2}\right]$ হোৱাকৈ প্ৰদত্ত সমীকৰণটোৰ
সমাধানৰ 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 : 90 Question Id : 70819120193 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Let $m, n \in \mathbb{N}$ and $\gcd(2, n) = 1$. If $30\binom{30}{0} + 29\binom{30}{1} + \dots + 2\binom{30}{28} + 1\binom{30}{29} = n \cdot 2^m$, then
 $n + m$ is equal to _____.
(Here $\binom{n}{k} = {}^nC_k$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 90 Question Id : 70819120193 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ধরা হ'ল $m, n \in \mathbb{N}$ আৰু গঃ সাঃ উঃ $(\gcd)(2, n) = 1$ ।

যদি $30\binom{30}{0} + 29\binom{30}{1} + \dots + 2\binom{30}{28} + 1\binom{30}{29} = n \cdot 2^m$ হয়, তেন্তে $n+m$ সমান হ'ব _____।

$$\left(\text{ইয়াত, } \binom{n}{k} = {}^nC_k \right)$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001