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Display Marks:	Yes

B TECH EU

Group Number :	1
Group Id :	708191201
Group Maximum Duration :	0
Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	300
Is this Group for Examiner? :	No

Physics Section A

Section Id :	708191784
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 :	7081911064
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 70819118664 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

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

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

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

Options :

70819161141. Both A and R are correct and R is the correct explanation of A

70819161142. Both A and R are correct but R is NOT the correct explanation of A

70819161143. A is correct but R is not correct

70819161144. A is not correct but R is correct

Question Number : 1 Question Id : 70819118664 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ذیل میں دو بیانات دیئے گئے ہیں۔ پہلے کو بیان A سے اور دوسرے کو وجہ R سے معنون کیا گیا ہے۔
 بیان A : سیارچہ A اور سیارچہ B کی فراری رفتار مساوی ہے جبکہ A اور B کی کمیت غیر مساوی ہے۔
 وجہ R : ان کی کمیت اور نصف قطر کا ضرب مساوی ہونا چاہئے۔
 $M_1 R_1 = M_2 R_2$
 اوپر دیئے گئے بیان کی روشنی میں ذیل میں دیئے گئے متبادلات میں سے صحیح متبادل چنئے :

Options :

70819161141. بیان A اور وجہ R دونوں صحیح ہیں۔ وجہ R، بیان A کی مکمل وضاحت ہے۔

70819161142. بیان A اور وجہ R دونوں صحیح ہیں لیکن وجہ R، بیان A کی صحیح وضاحت نہیں کرتی۔

70819161143. بیان A صحیح ہے جبکہ وجہ R غلط ہے۔

70819161144. بیان A غلط ہے جبکہ وجہ R صحیح ہے۔

Question Number : 2 Question Id : 70819118665 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Match List - I with List - II :

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

Choose the correct answer from the options given below :

Options :

70819161145. (a) → (i), (b) → (ii), (c) → (iv), (d) → (iii)

70819161146. (a) → (iii), (b) → (iv), (c) → (ii), (d) → (i)

70819161147. (a) → (ii), (b) → (iii), (c) → (iv), (d) → (i)

70819161148. (a) → (iii), (b) → (ii), (c) → (iv), (d) → (i)

Question Number : 2 Question Id : 70819118665 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

فہرست I - کو فہرست II سے جوڑیے :

[M L T⁻¹] (i) (پلانک کا مستقلہ) h (a)

[M L² T⁻¹] (ii) (حرکیاتی توانائی) E (b)

[M L² T⁻²] (iii) (برقی قوی) V (c)

[M L² I⁻¹ T⁻³] (iv) (خطی معیار حرکت) P (d)

درج ذیل متبادلات میں صحیح جواب چنئے :

Options :

70819161145. (a) → (i), (b) → (ii), (c) → (iv), (d) → (iii)

70819161146. (a) → (iii), (b) → (iv), (c) → (ii), (d) → (i)

70819161147. (a) → (ii), (b) → (iii), (c) → (iv), (d) → (i)

70819161148. (a) → (iii), (b) → (ii), (c) → (iv), (d) → (i)

Question Number : 3 Question Id : 70819118666 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161149. 16 m/s²

70819161150. $\pi^2 \text{ ms}^{-2}$

70819161151. 9.8 ms^{-2}

70819161152. $2\pi^2 \text{ ms}^{-2}$

Question Number : 3 Question Id : 70819118666 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

اگر 2 m کی لمبائی رکھنے والے سادہ پنڈولم کا دور 2 s ہے۔ اس مقام پر جہاں پنڈولم سادہ ہارمونی حرکت کر رہا ہے اسراع بہ وجہ کشش ثقل کی قدر ہوگی۔ _____

Options :

70819161149. 16 m/s^2

70819161150. $\pi^2 \text{ ms}^{-2}$

70819161151. 9.8 ms^{-2}

70819161152. $2\pi^2 \text{ ms}^{-2}$

Question Number : 4 Question Id : 70819118667 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161153. 16.6 cm

70819161154. 18.4 cm

70819161155. 14.8 cm

70819161156. 13 cm

Question Number : 4 Question Id : 70819118667 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک طالب علم گمگ نلی کا تجربہ کر رہا ہے۔ گمگ نلی کا قطر 6 cm اور دو شاخہ کی تعدد 504 Hz ہے۔ دیئے گئے درجہ حرارت پر ہوا میں آواز کی رفتار 336 m/s ہے۔ میٹرپٹی کے صفر کا نشان گمگ ستون کے اوپری سرے پر منطبق ہوتا ہے۔ پہلے گمگ کی حالت میں گمگ نلی میں پانی کے ستون کی بلندی ہوگی :

Options :

70819161153. 16.6 cm

70819161154. 18.4 cm

70819161155. 14.8 cm

70819161156. 13 cm

Question Number : 5 Question Id : 70819118668 Question Type : MCQ Option Shuffling : Yes Is

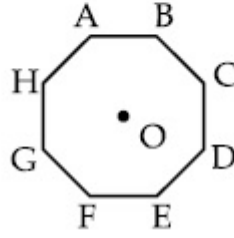
Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

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

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



Options :

70819161157. $16\hat{i} + 24\hat{j} + 32\hat{k}$

70819161158. $-16\hat{i} - 24\hat{j} + 32\hat{k}$

70819161159. $16\hat{i} - 24\hat{j} + 32\hat{k}$

70819161160. $16\hat{i} + 24\hat{j} - 32\hat{k}$

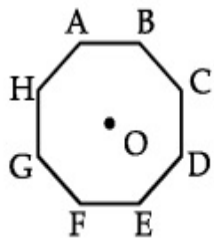
Question Number : 5 Question Id : 70819118668 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$\vec{AB} + \vec{AC} + \vec{AD} + \vec{AE} + \vec{AF} + \vec{AG} + \vec{AH}$ میں ABCDEFGH مساوی ضلع کی لمبائی رکھنے والے آٹھ ضلعی شکل

کی جمع کیا ہوگی جبکہ $\vec{AO} = 2\hat{i} + 3\hat{j} - 4\hat{k}$



Options :

70819161157. $16\hat{i} + 24\hat{j} + 32\hat{k}$

70819161158. $-16\hat{i} - 24\hat{j} + 32\hat{k}$

70819161159. $16\hat{i} - 24\hat{j} + 32\hat{k}$

70819161160. $16\hat{i} + 24\hat{j} - 32\hat{k}$

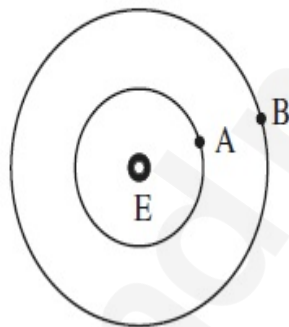
Question Number : 6 Question Id : 70819118669 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

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



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

Options :

70819161161. 1.33×10^3 s

70819161162. 4.24×10^3 s

70819161163. 4.24×10^2 s

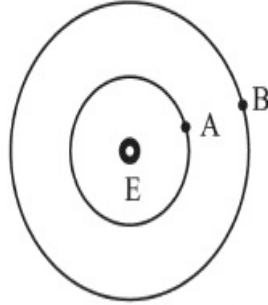
70819161164. 3.33×10^2 s

Question Number : 6 Question Id : 70819118669 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

دو سیارے A اور B جن کی کمیتیں بالترتیب 200 kg اور 400 kg ہے، سطح زمین سے بالترتیب 600 km اور 1600 km کی بلندی پر زمین کے مدار میں گردش کر رہے ہیں۔ اگر سیارے A اور B کے گردش دور بالترتیب T_A اور T_B ہو تو $T_B - T_A$ کی قیمت ہوگی:



[دیا گیا زمین کا نصف قطر = 6400 km ، زمین کی کمیت = 6×10^{24} kg]

Options :

70819161161. 1.33×10^3 s

70819161162. 4.24×10^3 s

70819161163. 4.24×10^2 s

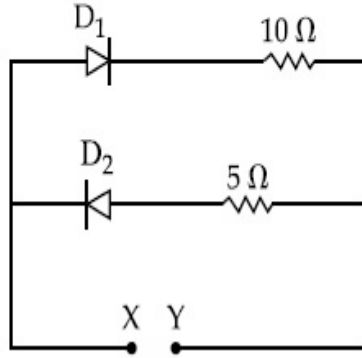
70819161164. 3.33×10^2 s

Question Number : 7 Question Id : 70819118670 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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



Options :

70819161165. ~ 0.5 A

70819161166. ~ 0.43 A

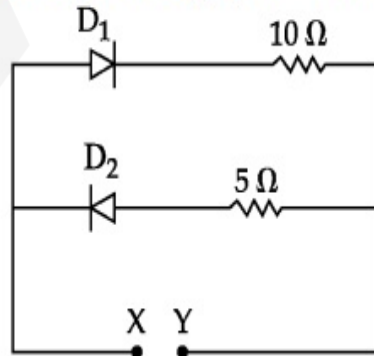
70819161167. ~ 0.86 A

70819161168. ~ 1.5 A

Question Number : 7 Question Id : 70819118670 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

برقی دور میں دو نقاط X اور Y کے درمیان 5 V کی بیٹری (برقی خانہ) کو جوڑا گیا۔ جبکہ D_1 اور D_2 عام سیلیکان ڈائیوڈ ہے۔ اگر برقی خانہ کے مثبت سرے کو X سے جوڑیں تب برقی خانے کے ذریعے مہیا کی گئی برقی رو کی قدر ہوگی :



Options :

70819161165. ~ 0.5 A

70819161166. ~ 0.43 A

70819161167. ~ 0.86 A

70819161168. ~ 1.5 A

Question Number : 8 Question Id : 70819118671 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

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

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

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

Options :

70819161169. Both Statement I and Statement II are true

70819161170. Both Statement I and Statement II are false

70819161171. Statement I is true but Statement II is false

70819161172. Statement I is false but Statement II is true

Question Number : 8 Question Id : 70819118671 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

- بیان I : ایک آواز کے سگنل کی تعدد 2 kHz ہے۔ اور اس کو کیریئر (carrier wave) کو موڈولیٹ کرنے کے لئے استعمال کیا جاتا ہے۔
 جس کی تعدد 1 MHz ہو تب سگنل کے لئے درکار تعدد کی پٹی کی چوڑائی (bandwidth) 4 kHz درکار ہوگی۔
 بیان II : اس صورت میں درکار بازو تعدد چوڑائی (side band) 1002 kHz اور 998 kHz ہوگی۔
 اوپر دیئے گئے بیان I اور بیان II سے متعلق تبادلات میں سے صحیح متبادل چنئے :

Options :

70819161169. دونوں بیان I اور بیان II صحیح ہیں۔
 70819161170. دونوں بیان I اور بیان II غلط ہیں۔
 70819161171. بیان I صحیح ہے جبکہ بیان II غلط ہے۔
 70819161172. بیان I غلط ہے جبکہ بیان II صحیح ہے۔

Question Number : 9 Question Id : 70819118672 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

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

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

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

Options :

70819161173. Both A and R are true and R is the correct explanation of A
 70819161174. Both A and R are true but R is NOT the correct explanation of A
 70819161175. A is true but R is false
 70819161176. A is false but R is true

Question Number : 9 Question Id : 70819118672 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ذیل میں دو بیانات دیئے گئے ہیں۔ پہلے کو دعویٰ A سے اور دوسرے کو وجہ R سے معنون کیا گیا ہے۔
 دعویٰ A : آزادانہ لنگتی سلاح کو گرم کریں تب اس میں حرارتی فساد (thermal stress) پیدا نہیں ہوتا۔
 وجہ R : حرارت دیئے پر سلاح کی لمبائی میں اضافہ ہوتا ہے۔
 اوپر دیئے گئے دعویٰ اور وجہ کی روشنی میں مندرجہ ذیل متبادلات میں سے صحیح متبادل چنیے:

Options :

70819161173. دونوں A اور R صحیح ہیں اور R، A کی مکمل وضاحت ہے۔

70819161174. دونوں A اور R صحیح ہیں جبکہ R، A کی مکمل وضاحت نہیں کرتا ہے۔

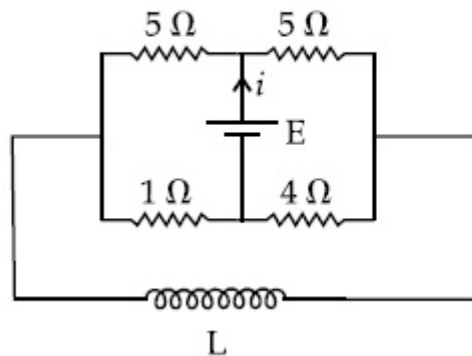
70819161175. A صحیح ہے جبکہ R غلط ہے۔

70819161176. A غلط ہے جبکہ R صحیح ہے۔

Question Number : 10 Question Id : 70819118673 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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



Options :

70819161177. $\frac{18E}{55}, \frac{5E}{18}$

70819161178. $\frac{5E}{18}, \frac{18E}{55}$

70819161179. $\frac{10E}{33}, \frac{5E}{18}$

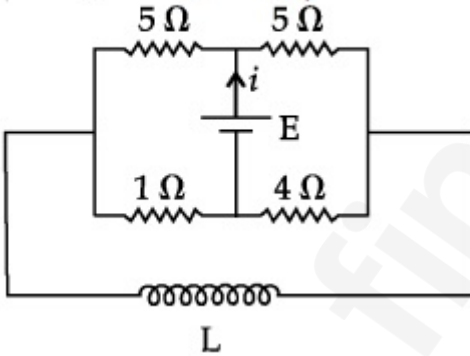
70819161180. $\frac{5E}{18}, \frac{10E}{33}$

Question Number : 10 Question Id : 70819118673 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

دیے گئے برقی سرکٹ میں وقت $t = 0$ اور $t = \infty$ پر بہنے والا برقی کرنٹ (i) معلوم کیجئے :



Options :

70819161177. $\frac{18E}{55}, \frac{5E}{18}$

70819161178. $\frac{5E}{18}, \frac{18E}{55}$

70819161179. $\frac{10E}{33}, \frac{5E}{18}$

70819161180. $\frac{5E}{18}$, $\frac{10E}{33}$

Question Number : 11 Question Id : 70819118674 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161181. 1.64 mm

70819161182. 0.90 mm

70819161183. 0.82 mm

70819161184. 1.80 mm

Question Number : 11 Question Id : 70819118674 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک اسکرو گج کی پچ (pitch) 1 mm ہے اور اس کے دائروں حلقہ پر نشانات کی تعداد 100 ہے۔ جب اس کے نشانوں میں کچھ نہ ہو تب دائروں پیمانے کا صفر کا نشان نسبتی خط سے 8 نشانات نیچے کی جانب ہوتا ہے۔ جب اس کے نشانوں کے درمیان تار کو جکڑ دیں تب دائروں پیمانے کے 72 نشانات نسبتی خط کے ساتھ منطبق ہوتے ہیں۔ اس صورت میں تار کا نصف قطر _____ mm ہوگا۔

Options :

70819161181. 1.64 mm

70819161182. 0.90 mm

70819161183. 0.82 mm

70819161184. 1.80 mm

**Question Number : 12 Question Id : 70819118675 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

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

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

Options :

70819161185. 2.8

70819161186. 8

70819161187. 7.8

70819161188. 3.8

**Question Number : 12 Question Id : 70819118675 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

ایک α ذرہ اور ایک پروٹون کو حالت سکون سے 200 V کے تفاوت قوتی (potential difference) کے ذریعہ اسراع پذیر کیا گیا۔ ان کی

ڈی بروگلی طول لہر بالترتیب λ_α اور λ_p ہے۔ تب نسبت $\frac{\lambda_p}{\lambda_\alpha}$ ہوگی۔

Options :

70819161185. 2.8

70819161186. 8

70819161187. 7.8

70819161188. 3.8

Question Number : 13 Question Id : 70819118676 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

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

Options :

70819161189. $\frac{\sqrt{2x}}{2x+1}$

70819161190. $\frac{2\sqrt{2x}}{2x+1}$

70819161191. $\frac{\sqrt{2x}}{x+1}$

70819161192. $\frac{2\sqrt{2x}}{x+1}$

Question Number : 13 Question Id : 70819118676 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

دو متشاکل منبع نور کے شدت کے درمیان کی نسبت $2x$ ہے۔ ان کی مدد سے حاصل تداخلی نمونہ میں $\frac{I_{\max} - I_{\min}}{I_{\max} + I_{\min}}$ کیا ہوگا ؟

Options :

70819161189. $\frac{\sqrt{2x}}{2x+1}$

70819161190. $\frac{2\sqrt{2x}}{2x+1}$

70819161191. $\frac{\sqrt{2x}}{x+1}$

70819161192. $\frac{2\sqrt{2x}}{x+1}$

Question Number : 14 Question Id : 70819118677 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161193. $\frac{u+v}{2}$

70819161194. $\frac{v-u}{2}$

70819161195. $\sqrt{\frac{v^2+u^2}{2}}$

70819161196. $\sqrt{\frac{v^2-u^2}{2}}$

Question Number : 14 Question Id : 70819118677 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

یکساں اسراع سے حرکت کرنے والی ایک ریل گاڑی کا انجن دیے گئے سگنل پوسٹ سے u رفتار سے گزرتا ہے۔ جبکہ اسی ریل گاڑی کا آخری ڈبہ اس سگنل پوسٹ سے v رفتار سے گزرتا ہے۔ تب بتائیے کہ اس ریل گاڑی کا درمیانی ڈبہ اس سگنل پوسٹ سے کس رفتار سے گزرے گا؟

Options :

70819161193. $\frac{u+v}{2}$

70819161194. $\frac{v-u}{2}$

70819161195. $\sqrt{\frac{v^2+u^2}{2}}$

70819161196. $\sqrt{\frac{v^2-u^2}{2}}$

Question Number : 15 Question Id : 70819118678 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161197. 4 : 2 : 1 and 2 : 1 : 1

70819161198. 2 : 1 : 1 and 4 : 2 : 1

70819161199. 1 : 2 : 4 and 1 : 1 : 2

70819161200. 1 : 2 : 4 and 2 : 1 : 1

Question Number : 15 Question Id : 70819118678 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک پروٹون، ایک ڈیوٹرون اور ایک α ذرہ یکساں مقناطیسی میدان میں یکساں معیار حرکت سے حرکت کر رہے ہیں۔ ان پر عامل مقناطیسی قوت کی نسبت اور چال کی نسبت _____ ہوں گی، ترتیب میں۔

Options :

70819161197. 2 : 1 : 1 اور 4 : 2 : 1

70819161198. 4 : 2 : 1 اور 2 : 1 : 1

70819161199. 1 : 1 : 2 اور 1 : 2 : 4

70819161200. 2 : 1 : 1 اور 1 : 2 : 4

Question Number : 16 Question Id : 70819118679 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161201. 0.1 m

70819161202. 0.15 m

70819161203. 0.2 m

Question Number : 16 Question Id : 70819118679 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

دائری لچھے کے محور کے ساتھ 0.05 m اور 0.2 m فاصلہ کی دوری پر پائے جانے والے نقاط پر متناہی طیبی میدان کی نسبت 8 : 1 ہے۔ اس لچھے کا نصف قطر ہوگا _____.

Options :

70819161201. 0.1 m

70819161202. 0.15 m

70819161203. 0.2 m

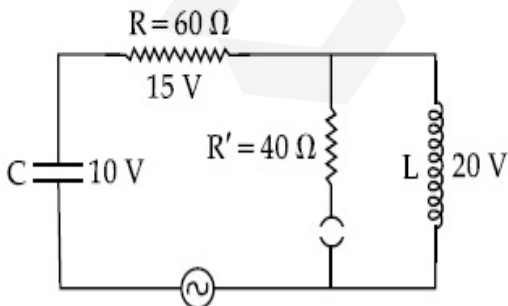
70819161204. 1.0 m

Question Number : 17 Question Id : 70819118680 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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



Options :

70819161205. 1.33 H and 250 μ F

70819161206. 1.33 H and 150 μ F

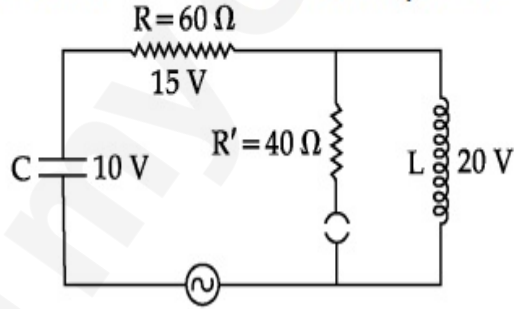
70819161207. 0.8 H and 150 μ F

70819161208. 0.8 H and 250 μ F

Question Number : 17 Question Id : 70819118680 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

L-C-R برقی دور میں جوڑے گئے متبادل قومی کی زاویائی تعدد 100 rad/s ہے۔ اس برقی سرکٹ میں استعمال آلات کو شکل میں دکھایا گیا ہے۔
تب استعمال لچھے کی امالیت اور مٹفہ (capacitor) کی گنجائش ہوگی :



Options :

70819161205. 250 μ F اور 1.33 H

70819161206. 150 μ F اور 1.33 H

70819161207. 150 μ F اور 0.8 H

70819161208. 250 μ F اور 0.8 H

Question Number : 18 Question Id : 70819118681 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161209. 5 : 7 : 2

70819161210. 3 : 7 : 2

70819161211. 3 : 5 : 2

70819161212. 5 : 7 : 3

Question Number : 18 Question Id : 70819118681 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک دو سالماتی گیس (diatomic gas) کے لیے $C_p = \frac{7}{2}R$ اور $C_v = \frac{5}{2}R$ ہے اس کو مستقل دباؤ پر گرم کیا گیا ہے۔ تب $dU : dQ : dW$ کی نسبت ہے :

Options :

70819161209. 5 : 7 : 2

70819161210. 3 : 7 : 2

70819161211. 3 : 5 : 2

70819161212. 5 : 7 : 3

Question Number : 19 Question Id : 70819118682 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

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

Options :

70819161213. $\frac{3}{1}$

70819161214. $\frac{1}{3}$

70819161215. $\frac{8}{1}$

70819161216. $\frac{1}{8}$

Question Number : 19 Question Id : 70819118682 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

دو تابکار عناصر X اور Y میں ابتدا میں مرکزوں کی تعداد بالترتیب N_1 اور N_2 ہے۔ عنصر X کا نصف حیات وقت عنصر Y کے نصف حیات

وقت کا نصف ہے۔ عنصر Y کے تین نصف حیات وقت کے بعد دونوں عناصر کے مرکزوں کی تعداد مساوی ہو جاتی ہے۔ تب $\frac{N_1}{N_2}$ کی نسبت

ہوگی : _____

Options :

70819161213. $\frac{3}{1}$

70819161214. $\frac{1}{3}$

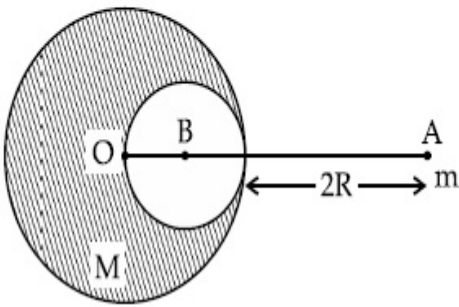
70819161215. $\frac{8}{1}$

70819161216. $\frac{1}{8}$

Question Number : 20 Question Id : 70819118683 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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



Options :

70819161217. 41 : 50

70819161218. 50 : 41

70819161219. 36 : 25

70819161220. 25 : 36

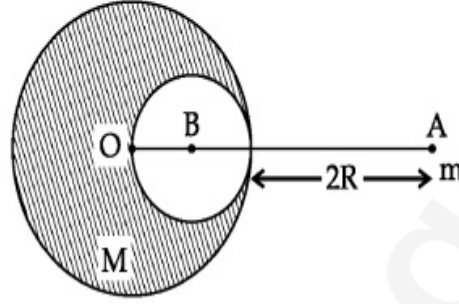
Question Number : 20 Question Id : 70819118683 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک ہوس کرہ کا نصف قطر R ہے۔ وہ کرہ کے مرکز سے 3R فاصلے کی دوری پر رکھے ایک ذرہ کو تباذنی قوت F_1 سے کشش کرتا ہے۔ اب اس کرہ

کے اندر $\left(\frac{R}{2}\right)$ نصف قطر کی ایک کروی سوراخ بنایا گیا (جیسا کہ شکل میں دکھایا گیا ہے)۔ اب اس ذرہ پر عامل قوت F_2 ہو جاتی ہے۔ تب

$F_1 : F_2$ کی نسبت _____ ہوگی :



Options :

70819161217. 41 : 50

70819161218. 50 : 41

70819161219. 36 : 25

70819161220. 25 : 36

Physics Section B

Section Id :	708191785
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 :

708191100

Question Shuffling Allowed :

Yes

Question Number : 21 Question Id : 70819118684 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 21 Question Id : 70819118684 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

4.0 u کمیت کی ایک جوہری گیس ایک غیر موصل برتن میں رکھی ہے۔ جو 30 m/s رفتار سے حرکت کر رہا ہے۔ اگر برتن اچانک رک جاتا ہے تو

گیس کی درجہ حرارت میں ہونے والی تبدیلی $\frac{x}{3R}$ ہوگی۔

(گیس مستقلہ R = gas constant) ہے x کی قدر ہے

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 : 70819118685 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 22 Question Id : 70819118685 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

512 باریک پارے کے قطرات ہیں۔ ہر ایک قطرہ کو 2 V کے قومی تک برقیایا گیا ہے۔ اب ان قطروں کو ملا کر ایک بڑا قطرہ بنایا گیا ہے۔ اس بڑے قطرے پر قومی V ہوگا۔

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 : 70819118686 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 23 Question Id : 70819118686 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ایک 2 H مالیت اور قابل نظر انداز مزاحمت رکھنے والے لامالی لچھے کو قومی $V = 3t$ volt ولٹ (جہاں پر t کی پیمائش سینڈ میں ہے) کے اطراف جوڑا گیا ہے۔ اگر وقفہ $t = 0$ پر برقی خانہ جوڑیں تب 4 s کے وقفہ کے بعد لچھے میں جمع شدہ توانائی Joule _____ ہے۔

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 : 70819118687 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 24 Question Id : 70819118687 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ایک چھوٹے سے گولے کو 1 m لمبائی کی باریک ڈوری سے باندھ کر عمودی دائرے میں گھمایا گیا ہے تب اس کے اعظم ترین اور اقل ترین تناؤ کے درمیان کی نسبت 5:1 حاصل ہو۔ اس گولے کی دائروی حرکت کے سب سے اونچے مقام پر رفتار m/s _____ ہوگی۔
($g = 10 m/s^2$ جبکہ)

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 : 70819118688 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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

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

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

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 25 Question Id : 70819118688 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

$U = \frac{\alpha}{r^{10}} - \frac{\beta}{r^5} - 3$ کسی دو سالماتی گیس (diatomic gas) کی قومی توانائی (U) اور بین سالماتی فاصلہ (r) کے درمیان تعلق کی مساوات

جہاں α اور β مثبت مستقل ہوں تب ان سالمات کے درمیان توازن کی حالت میں فاصلہ $\left(\frac{2\alpha}{\beta}\right)^{\frac{a}{b}}$ ہوگا، جہاں $a =$ _____

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 : 70819118689 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

The electric field in a region is given by $\vec{E} = \left(\frac{3}{5}E_0 \hat{i} + \frac{4}{5}E_0 \hat{j} \right) \frac{N}{C}$. The ratio of flux of reported

field through the rectangular surface of area 0.2 m^2 (parallel to $y-z$ plane) to that of the surface of area 0.3 m^2 (parallel to $x-z$ plane) is $a : b$, where $a =$ _____ .

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 26 Question Id : 70819118689 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

کسی حصہ میں برقی میدان کی مساوات $\vec{E} = \left(\frac{3}{5} E_0 \hat{i} + \frac{4}{5} E_0 \hat{j} \right) \frac{N}{C}$ ہے۔ تب $y-z$ سطح کے متوازی رکھے 0.2 m^2 رقبہ کے مستطیلی سطح سے گزرنے والے برقی فلکس کی نسبت $a : b$ ہوگی۔

a = _____ جہاں

[جبکہ \hat{i} ، \hat{j} اور \hat{k} بالترتیب x ، y اور z کی سمت میں اکائی سمتیے ہیں۔]

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 : 70819118690 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 27 Question Id : 70819118690 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

ایک اسٹاتی اسٹیشن (transmitting station) سے خارج لہر کی طول لہر 960 m ہے۔ اس کے گمگی برقی سرکٹ میں $2.56 \mu\text{F}$ صلاحیت کے ایک کپیسٹر (capacitor) کا استعمال کیا گیا۔ بتائیے اس صورت میں استعمال امالی لچھے کی گمگ کے لیے ضروری امالیت ہوگی۔ _____ $\times 10^{-8} \text{ H}$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 28 **Question Id :** 70819118691 **Question Type :** SA

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

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 28 **Question Id :** 70819118691 **Question Type :** SA

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

کسی محدب عدسے سے حاصل نکس یکساں ہوتے ہیں۔ جب کہ شے کا مقام عدسے سے 20 cm یا 10 cm ہو۔ تب اس محدب عدسے کی طول ماسکہ کی لمبائی _____ cm ہوگی۔

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 : 70819118692 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 29 Question Id : 70819118692 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

کسی حرارتی عمل میں کسی گیس کا دباؤ اس گیس کے حجم پر مساوات kV^3 سے منحصر ہوتا ہے۔ اگر اس گیس کے درجہ حرارت کو 100°C سے 300°C کر دیں تب اس دوران کیا گیا کام _____ nR ہوگا۔ (جہاں n سے مراد گیس مولوں کی تعداد ہے)۔

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

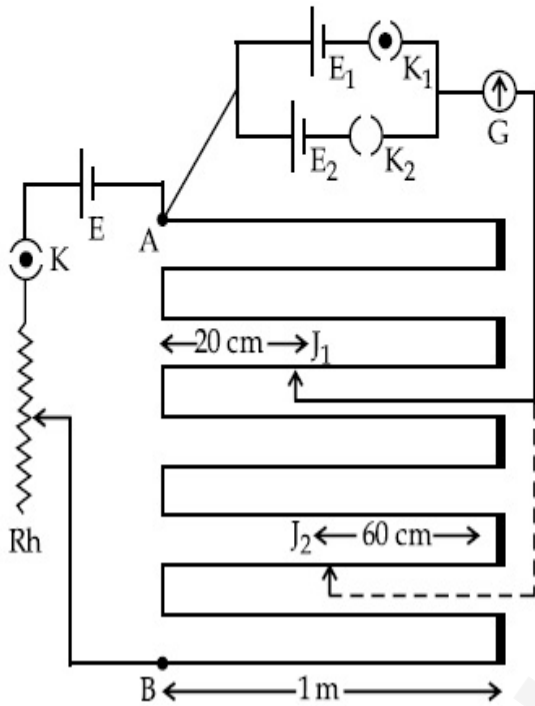
5 to 5.001

Question Number : 30 Question Id : 70819118693 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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

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



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

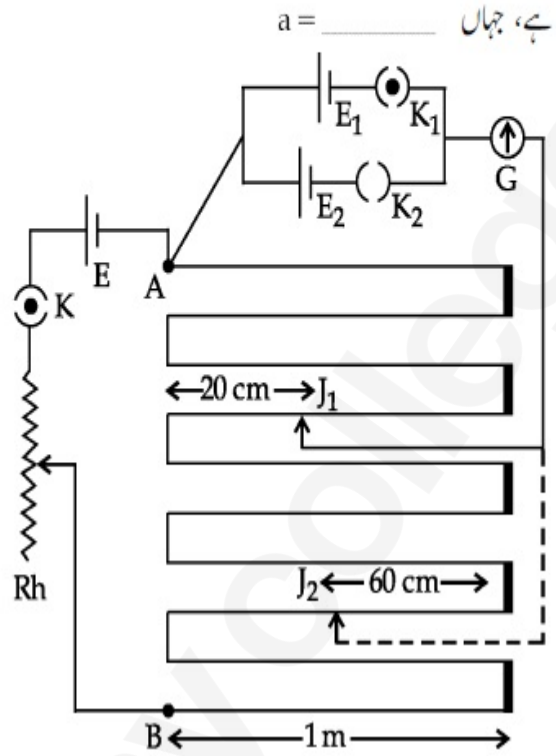
Question Number : 30 Question Id : 70819118693 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

پوشیدنی سرسبز ہے۔ اس سرے AB (لمبائی 10 m) کے اطراف جوڑا گیا توئی E استعمال توئی E₁ اور E₂ سے زیادہ ہے۔ جب کنجی K₁ کو

بند کر دیں تب جاکی کی مدد سے نقطہ J₁ پر گیلوانومیٹر کے لیے صفرا نحراف کا نقطہ حاصل ہوتا ہے۔ اب کنجی K₁ کو کھول کر کنجی K₂ کو بند کریں تب برقی

خانہ E₁ کی بجائے برقی خانہ E₂ برقی سرکٹ میں ہو تب گیلوانومیٹر کے صفرا نحراف کا نقطہ J₂ پر حاصل ہوتا ہے۔ تب $\frac{E_1}{E_2}$ کی قدر $\frac{a}{b}$



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 :

708191786

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

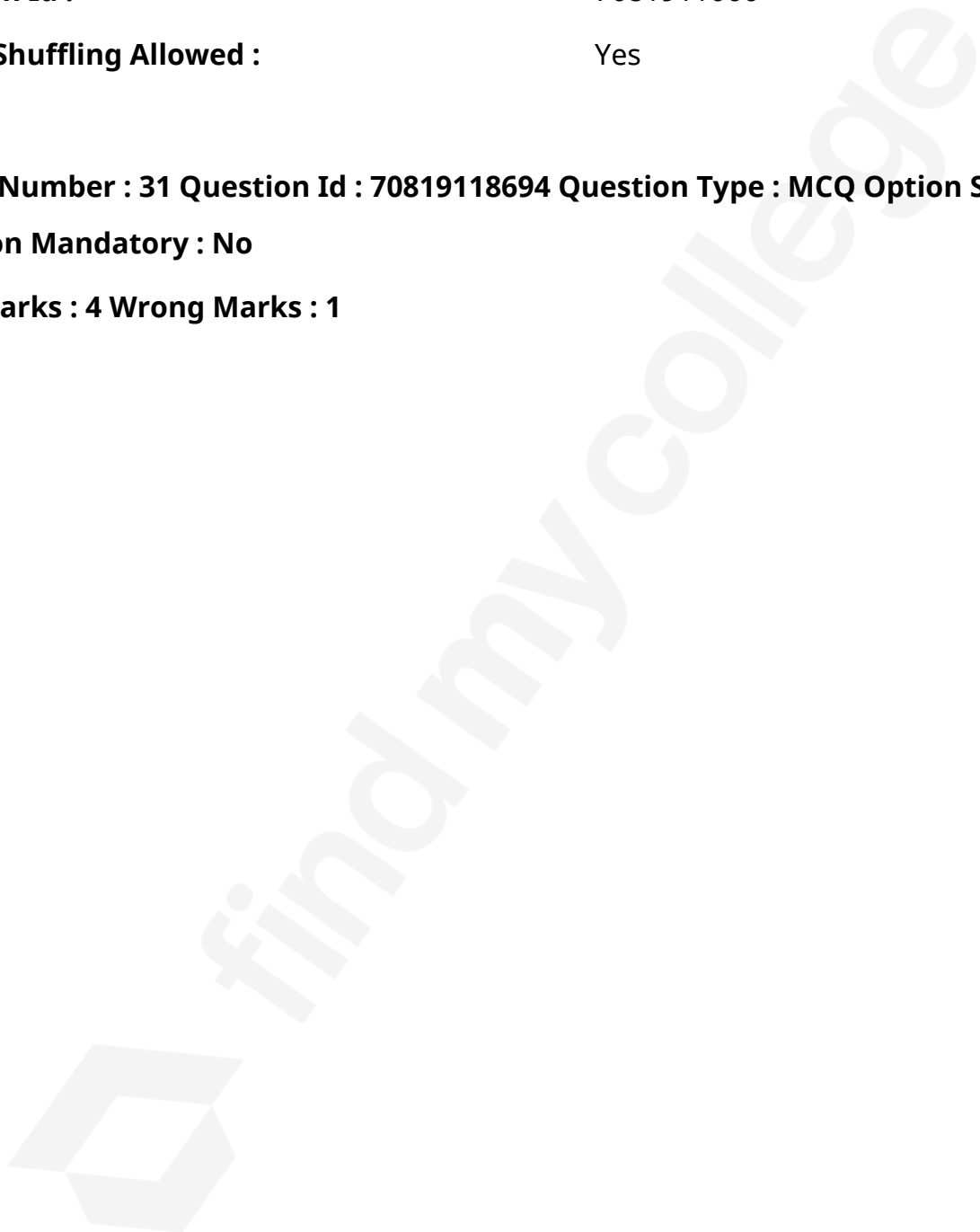
Sub-Section Id : 7081911066

Question Shuffling Allowed : Yes

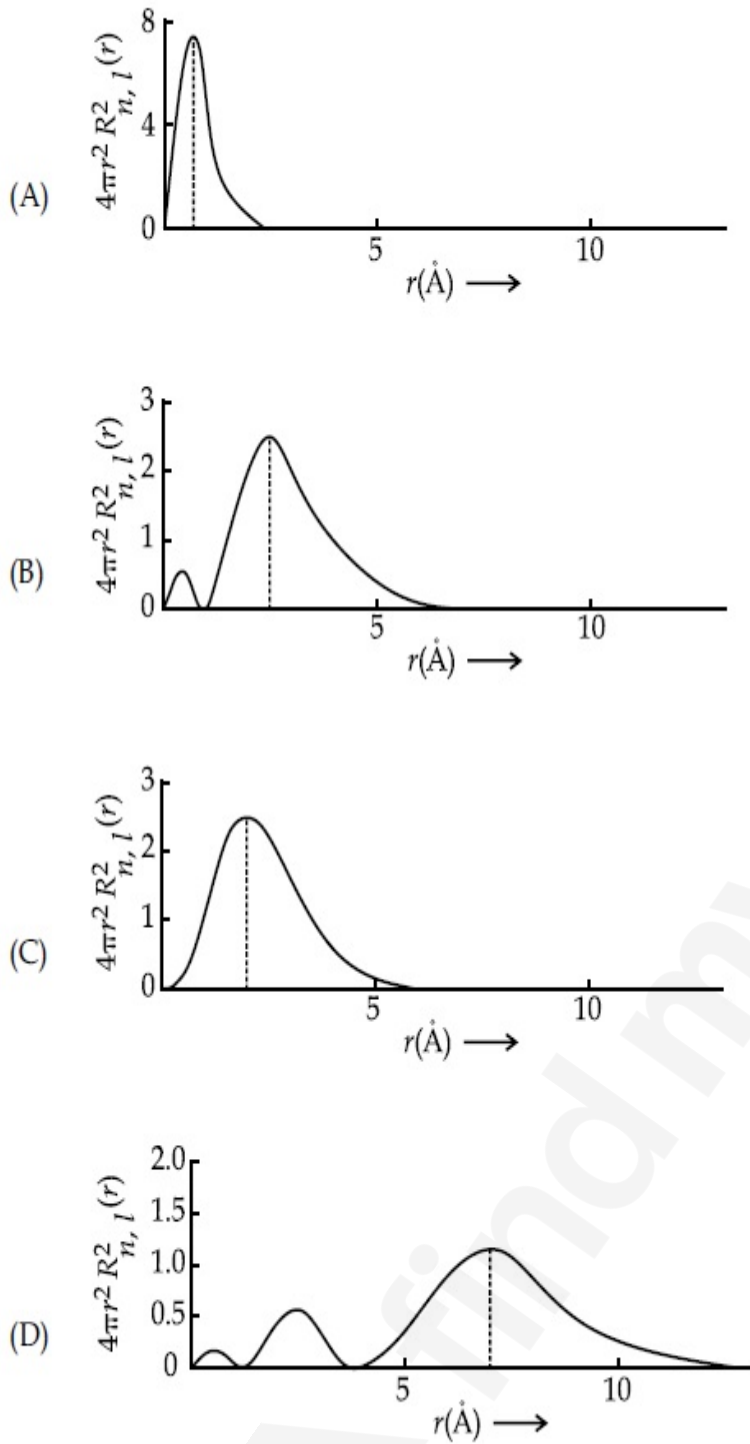
Question Number : 31 Question Id : 70819118694 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



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



The correct plot for 3s orbital is :

Options :

70819161231. (A)

70819161232. (B)

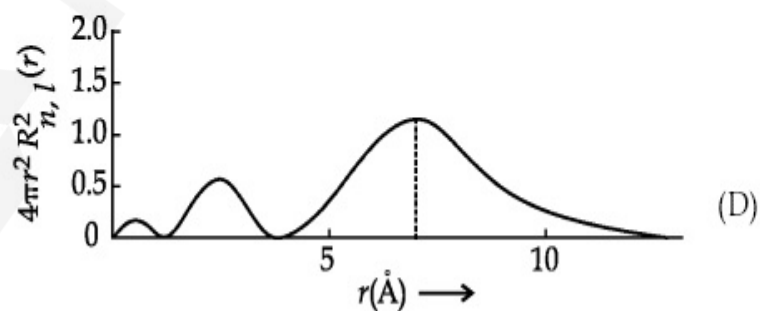
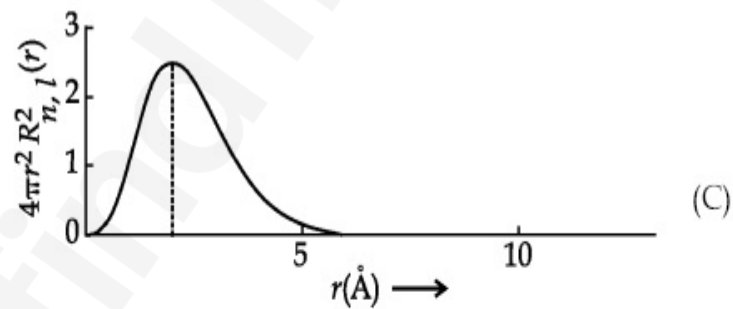
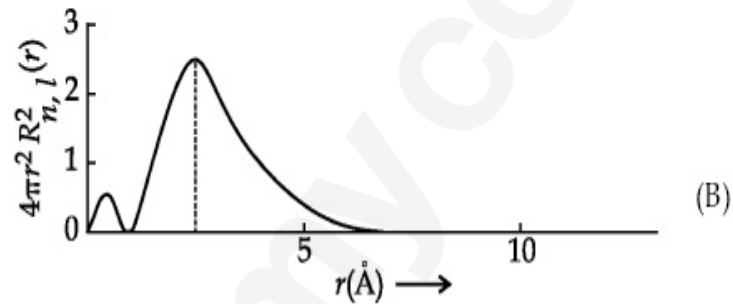
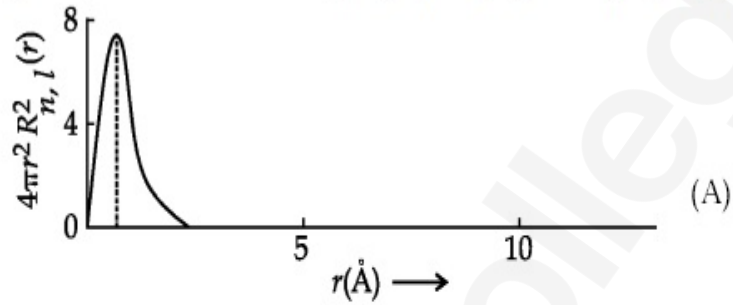
70819161233. (C)

Question Number : 31 Question Id : 70819118694 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ہائیڈروجن جوہر کے مداروں میں مختلف جذری تقسیم (radial distribution) کا تقابلی کے لئے ترمیم میں 'r' کے مقابلے نیچے دی گئی ہیں :



3s مدار کے لیے صحیح ترمیم ہے :

Options :

70819161231. (A)

70819161232. (B)

70819161233. (C)

70819161234. (D)

Question Number : 32 Question Id : 70819118695 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161235. O_2^{2-}

70819161236. He_2^-

70819161237. Be_2

70819161238. He_2^+

Question Number : 32 Question Id : 70819118695 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

سالماتی مداروں کے نظریہ کے مطابق مندرجہ ذیل میں دیئے گئے اجزاء میں وجود میں نہیں ہوتے ہے۔

Options :

70819161235. O_2^{2-}

70819161236. He_2^-

70819161237. Be_2

70819161238. He_2^+

Question Number : 33 Question Id : 70819118696 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161239. 0.625×10^{-6}

70819161240. 1.6×10^{-6}

70819161241. 2.2×10^{-16}

70819161242. 1.9×10^{-5}

Question Number : 33 Question Id : 70819118696 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

AgCN کے حل پذیری pH=3 کے ہف محلول میں x ہے۔ تو x کی قیمت _____ ہے۔ (قریب ترین عدد میں) (فرض کیجئے کہ cyano complex تیار نہیں ہوتا)

[$K_a(\text{HCN})=6.2 \times 10^{-10}$ اور $K_{sp}(\text{AgCN})=2.2 \times 10^{-16}$]

Options :

70819161239. 0.625×10^{-6}

70819161240. 1.6×10^{-6}

70819161241. 2.2×10^{-16}

70819161242. 1.9×10^{-5}

Question Number : 34 Question Id : 70819118697 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161243. 1

70819161244. zero

70819161245. ∞

70819161246. $\frac{1}{n}$

Question Number : 34 Question Id : 70819118697 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

اوسط دباؤ پر Freundlich کے احتسابی ہم تپش میں احتسابی حد $P^x \left(\frac{x}{m}\right)$ کے درست تناسب ہوتا ہے تو x کی قیمت ہے۔

Options :

70819161243. 1

70819161244. zero

70819161245. ∞

70819161246. $\frac{1}{n}$

Question Number : 35 Question Id : 70819118698 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Ellingham diagram is a graphical representation of :

Options :

70819161247. ΔG vs T

70819161248. ΔH vs T

70819161249. ΔG vs P

70819161250. $(\Delta G - T\Delta S)$ vs T

Question Number : 35 Question Id : 70819118698 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Ellingham خاکہ _____ کو ترسیعی اعتبارنظاہر کرتی ہے۔

Options :

70819161247. ΔG vs T

70819161248. ΔH vs T

70819161249. ΔG vs P

70819161250. $(\Delta G - T\Delta S)$ vs T

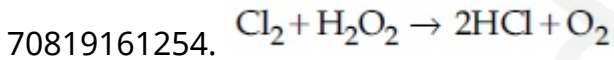
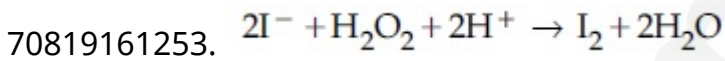
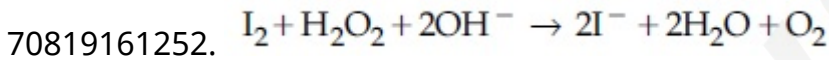
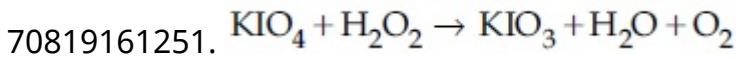
Question Number : 36 Question Id : 70819118699 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :



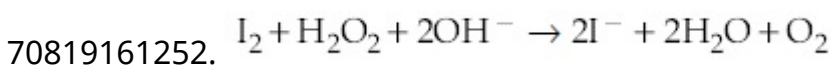
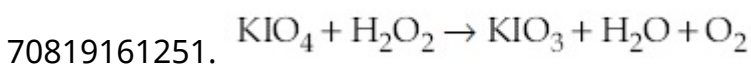
Question Number : 36 Question Id : 70819118699 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

مندرجہ ذیل میں سے کونسی تعامل H_2O_2 کی نوعیت تکسیدی ظاہر کرتی ہے :

Options :



70819161253. $2I^- + H_2O_2 + 2H^+ \rightarrow I_2 + 2H_2O$

70819161254. $Cl_2 + H_2O_2 \rightarrow 2HCl + O_2$

**Question Number : 37 Question Id : 70819118700 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

The correct statement about B_2H_6 is :

Options :

70819161255. All B–H–B angles are of 120° .

70819161256. The two B–H–B bonds are not of same length.

70819161257. Terminal B–H bonds have less p -character when compared to bridging bonds.

70819161258. Its fragment, BH_3 , behaves as a Lewis base.

**Question Number : 37 Question Id : 70819118700 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

: B_2H_6 کے بارے میں صحیح بیان ہے :

Options :

70819161255. B–H–B کے تمام زاویے 120° کے ہوتے ہیں۔

70819161256. دو B–H–B کے بندشیں یکساں لمبائی کے نہیں ہوتے ہیں۔

70819161257. B–H بندش کے سروں میں p -خصوصیات کم پائی جاتی ہیں جیسا کہ پیل بندش کے مقابلے میں

70819161258. BH_3 کے نکلے جو Lewis base کو ظاہر کرتے ہیں۔

Question Number : 38 Question Id : 70819118701 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

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

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

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

Options :

70819161259. Both Statement I and Statement II are true

70819161260. Both Statement I and Statement II are false

70819161261. Statement I is true but Statement II is false

70819161262. Statement I is false but Statement II is true

Question Number : 38 Question Id : 70819118701 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

مندرجہ ذیل میں دو بیانات دیئے گئے ہیں :

بیان-I : CeO_2 کو الڈیہائیڈس (aldehydes) اور کٹون (ketones) کی تکسید کے لئے استعمال کیا جاتا ہے۔

بیان-II : $EuSO_4$ کے آبی محلول کو طاقتور تجزیلی عامل کے طور پر مانا جاتا ہے۔

اوپر دیئے ہوئے بیانات کی روشنی میں مندرجہ ذیل خیالات میں سے صحیح جواب چن کر لکھئے۔

Options :

70819161259. دونوں بیان-I اور بیان-II صحیح ہیں۔

70819161260. دونوں بیان I- اور بیان II- غلط ہیں۔

70819161261. بیان I- صحیح ہے لیکن بیان II- غلط ہے۔

70819161262. بیان I- غلط ہے لیکن بیان II- صحیح ہے۔

Question Number : 39 Question Id : 70819118702 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161263. V^{2+} and Cr^+

70819161264. Cr^+ and Mn^{2+}

70819161265. Ni^{2+} and Cu^+

70819161266. Fe^{2+} and Co^+

Question Number : 39 Question Id : 70819118702 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

مندرجہ ذیل جوڑیوں میں کون سے جوڑی میں بیرونی الیکٹرونک تشکیل یکساں ہوگی ؟

Options :

70819161263. Cr^+ اور V^{2+}

70819161264. Mn^{2+} اور Cr^+

70819161265. Cu^+ اور Ni^{2+}

70819161266. Co^+ اور Fe^{2+}

Question Number : 40 Question Id : 70819118703 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161267. d^2sp^3 and paramagnetic

70819161268. sp^3d^2 and diamagnetic

70819161269. d^2sp^3 and diamagnetic

70819161270. sp^3d^2 and paramagnetic

Question Number : 40 Question Id : 70819118703 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

: $[\text{Mn}(\text{CN})_6]^{4-}$ اور $[\text{Fe}(\text{CN})_6]^{3-}$ کا مخلوطی عمل اور مقناطیسی نوعیت بالترتیب اس طرح ہیں :

Options :

70819161267. d^2sp^3 and paramagnetic پیرامقناطیسی

70819161268. sp^3d^2 and diamagnetic پیرامقناطیسی

70819161269. d^2sp^3 and diamagnetic پیرامقناطیسی

70819161270. sp^3d^2 and paramagnetic پیرامقناطیسی

Question Number : 41 Question Id : 70819118704 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

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

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

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

Options :

70819161271. Both Statement I and Statement II are true

70819161272. Both Statement I and Statement II are false

70819161273. Statement I is true but Statement II is false

70819161274. Statement I is false but Statement II is true

Question Number : 41 Question Id : 70819118704 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

مندرجہ ذیل میں دو بیانات دیئے گئے ہیں :

I- بیان : دھند کھرو، (smog) میں کمی کے لیے آکسیجن کے allotrope ایک اہم درمیانی رول ادا کرتے ہیں۔

II- بیان : troposphere میں نائٹروجن اور سلفر کے آکسائیڈس کے گیس جو فوٹو کیمیکل دھند (photochemical smog) کی

تیاری میں کارآمد ہو۔

اوپر کے دیئے ہوئے بیانات کی روشنی میں مندرجہ ذیل میں سے صحیح جواب چن کر لکھئے۔

Options :

70819161271. دونوں بیان I اور بیان II صحیح ہیں۔

70819161272. دونوں بیان I اور بیان II غلط ہیں۔

70819161273. بیان I یہاں پر صحیح ہے لیکن بیان II غلط ہے۔

70819161274. بیان I غلط ہے لیکن بیان II صحیح ہے۔

Question Number : 42 Question Id : 70819118705 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161275. 50.33

70819161276. 53.33

70819161277. 63.53

70819161278. 51.63

Question Number : 42 Question Id : 70819118705 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک آکسیجن مرکب میں $(C_xH_yO_2)$ 1.80 g مکمل احتراق ہوتا ہے۔ تب H_2O 1.08 g اور CO_2 2.64 g حاصل ہوتا۔ نامیاتی مرکب میں آکسیجن کا فیصد _____ ہے۔

Options :

70819161275. 50.33

70819161276. 53.33

70819161277. 63.53

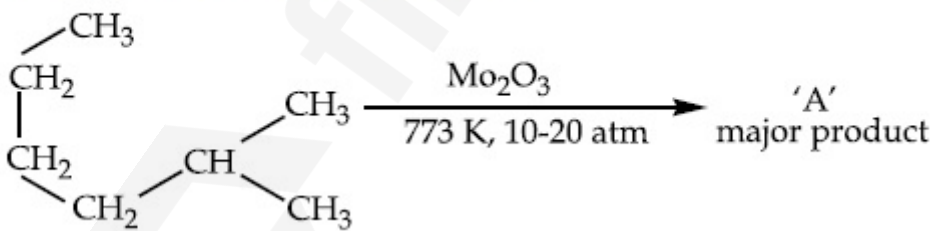
70819161278. 51.63

Question Number : 43 Question Id : 70819118706 Question Type : MCQ Option Shuffling : Yes

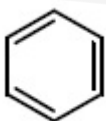
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

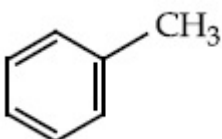
Identify A in the given chemical reaction.



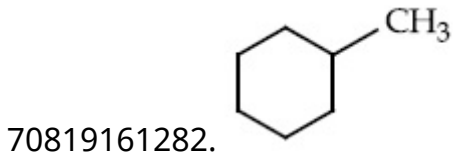
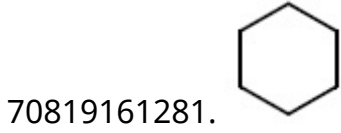
Options :



70819161279.



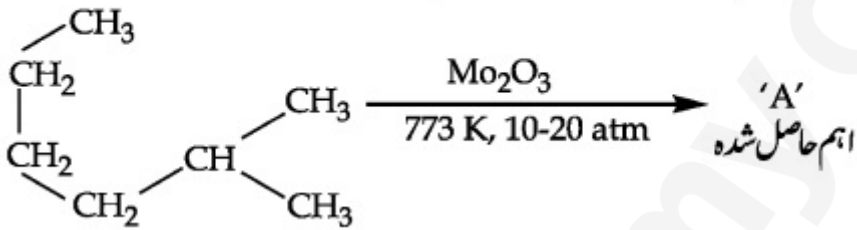
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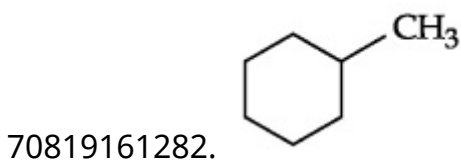
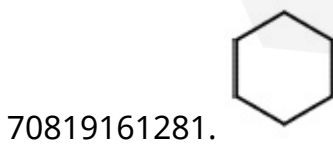
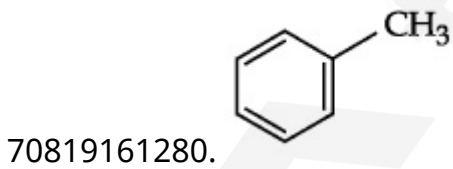
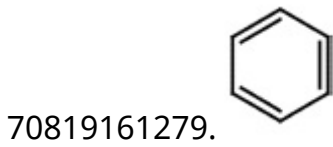
Question Number : 43 Question Id : 70819118706 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

مندرجہ ذیل کیمیائی تعامل میں A کی شناخت کیجئے :



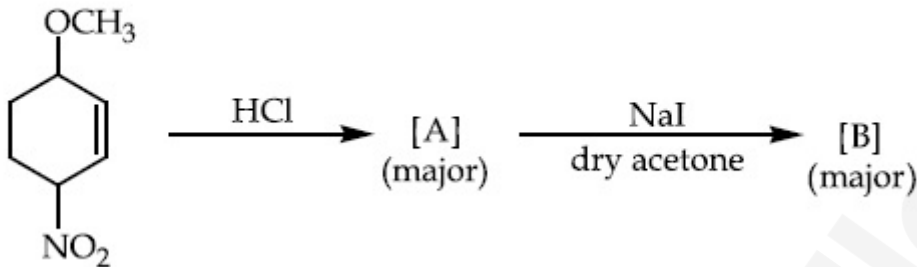
Options :



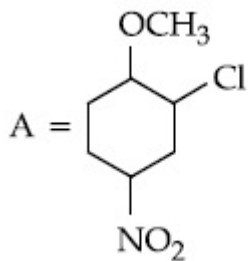
Question Number : 44 Question Id : 70819118707 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

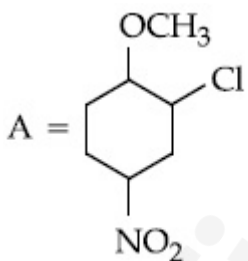
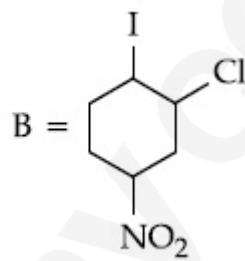
Identify A and B in the chemical reaction.



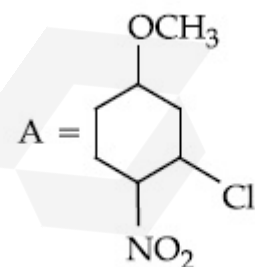
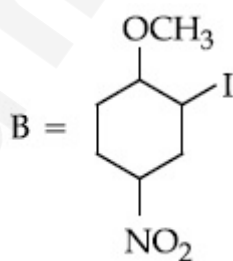
Options :



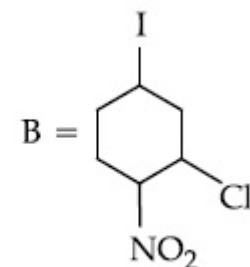
70819161283.



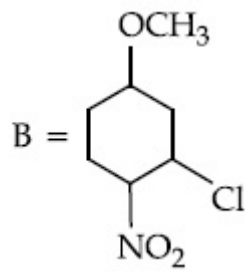
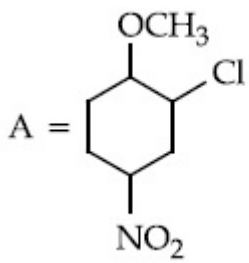
70819161284.



70819161285.



70819161286.

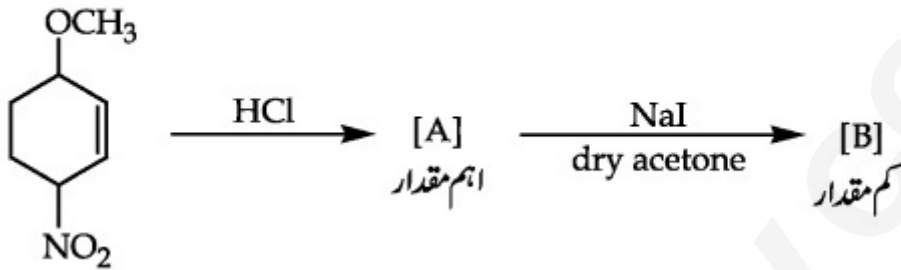


Question Number : 44 Question Id : 70819118707 Question Type : MCQ Option Shuffling : Yes

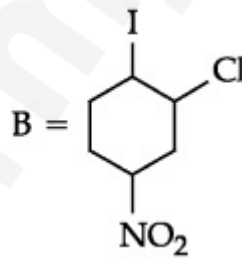
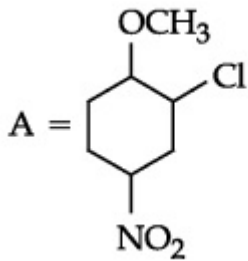
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

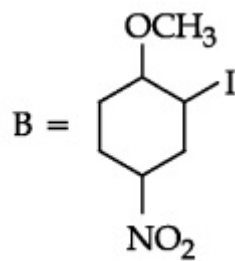
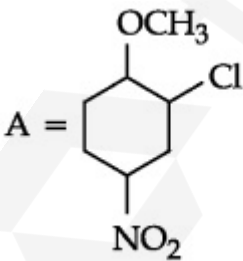
مندرجہ ذیل کیمیائی تعامل میں A اور B کی شناخت کیجئے۔



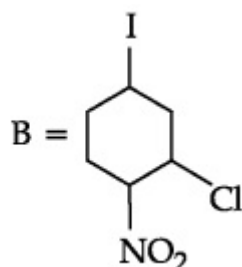
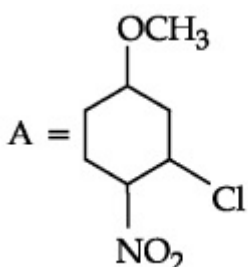
Options :



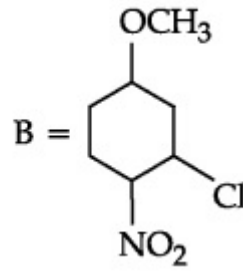
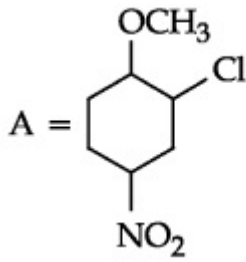
70819161283.



70819161284.



70819161285.



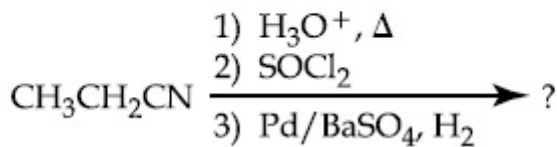
70819161286.

Question Number : 45 Question Id : 70819118708 Question Type : MCQ Option Shuffling : Yes

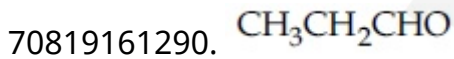
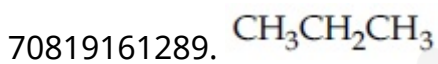
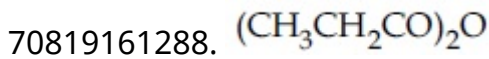
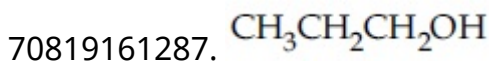
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The major product of the following chemical reaction is :



Options :

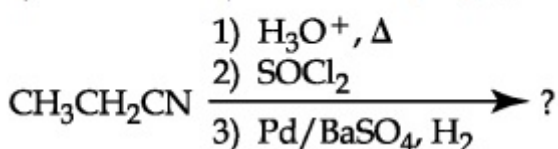


Question Number : 45 Question Id : 70819118708 Question Type : MCQ Option Shuffling : Yes

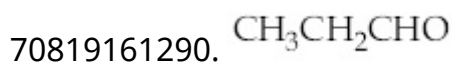
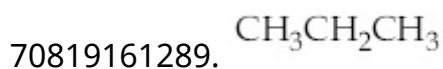
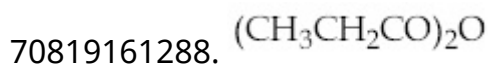
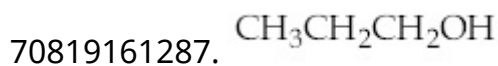
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

مندرجہ ذیل کیمیائی تعامل میں کونسا اہم حاصل شدہ شے ملتی ہے ؟



Options :



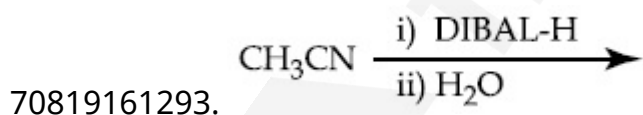
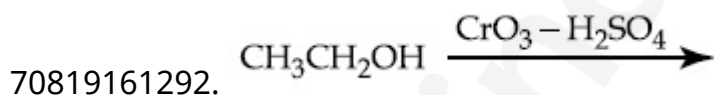
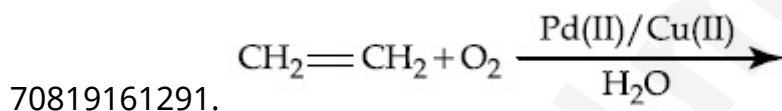
Question Number : 46 Question Id : 70819118709 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following reactions will not form acetaldehyde ?

Options :



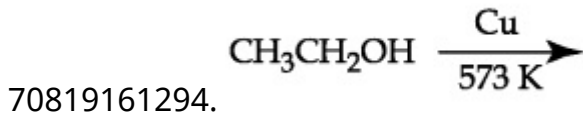
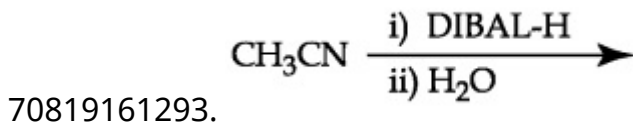
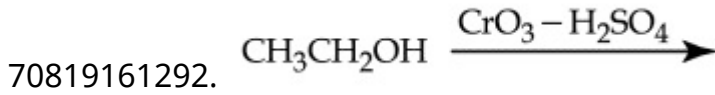
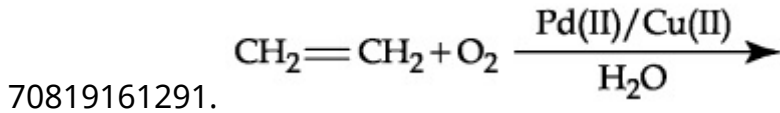
Question Number : 46 Question Id : 70819118709 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

مندرجہ ذیل میں کونسی ایک تفاعل میں acetaldehyde حاصل نہیں ہوگا ؟

Options :

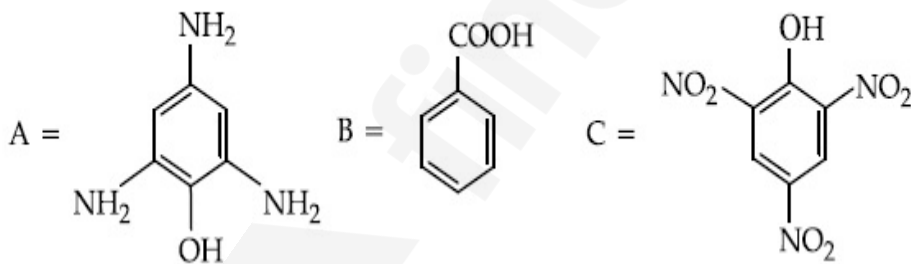


Question Number : 47 Question Id : 70819118710 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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



Options :

70819161295. A and B only

70819161296. C only

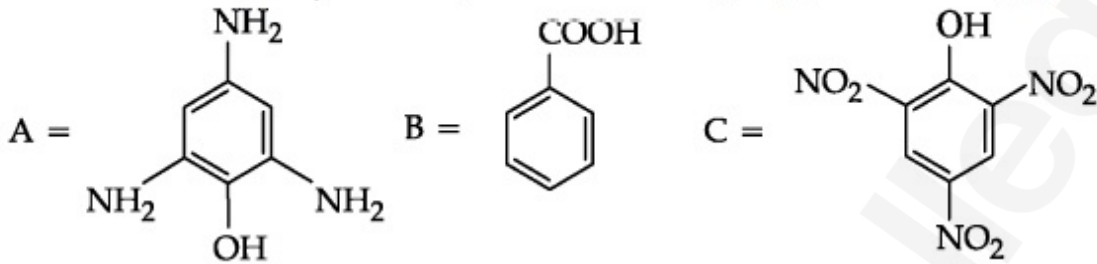
70819161297. B and C only

Question Number : 47 Question Id : 70819118710 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

مندرجہ ذیل میں سے کون سے مرکب / مرکبات میں کاربن ڈائی آکسائیڈ خارج ہوتی ہے سوڈیم بائی کاربونیٹ محلول کے ساتھ



Options :

70819161295. A and B only

70819161296. C only

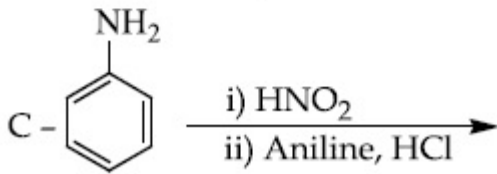
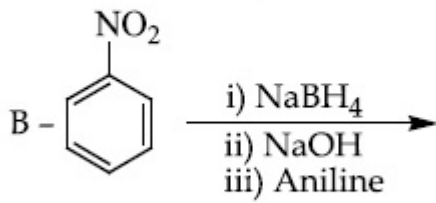
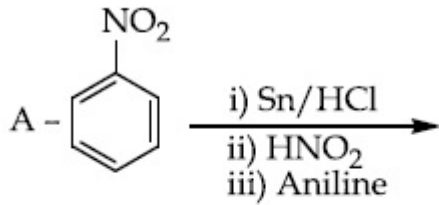
70819161297. B and C only

70819161298. B only

Question Number : 48 Question Id : 70819118711 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1



Options :

70819161299. A only

70819161300. C only

70819161301. B only

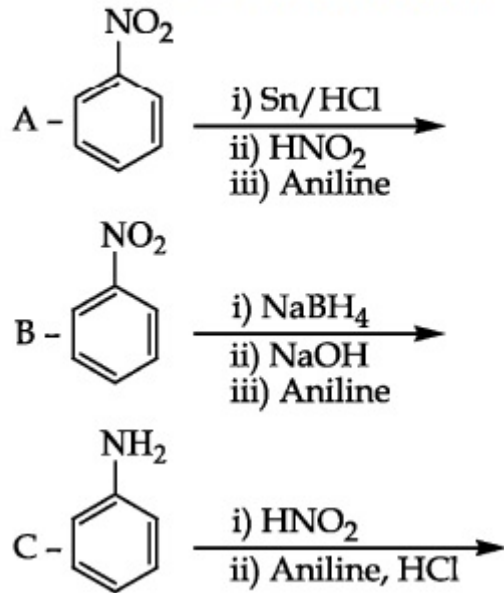
70819161302. A and B

Question Number : 48 Question Id : 70819118711 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

مندرجہ ذیل میں کونسی عمل/تعمولات *p*-aminoazobenzene حاصل نہیں گا ؟



Options :

70819161299. A only

70819161300. C only

70819161301. B only

70819161302. A and B

Question Number : 49 Question Id : 70819118712 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which statement is correct ?

Options :

70819161303. Buna-N is a natural polymer.

70819161304. Buna-S is a synthetic and linear thermosetting polymer.

70819161305. Neoprene is an addition copolymer used in plastic bucket manufacturing.

70819161306. Synthesis of Buna-S needs nascent oxygen.

Question Number : 49 Question Id : 70819118712 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

مندرجہ ذیل میں سے کونسا بیان صحیح ہے ؟

Options :

70819161303. Buna-N ایک قدرتی پالیمر ہے۔

70819161304. Buna-S یہ ایک مصنوعی اور حرر میٹھکم (thermosetting) خطلی پالیمرس ہے۔

70819161305. Neoprene یہ ایک جمعی (copolymer) ہے جو پلاسٹک کے بالٹی کی تیاری میں استعمال ہوتا ہے۔

70819161306. Buna-S کی ترکیب میں nascent oxygen کی ضرورت ہوتی ہے۔

Question Number : 50 Question Id : 70819118713 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161307. C-1 of galactose and C-4 of glucose

70819161308. C-1 of galactose and C-6 of glucose

70819161309. C-1 of glucose and C-4 of galactose

70819161310. C-1 of glucose and C-6 of galactose

**Question Number : 50 Question Id : 70819118713 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No**

Correct Marks : 4 Wrong Marks : 1

لیکٹوز میں گلوکوز اور گالکٹوز (galactose) کے درمیان کونسی glycosidic زنجیر (linkage) پائی جاتی ہے ؟

Options :

70819161307. C-1 of galactose and C-4 of glucose

70819161308. C-1 of galactose and C-6 of glucose

70819161309. C-1 of glucose and C-4 of galactose

70819161310. C-1 of glucose and C-6 of galactose

Chemistry Section B

Section Id :	708191787
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 :	7081911067

Question Number : 51 Question Id : 70819118714 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 51 Question Id : 70819118714 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

0.4 g کے NaOH اور Na₂CO₃ کے آمیزے میں کچھ غیر عامل ملاوٹ کو پہلے $\frac{N}{10}$ HCl اور phenolphthalein کے ساتھ titrate کیا گیا۔ نقطہ آخر کے لیے HCl کا 17.5 mL درکار ہوا تھا۔ اس کے بعد methyl orange ملا یا گیا اور اسی HCl کا 1.5 ml نقطہ آخر کا درکار ہوا۔ اس آمیزے میں Na₂CO₃ کی فی صدوزن _____ ہے۔ (قریب ترین مکمل عدد لکھیں)

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 : 70819118715 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 52 Question Id : 70819118715 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

27°C پر ایک کار کے ٹائر میں نائٹروجن گیس بھری گئی 35 psi پر اگر دباؤ 40 psi تک بڑھائی جائے تو ٹائر پھٹ سکتا۔ کار کا ٹائر کونسے درجہ حرارت پر پھٹ سکتا _____ ہے۔ (قریب ترین عدد میں)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

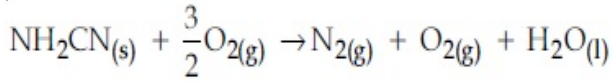
Possible Answers :

5 to 5.001

Question Number : 53 Question Id : 70819118716 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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



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

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 53 **Question Id :** 70819118716 **Question Type :** SA

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

بم کلوری میٹر (Bomb Calorimeter) میں Cyanamide $\text{NH}_2\text{CN}_{(s)}$ آکسیجن کے ساتھ مل کر عمل کرتی ہے۔ اور ΔU کی قیمت پائی جاتی تھی۔ $-742.24 \text{ kJ mol}^{-1}$ کی بہت ΔH_{298} پر



(مثالی گیس اور $R = 8.314 \text{ J mol}^{-1} \text{ K}^{-1}$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 54 **Question Id :** 70819118717 **Question Type :** SA

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

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

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 54 **Question Id :** 70819118717 **Question Type :** SA

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

ایک برقی گزار جو مولل (molal) آبی حالت میں 60% آئین شدہ ہوتی ہے۔ محلول کا نقطہ جوش _____ K ہے۔ (قریب ترین مکمل عدد میں) (دیا گیا: K_b for $(H_2O) = 0.52 \text{ K kg mol}^{-1}$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 55 **Question Id :** 70819118718 **Question Type :** SA

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

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

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 55 Question Id : 70819118718 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

CrO₄²⁻ کو اساسی واسطے میں S₂O₃²⁻ کو تکسید کرتا۔ اور اس سے SO₄²⁻ ملتا ہے اور Cr(OH)₄⁻ از خود تبدیل ہوتا ہے۔ تب CrO₄²⁻ کا حجم جو ضروری ہو 0.25 M S₂O₃²⁻ کے 40 mL کے ساتھ عمل کرنے کے لئے _____ ہے۔ (قریب ترین مکمل عدد میں)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

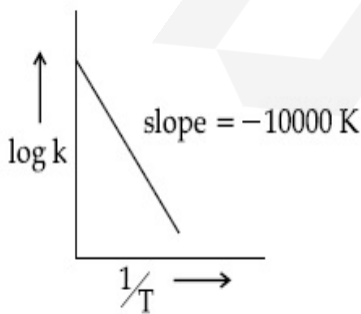
Possible Answers :

5 to 5.001

Question Number : 56 Question Id : 70819118719 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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



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

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

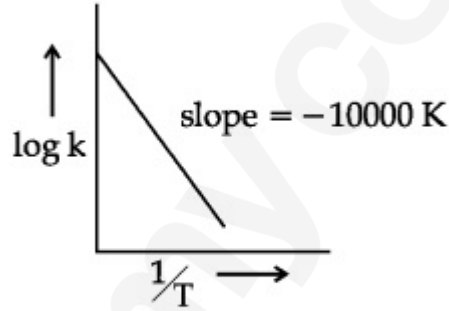
Possible Answers :

5 to 5.001

Question Number : 56 **Question Id :** 70819118719 **Question Type :** SA

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

تفاعل کے لیے $aA + bB \rightarrow cC + dD$ ترتیب میں $\log k$ کے مقابل $\frac{1}{T}$ دیا گیا ہے۔



درجہ حرارت جس (K) پر تفاعل کی رفتار کا مستقلہ 10^{-4} s^{-1} دیا گیا K ہے۔

تفاعل کی رفتار کا مستقلہ 10^{-5} s^{-1} (پر 500 K)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 57 **Question Id :** 70819118720 **Question Type :** SA

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

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 57 **Question Id :** 70819118720 **Question Type :** SA

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

(electron gain enthalpy) $\text{Na}_{(g)}$ سے Na^+ کی آئنٹی انتھالپی $495.8 \text{ kJ mol}^{-1}$ ہے۔ جبکہ Br کی الیکٹران گین انتھالپی (electron gain enthalpy) $-325.0 \text{ kJ mol}^{-1}$ ہے۔ NaBr کی آئنٹی ٹھوس lattice enthalpy $-728.4 \text{ kJ mol}^{-1}$ دی گئی ہوئی ہے۔ NaBr کی آئنٹی ٹھوس کی تیاری کے لیے توانائی $(-)______ \times 10^{-1} \text{ kJ mol}^{-1}$ ہے۔

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 :** 70819118721 **Question Type :** SA

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

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

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 58 Question Id : 70819118721 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

مندرجہ ذیل میں سے کونسے ہلائڈ/ہلائڈس (halide(s)) کی تعداد جو غیر عامل آب پاشیدگی میں ہوتے ہیں

SF₆ (D)

PCl₅ (C)

SiCl₄ (B)

BF₃ (A)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

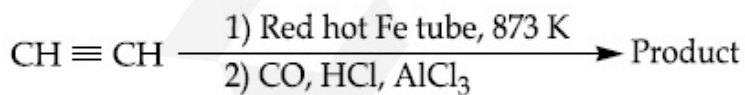
Possible Answers :

5 to 5.001

Question Number : 59 Question Id : 70819118722 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Consider the following chemical reaction.



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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

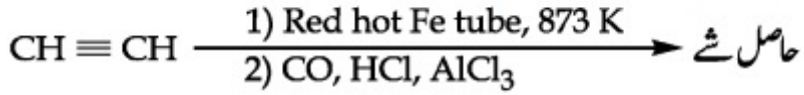
Possible Answers :

5 to 5.001

Question Number : 59 Question Id : 70819118722 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

مندرجہ ذیل کیمیائی مساوات کو نوٹ کیجئے :



حاصل شے میں کاربن جوہر کے sp^2 مخلوطی شدہ کی تعداد _____ ہے۔

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 : 70819118723 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Using the provided information in the following paper chromatogram :

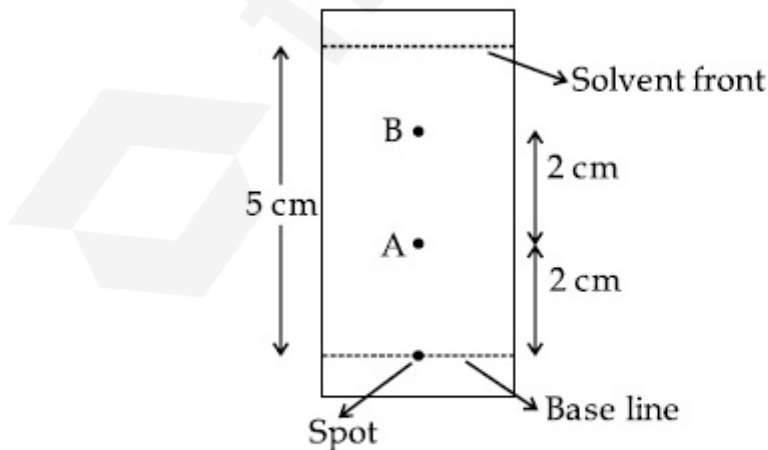


Fig : Paper chromatography for compounds A and B.

the calculated R_f value of A _____ $\times 10^{-1}$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

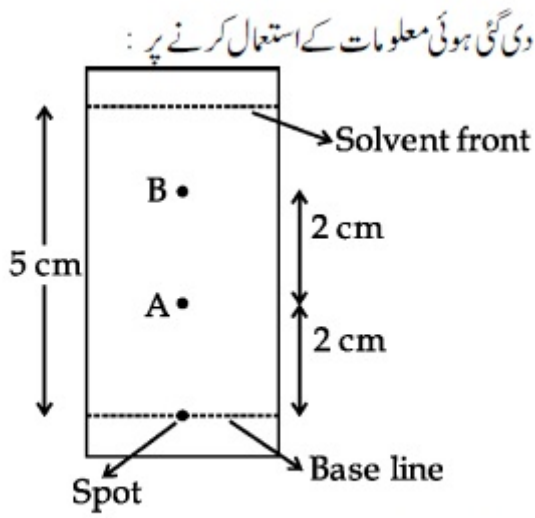
Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 60 Question Id : 70819118723 Question Type : SA

Correct Marks : 4 Wrong Marks : 0



A کی R_f کی قیمت $\times 10^{-1}$ _____ ہیں۔

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 :

708191788

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 :	7081911068
Question Shuffling Allowed :	Yes

Question Number : 61 Question Id : 70819118724 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161321. If f is onto, then $f(n) = n \forall n \in \mathbb{N}$

70819161322. f is one-one

70819161323. If g is onto, then $f \circ g$ is one-one

70819161324. If $f \circ g$ is one-one, then g is one-one

Question Number : 61 Question Id : 70819118724 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

(arbitrary function) فرض کیجئے $f, g : \mathbb{N} \rightarrow \mathbb{N}$ جبکہ $f(n+1) = f(n) + f(1) \forall n \in \mathbb{N}$ اور g کوئی خود مختار تفاعل ہے۔ مندرجہ ذیل میں سے کون سے بیان صحیح نہیں ہے ؟

Options :

70819161321. $\forall n \in \mathbb{N}, f(n) = n$ ہے تو 'f' اگر onto ہے

70819161322. 'f' یہ ایک-ایک (one-one) ہے۔

70819161323. اگر 'g' onto ہے تو 'fog' یہ ایک-ایک (one-one) ہے۔

70819161324. اگر 'fog' یہ ایک-ایک (one-one) ہے تو 'g' یہ ایک-ایک ہے۔

Question Number : 62 Question Id : 70819118725 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161325. $3\sqrt{2}$

70819161326. $\frac{1}{2\sqrt{2}}$

70819161327. $\frac{3}{2\sqrt{2}}$

70819161328. $\frac{3}{\sqrt{2}}$

Question Number : 62 Question Id : 70819118725 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

فرض کیجئے خطوط $(2 - i)z = (2 + i)\bar{z}$ اور $(i^2 = -1)$ $(2 + i)z + (i - 2)\bar{z} - 4i = 0$ یہ دائرہ C پر نارمل

(normal) ہیں۔ اگر خط $iz + \bar{z} + 1 + i = 0$ 'C' پر مماس (tangent) ہے تو اس کا نصف قطر _____ ہے۔

Options :

70819161325. $3\sqrt{2}$

70819161326. $\frac{1}{2\sqrt{2}}$

70819161327. $\frac{3}{2\sqrt{2}}$

70819161328. $\frac{3}{\sqrt{2}}$

Question Number : 63 Question Id : 70819118726 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161329. 2

70819161330. 3

70819161331. 4

70819161332. 0

Question Number : 63 Question Id : 70819118726 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

R میں صحیح عدد 'k' (integer) کے لئے غیر مساوی $x^2 - 2(3k-1)x + 8k^2 - 7 > 0$ کی تمام قیمتیں جو $x \in \mathbb{R}$ میں ہیں کے لئے معقول (valid) ہے۔

Options :

70819161329. ²

70819161330. ³

70819161331. ⁴

70819161332. ⁰

Question Number : 64 Question Id : 70819118727 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161333. $xy - z = (x + y)z$

70819161334. $xy + z = (x + y)z$

70819161335. $xy + yz + zx = z$

70819161336. $xyz = 4$

Question Number : 64 Question Id : 70819118727 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161333. $xy - z = (x + y)z$

70819161334. $xy + z = (x + y)z$

70819161335. $xy + yz + zx = z$

70819161336. $xyz = 4$

Question Number : 65 Question Id : 70819118728 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

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

Options :

70819161337. (5, 8)

70819161338. (5, -8)

70819161339. (-5, 8)

70819161340. (-5, -8)

Question Number : 65 Question Id : 70819118728 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

اگر تقاضا $f(x) = x^3 - ax^2 + bx - 4$ ، $x \in [1, 2]$ کے لئے رولز کا مسئلہ (Rolle's theorem) کو مطمئن

کرتی ہے تو ترتیب وار جوڑی (a, b) (ordered pair) کے برابر ہے۔ (holds)

Options :

70819161337. (5, 8)

70819161338. (5, -8)

70819161339. (-5, 8)

70819161340. (-5, -8)

Question Number : 66 Question Id : 70819118729 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161341. 0

70819161342. $\frac{1}{2}$

70819161343. $\frac{1}{e}$

70819161344. $\frac{1}{2}$

Question Number : 66 Question Id : 70819118729 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

سوال ہے

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

Options :

70819161341. 0

70819161342. $\frac{1}{2}$

70819161343. $\frac{1}{e}$

70819161344. 1

Question Number : 67 Question Id : 70819118730 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The value of the integral

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

(where c is a constant of integration)

Options :

70819161345.

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

70819161346. $\frac{1}{18} \left[9 - 2\cos^6\theta - 3\cos^4\theta - 6\cos^2\theta \right]^{\frac{3}{2}} + c$

70819161347. $\frac{1}{18} \left[11 - 18\sin^2\theta + 9\sin^4\theta - 2\sin^6\theta \right]^{\frac{3}{2}} + c$

70819161348. $\frac{1}{18} \left[11 - 18\cos^2\theta + 9\cos^4\theta - 2\cos^6\theta \right]^{\frac{3}{2}} + c$

Question Number : 67 Question Id : 70819118730 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

کی قیمت $\int \frac{\sin\theta \cdot \sin 2\theta (\sin^6\theta + \sin^4\theta + \sin^2\theta) \sqrt{2\sin^4\theta + 3\sin^2\theta + 6}}{1 - \cos 2\theta} d\theta$ (Integral) تکمیل

ہے _____
(جہاں 'c' تکمیلی مستقل ہے)

Options :

70819161345. $\frac{1}{18} \left[9 - 2\sin^6\theta - 3\sin^4\theta - 6\sin^2\theta \right]^{\frac{3}{2}} + c$

70819161346. $\frac{1}{18} \left[9 - 2\cos^6\theta - 3\cos^4\theta - 6\cos^2\theta \right]^{\frac{3}{2}} + c$

70819161347. $\frac{1}{18} \left[11 - 18\sin^2\theta + 9\sin^4\theta - 2\sin^6\theta \right]^{\frac{3}{2}} + c$

70819161348.

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

Question Number : 68 Question Id : 70819118731 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161349. $\frac{e+1}{3}$

70819161350. $\frac{1}{3e}$

70819161351. $\frac{e-1}{3e}$

70819161352. $\frac{e+1}{3e}$

Question Number : 68 Question Id : 70819118731 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

_____ کی قیمت $\int_{-1}^1 x^2 e^{\lfloor x^3 \rfloor} dx$ ہے۔ جہاں پر $\lfloor t \rfloor$ یہ سب سے بڑے صحیح عدد $\leq t$ کو ظاہر کرتا ہے۔

Options :

70819161349. $\frac{e+1}{3}$

$$70819161350. \frac{1}{3e}$$

$$70819161351. \frac{e-1}{3e}$$

$$70819161352. \frac{e+1}{3e}$$

Question Number : 69 Question Id : 70819118732 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

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

Options :

$$70819161353. (4, 5)$$

$$70819161354. (5, 5)$$

$$70819161355. (5, 4)$$

$$70819161356. (4, 4)$$

Question Number : 69 Question Id : 70819118732 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

اگر ایک منحنی مبداء میں سے گذرتی ہے اور کوئی بھی نقطہ (x, y) پر اس کے مماس کی ڈھلان $\frac{x^2 - 4x + y + 8}{x - 2}$ ہے تو یہ منحنی

نقطہ میں سے بھی گذرتی ہے۔ _____

Options :

70819161353. (4, 5)

70819161354. (5, 5)

70819161355. (5, 4)

70819161356. (4, 4)

Question Number : 70 Question Id : 70819118733 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161357. $(x - 4)^2 + (y + 2)^2 = 16$

70819161358. $(x - 2)^2 + (y - 4)^2 = 4$

70819161359. $(x - 4)^2 + (y - 4)^2 = 8$

70819161360. $(x - 2)^2 + (y - 2)^2 = 12$

Question Number : 70 Question Id : 70819118733 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

نقطہ (3, 5) کا خط $x - y + 1 = 0$ میں عکس (image) _____ پر شامل (lies on) ہے۔

Options :

70819161357. $(x-4)^2 + (y+2)^2 = 16$

70819161358. $(x-2)^2 + (y-4)^2 = 4$

70819161359. $(x-4)^2 + (y-4)^2 = 8$

70819161360. $(x-2)^2 + (y-2)^2 = 12$

Question Number : 71 Question Id : 70819118734 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161361. $(0, 3)$

70819161362. $(-6, 0)$

70819161363. $(5, 4)$

70819161364. $(4, 5)$

Question Number : 71 Question Id : 70819118734 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

شاذی $y^2 = 6x$ پر ایک مماس کھینچا گیا جو خط $2x + y = 1$ پر عمود ہے۔ مندرجہ ذیل میں سے کونسا نقطہ اس پر واقع نہیں ہے ؟

Options :

70819161361. (0, 3)

70819161362. (-6, 0)

70819161363. (5, 4)

70819161364. (4, 5)

Question Number : 72 Question Id : 70819118735 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161365. $a + b = c + d$

70819161366. $a - b = c - d$

70819161367. $ab = \frac{c + d}{a + b}$

70819161368. $a - c = b + d$

Question Number : 72 Question Id : 70819118735 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

الرغی (curves) $\frac{x^2}{a} + \frac{y^2}{b} = 1$ اور $\frac{x^2}{c} + \frac{y^2}{d} = 1$ یکدوسرے کو 90° کا زاویہ بناتے ہوئے قطع کرتے ہیں تو مندرجہ ذیل

میں سے کون سا رابطہ (relation) صحیح ہے ؟

Options :

70819161365. $a + b = c + d$

70819161366. $a - b = c - d$

70819161367. $ab = \frac{c + d}{a + b}$

70819161368. $a - c = b + d$

Question Number : 73 Question Id : 70819118736 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161369. $\frac{5}{8}$

70819161370. $\frac{3}{8}$

70819161371. $\frac{1}{2}$

70819161372. $\frac{3}{4}$

Question Number : 73 Question Id : 70819118736 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

فرض کیجئے 'α' خطوط کے درمیان کا زاویہ ہے جس کے کوسائن سمت (direction cosines) مساوات $l + m - n = 0$ اور $l^2 + m^2 - n^2 = 0$ کو مطمئن کرتے ہیں تو $\sin^4 \alpha + \cos^4 \alpha$ کی قیمت _____ ہے۔

Options :

70819161369. $\frac{5}{8}$

70819161370. $\frac{3}{8}$

70819161371. $\frac{1}{2}$

70819161372. $\frac{3}{4}$

Question Number : 74 Question Id : 70819118737 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

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

Options :

70819161373. $\frac{x}{3} = \frac{y-1}{4} = \frac{z-2}{-3}$

70819161374. $\frac{x}{-3} = \frac{y-1}{4} = \frac{z-2}{3}$

70819161375.

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

70819161376. $\frac{x}{3} = \frac{y-1}{4} = \frac{z-2}{3}$

Question Number : 74 Question Id : 70819118737 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

_____ ہے۔ $\frac{x-1}{2} = \frac{y+1}{3} = \frac{z-1}{-2}$ پر عمود اور نقطہ $(0, 1, 2)$ میں سے گزرنے والے خط کی مساوات

Options :

70819161373. $\frac{x}{3} = \frac{y-1}{4} = \frac{z-2}{-3}$

70819161374. $\frac{x}{-3} = \frac{y-1}{4} = \frac{z-2}{3}$

70819161375. $\frac{x}{3} = \frac{y-1}{-4} = \frac{z-2}{3}$

70819161376. $\frac{x}{3} = \frac{y-1}{4} = \frac{z-2}{3}$

Question Number : 75 Question Id : 70819118738 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

When a missile is fired from a ship, the probability that it is intercepted is $\frac{1}{3}$ and the probability

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

Options :

70819161377. $\frac{1}{27}$

70819161378. $\frac{1}{8}$

70819161379. $\frac{3}{8}$

70819161380. $\frac{3}{4}$

Question Number : 75 Question Id : 70819118738 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

ایک جہاز سے ایک میسائل (missile) داغا گیا۔ راستے میں رُکنے (intercepted) کی احتمال $\frac{1}{3}$ ہے۔ اور میسائل کے ہدف کو مارنے کا

احتمال $\frac{3}{4}$ ہے شرط یہ ہے کہ وہ راستے میں نہیں رکے گی۔ اگر جہاز سے آزادانہ طور پر تین میسائل داغے گئے تو تینوں ہدف کو مارنے کی احتمال

ہے۔

Options :

70819161377. $\frac{1}{27}$

70819161378. $\frac{1}{8}$

70819161379. $\frac{3}{8}$

70819161380. $\frac{3}{4}$

Question Number : 76 Question Id : 70819118739 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161381. $\frac{1}{36}$

70819161382. $\frac{1}{54}$

70819161383. $\frac{1}{72}$

70819161384. $\frac{5}{216}$

Question Number : 76 Question Id : 70819118739 Question Type : MCQ Option Shuffling : Yes
Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

دو درجی مساوات $ax^2 + bx + c = 0$ میں ضریب (coefficients) a ، b اور c اس طرح حاصل کئے گئے کہ ایک پانسہ (dice) تین مرتبہ پھینکا گیا تو اس مساوات کے جذر (roots) مساوی ہونے کی احتمال _____ ہے۔

Options :

70819161381. $\frac{1}{36}$

70819161382. $\frac{1}{54}$

70819161383. $\frac{1}{72}$

70819161384. $\frac{5}{216}$

Question Number : 77 Question Id : 70819118740 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161385. $\left(0, \frac{\pi}{2}\right) \cup \left(\pi, \frac{3\pi}{2}\right)$

70819161386. $\left(0, \frac{\pi}{4}\right) \cup \left(\frac{\pi}{2}, \frac{3\pi}{4}\right) \cup \left(\frac{3\pi}{2}, \frac{11\pi}{6}\right)$

70819161387. $\left(0, \frac{\pi}{2}\right) \cup \left(\frac{\pi}{2}, \frac{3\pi}{4}\right) \cup \left(\pi, \frac{7\pi}{6}\right)$

70819161388. $\left(0, \frac{\pi}{4}\right) \cup \left(\frac{\pi}{2}, \frac{3\pi}{4}\right) \cup \left(\pi, \frac{5\pi}{4}\right) \cup \left(\frac{3\pi}{2}, \frac{7\pi}{4}\right)$

Question Number : 77 Question Id : 70819118740 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$\sin 2\theta + \tan 2\theta > 0$ کے لئے $\theta \in [0, 2\pi]$ کے تمام ممکن قیمتیں _____ میں شامل ہیں۔

Options :

70819161385. $\left(0, \frac{\pi}{2}\right) \cup \left(\pi, \frac{3\pi}{2}\right)$

70819161386. $\left(0, \frac{\pi}{4}\right) \cup \left(\frac{\pi}{2}, \frac{3\pi}{4}\right) \cup \left(\frac{3\pi}{2}, \frac{11\pi}{6}\right)$

70819161387. $\left(0, \frac{\pi}{2}\right) \cup \left(\frac{\pi}{2}, \frac{3\pi}{4}\right) \cup \left(\pi, \frac{7\pi}{6}\right)$

70819161388. $\left(0, \frac{\pi}{4}\right) \cup \left(\frac{\pi}{2}, \frac{3\pi}{4}\right) \cup \left(\pi, \frac{5\pi}{4}\right) \cup \left(\frac{3\pi}{2}, \frac{7\pi}{4}\right)$

Question Number : 78 Question Id : 70819118741 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161389. 24

70819161390. 30

70819161391. 36

70819161392. 45

Question Number : 78 Question Id : 70819118741 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

$xyz = 24$ کے مثبت صحیح عددی حل (positive integral solutions) کی کل تعداد _____ ہے جس کے لئے $xyz = 24$

Options :

70819161389. ²⁴70819161390. ³⁰70819161391. ³⁶70819161392. ⁴⁵**Question Number : 79 Question Id : 70819118742 Question Type : MCQ Option Shuffling : Yes****Is Question Mandatory : No****Correct Marks : 4 Wrong Marks : 1**

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

Options :

70819161393. 10

70819161394. $10(\sqrt{3} + 1)$ 70819161395. $10\sqrt{3}$ 70819161396. $10(\sqrt{3} - 1)$ **Question Number : 79 Question Id : 70819118742 Question Type : MCQ Option Shuffling : Yes****Is Question Mandatory : No****Correct Marks : 4 Wrong Marks : 1**

ایک آدمی ٹاور (tower) کے اوپر سے مشاہدہ کرتا ہے کہ ایک نقطہ A سے ٹاور کی طرف ایک تیزی سے چلنے والی چھوٹی کشتی (boat) یکساں رفتار سے آرہی ہے۔ اس نقطہ پر کشتی سے آدمی کی آنکھ سے بننے والا نزولی زاویہ (Angle of depression) 30° ہے۔ [آدمی کی اونچائی کو نظر انداز کیجئے]۔ کشتی 20 سیکنڈ چلنے کے بعد ٹاور سے (جو پانی کے ہموار ہے) کشتی نقطہ B پر پہنچ جاتی ہے۔ جہاں پر نزولی زاویہ 45° ہے۔ نقطہ B سے ٹاور کے قاعدہ تک پہنچنے کے لئے کشتی کو _____ وقت (سیکنڈ میں) درکار ہے :

Options :

70819161393. 10

70819161394. $10(\sqrt{3} + 1)$

70819161395. $10\sqrt{3}$

70819161396. $10(\sqrt{3} - 1)$

Question Number : 80 Question Id : 70819118743 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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

Options :

70819161397. $A \rightarrow (A \rightarrow B)$

70819161398. $A \rightarrow (A \vee B)$

70819161399. $A \rightarrow (A \wedge B)$

70819161400. $A \rightarrow (A \leftrightarrow B)$

Question Number : 80 Question Id : 70819118743 Question Type : MCQ Option Shuffling : Yes

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

-ہے (equivalent) کے مساوی _____ $A \rightarrow (B \rightarrow A)$ بیان

Options :

70819161397. $A \rightarrow (A \rightarrow B)$

70819161398. $A \rightarrow (A \vee B)$

70819161399. $A \rightarrow (A \wedge B)$

70819161400. $A \rightarrow (A \leftrightarrow B)$

Mathematics Section B

Section Id :	708191789
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 :	7081911069
Question Shuffling Allowed :	Yes

Question Number : 81 Question Id : 70819118744 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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

_____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 81 **Question Id :** 70819118744 **Question Type :** SA

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

∴ _____ $13(a^2 + b^2)$ if $(I_2 + A)(I_2 - A)^{-1} = \begin{bmatrix} a & -b \\ b & a \end{bmatrix}$ and $A = \begin{bmatrix} 0 & -\tan\left(\frac{\theta}{2}\right) \\ \tan\left(\frac{\theta}{2}\right) & 0 \end{bmatrix}$

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 :** 70819118745 **Question Type :** SA

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

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

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 82 **Question Id :** 70819118745 **Question Type :** SA

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

$$A = \begin{bmatrix} x & y & z \\ y & z & x \\ z & x & y \end{bmatrix} : \text{فرض کیجئے}$$

جہاں پر x, y, z اور حقیقی اعداد اس طرح ہیں کہ $x + y + z > 0$ اور $xyz = 2$ اگر $A^2 = I_3$ تو $x^3 + y^3 + z^3$ کی قیمت

- ہے _____

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 :** 70819118746 **Question Type :** SA

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

If the system of equations

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

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

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

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 83 **Question Id :** 70819118746 **Question Type :** SA

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

اگر مساوات کے نظام

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

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

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

کے لامحدود حل (infinitely many solutions) ہیں تو k _____ کے برابر ہے۔

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 :** 70819118747 **Question Type :** SA

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

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 84 **Question Id :** 70819118747 **Question Type :** SA

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

ہندسے 1, 2, 3, 4, 5 کا استعمال کر کے 100 اور 1000 کے درمیان حاصل ہونے والے نمبرات کی کل تعداد _____ ہے۔ اگر کوئی بھی ہندسہ دوبارہ استعمال نہ ہو اور وہ نمبر 3 یا 5 سے تقسیم ہو۔

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 :** 70819118748 **Question Type :** SA

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

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 85 Question Id : 70819118748 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

فرض کیجئے A_1, A_2, A_3, \dots یہ مربعے (squares) اس طرح ہیں کہ $n \geq 1$ کے A_n کے ضلع کی لمبائی، A_{n+1} کے وتر (diagonal) کی لمبائی کے برابر ہے۔ اگر A_1 کی لمبائی 12 cm ہے تو n کی سب سے چھوٹی قیمت _____ ہے جس کے لئے A_n کا رقبہ ایک سے کم ہے۔

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 : 70819118749 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 86 Question Id : 70819118749 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

نقاط کی تعداد _____ ہے جہاں پر تفاعل $f(x) = |2x + 1| - 3|x + 2| + |x^2 + x - 2|, x \in \mathbb{R}$ تفریقی نہیں ہے۔ (not differentiable)

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 : 70819118750 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 87 Question Id : 70819118750 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 89 Question Id : 70819118752 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 89 Question Id : 70819118752 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

خطوط $(\sqrt{3})kx + ky - 4\sqrt{3} = 0$ اور $\sqrt{3}x - y - 4(\sqrt{3})k = 0$ کے انقطاعی نقطہ کے لوکس (locus) کی مساوات مخروطی (conic) ہے اس کا eccentricity _____ ہے۔

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 : 70819118753 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001

Question Number : 90 Question Id : 70819118753 Question Type : SA

Correct Marks : 4 Wrong Marks : 0

فرض کیجئے $\vec{a} = \hat{i} + 2\hat{j} - \hat{k}$ ، $\vec{b} = \hat{i} - \hat{j}$ اور $\vec{c} = \hat{i} - \hat{j} - \hat{k}$ یہ تین سمتیں (vectors) ہیں۔ اگر \vec{r} سمت اس طرح ہے کہ $\vec{r} \times \vec{a} = \vec{c} \times \vec{a}$ اور $\vec{r} \cdot \vec{b} = 0$ تو $\vec{r} \cdot \vec{a}$ کے برابر ہے۔

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5 to 5.001