Andhra Pradesh State Council of Higher Education

Notations :

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

Question Paper Name :	Mechanical Engineering 22nd July 2022 Shift 2
Duration :	180
Total Marks :	200
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

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Mathematics

Section Id :	722544112
Section Number :	1
Mandatory or Optional :	Mandatory
Number of Questions :	50
Section Marks :	50
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0

Question Number : 1 Question Id : 7225445602 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $A=\begin{bmatrix}\cos\theta & -\sin\theta \\ \sin\theta & \cos\theta\end{bmatrix}$ then $A^T+A=I_2$ if

Options :

1. ✖ $\theta=n\pi, n\in Z$

2. ✖ $\theta=(2n+1)\frac{\pi}{2}, n\in Z$

3. ✔ $\theta=2n\pi\pm\frac{\pi}{3}, n\in Z$

4. ✖ $\theta=(2n+1)\frac{\pi}{4}, n\in Z$

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Question Number : 2 Question Id : 7225445603 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If for the matrix A, $A^3 = I$ then $A^{-1} =$

Options :

1. ✓ A^2

2. ✗ A^3

3. ✗ A

4. ✗ A^4

Question Number : 3 Question Id : 7225445604 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of λ for which the system of equations
$x+y+z=6$, $x+2y+3z=10$, $x+2y+\lambda z=12$ is inconsistent is

Options :

1. ✗ $\lambda = 1$

2. ✗ $\lambda = 2$

3. ✗ $\lambda = -2$

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4. ✔ $\lambda = 3$

Question Number : 4 Question Id : 7225445605 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $A=\begin{bmatrix} a & 0 & 0 \\ 0 & a & 0 \\ 0 & 0 & a \end{bmatrix}$ *then the value of* $|adj\ A|$ *is*

Options :

1. ✖ a^{27}

2. ✖ a^{9}

3. ✔ a^{6}

4. ✖ a^{2}

Question Number : 5 Question Id : 7225445606 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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$$If\ A+2B=\begin{bmatrix}1 & 2 & 0\\ 6 & -3 & 3\\ -5 & 3 & 1\end{bmatrix}\ and\ 2A-B=\begin{bmatrix}2 & -1 & 5\\ 2 & -1 & 6\\ 0 & 1 & 2\end{bmatrix}$$ then $tr(A)-\text{tr}(B)$ value equal

to

Options :

1. ✖ 0

2. ✖ 1

3. ✔ 2

4. ✖ 3

Question Number : 6 Question Id : 7225445607 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\frac{2x+3}{(x+1)(x-3)}=\frac{a}{(x+1)}+\frac{b}{(x-3)}then\ \ 2a+3b=$$

Options :

1. ✖ 14

2. ✖ 12

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3. ✔ $25/4$

4. ✖ -12

Question Number : 7 Question Id : 7225445608 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Number of partial fractions of $\frac{3x^2+70x+93}{(x-1)^4}$ *is*

Options :

1. ✔ 3

2. ✖ 4

3. ✖ 5

4. ✖ 2

Question Number : 8 Question Id : 7225445609 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Given that $A=\sin^2\theta+\cos^4\theta$, *then for all real values of* θ

Options :

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1. ✖ $1 \leq A \leq 2$

2. ✔ $\frac{3}{4} \leq A \leq 1$

3. ✖ $\frac{13}{16} \leq A \leq 1$

4. ✖ $\frac{3}{4} \leq A \leq \frac{13}{16}$

Question Number : 9 Question Id : 7225445610 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$If \tan\theta = -\frac{4}{3}$,*then* $\sin\theta =$

Options :

1. ✖ $-\frac{4}{5}$ *but not* $\frac{4}{5}$

2. ✔ $-\frac{4}{5}$ *or* $\frac{4}{5}$

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3. ✖ $\frac{4}{5}$ *but not* $-\frac{4}{5}$

4. ✖ $-\frac{3}{5}$ *but not* $\frac{3}{5}$

Question Number : 10 Question Id : 7225445611 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The general solution of

$\sin x - 3\sin 2x + \sin 3x = \cos x - 3\cos 2x + \cos 3x$ *is*

Options :

1. ✖ $n\pi + \frac{\pi}{8}$

2. ✔ $\frac{n\pi}{2} + \frac{\pi}{8}$

3. ✖ $(-1)^n \frac{n\pi}{2} + \frac{\pi}{8}$

4. ✖ $2n\pi + \cos^{-1}\frac{3}{2}$

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Question Number : 11 Question Id : 7225445612 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If x, y, z *are in AP and* $\tan^{-1} x, \tan^{-1} y$ *and* $\tan^{-1} z$ *are also in AP then*

Options :

1. ✓ $x = y = z$

2. ✗ $2x = 3y = 6z$

3. ✗ $6x = 3y = 2z$

4. ✗ $6x = 4y = 3z$

Question Number : 12 Question Id : 7225445613 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\tan^{-1} 2x + \tan^{-1} 3x = \frac{\pi}{4}$ *then* $x =$

Options :

1. ✓ $\frac{1}{6}$

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2. ✖ $\frac{1}{3}$

3. ✖ $\frac{1}{2}$

4. ✖ $\frac{3}{2}$

Question Number : 13 Question Id : 7225445614 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The sides of a triangle are in the ratio $1:\sqrt{3}:2$ then the angles of the triangle are in the ratio

Options :

1. ✖ $1:3:5$

2. ✖ $2:3:2$

3. ✖ $3:2:1$

4. ✔ $1:2:3$

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Question Number : 14 Question Id : 7225445615 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$Let\ \cos(\alpha+\beta)=\frac{4}{5}\ and\ \sin(\alpha-\beta)=\frac{5}{13}\ where\ 0<\alpha,\beta\le\frac{\pi}{4},\ then\ \tan 2\alpha=$$

Options :

1. ✖ $\frac{19}{12}$

2. ✖ $\frac{20}{7}$

3. ✖ $\frac{25}{16}$

4. ✔ $\frac{56}{33}$

Question Number : 15 Question Id : 7225445616 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$If\ 1+\sin x+\sin^2 x+\sin^3 x+....\infty\ =4+2\sqrt{3}\ ,\quad 0<x<\pi,\ then\ x=$$

Options :

1. ✖ $\frac{\pi}{6}$

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2. ✖ $\frac{\pi}{4}$

3. ✔ $\frac{2\pi}{3}$

4. ✖ $\frac{3\pi}{4}$

Question Number : 16 Question Id : 7225445617 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The angles of a triangle are in the ratio 3:5:10 then the ratio of the smallest side to the greatest side is

Options :

1. ✖ $1 : \sin 10°$

2. ✖ $1 : 2\sin 10°$

3. ✖ $1 : \cos 10°$

4. ✔ $1 : 2\cos 10°$

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Question Number : 17 Question Id : 7225445618 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$If\ \sin^{-1}x+\sin^{-1}y=\frac{2\pi}{3}\ then\ \cos^{-1}x+\cos^{-1}y=$

Options :

1. ✘ $\frac{2\pi}{3}$

2. ✔ $\frac{\pi}{3}$

3. ✘ $\frac{\pi}{6}$

4. ✘ π

Question Number : 18 Question Id : 7225445619 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The conjugate of a complex number is $\frac{1}{i-1}$, then that complex number is

Options :

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1. ✔ $\frac{-1}{i+1}$

2. ✖ $\frac{1}{i-1}$

3. ✖ $\frac{-1}{i-1}$

4. ✖ $\frac{1}{i+1}$

Question Number : 19 Question Id : 7225445620 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\frac{(\sin\ \pi/8 + i\cos\ \pi/8)^8}{(\sin\ \pi/8 - i\cos\ \pi/8)^8} =$

Options :

1. ✖ -1

2. ✖ 0

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3. ✓ 1

4. ✗ $2i$

Question Number : 20 Question Id : 7225445621 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The lines $2x-3y-5=0$ *and* $3x-4y=7$ *are diameters of a circle of area* 49π *sq.units, then the equation of the circle is*

Options :

1. ✗ $x^2+y^2+2x-2y-62=0$

2. ✗ $x^2+y^2+2x-2y-47=0$

3. ✓ $x^2+y^2-2x+2y-47=0$

4. ✗ $x^2+y^2-2x+2y-62=0$

Question Number : 21 Question Id : 7225445622 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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If the point $(a,-a)$ *lies inside the circle* $x^2+y^2-4x+2y-8=0$, then $'a'$ *lies in the* interval

Options :

1. ✔ $(-1,4)$

2. ✖ $(-\infty,-1)$

3. ✖ $(4,\infty)$

4. ✖ $[-1,4]$

Question Number : 22 Question Id : 7225445623 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The focus of the parabola $y^2-4y-8x+4=0$ *is*

Options :

1. ✖ $(1,1)$

2. ✖ $(1,2)$

3. ✖ $(2,1)$

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4. ✔ $(2,2)$

Question Number : 23 Question Id : 7225445624 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The equation $\frac{x^2}{10-a}+\frac{y^2}{4-a}=1$ *represents an ellipse if*

Options :

1. ✔ $a<4$

2. ✘ $a>4$

3. ✘ $4<a<10$

4. ✘ $a>10$

Question Number : 24 Question Id : 7225445625 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The vertices of the hyperbola $9x^2-16y^2-36x+96y-252=0$, *are*

Options :

1. ✘ $(6,3)$ *and* $(-6,3)$

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2. ✔ $(6,3)$ *and* $(-2,3)$

3. ✖ $(-6,3)$ *and* $(-6,-3)$

4. ✖ $(0, \pm\frac{2}{3})$

Question Number : 25 Question Id : 7225445626 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The eccentricity of the hyperbola with latus rectum 12 *and semi conjugate axis* $2\sqrt{3}$ *is*

Options :

1. ✔ 2

2. ✖ 3

3. ✖ $\sqrt{3}/2$

4. ✖ $2\sqrt{3}$

Question Number : 26 Question Id : 7225445627 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The side of an equilateral triangle expands at the rate of 2 cm/sec, the rate of increase of its area when each side is 10 cm (in cm^2/sec)

Options :

1. ✖ $10\sqrt{2}$

2. ✖ $10\sqrt{3}$

3. ✔ 10

4. ✖ 5

Question Number : 27 Question Id : 7225445628 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If f (x+y) = f(x) f(y), for all x,y. f(5) = 2, $f'(0)=3$, then $f'(5)=$

Options :

1. ✔ 6

2. ✖ 2

3. ✖ 3

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4. ✖ 5

Question Number : 28 Question Id : 7225445629 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\lim_{x\to\infty}\left[\frac{x^2+2x-1}{2x^2-3x-2}\right]^{\frac{2x+1}{2x-1}} \text{ is equal to}$$

Options :

1. ✖ 0

2. ✖ ∞

3. ✔ 1/2

4. ✖ 1/3

Question Number : 29 Question Id : 7225445630 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\lim_{x\to 0}\frac{\sin^2 mx}{\tan^2 nx} \text{ is equal to}$$

Options :

1. ✖ m/n

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2. ✖ $m^2.n^2$

3. ✔ m^2/n^2

4. ✖ n^2/m^2

Question Number : 30 Question Id : 7225445631 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$If\ \ f(x)=\left|x^2-5x+6\right|\ \ then\ \ f'(x)=$

Options :

1. ✖ $2x-5 \quad for \ \ 2<x<3$

2. ✔ $5-2x \quad for \ \ 2<x<3$

3. ✖ $2x-5 \quad for \ \ x>2$

4. ✖ $5-2x \quad for \ \ x<3$

Question Number : 31 Question Id : 7225445632 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

ZOLLEGE.in

If $y = \log_y x$, then $\frac{dy}{dx} =$

Options :

1. ✔ $\frac{1}{x(1+\log y)}$

2. ✘ $\frac{1}{x+\log y}$

3. ✘ $\frac{1}{\log x(1+y)}$

4. ✘ $\frac{1}{y+\log x}$

Question Number : 32 Question Id : 7225445633 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The angle between tangents *to the curve* $y = x^2 - 5x + 6$ *at the* points $(2,0)$ and $(3,0)$ is

Options :

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1. ✖ $\frac{\pi}{3}$

2. ✔ $\frac{\pi}{2}$

3. ✖ $\frac{\pi}{6}$

4. ✖ $\frac{\pi}{4}$

Question Number : 33 Question Id : 7225445634 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If errors of 1% *is made in the base radius and height of a cylinder then the percentage error in its volume is*

Options :

1. ✖ 1%

2. ✖ 2%

3. ✔ 3%

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4% ✖

4. ✖

Question Number : 34 Question Id : 7225445635 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$The\ value\ of\ 'a'\ for\ which\ the\ function\ f(x) = a\sin x + \frac{1}{3}\sin 3x$$

$$has\ \ an\ \ extremum\ \ at\ x = \frac{\pi}{3}\ is$$

Options :

1 ✖

1. ✖

−1 ✖

2. ✖

0 ✖

3. ✖

2 ✔

4. ✔

Question Number : 35 Question Id : 7225445636 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$If\ \ u = x^y\ \ then\ \frac{\partial^2 u}{\partial x \partial y} =$$

Options :

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1. ✖ $x^{y-1}(1+x\log y)$

2. ✖ $y^{x-1}(1+y\log x)$

3. ✔ $x^{y-1}(1+y\log x)$

4. ✖ $x^{y+1}(1-y\log x)$

Question Number : 36 Question Id : 7225445637 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\int e^{\sin^{-1}x}\frac{1}{\sqrt{1-x^2}}dx$

Options :

1. ✖ $2e^{\sin^{-1}x}+c$

2. ✔ $e^{\sin^{-1}x}+c$

3. ✖ $e^{\sin x}+c$

4. ✖ $e^{\cos^{-1}x}+c$

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Question Number : 37 Question Id : 7225445638 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$If \int \frac{4x+1}{x^2+3x+2}dx = a\log|x+1| + b\log|x+2| + C, \text{ then}$$

Options :

1. ✖ $a = b$

2. ✔ $a + b = 4$

3. ✖ $a = 2b$

4. ✖ $b = 2a$

Question Number : 38 Question Id : 7225445639 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\int \frac{\cos 2x}{(\sin x + \cos x)^2}dx =$$

Options :

1. ✖ $-\frac{1}{\sin x + \cos x} + c$

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2. ✔ $\log|\sin x+\cos x|+c$

3. ✖ $\log|\sin x-\cos x|+c$

4. ✖ $(\sin x+\cos x)^2+c$

Question Number : 39 Question Id : 7225445640 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$If\ \int f(x)dx=2(f(x))^3+C\ \ then\ \ f(x)=$

Options :

1. ✖ $\frac{x}{2}$

2. ✖ x^3

3. ✖ $\frac{1}{\sqrt{x}}$

4. ✔ $\sqrt{\frac{x}{3}}$

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Question Number : 40 Question Id : 7225445641 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$If \int e^{ax}\cos bx\ dx = \frac{e^{2x}}{29}f(x)+C,\ then\ f''(x) =$$

Options :

1. ✖ $29f(x)$

2. ✖ $-29f(x)$

3. ✖ $25f(x)$

4. ✔ $-25f(x)$

Question Number : 41 Question Id : 7225445642 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$The\ value\ of\ x\ in \int_{\sqrt{2}}^{x} \frac{1}{t\sqrt{t^2-1}}dt = \frac{\pi}{2}\ is$$

Options :

1. ✖ $\frac{\sqrt{3}}{2}$

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2. ✖ $2\sqrt{2}$

3. ✖ 2

4. ✔ $-\sqrt{2}$

Question Number : 42 Question Id : 7225445643 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\int_0^1 \frac{(\sin^{-1} x)^2}{\sqrt{1-x^2}} dx$

Options :

1. ✔ $\frac{\pi^3}{24}$

2. ✖ $\frac{\pi^3}{48}$

3. ✖ $\frac{\pi^3}{64}$

4. ✖ $\frac{\pi^3}{12}$

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Question Number : 43 Question Id : 7225445644 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$If\ f(x)\ is\ a\ polynomial\ of$ degree 2 $satisfying\ f(0)=1,$

$f'(0)=-2\ and\ f''(0)=6\ then \int_{-1}^{2} f(x)dx =$

Options :

1. ✖ 6

2. ✖ 0

3. ✔ 9

4. ✖ -8

Question Number : 44 Question Id : 7225445645 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The degree of the differential equation $a^2\frac{d^2y}{dx^2}=\left[1+\left(\frac{dy}{dx}\right)^2\right]^{3/2}$ *is*

Options :

1. ✔ 2

2. ✖ 1

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3. ✖ 3

4. ✖ 4

Question Number : 45 Question Id : 7225445646 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\log\left(\frac{y}{x}\right) = cx$, where c is abitrary constant is a solution of the differential equation

Options :

1. ✔ $\log\left(\frac{y}{x}\right) = \frac{x}{y}\frac{dy}{dx} - 1$

2. ✖ $\log\left(\frac{x}{y}\right) = \frac{x}{y}\frac{dy}{dx} - 1$

3. ✖ $\log\left(\frac{x}{y}\right) = \frac{y}{x}\frac{dy}{dx} + 1$

4. ✖ $\frac{dy}{dx} = 1 + \log\left(\frac{y}{x}\right)$

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Question Number : 46 Question Id : 7225445647 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The solution of the differential equation $\cos\theta\, dr - r\sin\theta\, d\theta = 0$ *is*

Options :

1. ✓ $r\cos\theta = c$, $c-$arbitrary constant

2. ✗ $r\sin\theta = c$, $c-$arbitrary constant

3. ✗ $r\cos\theta + r\sin\theta = c$, $c-$arbitrary constant

4. ✗ $r^2\cos 2\theta = c$, $c-$arbitrary constant

Question Number : 47 Question Id : 7225445648 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The degree of $\left(\frac{d^2y}{dx^2}\right)^2 + \left(\frac{dy}{dx}\right)^2 = x\sin\frac{dy}{dx}$ is

Options :

1. ✗ 1

2. ✗ 2

3. ✗ 3

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4. ✓ Not defined

Question Number : 48 Question Id : 7225445649 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The complimenary function of the differential equation $\frac{d^2y}{dx^2}+4\frac{dy}{dx}+3y=e^{2x}$ *is*

Options :

1. ✗ $x=c_1e^{-y}+c_2e^{-3y}$, c_1,c_2-arbitrary constants

2. ✓ $y=c_1e^{-x}+c_2e^{-3x}$, c_1,c_2-arbitrary constants

3. ✗ $y=c_1e^{x}+c_2e^{3x}$, c_1,c_2-arbitrary constants

4. ✗ $x=c_1e^{y}+c_2e^{3y}$, c_1,c_2-arbitrary constants

Question Number : 49 Question Id : 7225445650 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The particular integral of $(D^2+4)y=\cos 2x$ *is*

Options :

1. ✗ $-\frac{1}{2}x\sin 2x$

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2. ✖ $\frac{1}{2}x\sin 2x$

3. ✖ $-\frac{1}{4}x\cos 2x$

4. ✔ $\frac{1}{4}x\sin 2x$

Question Number : 50 Question Id : 7225445651 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The integrating factor of the equation $x^2y\,dx-(x^3+y^3)dy=0$ *is*

Options :

1. ✖ $-\frac{1}{x^4}$

2. ✖ $\frac{1}{x^4}$

3. ✖ $\frac{1}{y^4}$

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4. ✔ $-\frac{1}{y^4}$

Physics

Section Id :	722544113
Section Number :	2
Mandatory or Optional :	Mandatory
Number of Questions :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0

Question Number : 51 Question Id : 7225445652 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Parsec is the unit of

Options :

1. ✖ Time

2. ✔ Distance

3. ✖ Frequency

4. ✖ Angular acceleration

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Question Number : 52 Question Id : 7225445653 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Among the following pairs, which pair does not have identical dimensions

Options :

1. ✔ Moment of inertia and moment of a force

2. ✘ Work and torque

3. ✘ Angular momentum and Planck's constant

4. ✘ Impulse and momentum

Question Number : 53 Question Id : 7225445654 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

One of the two forces is double the other and their resultant is equal to the greater force.

The angle between them is

Options :

1. ✘ $\cos^{-1}(1/2)$

2. ✘ $\cos^{-1}(-1/2)$

3. ✘ $\cos^{-1}(1/4)$

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4. ✔ $\cos^{-1}(-1/4)$

Question Number : 54 Question Id : 7225445655 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If three vectors $\vec{A} = \hat{\imath} - 2\hat{\jmath} + 3\hat{k}$, $\vec{B} = x\hat{\imath} + 3\hat{k}$ and $\vec{C} = 7\hat{\imath} + 3\hat{\jmath} - 11\hat{k}$ are coplanar, then the value of x is

Options :

1. ✘ 36/21

2. ✔ -51/13

3. ✘ 51/32

4. ✘ -36/21

Question Number : 55 Question Id : 7225445656 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A body is allowed to fall from a height of 100 m. The time taken for the first 50 m is t_1 and for the remaining 50 m is t_2, then

Options :

1. ✘ $t_1 = t_2$

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$t_1 > t_2$

2. ✓

3. ✗ $t_1 < t_2$

Depends upon the mass

4. ✗

Question Number : 56 Question Id : 7225445657 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two stones are projected with the same speed but making different angles with the horizontal. Their horizontal ranges are equal. The angle of projection of one stone is $\pi/3$ and the maximum height reached by it is 102 meters. Then the maximum height reached by the other in meters is

Options :

1. ✗ 336

2. ✗ 224

3. ✗ 56

4. ✓ 34

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Question Number : 57 Question Id : 7225445658 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A cricket ball is thrown at a speed of 28 ms^{-1} in a direction 30° above the horizontal. The time taken by the ball to return to the same level in seconds is

Options :

1. ✓ 2.9

2. ✗ 3.9

3. ✗ 1.9

4. ✗ 2

Question Number : 58 Question Id : 7225445659 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The maximum height of a projectile is half of its range on the horizontal. If the velocity of the projection is u, then its range on the horizontal is

Options :

1. ✗ $\frac{2u^2}{5g}$

2. ✗ $\frac{3u^2}{5g}$

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3. ✖ $\frac{u^2}{g}$

4. ✔ $\frac{4u^2}{5g}$

Question Number : 59 Question Id : 7225445660 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A cubical block rests on an inclined plane of coefficient of friction $\mu = \frac{1}{\sqrt{3}}$. What should be the angle of inclination so that the block just slides down the inclined plane?

Options :

1. ✔ $30°$

2. ✖ $60°$

3. ✖ $45°$

4. ✖ $90°$

Question Number : 60 Question Id : 7225445661 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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For the equilibrium of a body on an inclined plane of inclination 45°, the coefficient of static friction will be

Options :

1. ✓ Greater than one

2. ✗ Zero

3. ✗ Less than one

4. ✗ Less than zero

Question Number : 61 Question Id : 7225445662 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The displacement x and time t for a particle are related to each other as $t = \sqrt{x} + 3$. The work done in first six seconds of its motion is

Options :

1. ✗ 6 J

2. ✓ Zero

3. ✗ 4 J

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4. ✖ 2 J

Question Number : 62 Question Id : 7225445663 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A particle move with a velocity $v = (5\hat{\imath} - 3\hat{\jmath} + 6\hat{k})$ m/s under the influence of a constant force $\vec{F} = 10\hat{\imath} + 10\hat{\jmath} + 20\hat{k}$. The instantaneous power applied to the particle is

Options :

1. ✖ 200 J/sec

2. ✖ 40 J/sec

3. ✔ 140 J/sec

4. ✖ 170 J/sec

Question Number : 63 Question Id : 7225445664 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The main source of solar energy is

Options :

1. ✖ Nuclear fission

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2. ✓ Nuclear fusion

3. ✗ Gravitational contraction

4. ✗ Combustion

Question Number : 64 Question Id : 7225445665 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The particle executing the simple harmonic motion passes through the mean position. It has

Options :

1. ✗ Minimum kinetic energy and maximum potential energy

2. ✓ Maximum kinetic energy and minimum potential energy

3. ✗ Maximum kinetic energy and maximum potential energy

4. ✗ Minimum kinetic energy and minimum potential energy

Question Number : 65 Question Id : 7225445666 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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A simple pendulum has a time period T_1 on the earth's surface and T_2 at a height of R above the earth's surface, where R is the radius of the earth. The value of T_2/T_1 is

Options :

1. ✖ 1

2. ✖ 4

3. ✖ $\sqrt{2}$

4. ✔ 2

Question Number : 66 Question Id : 7225445667 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a characteristic of musical sound?

Options :

1. ✖ Quality

2. ✖ Pitch

3. ✔ Wavelength

4. ✖ Loudness

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Question Number : 67 Question Id : 7225445668 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Doppler shift in frequency does not depend upon

Options :

1. ✖ The actual frequency of the wave

2. ✔ The distance of the source from the listener

3. ✖ The velocity of the source

4. ✖ The velocity of the observer

Question Number : 68 Question Id : 7225445669 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Inaudibility limit is around

Options :

1. ✖ One-hundredth of the initial intensity

2. ✖ One-tenth of the initial intensity

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3. ✖ One-thousandth of the initial intensity

4. ✔ One-millionth of the initial intensity

Question Number : 69 Question Id : 7225445670 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An ideal gas at 27°C is compressed adiabatically to 8/27 of its original volume. If $\gamma = 5/3$, then the rise in temperature is

Options :

1. ✖ 450K

2. ✔ 375K

3. ✖ 225K

4. ✖ 405K

Question Number : 70 Question Id : 7225445671 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A system is provided with 200 calories of heat and the work done by the system on the surrounding is 40 J. Then its internal energy

Options :

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1. ✗ Increases by 600 J

2. ✗ Decreases by 800 J

3. ✓ Increases by 800 J

4. ✗ Decreases by 50J

Question Number : 71 Question Id : 7225445672 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The temperature of n moles of an ideal gas is increased from T to 4Tthrough a process for which pressure $P = a T^{-1}$where a is a constant. Then the work done by the gas is

Options :

1. ✗ nRT

2. ✗ $4nRT$

3. ✗ $2nRT$

4. ✓ $6nRT$

Question Number : 72 Question Id : 7225445673 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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When an ideal gas with pressure P and volume V is compressed isothermally to one fourth of its volume, the pressure is P_1. When the same gas is compressed polytropically according to the equation $PV^{1.5}$ = constant to one fourth of its initial volume, the pressure is P_2. The ratio of P_2/P_1 is

Options :

1. ✗ ½

2. ✗ $\frac{1}{2^{1.5}}$

3. ✓ 2

4. ✗ $2^{1.5}$

Question Number : 73 Question Id : 7225445674 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A Carnot engine whose efficiency is 40%, receives heat at 500K. If the efficiency is to be 50%, the source temperature for the same exhaust temperature is

Options :

1. ✗ 900 K

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2. ✓ 600 K

3. ✗ 700 K

4. ✗ 800 K

Question Number : 74 Question Id : 7225445675 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Optical fibers carry very large information compared to copper cables because of their

Options :

1. ✗ Large thickness

2. ✓ Extremely wide bandwidth

3. ✗ Extremely less bandwidth

4. ✗ Light weight

Question Number : 75 Question Id : 7225445676 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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A superconductor is a perfect …….. material.

Options :

1. ✔ Diamagnetic

2. ✘ Dielectric

3. ✘ Insulating

4. ✘ Semiconducting

Chemistry

Section Id :	722544114
Section Number :	3
Mandatory or Optional :	Mandatory
Number of Questions :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0

Question Number : 76 Question Id : 7225445677 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a characteristic of Plank's theory radiation?

Options :

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1. ✗ Energy is always associated with radiations

2. ✓ The absorption and emission of energy occur continuously and not in small packets of energy called quanta

3. ✗ The energy associated with a quantum of radiation is directly proportional to its frequency

4. ✗ The emission and absorption of energy takes place in small packets called quanta

Question Number : 77 Question Id : 7225445678 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The atomic number of calcium is 20 and mass number is 40, it contains

Options :

1. ✓ 20 protons, 20 electrons and 20 neutrons

2. ✗ 20 protons, 20 electrons and 22 neutrons

3. ✗ 20 protons, 20 electrons and 40 neutrons

4. ✗ 40 protons, 20 electrons and 20 neutrons

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Question Number : 78 Question Id : 7225445679 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which molecule among the following obeys the octet rule?

Options :

1. ✗ PF_5

2. ✗ NO

3. ✗ ClO_2

4. ✓ O_2

Question Number : 79 Question Id : 7225445680 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one among the following has higher ionic radius?

Options :

1. ✓ C^{4-}

2. ✗ N^{3-}

3. ✗ O^{2-}

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4. ✖ Na^+

Question Number : 80 Question Id : 7225445681 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

0.2 equivalents of H_2SO_4 is present in 100 mL of the solution. What is its normality?

Options :

1. ✖ 1 N

2. ✔ 2 N

3. ✖ 4 N

4. ✖ 20 N

Question Number : 81 Question Id : 7225445682 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which ion is isoelectronic with CO?

Options :

1. ✔ CN^-

2. ✖ O_2^+

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3. ✖ O_2^-

4. ✖ N_2^+

Question Number : 82 Question Id : 7225445683 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

20 mL of 0.01 M HCl solution is diluted to 100 mL What is the molarity of final solution?

Options :

1. ✖ 0.02 M

2. ✔ 0.002 M

3. ✖ 0.05 M

4. ✖ 0.001 M

Question Number : 83 Question Id : 7225445684 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How many moles of HCl are required to react with completely with 2 moles of Na_2CO_3?

Options :

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1. ✗ 1

2. ✗ 2

3. ✗ 3

4. ✓ 4

Question Number : 84 Question Id : 7225445685 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one among the following is a Lewis acid and also Bronsted acid?

Options :

1. ✗ CO_2

2. ✗ $AlCl_3$

3. ✓ H^+

4. ✗ Cu^{2+}

Question Number : 85 Question Id : 7225445686 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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What is the pH of 0.01 M NaOH solution?

Options :

1. ✖ 2

2. ✖ 8

3. ✖ 10

4. ✔ 12

Question Number : 86 Question Id : 7225445687 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Four alkali metals A, B, C and D are having standard electrode potentials as -3.05, - 1.66, -0.40 and 0.80 V respectively. Which one will be most reducing?

Options :

1. ✔ A

2. ✖ B

3. ✖ C

4. ✖ D

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Question Number : 87 Question Id : 7225445688 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one among the following is used as depolarizer in dry cell battery?

Options :

1. ✖ Ammonium chloride

2. ✖ Potassium hydroxide

3. ✔ Manganese dioxide

4. ✖ Sodium phosphate

Question Number : 88 Question Id : 7225445689 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How much copper is deposited when 2 Faraday of electricity is passed through a $CuSO_4$ solution? (Cu atomic weight = 63.54)

Options :

1. ✖ 31. 77 g

2. ✖ 159.54 g

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3. ✖ 127.77 g

4. ✔ 63.54 g

Question Number : 89 Question Id : 7225445690 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the cell potential for the following cell at 298 K?
$Mg(s) \mid Mg^{2+}(0.001M) \parallel Cu^{2+}(0.0001M) \mid Cu(s)$
Given E_0 of $Cu^{2+}|Cu = 0.34$ V and E_0 of $Mg^{2+} \mid Mg = -2.37$ V

Options :

1. ✖ 1.34 V

2. ✔ 2.68 V

3. ✖ 0.268 V

4. ✖ 0.134 V

Question Number : 90 Question Id : 7225445691 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The hard water sample contains the following ions/salts. Which water sample is more in hardness?

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Options :

1. ✗ 100 grams of $CaCO_3$ per litre

2. ✗ 50 equivalents of Ca^{2+} ions per litre

3. ✓ 20 moles of $CaCO_3$ per litre

4. ✗ 20 moles of $MgCO_3$ per litre

Question Number : 91 Question Id : 7225445692 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

20 ml of hard water required 10 ml of EDTA solution. The hardness of water sample is 1000 ppm. What is the molarity of EDTA?

Options :

1. ✓ 0.02 M

2. ✗ 0.03 M

3. ✗ 0.005 M

4. ✗ 0.05 M

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Question Number : 92 Question Id : 7225445693 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The hardness of water sample is 500 ppm. What is the weight of $MgSO_4$ present in it, assume that the hardness is only due to the presence of magnesium sulphate.

Options :

1. ✗ 0.3 g

2. ✗ 1.2 g

3. ✓ 0.6 g

4. ✗ 0.01 g

Question Number : 93 Question Id : 7225445694 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The rate of corrosion is high if

Options :

1. ✓ Anodic areas are small and cathodic areas are large

2. ✗ Anodic areas are large and cathodic areas are small

3. ✗ Both anodic and cathodic areas are large

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4. ✖ Does not depend upon the area of anode and cathode

Question Number : 94 Question Id : 7225445695 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In electroplating, the metal to be coated or electroplated is made of

Options :

1. ✖ Anode

2. ✔ Cathode

3. ✖ Both anode and cathode

4. ✖ Inert metal

Question Number : 95 Question Id : 7225445696 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a thermosetting plastic?

Options :

1. ✖ Bakelite

2. ✖ Melamine

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3. ✖ Epoxy resins

4. ✔ Teflon

Question Number : 96 Question Id : 7225445697 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following molecule contains the functionality TWO?

Options :

1. ✖ 1, 2-Dihydroxy benzene

2. ✖ Benzene

3. ✖ Phenol

4. ✔ Ethylene

Question Number : 97 Question Id : 7225445698 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a synthetic rubber?

Options :

1. ✖ Buna-S

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2. ✗ Buna-N

3. ✗ Neoprene

4. ✓ 1, 4-Polyisoprene

Question Number : 98 Question Id : 7225445699 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a renewable source of energy?

Options :

1. ✗ Solar energy

2. ✗ Wind Energy

3. ✓ Petrol

4. ✗ Hydro energy

Question Number : 99 Question Id : 7225445700 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one among the following is not a greenhouse gas?

Options :

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1. ✖ CH_4

2. ✖ Water vapour

3. ✖ Chlorofluoro carbons

4. ✔ SO_2

Question Number : 100 Question Id : 7225445701 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one is responsible for the depletion of ozone layer?

Options :

1. ✖ Carbon free radical

2. ✖ Oxygen free radical

3. ✔ Chlorine free radical

4. ✖ Fluorine free radical

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Mechanical Engineering

Section Id :	722544115
Section Number :	4
Mandatory or Optional :	Mandatory
Number of Questions :	100
Section Marks :	100
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0

Question Number : 101 Question Id : 7225445702 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the Taylor's tool life equation $VT^n = C$, value of index n depends on

Options :

1. ✔ Cutting tool material

2. ✘ Work piece material

3. ✘ Temperature at work tool interface

4. ✘ Working conditions

Question Number : 102 Question Id : 7225445703 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Burnishing is an operation of

Options :

1. ✖ Heat treatment

2. ✖ Deep boring

3. ✖ Hot working process

4. ✔ Gear surface finishing

Question Number : 103 Question Id : 7225445704 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Cutting force and power involved in a machine tool can be measured using a

Options :

1. ✖ Transducer

2. ✔ Dynamometer

3. ✖ Gyroscope

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4. ✗ Pyrometer

Question Number : 104 Question Id : 7225445705 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 'Sine bar' is an instrument used to measure

Options :

1. ✓ External tapers

2. ✗ Internal tapers

3. ✗ Any taper angles

4. ✗ Linear dimensions

Question Number : 105 Question Id : 7225445706 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The main principle of electroplating is

Options :

1. ✓ Hydrolysis

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2. ✖ Neutralization

3. ✖ Esterification

4. ✖ Saturation

Question Number : 106 Question Id : 7225445707 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two slip gauges in conjunction can be used for measurement by

Options :

1. ✖ Adhesion

2. ✖ Staking

3. ✔ Wringing

4. ✖ Slipping

Question Number : 107 Question Id : 7225445708 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Several machine tools can be controlled by a central computer in

Options :

1. ✖ NC machines

2. ✖ CNC machines

3. ✔ DNC machines

4. ✖ CCNC machines

Question Number : 108 Question Id : 7225445709 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

NC contouring is an example of

Options :

1. ✔ Continuous path positioning

2. ✖ Point-to-point positioning

3. ✖ Absolute positioning

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4. ✗ Incremental positioning

Question Number : 109 Question Id : 7225445710 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a CNC program block, N002 GO2 G91 X40 Z40....., GO2 and G91 refer to

Options :

1. ✗ Circular interpolation in counter clockwise direction and incremental dimension

2. ✗ Circular interpolation in counter clockwise direction and absolute dimension

3. ✓ Circular interpolation in clockwise direction and incremental dimension

4. ✗ Circular interpolation in clockwise direction and absolute dimension

Question Number : 110 Question Id : 7225445711 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ of the following is not the main element of Flexible Manufacturing System.

Options :

1. ✗ Tool handling system

2. ✗ Material handling system

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3. ✗ Main frame computer

4. ✓ Work handling system

Question Number : 111 Question Id : 7225445712 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a sheet metal operation?

Options :

1. ✗ Punching

2. ✗ Piercing

3. ✓ Burring

4. ✗ Blanking

Question Number : 112 Question Id : 7225445713 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Strongest form of an angle joint used in cabinet work is

Options :

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1. ✖ Butt joint

2. ✖ Bridle joint

3. ✔ Dovetail joint

4. ✖ Lap joint

Question Number : 113 Question Id : 7225445714 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Lapping is an operation of

Options :

1. ✖ Making a cone-shaped enlargement of the end of a hole

2. ✖ Smoothing and squaring the surface around a hole

3. ✔ Sizing and finishing a small diameter hole

4. ✖ Producing a hole by removing metal along the circumference of a hollow cutting tool

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Question Number : 114 Question Id : 7225445715 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In arc welding, the main criterion for the selection of electrode diameter is

Options :

1. ✗ Materials type to be welded

2. ✓ Thickness of material to be welded

3. ✗ Voltage

4. ✗ Process type

Question Number : 115 Question Id : 7225445716 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In submerged arc welding, the arc is struck between

Options :

1. ✗ Consumable coated electrode and work piece

2. ✗ Non-consumable electrode and work piece

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3. ✗ Tungsten electrode and work piece

4. ✓ Consumable bare electrode and work piece

Question Number : 116 Question Id : 7225445717 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

'Weld decay' is a phenomenon associated with

Options :

1. ✗ Non-ferrous material

2. ✓ Stainless steel

3. ✗ Cast iron

4. ✗ Mild steel

Question Number : 117 Question Id : 7225445718 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The surface roughness on a drawing is represented by a

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Options :

1. ✗ Circle

2. ✓ Triangle

3. ✗ Square

4. ✗ Zig-zag lines

Question Number : 118 Question Id : 7225445719 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The term 'Allowance' used in Limits and Fits refers to

Options :

1. ✓ Minimum clearance between shaft and hole

2. ✗ Maximum clearance between shaft and hole

3. ✗ Difference between maximum and minimum sizes of hole

4. ✗ Difference between maximum and minimum sizes of shaft

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Question Number : 119 Question Id : 7225445720 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The purpose of 'cores' used in casting process is to

Options :

1. ✖ Withdraw the pattern easily

2. ✖ Control the flow of molten metal

3. ✔ Make desired hollow shape in the casting

4. ✖ Support loose pieces

Question Number : 120 Question Id : 7225445721 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Wax patterns are used in

Options :

1. ✔ Investment casting

2. ✖ Shell moulding

3. ✖ Slush casting

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4. ✖ Centrifugal casting

Question Number : 121 Question Id : 7225445722 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hot tear refers to a

Options :

1. ✖ Heat treatment process

2. ✖ Hot working process

3. ✖ Casting process

4. ✔ Casting defect

Question Number : 122 Question Id : 7225445723 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In Interference fit, interference exists between the

Options :

1. ✖ Low limit of shaft and low limit of hole

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2. ✗ High limit of shaft and low limit of hole

3. ✓ Low limit of shaft and high limit of hole

4. ✗ High limit of shaft and high limit of hole

Question Number : 123 Question Id : 7225445724 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In 'isometric projection', the lengths of all the lines parallel to the three planes should be set at

Options :

1. ✓ 0.816 times the true length

2. ✗ Same as the true length

3. ✗ 1.11 times the true length

4. ✗ 0.75 times the true length

Question Number : 124 Question Id : 7225445725 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The operation of removing the burr or flash from the forged parts in drop forging is known as_____

Options :

1. ✖ Lancing

2. ✔ Trimming

3. ✖ Coining

4. ✖ Burring

Question Number : 125 Question Id : 7225445726 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Coining is the operation of_____

Options :

1. ✔ Cold forging

2. ✖ Hot forging

3. ✖ Cold extrusion

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Hot extrusion

4. ✖

Question Number : 126 Question Id : 7225445727 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The material property that is most undesirable for forging is

Options :

Malleability

1. ✖

Ductility

2. ✖

Brittleness

3. ✔

Plasticity

4. ✖

Question Number : 127 Question Id : 7225445728 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The cold chisels are made by

Options :

Rolling

1. ✖

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2. ✗ Piercing

Drawing

3. ✗

Forging

4. ✓

Question Number : 128 Question Id : 7225445729 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

'Monel metal' is an alloy of Copper and

Options :

Zinc

1. ✗

Aluminum

2. ✗

Nickel

3. ✓

Lead

4. ✗

Question Number : 129 Question Id : 7225445730 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Railway tracks (rails) are usually made of

Options :

1. ✖ Mild steel

2. ✖ Alloy steel

3. ✖ Tungsten steel

4. ✔ High carbon steels

Question Number : 130 Question Id : 7225445731 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the percentage of Carbon in Steels?

Options :

1. ✖ More than 2.5 %

2. ✔ Upto 2%

3. ✖ More than 3%

4. ✖ More than 4%

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Question Number : 131 Question Id : 7225445732 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

After cold working, which of the following processes is used to relieve stresses?

Options :

1. ✖ Normalizing

2. ✔ Annealing

3. ✖ Austempering

4. ✖ Martempering

Question Number : 132 Question Id : 7225445733 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Addition of Manganese to a steel increases its

Options :

1. ✖ Hardness

2. ✖ Fluidity

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3. ✓ Tensile strength

4. ✗ Ductility

Question Number : 133 Question Id : 7225445734 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

'Connecting rods' in automobiles are usually made of

Options :

1. ✗ Low carbon steel

2. ✗ Mild steel

3. ✓ Medium carbon steel

4. ✗ High carbon steel

Question Number : 134 Question Id : 7225445735 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The resultant of two forces P and Q acting along the same straight line and in same direction is

Options :

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1. ✗ $2P + Q$

2. ✗ $P + 2Q$

3. ✓ $P + Q$

4. ✗ $P - Q$

Question Number : 135 Question Id : 7225445736 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a simply supported beam having length, L, and subjected to a concentrated load, W, at mid-point, the magnitude and position respectively of maximum bending moment are

Options :

1. ✓ WL /4, at the mid-point

2. ✗ WL /4, at the end

3. ✗ WL /8, at the mid-point

4. ✗ WL /8, at the end

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Question Number : 136 Question Id : 7225445737 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What will be the strain energy stored in the metallic bar of cross sectional area 2 cm^2 and gauge length 10 cm, if it is stretched by 0.002 cm under the load of 12 kN?

Options :

1. ✘ 10 N-cm

2. ✔ 12 N-cm

3. ✘ 14 N-cm

4. ✘ 16 N-cm

Question Number : 137 Question Id : 7225445738 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a simply supported beam, what would be the change in deflection at the center of the beam, if the point load at the center is replaced by a uniformly distributed load throughout the length?

Options :

1. ✘ 1/2 times

2. ✘ 1/4 times

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3. ✗ 5/8 times

4. ✓ 3/8 times

Question Number : 138 Question Id : 7225445739 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a body is stressed within its elastic limit, the ratio of the linear strain to the lateral strain is known as

Options :

1. ✗ Poisson's ratio

2. ✓ 1/Poisson's ratio

3. ✗ Stress ratio

4. ✗ Strain ratio

Question Number : 139 Question Id : 7225445740 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The efficiency of a machine

Options :

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Is directly proportional to the velocity ratio

1. ✗

Should occur when the load is 50% of maximum permissible load

2. ✗

Is the ratio of mechanical advantage to the velocity ratio

3. ✓

Is the ratio of velocity ratio to the mechanical advantage

4. ✗

Question Number : 140 Question Id : 7225445741 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If a solid circular steel shaft of 2 cm diameter is subjected to a permissible shear stress of 10 kN/cm^2,then the value of twisting moment will be

Options :

5π kN-cm

1. ✓

10π kN-cm

2. ✗

15π kN-cm

3. ✗

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4. ✗ 20π kN-cm

Question Number : 141 Question Id : 7225445742 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A key of 14 mm width, 9 mm height and 100 mm length is mounted on a shaft of 50 mm diameter. If allowable shear stress for the key material is 50 MPa, what is the maximum torque that can be transmitted?

Options :

1. ✗ 3500 Nm

2. ✗ 4500 Nm

3. ✗ 2250 Nm

4. ✓ 1750 Nm

Question Number : 142 Question Id : 7225445743 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following couplings is not used to connect two shafts that have both lateral and angular misalignments?

Options :

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1. ✖ Universal coupling

2. ✔ Flange coupling

3. ✖ Oldham coupling

4. ✖ Bushed pin type coupling

Question Number : 143 Question Id : 7225445744 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two closely coiled helical springs A & B are such that the mean diameter of spring A is half that of spring B, possess an equal number of active coils and same wire diameter. If they are subjected to the same axial load of W, the ratio of deflection in spring A to that in spring B is

_____

Options :

1. ✔ 1/8

2. ✖ 1/4

3. ✖ 2

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4. ✗ 8

Question Number : 144 Question Id : 7225445745 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If a flywheel having a mass of 100 kg and radius of gyration of 10 cm, is rotating at a speed of 10 rad/sec, its rotational kinetic energy will be equal to

Options :

1. ✗ 5J

2. ✗ 10J

3. ✓ 50J

4. ✗ 100J

Question Number : 145 Question Id : 7225445746 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For a Watt governor, 10 cm height corresponds to a speed of about

Options :

1. ✗ 85 rpm

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2. ✓ 95 rpm

3. ✗ 87 rpm

4. ✗ 102 rpm

Question Number : 146 Question Id : 7225445747 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Creep in a belt is due to

Options :

1. ✗ Material effect of the belt

2. ✗ Material effect of the pulley

3. ✗ Surrounding conditions

4. ✓ Uneven extensions and contractions due to varying tension

Question Number : 147 Question Id : 7225445748 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Which one of the following is a positive drive?

Options :

1. ✔ Chain drive

2. ✖ Crossed flat belt drive

3. ✖ Rope drive

4. ✖ V-belt drive

Question Number : 148 Question Id : 7225445749 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When the axes of the first and last gears are co-axial, then the train is known as

Options :

1. ✖ Simple gear train

2. ✖ Compound gear train

3. ✔ Reverted gear train

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4. ✖ Epicyclical gear train

Question Number : 149 Question Id : 7225445750 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Silent chain is made up of

Options :

1. ✖ Links and blocks

2. ✖ Links, pins, bushes and rollers

3. ✖ Pins, bushes and rollers

4. ✔ Inverted tooth overlapping links

Question Number : 150 Question Id : 7225445751 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The effective diameter of a cylinder is 400 mm and highest pressure of steam acting on engine cylinder head is 1.1 N/mm^2. If the allowable stress in tension of bolt material is 32 N/mm^2 and number of bolts is 11, the core diameter of the bolt required is _____.

Options :

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11mm

1. ✗

22mm

2. ✓

33mm

3. ✗

12mm

4. ✗

Question Number : 151 Question Id : 7225445752 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is an extensive property?

Options :

1. ✗ Pressure

2. ✓ Volume

3. ✗ Temperature

4. ✗ Density

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Question Number : 152 Question Id : 7225445753 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following laws states that "the heat and work are mutually convertible?"

Options :

1. ✗ Boyle

2. ✗ Charles

3. ✓ Joule

4. ✗ Avogadro

Question Number : 153 Question Id : 7225445754 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The second law of thermodynamics defines

Options :

1. ✗ Heat

2. ✗ Work

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3. ✗ Energy

4. ✓ Entropy

Question Number : 154 Question Id : 7225445755 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A gas expands from 0.025 m^3 to 0.075 m^3 at a constant pressure of 2.0 MPa and absorbs 150 kJ of heat during the process. The change in internal energy of the gas in kJ is

Options :

1. ✗ 149.90

2. ✓ 50

3. ✗ 100

4. ✗ 150

Question Number : 155 Question Id : 7225445756 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The efficiency of a Carnot cycle may be increased by

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Options :

1. ✓ Increasing the source temperature

2. ✗ Decreasing the source temperature

3. ✗ Increasing the sink temperature

4. ✗ Increasing both the source and sink temperatures

Question Number : 156 Question Id : 7225445757 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For the same compression ratio, the efficiency of a dual cycle is

Options :

1. ✓ More than Diesel cycle and less than Otto cycle

2. ✗ Less than Diesel cycle and more than Otto cycle

3. ✗ Less than Diesel cycle

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4. ✗ More than Otto cycle

Question Number : 157 Question Id : 7225445758 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The principal constituents of a fuel are

Options :

1. ✓ Carbon and Hydrogen

2. ✗ Oxygen and Hydrogen

3. ✗ Sulphur and Oxygen

4. ✗ Sulphur and Hydrogen

Question Number : 158 Question Id : 7225445759 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A single cylinder engine running at 1800 rpm develops a torque of 10 Nm. The indicated power of the engine is 2.0 kW. The loss due to friction is _____W.

Options :

1. ✗ 1.884

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2. ✖ 106

3. ✔ 116

4. ✖ 18.84

Question Number : 159 Question Id : 7225445760 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If N is the rpm, number of power strokes per hour in a two stroke engine is _____

Options :

1. ✖ N/2

2. ✖ N

3. ✖ 2N

4. ✔ 60N

Question Number : 160 Question Id : 7225445761 Display Question Number : Yes Is Question Mandatory : No Calculator : None

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

Which of the following is an ideal cycle for a gas turbine power plant?

Options :

1. ✔ Brayton cycle

2. ✖ Otto cycle

3. ✖ Sterling cycle

4. ✖ Diesel cycle

Question Number : 161 Question Id : 7225445762 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The capacity of a compressor is expressed in

Options :

1. ✖ kg/m^3

2. ✖ m^3/kg

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3. ✔ m^3/min

4. ✖ kg/m^2

Question Number : 162 Question Id : 7225445763 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The normal range of compression ratio for a Diesel cycle is

Options :

1. ✖ 4 to 6

2. ✖ 6 to 8

3. ✔ 15 to 20

4. ✖ Above 25

Question Number : 163 Question Id : 7225445764 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a high pressure boiler?

Options :

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1. ✖ Cochran boiler

2. ✖ Babcock and Wilcox boiler

3. ✔ Benson boiler

4. ✖ Lancashire boiler

Question Number : 164 Question Id : 7225445765 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is used to put off fire in the furnace of a boiler when the level of water in the boiler falls to an unsafe limit?

Options :

1. ✖ Blow off cock

2. ✔ Fusible plug

3. ✖ Stop valve

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Safety valve

4. ✗

Question Number : 165 Question Id : 7225445766 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Dryness fraction of a dry saturated steam is _____

Options :

1. ✓ 1

2. ✗ 0

3. ✗ 0.5

4. ✗ 0.75

Question Number : 166 Question Id : 7225445767 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the isentropic enthalpy drop in a moving blade is 50% of that in a fixed blade, the degree of reaction is

Options :

1. ✗ 0.25

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2. ✔ 0.33

3. ✖ 0.5

4. ✖ 0.75

Question Number : 167 Question Id : 7225445768 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The enthalpy of a fluid changes by 4.55 kJ/kg when it is made to flow through a nozzle. What will be the final velocity of the fluid, if it enters the nozzle at 30 m/s?

Options :

1. ✖ 30.15 m/s

2. ✖ 9.10 m/s

3. ✖ 60.30 m/s

4. ✔ 100 m/s

Question Number : 168 Question Id : 7225445769 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The ratio of the work done on the blades to the energy supplied to the blades is called

Options :

1. ✔ Blading efficiency

2. ✘ Nozzle efficiency

3. ✘ Stage efficiency

4. ✘ Mechanical efficiency

Question Number : 169 Question Id : 7225445770 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The friction in a nozzle _____ exit velocity of steam.

Options :

1. ✘ Has no effect on

2. ✔ Decreases

3. ✘ Increases

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4. ✖ Decreases up to a certain point and then increases

Question Number : 170 Question Id : 7225445771 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Reheating is used to _____

Options :

1. ✖ Increase the compressor work

2. ✔ Increase the turbine work

3. ✖ Decrease the compressor work

4. ✖ Decrease the turbine work

Question Number : 171 Question Id : 7225445772 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The specific gravity of an oil, whose specific weight is 2.4525 kN/m^3, is

Options :

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1. ✖ 0.05

2. ✔ 0.25

3. ✖ 0.50

4. ✖ 0.75

Question Number : 172 Question Id : 7225445773 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ratio of the normal force of jet of water on a plate inclined at an angle of 30^0 to that when the plate is normal to jet is___

Options :

1. ✖ $\sqrt{2}$

2. ✖ $1/\sqrt{2}$

3. ✖ 1

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4. ✔ 1/2

Question Number : 173 Question Id : 7225445774 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The loss of head due to friction in a circular pipe is _____

Options :

1. ✘ flv^2 / gd

2. ✔ $4\ flv^2 / 2gd$

3. ✘ $flv^2 / 3gd$

4. ✘ $flv^2 / 4gd$

Question Number : 174 Question Id : 7225445775 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The unit power developed by a turbine is _____, if Power developed by the turbine under a head of water H is P.

Options :

1. ✘ $PH^{-0.5}$

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2. ✗ $PH^{-1.0}$

3. ✓ $PH^{-1.5}$

4. ✗ $PH^{-2.0}$

Question Number : 175 Question Id : 7225445776 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The surface tension in a soap bubble of 40 mm diameter, when the inside pressure is 2.5 Pa above the atmospheric pressure, is _____ N/m

Options :

1. ✗ 0.025

2. ✗ 0.005

3. ✗ 0.05

4. ✓ 0.0125

Question Number : 176 Question Id : 7225445777 Display Question Number : Yes Is Question Mandatory : No Calculator : None

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

The bulk modulus of elasticity of liquid whose pressure is increased from 70 kPa to 130 kPa and volume decreased by 0.15% is _____.

Options :

1. ✗ 40 Pa

2. ✗ 40 kPa

3. ✓ 40 MPa

4. ✗ 40 GPa

Question Number : 177 Question Id : 7225445778 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a liquid is flowing through a pipe, the velocity of the liquid is maximum ____

Options :

1. ✗ Near the walls

2. ✗ At a point at $1/4^{th}$ of the radius from the center

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3. ✖ At a point at 3/4th of the radius from the center

4. ✔ At the center

Question Number : 178 Question Id : 7225445779 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A centrifugal pump will start delivering liquid only when the pressure rise in the impeller is equal to the

Options :

1. ✖ Kinetic head

2. ✖ Velocity head

3. ✔ Manometric head

4. ✖ Static head

Question Number : 179 Question Id : 7225445780 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Slip of a reciprocating pump is defined as _____ of theoretical discharge and actual discharge.

Options :

1. ✖ Ratio

2. ✖ Product

3. ✖ Sum

4. ✔ Difference

Question Number : 180 Question Id : 7225445781 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A reversible engine has ideal thermal efficiency of 33.33%. When it is used as a refrigerating machine with all other conditions unchanged, the COP will be _____

Options :

1. ✖ 1.33

2. ✔ 2.0

3. ✖ 2.33

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4. ✗ 3.33

Question Number : 181 Question Id : 7225445782 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a vapour compression system, the condition of refrigerant is dry saturated vapour

Options :

1. ✓ Before entering the compressor

2. ✗ After leaving the compressor

3. ✗ Before entering the condenser

4. ✗ After leaving the condenser

Question Number : 182 Question Id : 7225445783 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

During a refrigeration cycle, heat is absorbed by the refrigerant in

Options :

1. ✗ Condenser

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2. ✗ Expansion valve

3. ✗ Compressor

4. ✓ Evaporator

Question Number : 183 Question Id : 7225445784 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

One tonne of refrigeration (1TR) means that the heat removing capacity is

Options :

1. ✗ 21 kJ/min

2. ✓ 210 kJ/min

3. ✗ 420 kJ/min

4. ✗ 620 kJ/min

Question Number : 184 Question Id : 7225445785 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Work study is primarily concerned with

Options :

1. ✔ Improving present method and finding standard time

2. ✖ Worker motivation

3. ✖ Improving quality

4. ✖ Improving production capacity

Question Number : 185 Question Id : 7225445786 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Gantt charts are used in

Options :

1. ✖ Breakeven analysis

2. ✔ Production scheduling

3. ✖ Quality control

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Sales forecasting

4. ✖

Question Number : 186 Question Id : 7225445787 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

'Works cost' implies

Options :

Prime cost

1. ✖

Factory expenses

2. ✖

Prime cost + factory expenses

3. ✔

Prime cost + office expenses

4. ✖

Question Number : 187 Question Id : 7225445788 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

'Salary of sales manager' comes under

Options :

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1. ✖ Prime cost

2. ✖ Production cost

3. ✖ Administrative overheads

4. ✔ Selling and distribution overheads

Question Number : 188 Question Id : 7225445789 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In ABC analysis, classification of inventory items is based on

Options :

1. ✔ Annual consumption value

2. ✖ Unit cost of the item

3. ✖ Consumption quantity

4. ✖ Criticality of items to production

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Question Number : 189 Question Id : 7225445790 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Capital expenditure means

Options :

1. ✘ Expenses incurred in acquiring capital

2. ✔ Expenditure on procurement of fixed assets

3. ✘ Expenditure on procurement of current assets

4. ✘ Recurring expenses

Question Number : 190 Question Id : 7225445791 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which probability distribution is used to construct the C-Chart?

Options :

1. ✘ Binomial

2. ✔ Poisson

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3. ✖ Normal

4. ✖ Exponential

Question Number : 191 Question Id : 7225445792 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Acceptance sampling is widely used in

Options :

1. ✖ Batch production

2. ✖ Job production

3. ✔ Mass production

4. ✖ Intermittent production

Question Number : 192 Question Id : 7225445793 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

ISO 9000 determines _____

Options :

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1. ✗ The procedure used for quality control

2. ✗ Infrequent causes of variation

3. ✗ Performance of suppliers regarding quality

4. ✓ If the company practices its written procedures

Question Number : 193 Question Id : 7225445794 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is generally not a basic characteristic of an entrepreneur?

Options :

1. ✗ Risk taking nature

2. ✗ Innovative thinking

3. ✗ Expectation of profits

4. ✓ Inventiveness

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Question Number : 194 Question Id : 7225445795 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The longitudinal distance between the centres of the front and the rear axles is called

Options :

1. ✖ Wheel track

2. ✔ Wheel base

3. ✖ Wheel length

4. ✖ Wheel clearance

Question Number : 195 Question Id : 7225445796 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following components is used to provide different rotational speed to the road wheels when the vehicle negotiates curved paths?

Options :

1. ✔ Differential

2. ✖ Rear axle

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3. ✖ Steering wheel

4. ✖ Front axle

Question Number : 196 Question Id : 7225445797 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When the brakes of a moving vehicle are applied, _____ energy is converted into _____ energy.

Options :

1. ✖ Heat to kinetic

2. ✖ Potential to kinetic

3. ✖ Potential to heat

4. ✔ Kinetic to heat

Question Number : 197 Question Id : 7225445798 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The clutch is located between the transmission and the ____

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Options :

1. ✓ Engine

2. ✗ Rear axle

3. ✗ Propeller shaft

4. ✗ Differential

Question Number : 198 Question Id : 7225445799 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The materials used for cylinder block are

Options :

1. ✗ Cast iron and steel

2. ✓ Cast iron and aluminium alloy

3. ✗ Steel and aluminium alloy

4. ✗ Brass and steel

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Question Number : 199 Question Id : 7225445800 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The function of a governor in automobiles is to

Options :

1. ✔ Limit the vehicle speed

2. ✘ Increase vehicle safety

3. ✘ Increase fuel economy

4. ✘ Give stability to the vehicle

Question Number : 200 Question Id : 7225445801 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a gear box has four forward speeds and one reverse speed, it is said to be a

Options :

1. ✘ 3-speed gear box

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2. ✔ 4-speed gear box

3. ✖ 5-speed gear box

4. ✖ 6-speed gear box

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