Physics Section A

Section Id :	366694242
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	80

Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	366694242
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 31 Question Id : 3666944205 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A transmitting antenna is kept on the surface of the earth. The minimum height of receiving antenna required to receive the signal in line of sight at 4 km distance from it is $x \times 10^{-2}$ m. The value of x is _____.

(Let, radius of earth R = 6400 km)

Options :

36669413071. 1.25

36669413072. 12.5

36669413073. 125

36669413074. 1250

Question Number : 31 Question Id : 3666944205 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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एक प्रेषक ऐंटिना को पृथ्वी के तल पर रखा गया है। इससे $4\,\text{km}$ की दूरी पर दृष्टि रेखीय सिग्नल प्राप्त करने के लिए ग्राही ऐंटिना टॉवर (इमारत) की आवश्यक न्यूनतम ऊँचाई $x \times 10^{-2}\,\text{m}$ है। x का मान है:

(माना, पृथ्वी की त्रिज्या $\text{R} = 6400\,\text{km}$)

Options :

36669413071. 1.25

36669413072. 12.5

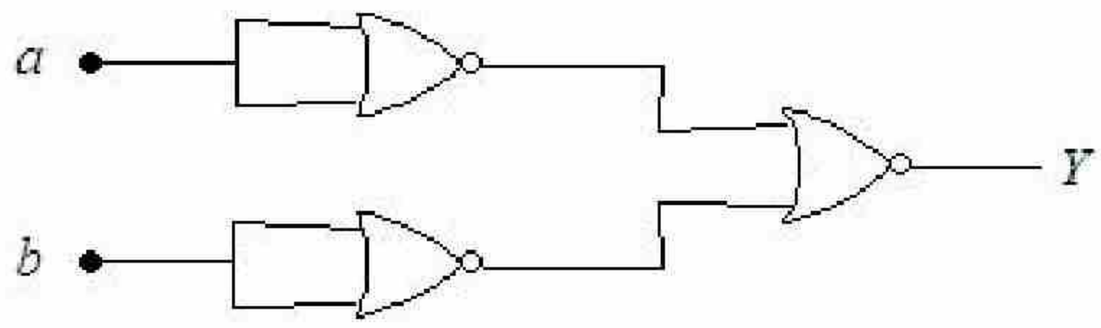
36669413073. 125

36669413074. 1250

Question Number : 32 Question Id : 3666944206 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The logic performed by the circuit shown in figure is equivalent to :



Options :

36669413075. OR

36669413076. NAND

36669413077. AND

36669413078. NOR

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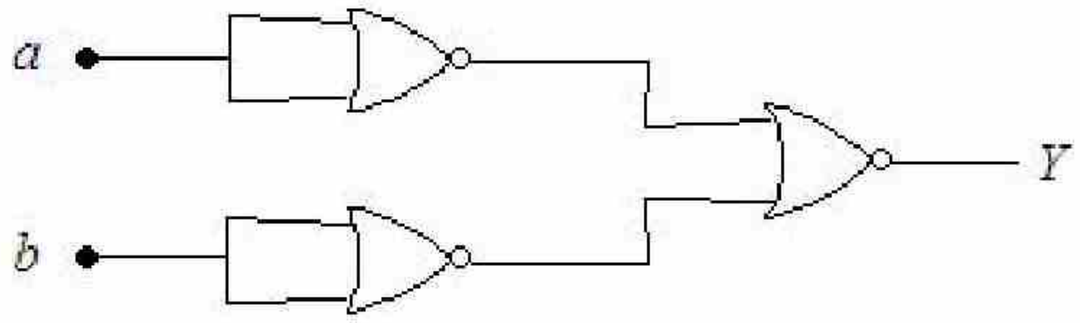
Question Number : 32 Question Id : 3666944206 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

चित्र में प्रदर्शित परिपथ द्वारा पूर्ण किया गया तर्क (लॉजिक) निम्न के तुल्य है:



Options :

36669413075. OR

36669413076. NAND

36669413077. AND

36669413078. NOR

Question Number : 33 Question Id : 3666944207 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Two radioactive elements A and B initially have same number of atoms. The half life of A is same as the average life of B. If λ_A and λ_B are decay constants of A and B respectively, then choose the correct relation from the given options.

Options :

36669413079. $\lambda_A \ln 2 = \lambda_B$

36669413080. $\lambda_A = \lambda_B \ln 2$

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$\lambda_A = \lambda_B$

36669413082. $\lambda_A = 2\lambda_B$

Question Number : 33 Question Id : 3666944207 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

दो रेडियोसक्रिय तत्वों A एवं B के परमाणुओं की संख्या प्रारम्भ में समान है। A की अर्द्धायु, B की औसत आयु के समान है। यदि λ_A एवं λ_B, A एवं B के क्रमशः क्षय नियतांक हैं, तो नीचे दिए गए विकल्पों में से सही सम्बंध चुनिए:

Options :

36669413079. $\lambda_A \ln 2 = \lambda_B$

36669413080. $\lambda_A = \lambda_B \ln 2$

36669413081. $\lambda_A = \lambda_B$

36669413082. $\lambda_A = 2\lambda_B$

Question Number : 34 Question Id : 3666944208 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A metallic surface is illuminated with radiation of wavelength λ, the stopping potential is V_o. If the same surface is illuminated with radiation of wavelength 2λ, the stopping potential becomes $\frac{V_o}{4}$. The threshold wavelength for this metallic surface will be

Options :

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36669413083. 4λ

36669413084. $\frac{3}{2}\lambda$

36669413085. 3λ

36669413086. $\frac{\lambda}{4}$

Question Number : 34 Question Id : 3666944208 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

किसी धात्विक तल को λ तरंगदैर्ध्य वाले विकिरण से प्रदीप्त किया जाता है, जिसका रोधी विभव V_o है। यदि इसी तल को 2λ, तरंगदैर्ध्य वाले विकिरण से प्रदीप्त किया जाए तो रोधी विभव $\frac{V_o}{4}$ हो जाता है। इस धात्विक तल के लिए देहली तरंगदैर्ध्य होगीः

Options :

36669413083. 4λ

36669413084. $\frac{3}{2}\lambda$

36669413085. 3λ

36669413086. $\frac{\lambda}{4}$

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Question Number : 35 Question Id : 3666944209 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The critical angle for a denser-rarer interface is 45°. The speed of light in rarer medium is 3×10^8 m/s. The speed of light in the denser medium is:

Options :

36669413087. 2.12×10^8 m/s

36669413088. 3.12×10^7 m/s

36669413089. 5×10^7 m/s

36669413090. $\sqrt{2} \times 10^8$ m/s

Question Number : 35 Question Id : 3666944209 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

किसी सघन-विरल अंतरपृष्ठ (interface) के लिए क्रान्तिक कोण 45° है। विरल माध्यम मे प्रकाश की चाल 3×10^8 m/s है। सघन माध्यम में प्रकाश की चाल है:

Options :

36669413087. 2.12×10^8 m/s

36669413088. 3.12×10^7 m/s

36669413089. 5×10^7 m/s

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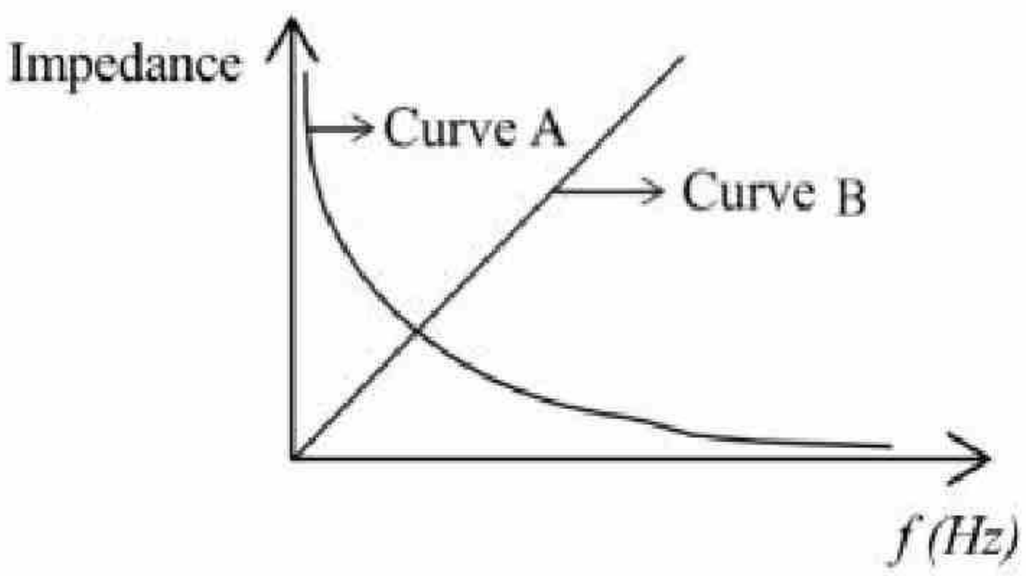
36669413090. $\sqrt{2} \times 10^8$ m/s

Question Number : 36 Question Id : 3666944210 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



As per the given graph, choose the correct representation for curve A and curve B.

{Where X_C = reactance of pure capacitive circuit connected with A.C. source

X_L = reactance of pure inductive circuit connected with A.C. source

R = impedance of pure resistive circuit connected with A.C. source.

Z = Impedance of the LCR series circuit}

Options :

36669413091. $A = X_C, B = X_L$

36669413092. $A = X_L, B = Z$

36669413093. $A = X_C, B = R$

36669413094. $A = X_L, B = R$

Question Number : 36 Question Id : 3666944210 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

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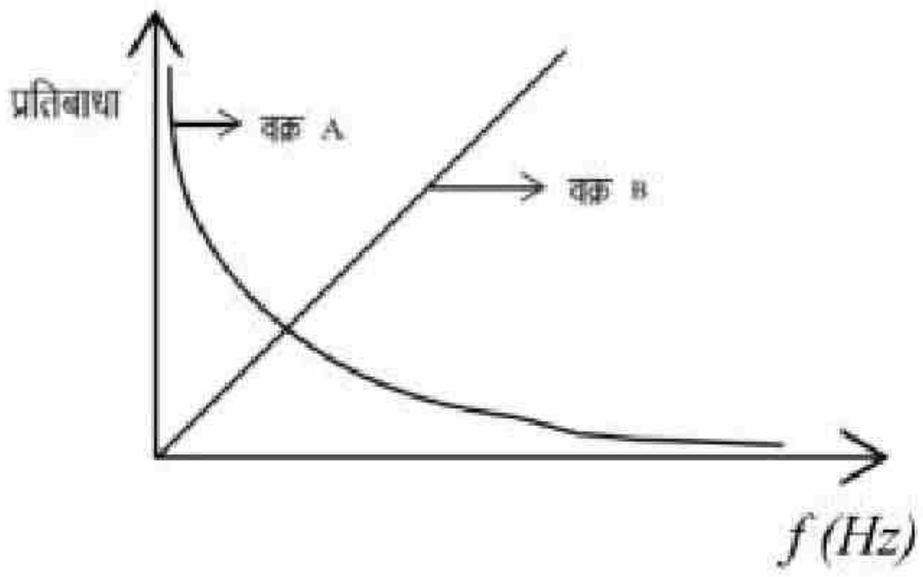
Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1



दिए हुए अभिरेख (ग्राफ) के अनुसार, वक्र A एवं वक्र B के लिए सही विकल्प चुनें।

{जहाँ X_C = A.C. (प्रत्यावर्ती) स्रोत से जुडे शुद्ध धारतीय परिपथ का प्रतिघात

X_L = A.C. स्रोत से जुडे हुए शुद्ध प्रेरकीय परिपथ का प्रतिघात

R = A.C. स्रोत से जुडे हुए शुद्ध प्रतिरोधकीय परिपथ की प्रतिबाधा

Z = श्रेणीबद्ध LCR परिपथ की प्रतिबाधा}

Options :

36669413091. $A = X_C, B = X_L$

36669413092. $A = X_L, B = Z$

36669413093. $A = X_C, B = R$

36669413094. $A = X_L, B = R$

Question Number : 37 Question Id : 3666944211 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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The electric field in an electromagnetic wave is given as

$$\vec{E} = 20 \sin \omega\left(t - \frac{x}{c}\right)\vec{j}\ NC^{-1}$$

where ω and c are angular frequency and velocity of electromagnetic wave respectively. The energy contained in a volume of $5 \times 10^{-4}\ m^3$ will be
(Given $\varepsilon_0 = 8{\cdot}85 \times 10^{-12}\ C^2/Nm^2$)

Options :

36669413095. $8{\cdot}85 \times 10^{-13}\ J$

36669413096. $88{\cdot}5 \times 10^{-13}\ J$

36669413097. $28{\cdot}5 \times 10^{-13}\ J$

36669413098. $17{\cdot}7 \times 10^{-13}\ J$

Question Number : 37 Question Id : 3666944211 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

किसी विधुत चुम्बकीय तरंग का विधुत क्षेत्र निम्नवत है

$$\vec{E} = 20 \sin \omega\left(t - \frac{x}{c}\right)\vec{j}\ NC^{-1}$$

जहाँ ω एवं c क्रमशः कोणीय आवृत्ति एवं विधुत चुम्बकीय तरंग का वेग हैं। $5 \times 10^{-4}\ m^3$ के आयतन में अंतर्विष्ट (Contained) ऊर्जा होगीः

(दिया है $\varepsilon_0 = 8.85 \times 10^{-12}\ C^2/Nm^2$)

Options :

36669413095. $8{\cdot}85 \times 10^{-13}\ J$

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36669413096. $88 \cdot 5 \times 10^{-13}$ J

36669413097. $28 \cdot 5 \times 10^{-13}$ J

36669413098. $17 \cdot 7 \times 10^{-13}$ J

Question Number : 38 Question Id : 3666944212 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The free space inside a current carrying toroid is filled with a material of susceptibility 2×10^{-2}. The percentage increase in the value of magnetic field inside the toroid will be

Options :

36669413099. 2%

36669413100. $0 \cdot 2\%$

36669413101. 1%

36669413102. $0 \cdot 1\%$

Question Number : 38 Question Id : 3666944212 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक धारावाही टॉरॉइड के मध्य के मुक्त स्थान को 2×10^{-2} सस्पटिबिलिटी वाले पदार्थ से

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Options :

36669413099. 2%

36669413100. $0{\cdot}2\%$

36669413101. 1%

36669413102. $0{\cdot}1\%$

Question Number : 39 Question Id : 3666944213 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The current sensitivity of moving coil galvanometer is increased by 25%. This increase is achieved only by changing in the number of turns of coils and area of cross section of the wire while keeping the resistance of galvanometer coil constant. The percentage change in the voltage sensitivity will be:

Options :

36669413103. $+25\%$

36669413104. -25%

36669413105. Zero

36669413106. -50%

Question Number : 39 Question Id : 3666944213 Question Type : MCQ Option Shuffling : Yes Is

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Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

एक चल कुंडली धारामापी की धारा सुग्राहीता 25% बढ़ा दी जाती है। यह वृद्धि, कुंडली के घेरों की संख्या, एवं तार के अनुप्रस्थ काट क्षेत्रफल में परिवर्तन करने से प्राप्त होती है, जबकि धारामापी की कुंडली का प्रतिरोध नियत रखा जाता है । वोल्टेज सुग्राहिता में हुआ प्रतिशत परिवर्तन होगाः

Options :

36669413103. $+25\%$

36669413104. -25%

36669413105. शून्य

36669413106. -50%

Question Number : 40 Question Id : 3666944214 Question Type : MCQ Option Shuffling : Yes Is

Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Two identical heater filaments are connected first in parallel and then in series. At the same applied voltage, the ratio of heat produced in same time for parallel to series will be:

Options :

36669413107. $1:4$

36669413108. $4:1$

36669413109. $1:2$

36669413110. $2:1$

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Question Number : 40 Question Id : 3666944214 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

हीटर के दो समरूप फिलामेंटों को पहले समानान्तर क्रम में फिर श्रेणी क्रम में जोडा जाता है । समान आरोपित विभव के लिए, समान समय में समानान्तर क्रम में उत्पन्न ऊष्मा का श्रेणी क्रम में उत्पन्न ऊष्मा से अनुपात होगाः

Options :

36669413107. $1:4$

36669413108. $4:1$

36669413109. $1:2$

36669413110. $2:1$

Question Number : 41 Question Id : 3666944215 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A parallel plate capacitor of capacitance 2 F is charged to a potential V, The energy stored in the capacitor is E_1. The capacitor is now connected to another uncharged identical capacitor in parallel combination. The energy stored in the combination is E_2. The ratio E_2/E_1 is :

Options :

36669413111. $1:2$

36669413112. $2:1$

36669413113. $2:3$

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36669413114. 1 : 4

Question Number : 41 Question Id : 3666944215 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

2 F धारिता वाले एक समानान्तर पट्टिका संधारित्र को V विभव तक आवेशित किया जाता है। संधारित्र में संचित ऊर्जा का मान E_1 है। अब इस संधारित्र को किसी दूसरे समरुप अनावेशित संधारित्र के साथ समानान्तर क्रम में जोडा जाता है। संयोजन में संचित ऊर्जा का मान E_2 है। अनुपात E_2/E_1 है:

Options :

36669413111. 1 : 2

36669413112. 2 : 1

36669413113. 2 : 3

36669413114. 1 : 4

Question Number : 42 Question Id : 3666944216 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The variation of kinetic energy (KE) of a particle executing simple harmonic motion with the displacement (x) starting from mean position to extreme position (A) is given by

Options :

36669413115.

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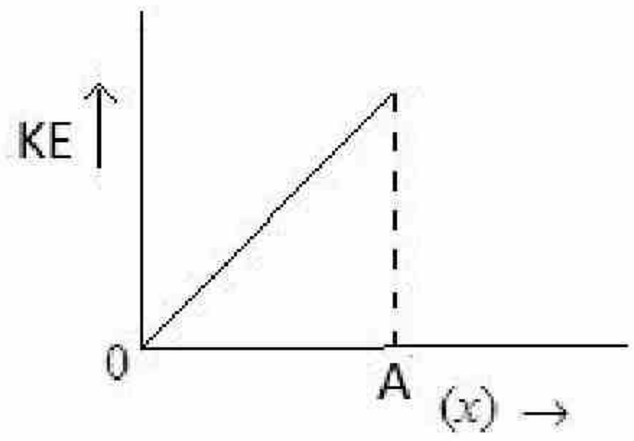
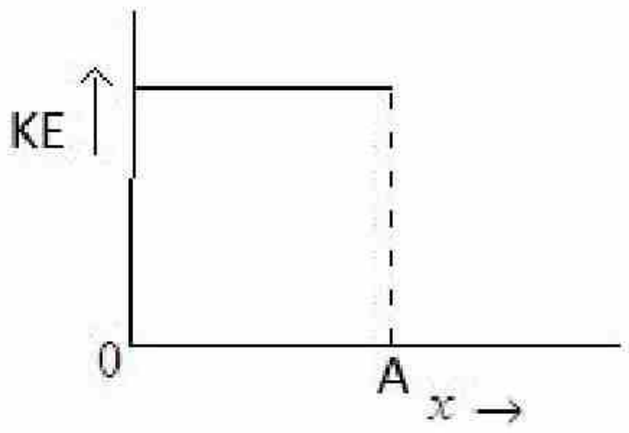
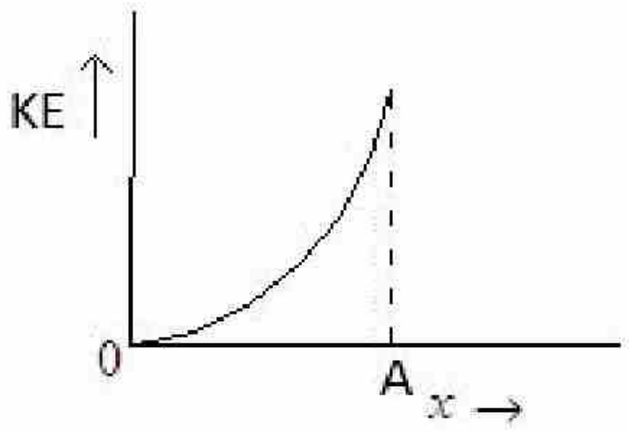
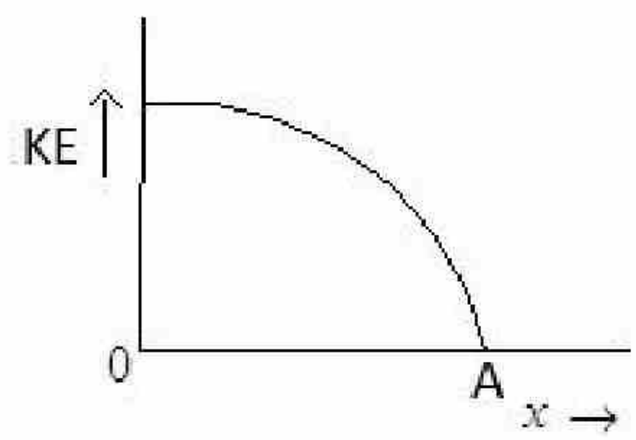




36669413116.



36669413117.



36669413118.

Question Number : 42 Question Id : 3666944216 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

सरल आवर्त गति करते हुए किसी कण के, उसकी माध्य स्थिति से अंतिम (चरम) स्थिति (A) तक, उसके विस्थापन (x) के साथ उसकी गतिज ऊर्जा (KE) में परिवर्तन, निम्नवत दिया गया है:

Options :

36669413115.

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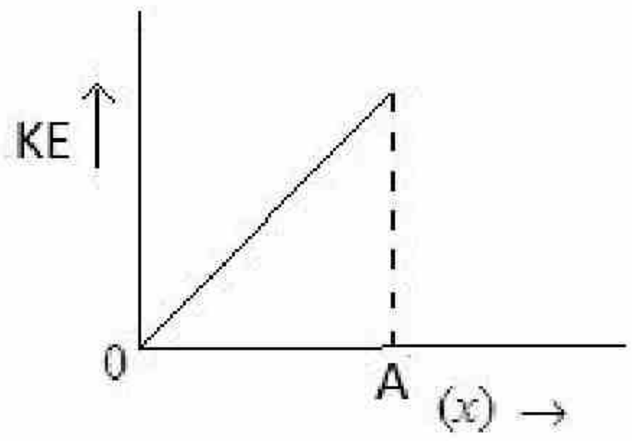
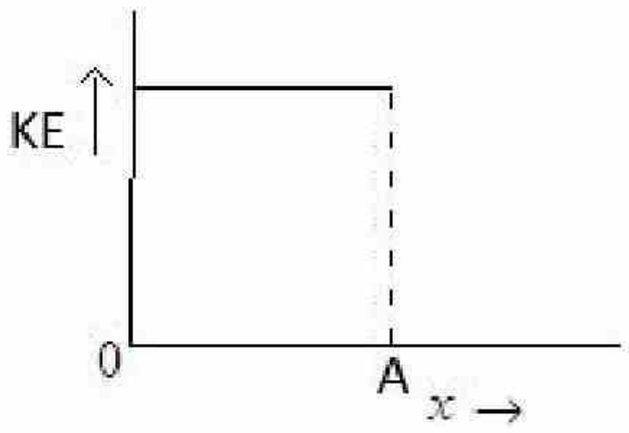
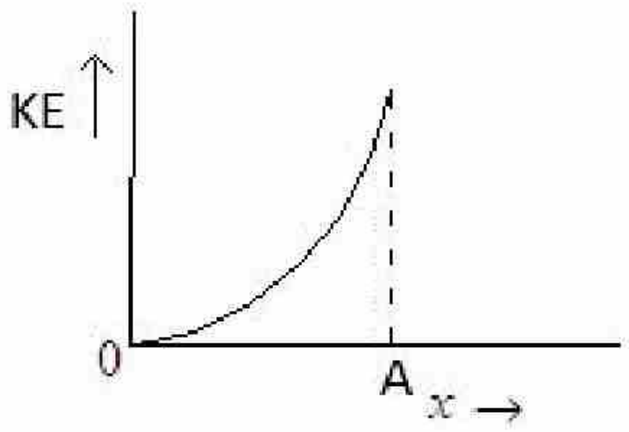
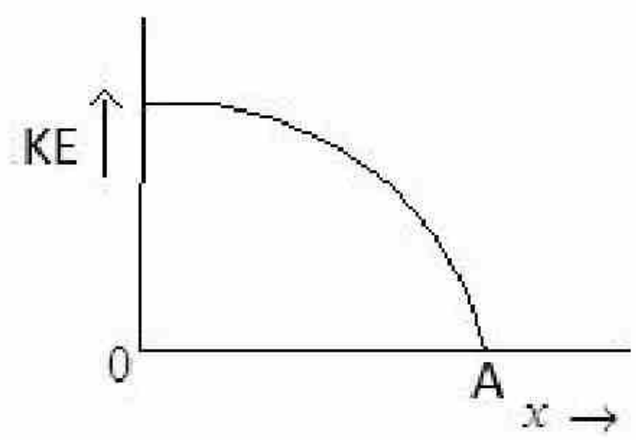




36669413116.



36669413117.



36669413118.

Question Number : 43 Question Id : 3666944217 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Three vessels of equal volume contain gases at the same temperature and pressure. The first vessel contains neon (monoatomic), the second contains chlorine (diatomic) and third contains uranium hexafloride (polyatomic). Arrange these on the basis of their root mean square speed (v_{rms}) and choose the correct answer from the options given below:

Options :

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36669413119. $v_{rms}\,(mono) > v_{rms}\,(dia) > v_{rms}\,(poly)$

36669413120. $v_{rms}\,(mono) < v_{rms}\,(dia) < v_{rms}\,(poly)$

36669413121. $v_{rms}\,(mono) = v_{rms}\,(dia) = v_{rms}\,(poly)$

36669413122. $v_{rms}\,(dia) < v_{rms}\,(poly) < v_{rms}\,(mono)$

Question Number : 43 Question Id : 3666944217 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

समान आयतन वाले तीन बर्तनों में समान तापमान एवं दाब पर गैसें रखी हुई हैं। पहले बर्तन में निऑन (एकल परमाणवीय), दूसरे बर्तन में क्लोरीन (द्वीपरमाणवीय), एवं तीसरे बर्तन में यूरेनियम हेक्सा फ्लोराइड (बहुपरमाणवीय) गैस हैं। इन्हें, इनकी वर्ग माध्य मूल चाल (v_{rms}) के आधार पर व्यवस्थित करें एवं नीचे दिए गए विकल्पों में से सही उत्तर चुनें:

Options :

36669413119. $v_{rms}\,(mono) > v_{rms}\,(dia) > v_{rms}\,(poly)$

36669413120. $v_{rms}\,(mono) < v_{rms}\,(dia) < v_{rms}\,(poly)$

36669413121. $v_{rms}\,(mono) = v_{rms}\,(dia) = v_{rms}\,(poly)$

36669413122. $v_{rms}\,(dia) < v_{rms}\,(poly) < v_{rms}\,(mono)$

Question Number : 44 Question Id : 3666944218 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

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Correct Marks : 4 Wrong Marks : 1

1 kg of water at 100°C is converted into steam at 100°C by boiling at atmospheric pressure. The volume of water changes from $1{\cdot}00 \times 10^{-3}$ m^3 as a liquid to $1{\cdot}671$ m^3 as steam. The change in internal energy of the system during the process will be

(Given latent heat of vaporisaiton = 2257 kJ/kg, Atmospheric pressure = 1×10^5 Pa)

Options :

36669413123. $-$ 2090 kJ

36669413124. + 2090 kJ

36669413125. $-$ 2426 kJ

36669413126. + 2476 kJ

Question Number : 44 Question Id : 3666944218 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

100°C पर 1 Kg पानी को उबालकर वायुमण्डलीय दाब पर 100°C की भाप में परिवर्तित किया जाता है । पानी का आयतन. 1.00×10^{-3} m^3 द्रव से $1{\cdot}671$ m^3 भाप में परिवर्तित हो जाता है । इस प्रक्रम के दौरान, निकाय की आंतरिक ऊर्जा में हुए परिवर्तन का लगभग मान होगा

(दिया है, बाष्पीकरण की गुप्त ऊष्मा = 2257 kJ/kg, वायुमण्डलीय दाब = 1×10^5 Pa)

Options :

36669413123. $-$ 2090 kJ

36669413124. + 2090 kJ

36669413125. $-$ 2426 kJ

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36669413126. $+2476\ \text{kJ}$

Question Number : 45 Question Id : 3666944219 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

On a temperature scale 'X', the boiling point of water is 65° X and the freezing point is –15°X. Assume that the X scale is linear. The equivalent temperature corresponding to –95° X on the Farenheit scale would be:

Options :

36669413127. $-48°\text{F}$

36669413128. $-63°\text{F}$

36669413129. $-112°\text{F}$

36669413130. $-148°\text{F}$

Question Number : 45 Question Id : 3666944219 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

किसी तापमापी के पैमाने 'X' पर पानी का **क्वथनांक** 65° X एवं हिमांक –15°X है। माना X पैमाना रेखीय है। फारनहाइट पैमाने पर –95° X के संगत, तुल्य तापमान होगा:

Options :

36669413127. $-48°\text{F}$

36669413128. $-63°\text{F}$

36669413129. $-112°\text{F}$

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36669413130. $-148^{\circ}F$

Question Number : 46 Question Id : 3666944220 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

The radii of two planets 'A' and 'B' are 'R' and '4R' and their densities are ρ and $\rho/3$ respectively. The ratio of acceleration due to gravity at their surfaces (g_A : g_B) will be:

Options :

36669413131. 3 : 16

36669413132. 4 : 3

36669413133. 3 : 4

36669413134. 1 : 16

Question Number : 46 Question Id : 3666944220 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

दो ग्रहों 'A' और 'B' की त्रिज्याएँ 'R' एवं '4R' हैं, एवं उनके घनत्व क्रमशः ρ एवं $\rho/3$ हैं। उनके धरातलों पर गुरुत्वीय त्वरणों का अनुपात (g_A: g_B) होगाः

Options :

36669413131. 3 : 16

36669413132. 4 : 3

36669413133. 3 : 4

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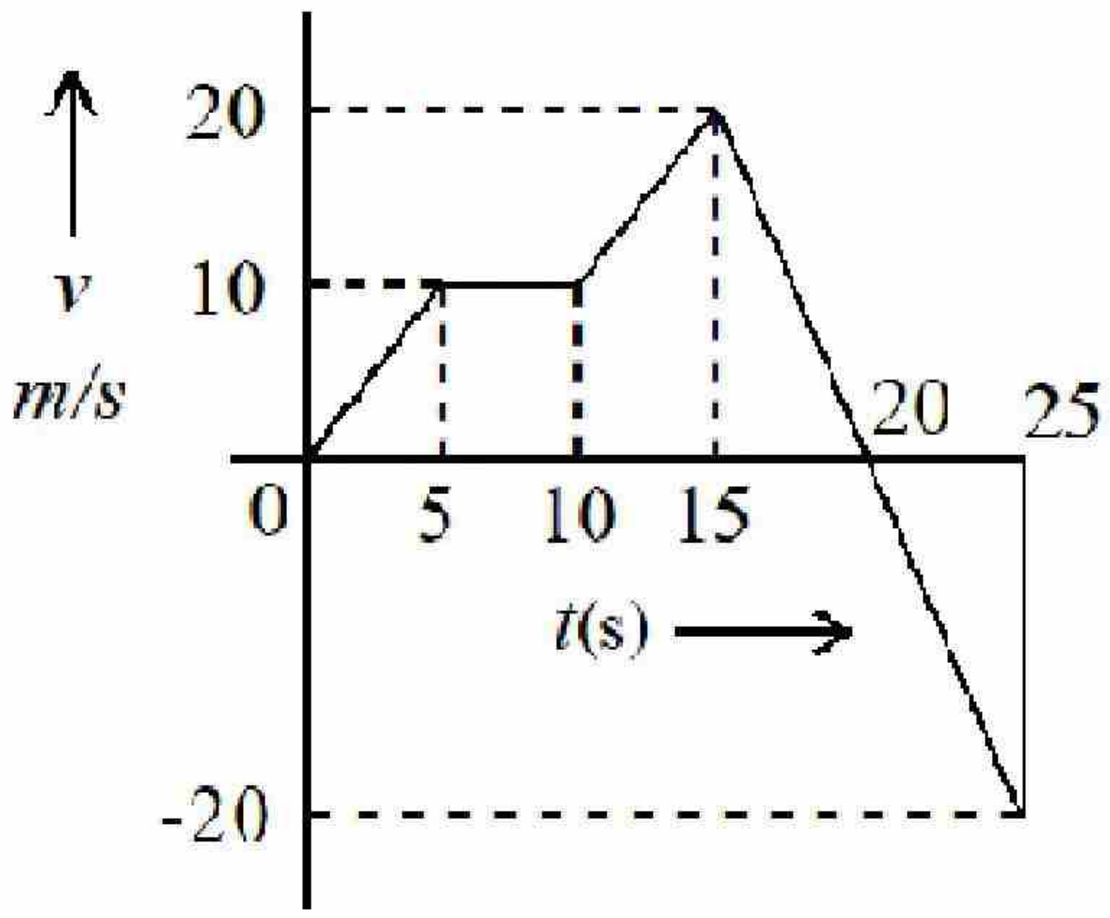
36669413134. 1 : 16

Question Number : 47 Question Id : 3666944221 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

From the v - *t* graph shown, the ratio of distance to displacement in 25 s of motion is:



Options :

36669413135. 1

36669413136. $\frac{1}{2}$

36669413137. $\frac{5}{3}$

36669413138. $\frac{3}{5}$

Question Number : 47 Question Id : 3666944221 Question Type : MCQ Option Shuffling : Yes Is

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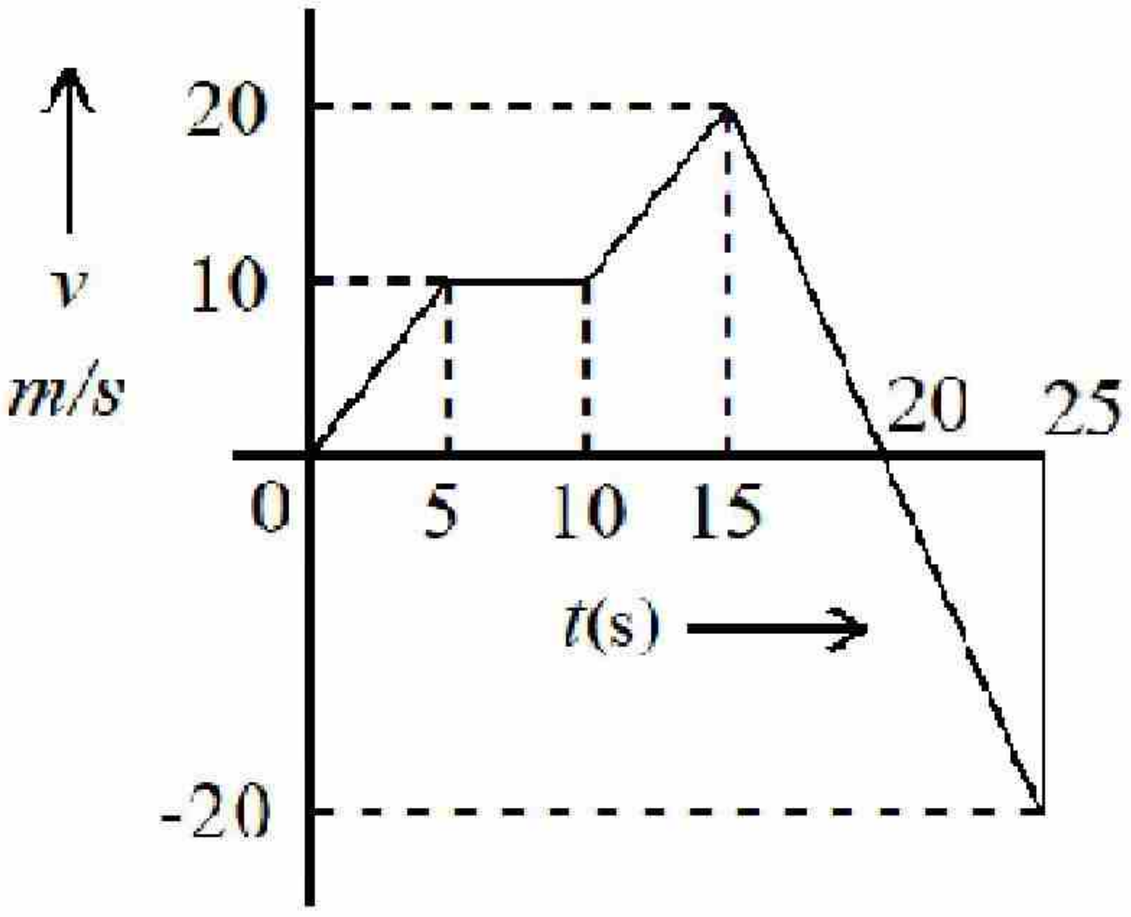
Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

दर्शाये हुए $v \rightarrow t$ अभिरेख में, 25 सेकण्ड की गति के दौरान तय की गई दूरी एवं विस्थापन का अनुपात हैः



Options :

36669413135. 1

36669413136. $\frac{1}{2}$

36669413137. $\frac{5}{3}$

36669413138. $\frac{3}{5}$

Question Number : 48 Question Id : 3666944222 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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A coin placed on a rotating table just slips when it is placed at a distance of 1 cm from the center. If the angular velocity of the table in halved, it will just slip when placed at a distance of_____ from the centre :

Options :

36669413139. 1 cm

36669413140. 2 cm

36669413141. 4 cm

36669413142. 8 cm

Question Number : 48 Question Id : 3666944222 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

किसी घूमती हुई मेज पर एक सिक्का रखा है, यदि सिक्के को केन्द्र से 1 cm की दूरी पर रखा जाता है, तो यह फिसलने लगता है। यदि मेज का कोणीय वेग आधा कर दिया जाता है, तो सिक्का जिस दूरी पर फिसलना प्रारम्भ कर देगा, वह है

Options :

36669413139. 1 cm

36669413140. 2 cm

36669413141. 4 cm

36669413142. 8 cm

Question Number : 49 Question Id : 3666944223 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Correct Marks : 4 Wrong Marks : 1

An average force of 125 N is applied on a machine gun firing bullets each of mass 10 g at the speed of 250 m/s to keep it in position. The number of bullets fired per second by the machine gun is :

Options :

36669413143. 5

36669413144. 100

36669413145. 50

36669413146. 25

Question Number : 49 Question Id : 3666944223 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

10 g द्रव्यमान वाली गोलियों को 250 m/s की गति से दागती हुई एक मशीन गन (बंदूक) को संतुलित स्थिति में रखने के लिए, इस पर आरोपित औसत बल 125 N है। मशीन गन द्वारा दागी गई प्रति सेकण्ड गोलियों की संख्या हैं:

Options :

36669413143. 5

36669413144. 100

36669413145. 50

36669413146. 25

Question Number : 50 Question Id : 3666944224 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

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Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

Given below are two statements :

Statements I : Astronomical unit (Au), Parsec (Pc) and Light year (ly) are units for measuring astronomical distances.

Statements II : Au < Parsec (Pc) < ly

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

Options :

36669413147. Both Statements I and Statements II are correct,

36669413148. Both Statements I and Statements II are incorrect.

36669413149. Statements I is correct but Statements II is incorrect.

36669413150. Statements I is incorrect butStatements II is correct.

Question Number : 50 Question Id : 3666944224 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

नीचे दो कथन दिए गए हैं:

कथन I : खगोलीय इकाई (Au), पारसैक (Pc) एवं प्रकाश वर्ष (ly) खगोलीय दूरियाँ मापने के लिए इकाईयाँ हैं।

कथन II : Au < पारसैक (Pc) < ly

उपरोक्त कथनों के आलोक में, नीचे दिए गए विकल्पों में से सर्वाधिक उपयुक्त उत्तर चुनें।

Options :

36669413147. कथन I एवं कथन II दोनों सही हैं।

[illegible] कथन I एवं कथन II दोनों गलत हैं।

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36669413149. कथन I सही है किन्तु कथन II गलत है।

36669413150. कथन I गलत है, किन्तु कथन II सही है।

Physics Section B

Section Id :	366694243
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	5
Section Marks :	20
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	366694243
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 51 Question Id : 3666944225 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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A monochromatic light is incident on a hydrogen sample in ground state. Hydrogen atoms absorb a fraction of light and subsequently emit radiation of six different wavelengths. The frequency of incident light is $x \times 10^{15}$ Hz. The value of x is _____.

(Given h = 4.25×10^{-15} eVs)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 51 Question Id : 3666944225 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

हाइड्रोजन नमूने जो कि मूल अवस्था में हैं, पर एकलवर्णीय प्रकाश आपतित होता है। हाइड्रोजन परमाणु प्रकाश का कुछ भाग अवशोषित करता है एवं तत्पश्चात छः अलग-अलग तरंगदैर्ध्यों का विकिरण उत्सर्जित करता है। आपतित प्रकाश की आवृति $x \times 10^{15}$ Hz है। x का मान _____ है।

(दिया है, h = 4.25×10^{-15} eVs)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 52 Question Id : 3666944226 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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The radius of curvature of each surface of a convex lens having refractive index 1.8 is 20 cm. The lens is now immersed in a liquid of refractive index 1.5. The ratio of power of lens in air to its power in the liquid will be x : 1. The value of x is

_____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 52 Question Id : 3666944226 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

1.8 अपवर्तनांक वाले उत्तल लैंस के वक्र की त्रिज्या 20 cm है। अब इस लैंस को 1.5 अपवर्तनांक वाले द्रव में डुबाया जाता है। हवा में लैंस की शक्ति का द्रव में इसकी शक्ति से अनुपात x : 1 है। x का मान _____ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 53 Question Id : 3666944227 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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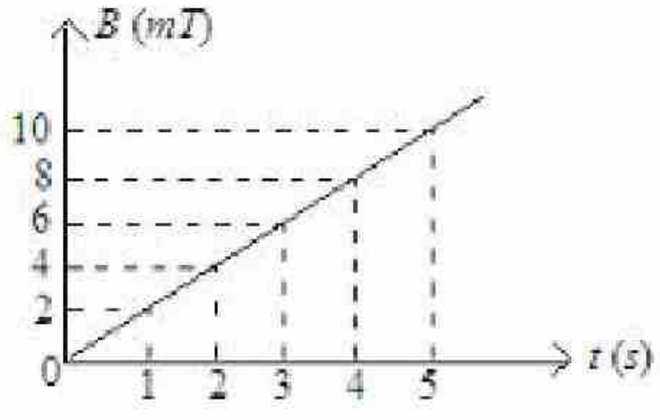
The magnetic field B crossing normally a square metallic plate of area 4 m^2 is changing with time as shown in figure. The magnitude of induced emf in the plate during t = 2s to t = 4s, is _____ mV.



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

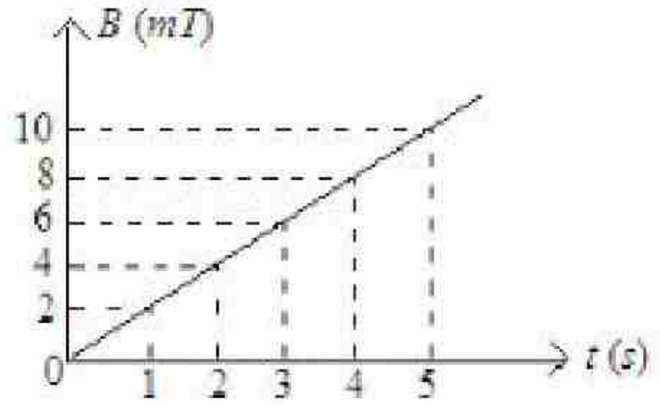
Possible Answers :

10

Question Number : 53 Question Id : 3666944227 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

4 m^2 क्षेत्रफल वाली धात्विक प्लेट से लम्बवत गुजरने वाले चुम्बकीय क्षेत्र B में समय के साथ परिवर्तन, चित्र में प्रदर्शित हैं। समय t = 2s से t = 4s के दौरान, प्लेट में प्रेरित विद्युत वाहक बल (emf) का मान _____ mV है।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

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10

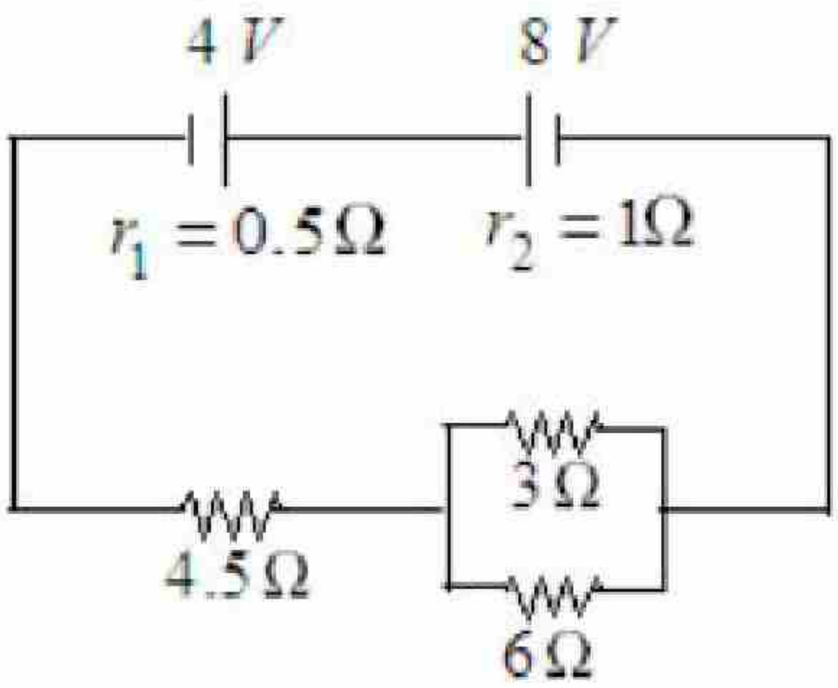
Question Number : 54 Question Id : 3666944228 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

In the circuit diagram shown in figure given below, the current flowing through resistance 3 Ω is $\frac{x}{3}$ A.

The value of x is _____



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 54 Question Id : 3666944228 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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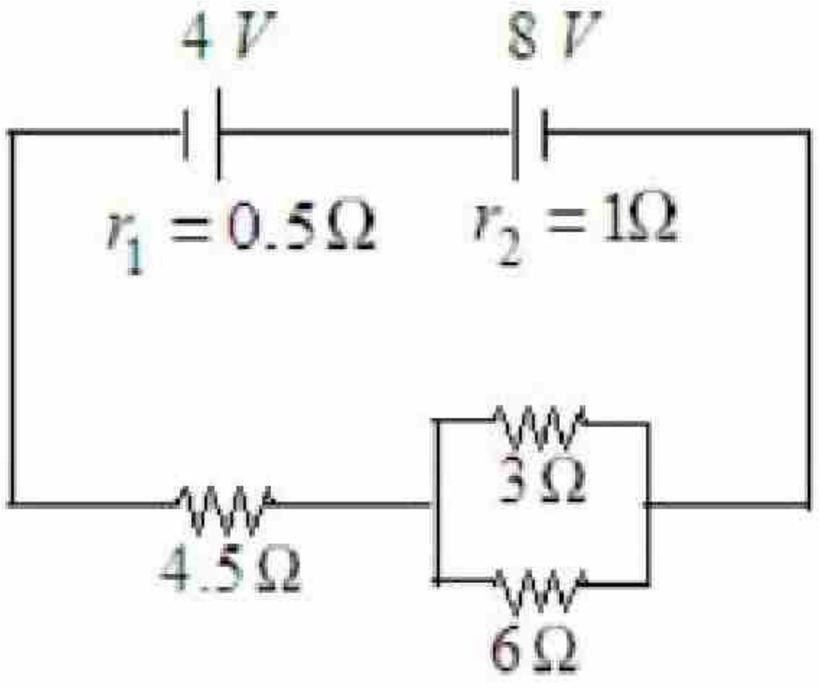
नीचे दिये गए चित्र में प्रदर्शित परिपथ में, 3Ω वाले प्रतिरोध में प्रवाहित धारा $\frac{x}{3}$ A है। x का मान _____ है।



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 55 Question Id : 3666944229 Question Type : SA Calculator : None

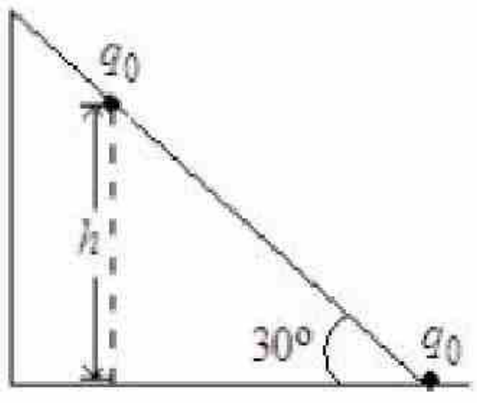
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

As shown in the figure, a configuration of two equal point charges ($q_0 = +2\mu$ C) is placed on an inclined plane. Mass of each point charge is 20 g. Assume that there is no friction between charge and plane. For the system of two point charges to be in equilibrium (at rest) the height $h = x \times 10^{-3}$ m.

The value of x is _____.

(Take $\frac{1}{4\pi\varepsilon_0} = 9 \times 10^9 \text{N m}^2 \text{ C}^{-2}$, $g = 10 \text{ m s}^{-2}$)



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Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

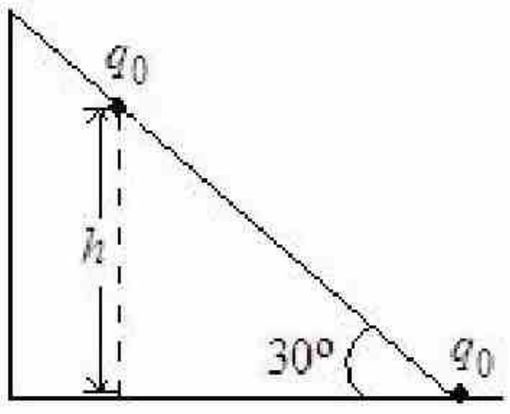
Question Number : 55 Question Id : 3666944229 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

चित्र में दर्शाये अनुसार, 20 g द्रव्यमान वाले दो समान बिन्दु आवेश ($q_0 = +2\mu$ C) एक आनत तल पर रखे हैं। माना आवेशों एवं तल के बीच कोई घर्षण नहीं है। दोनों बिन्दु आवेशों के निकाय की साम्यावस्था स्थिर के लिए, $h = x \times 10^{-3}$ m है। x का मान _____ है।

(यदि $\frac{1}{4\pi\varepsilon_0} = 9 \times 10^9 \text{ N m}^2 \text{ C}^{-2}, g = 10 \text{ m s}^{-2}$)



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 56 Question Id : 3666944230 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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The equation of wave is given by

$Y = 10^{-2} \sin 2\pi (160t - 0{\cdot}5x + \pi/4)$

where x and Y are in m and t in s. The speed of the wave is _____ km h^{-1}.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 56 Question Id : 3666944230 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

किसी तरंग का समीकरण निम्नवत है

$Y = 10^{-2} \sin 2\pi (160t - 0{\cdot}5x + \pi/4)$

जहाँ x एवं y मीटर में एवं t सेकण्ड में है। तरंग की चाल _____ km/h है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 57 Question Id : 3666944231 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

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The length of a wire becomes l_1 and l_2 when 100 N and 120 N tensions are applied respectively. If $10\,l_2 = 11\,l_1$, the natural length of wire will be $\frac{1}{x}\,l_1$. Here the value of x is _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 57 Question Id : 3666944231 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

तार की लम्बाईयाँ l_1 एवं l_2 हो जाती हैं, जब इस पर क्रमशः 100 N एवं 120 N तन्यता आरोपित की जाती हैं। यदि $10\,l_2 = 11\,l_1$ है, तो तार की वास्तविक लम्बाई $\frac{1}{x}\,l_1$ होगी। यहाँ x का मान _____ है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 58 Question Id : 3666944232 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A solid sphere of mass 500 g and radius 5 cm is rotated about one of its diameter with angular speed of 10 rad s^{-1}. If the moment of inertia of the sphere about its tangent is $x \times 10^{-2}$ times its angular momentum about the diameter. Then the value of x will be

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Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 58 Question Id : 3666944232 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

500 g द्रव्यमान एवं 5 cm त्रिज्या वाले एक ठोस गोले को इसके एक व्यास के परितः 10 rad s^{-1} की कोणीय चाल से घुमाया जाता है। यदि गोले का अपनी स्पर्शी के सापेक्ष जडत्वाघूर्ण, व्यास के सापेक्ष इसके कोणीय संवेग का $x \times 10^{-2}$ गुना है। तो x का मान _____ होगा ।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 59 Question Id : 3666944233 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A force $\vec{F} = (2 + 3x)\hat{i}$ acts on a particle in the x direction where F is in newton and x is in meter. The work done by this force during a displacement from $x = 0$ to $x = 4$ m, is _____J.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

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Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 59 Question Id : 3666944233 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

किसी कण पर x दिशा में बल $\vec{F} = (2 + 3x)\hat{i}$ आरोपित किया जाता है, जहाँ F न्यूटन में हैं और x मीटर में हैं। विस्थापन $x = 0$ से $x = 4$ मीटर के दौरान बल द्वारा किया गया कार्य _____J है।

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Question Number : 60 Question Id : 3666944234 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

A projectile fired at 30° to the ground is observed to be at same height at time 3s and 5s after projection, during its flight. The speed of projection of the projectile is _____ $\mathrm{m\ s^{-1}}$.

(Given $g = 10\ \mathrm{m\ s^{-2}}$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

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Possible Answers :

10

Question Number : 60 Question Id : 3666944234 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Wrong Marks : 1

धरातल से 30° के कोण पर प्रक्षेपित किया गया प्रक्षेप्य, प्रक्षेपण के पश्चात, उड्डयन के दौरान 3s एवं 5s पर समान ऊँचाई पर पाया जाता है। प्रक्षेप्य की प्रक्षेपण चाल _____ m s^{-1} हैं।

(दिया है $\text{g} = 10\ \text{m s}^{-2}$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

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