Question Paper Preview

Question Paper Name: Mechanical Engineering
Subject Name: Mechanical Engineering

Mathematics

Number of Questions: 50
Display Number Panel: Yes
Group All Questions: No

Question Number : 1 Question Id : 67809418224 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $A = \begin{pmatrix} 2 & -1 & 0 \\ 3 & 4 & 7 \end{pmatrix}$ and $B = \begin{pmatrix} 5 & 2 & -3 \\ 1 & 0 & -2 \end{pmatrix}$ then $2A+3B =$

Options :

1. $\begin{pmatrix} 19 & 4 & -9 \\ 9 & 8 & 8 \end{pmatrix}$

2. $\begin{pmatrix} -19 & -4 & 9 \\ 9 & 8 & -8 \end{pmatrix}$

3. $\begin{pmatrix} 18 & 4 & -9 \\ 9 & 8 & 8 \end{pmatrix}$

4. $\begin{pmatrix} 17 & 5 & -9 \\ 8 & 8 & 9 \end{pmatrix}$

Question Number : 2 Question Id : 67809418225 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $A = \begin{pmatrix} 2 & -3 & 0 \\ 1 & 4 & -1 \end{pmatrix}$ and $B = \begin{pmatrix} 6 & 1 \\ 3 & 0 \\ 5 & 2 \end{pmatrix}$ then $(AB)^T$ =

Options :

1. A^TB^T

2. B^TA^T

3. $(BA)^T$

4. AB^T

Question Number : 3 Question Id : 67809418226 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If two rows or two columns of a determinant are identical then the value of the determinant is

Options :

1. 2

2. -1

3. 0

4. -2

Question Number : 4 Question Id : 67809418227 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\begin{vmatrix} 265 & 240 & 219 \\ 240 & 225 & 198 \\ 219 & 198 & 181 \end{vmatrix}$ is

Options :

1. -1

2. 0

3. 1

4. 2

Question Number : 5 Question Id : 67809418228 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The adjoint of the square matrix $A = \begin{pmatrix} 2 & 5 & 1 \\ 3 & 1 & 2 \\ 4 & 3 & 1 \end{pmatrix}$ is

Options :

1. $\begin{pmatrix} -5 & -2 & 9 \\ 5 & -2 & -1 \\ 5 & 14 & -13 \end{pmatrix}$

2. $\begin{pmatrix} 5 & 2 & 9 \\ 5 & -2 & -1 \\ 5 & 14 & -13 \end{pmatrix}$

3. $\begin{pmatrix} -5 & -2 & 9 \\ -5 & -2 & -1 \\ -5 & 14 & -13 \end{pmatrix}$

4. $\begin{pmatrix} -5 & -2 & -9 \\ 5 & 2 & 1 \\ 5 & 14 & -13 \end{pmatrix}$

Question Number : 6 Question Id : 67809418229 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Resolve into partial fractions: $\frac{5}{(2x-1)(3x-1)} =$

Options :

1. $\frac{8}{2x-1} + \frac{5}{3x-1}$

2. $\frac{10}{2x-1} - \frac{15}{3x-1}$

3. $\frac{11}{3x-1} + \frac{7}{2x-1}$

4. $\frac{1}{2x-1} + \frac{2}{3x-1}$

Question Number : 7 Question Id : 67809418230 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Resolve into partial fractions: $\frac{3x-1}{(x-1)(x-2)(x-3)} =$

Options :

1. $\frac{2}{x-1} + \frac{5}{x-2} - \frac{4}{x-3}$

2. $\frac{-1}{x-1}+\frac{5}{x-2}-\frac{4}{x-3}$

3. $\frac{1}{x-1}+\frac{5}{x-2}+\frac{4}{x-3}$

4. $\frac{1}{x-1}-\frac{5}{x-2}+\frac{4}{x-3}$

Question Number : 8 Question Id : 67809418231 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\tan A=\frac{1}{2}$ and $\tan B=\frac{1}{3}$ then $\tan(A-B)=$

Options :

1. $\frac{1}{7}$

2. $\frac{-1}{7}$

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

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

Question Number : 9 Question Id : 67809418232 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\cot 2A+\tan A=$

Options :

1. $\sin 2A$

2. $\cos 2A$

3. $\sec 2A$

4. $\operatorname{cosec} 2A$

Question Number : 10 Question Id : 67809418233 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\frac{1-\cos 2A+\sin 2A}{1+\cos 2A+\sin 2A} =$

Options :

1. sinA

2. cosA

3. tanA

4. cotA

Question Number : 11 Question Id : 67809418234 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $sin\frac{\pi}{5} sin\frac{2\pi}{5} sin\frac{3\pi}{5} sin\frac{4\pi}{5} =$

Options :

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

2. $\frac{5}{16}$

3. $\frac{-5}{16}$

4. $\frac{7}{15}$

Question Number : 12 Question Id : 67809418235 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $cos20^0 + cos100^0 + cos140^0 =$

Options :

1. 0

2. 3

3. 1

4. -3

Question Number : 13 Question Id : 67809418236 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\sum a(b^2 + c^2)cosA$ is

Options :

1. 2abc

2. 4abc

3. 3abc

4. 5abc

Question Number : 14 Question Id : 67809418237 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $(a-b)^2cos^2\left(\frac{C}{2}\right) + (a+b)^2sin^2\left(\frac{C}{2}\right)$ is

Options :

1. C^3

2. C

3. C^5

4. C^2

Question Number : 15 Question Id : 67809418238 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $2tan^{-1}\left(\frac{1}{3}\right) + tan^{-1}\left(\frac{1}{7}\right)$ is

Options :

1. $\pi/4$

2. $\pi/2$

3. $\pi/6$

4. $\pi/3$

Question Number : 16 Question Id : 67809418239 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The general solution of $4cos^2x - 3 = 0$ is

Options :

1. $2n\pi \pm \frac{\pi}{6}$

2. $2n\pi \pm \frac{7\pi}{6}$

3. $3n\pi \pm \frac{5\pi}{6}$

4. $2n\pi \pm \frac{11\pi}{6}$

Question Number : 17 Question Id : 67809418240 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $tan^{-1}x + tan^{-1}y + tan^{-1}z = \frac{\pi}{2}$, then the value of $xy + yz + zx$ is

Options :

1. -1

2. 3

3. 5

4. 1

Question Number : 18 Question Id : 67809418241 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The modulus of a complex number $\sqrt{3} + i$ is

Options :

1. -2

2. 3

3. 2

4. 5

Question Number : 19 Question Id : 67809418242 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $x+\frac{1}{x}=2\cos\theta$ then the value of $x^n+\frac{1}{x^n}$ is

Options :

1. $2\cos n\theta$

2. $-2\cos n\theta$

3. $3\cos\theta$

4. $2\sin n\theta$

Question Number : 20 Question Id : 67809418243 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The centre of the circle:$x^2+y^2-2x+6y-6=0$ is

Options :

1. $(1,3)$

2. $(2,3)$

3. $(1,-3)$

4. $(-1,3)$

Question Number : 21 Question Id : 67809418244 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The radius of the circle: $5x^2+5y^2-6x+8y-75=0$ is

Options :

1. -4

2. 4

3. 2

4. 3

Question Number : 22 Question Id : 67809418245 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation of the parabola with vertex $(2,-1)$ and focus $(2,-3)$ is

Options :

1. $x^2 - 4x + 8y + 12 = 0$

2. $x^2 - 4x - 8y - 12 = 0$

3. $x^2 + 4x - 8y - 12 = 0$

4. $x^2 + 5x - 8y - 11 = 0$

Question Number : 23 Question Id : 67809418246 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The centre of the ellipse: $9x^2 + 25y^2 - 18x + 100y - 116 = 0$ is

Options :

1. $(2, -1)$

2. $(-1, -2)$

3. $(1, -2)$

4. $(1,2)$

Question Number : 24 Question Id : 67809418247 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The focus of the hyperbola: $\frac{x^2}{25} - \frac{y^2}{144} = 1$ is

Options :

1. $(-13,0)$

2. $(13,0)$

3. $(13, -1)$

4. $(13,1)$

Question Number : 25 Question Id : 67809418248 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of the major axis of the ellipse: $4x^2 + 3y^2 = 48$ is

Options :

1. 10

2. 11

3. 8

4. 13

Question Number : 26 Question Id : 67809418249 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\lim_{x\to 1}\frac{x^3-1}{x-1}$ is

Options :

1. 3

2. -3

3. 2

4. 1

Question Number : 27 Question Id : 67809418250 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $y=\frac{a+bx}{b-ax}$ then the derivative of y with respect to x is

Options :

1. $\frac{a^2+b^2}{(b-ax)^2}$

2. $\frac{a^2+b^2}{(b+ax)^2}$

3. $\frac{a^2-b^2}{(b-ax)^2}$

4. $\frac{a+b}{(b-ax)^2}$

Question Number : 28 Question Id : 67809418251 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $y = x^3 e^x$ then $\frac{dy}{dx}$ is

Options :

1. $(x-3)x^2e^x$

2. $(x-2)x^3e^x$

3. $(x+3)x^2e^x$

4. $(x-1)x^3e^x$

Question Number : 29 Question Id : 67809418252 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $y = \sec x + \tan x$ then $\frac{dy}{dx}$ is

Options :

1. $y \cos x$

2. $y \sec x$

3. $-y \sin x$

4. $y \tan x$

Question Number : 30 Question Id : 67809418253 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $y = \frac{2+3\sinh x}{3+2\sinh x}$ then the derivative of y with respect to x is

Options :

1. $\frac{5\cosh x}{(3+2\sinh x)^2}$

2. $\frac{5\sinh x}{(3+2\sinh x)^2}$

3. $\frac{5\sin x}{(3-2\cosh x)^2}$

4. $\frac{sinh^2 x}{(2-3\sinh x)^2}$

Question Number : 31 Question Id : 67809418254 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $y = \sqrt{\frac{1-\cos x}{1+\cos x}}$ then $\frac{dy}{dx}$ is

Options :

1. $\sec^2\left(\frac{x}{2}\right)$

2. $\cos^2\left(\frac{x}{2}\right)$

3. $\frac{1}{2}\cos^2\left(\frac{x}{2}\right)$

4. $\frac{1}{2}\sec^2\left(\frac{x}{2}\right)$

Question Number : 32 Question Id : 67809418255 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The angle between the curves $y = x^2 + 3x - 7$ and $y^2 = 2x + 5$ at $(2,3)$ is

Options :

1. $\tan\theta = 2$

2. $\sec\theta = 2$

3. $\cos\theta = 1$

4. $\sin\theta = 3$

Question Number : 33 Question Id : 67809418256 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The range of x for which the function $x^3 - 3x^2 - 45x + 2$ is increasing with x is

Options :

1. $(3,-5)$

2. $(-3,-5)$

3. $(3,5)$

4. $(-3,5)$

Question Number : 34 Question Id : 67809418257 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum value of the function $2x^3 - 12x^2 + 18x + 5$ is

Options :

1. 13

2. 12

3. 10

4. 15

Question Number : 35 Question Id : 67809418258 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If u is a homogeneous function of x and y with degree n then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} =$

Options :

1. $-nu$

2. n^2u

3. nu

4. $nu^2 + u$

Question Number : 36 Question Id : 67809418259 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int \frac{\cos\sqrt{x}}{\sqrt{x}} dx$ is

Options :

1. $2\sin\sqrt{x} + c$

2. $3\sin\sqrt{x}+c$

3. $2\sin x+c$

4. $\sin\sqrt{x}+c$

Question Number : 37 Question Id : 67809418260 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int\frac{dx}{\sqrt{a^2-x^2}}$ is

Options :

1. $\cos^{-1}\left(\frac{x}{a}\right)+c$

2. $\sin^{-1}\left(\frac{x}{a}\right)+c$

3. $\sinh^{-1}\left(\frac{x}{a}\right)+c$

4. $\sin^{-1}\left(\frac{a}{x}\right)+c$

Question Number : 38 Question Id : 67809418261 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int\frac{dx}{4x^2+4x+17}$ is

Options :

1. $\frac{1}{8}\tan^{-1}\left(\frac{2x+1}{4}\right)+c$

2. $\frac{1}{4}\cot^{-1}\left(\frac{2x+1}{4}\right)+c$

3. $\frac{1}{8}\sin^{-1}\left(\frac{2x+1}{4}\right)+c$

4. $\frac{1}{3}\tan^{-1}\left(\frac{2x+1}{4}\right)+c$

Question Number : 39 Question Id : 67809418262 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int \log x \, dx$ is

Options :

1. $x \log x + x + c$

2. $x^2 \log x - x + c$

3. $x \log x - x + c$

4. $x \log x - \frac{x^2}{2} + c$

Question Number : 40 Question Id : 67809418263 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int_1^4 \left(\sqrt{x} + \frac{1}{\sqrt{x}}\right) dx$ is

Options :

1. $\frac{20}{3}$

2. $-\frac{20}{3}$

3. $\frac{10}{3}$

4. $\frac{15}{3}$

Question Number : 41 Question Id : 67809418264 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int_0^{\pi/2} \sin^2 x \, dx$ is

Options :

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

2. $-\frac{\pi}{4}$

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

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

Question Number : 42 Question Id : 67809418265 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The area enclosed between the curve $y^2 = 4ax$ and the line $x = 2y$ is

Options :

1. $\frac{64}{5}$ sq. units

2. $\frac{64}{3}$ sq. units

3. $\frac{65}{4}$ sq. units

4. $\frac{63}{4}$ sq. units

Question Number : 43 Question Id : 67809418266 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\lim_{n\to\infty}\left[\frac{1}{n+1}+\frac{1}{n+2}+\cdots..+\frac{1}{n+n}\right]$ is

Options :

1. $\log 2$

2. $\log 3$

3. $-\log 2$

4. $\log n$

Question Number : 44 Question Id : 67809418267 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Form the differential equation by eliminating the arbitrary constant a from $ay^2 = x^3$

Options :

1. $\frac{dy}{dx} = \frac{3y}{2x}$

2. $\frac{dy}{dx} = \frac{2x}{3y}$

3. $\frac{dy}{dx} = \frac{x}{y}$

4. $\frac{dy}{dx} = \frac{2y}{x}$

Question Number : 45 Question Id : 67809418268 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of $\sqrt{1-y^2}dx + \sqrt{1-x^2}dy = 0$ is

Options :

1. $\cos^{-1}x + \cos^{-1}y = c$

2. $\sinh^{-1}x + \cosh^{-1}y = c$

3. $\cos^{-1}x + \sec^{-1}x = c$

4. $\sin^{-1}x + \sin^{-1}y = c$

Question Number : 46 Question Id : 67809418269 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of $\frac{dy}{dx} = (4x + y + 1)^2$ is

Options :

1. $\frac{1}{2}\tan^{-1}\left(\frac{4x+y+1}{2}\right) = x + c$

2. $\frac{1}{2}\cot^{-1}\left(\frac{4x+y+1}{2}\right) = x + c$

3. $-\frac{1}{2}\tan^{-1}\left(\frac{4x+y+1}{2}\right) = x + c$

4. $\frac{1}{2}\tan^{-1}\left(\frac{4x-y-1}{2}\right) = x + c$

Question Number : 47 Question Id : 67809418270 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of exact differential equation $2xy\,dx + x^2dy = 0$ is

Options :

1. $x^2y^2 = c$

2. $x^2y = c$

3. $x^3y = c$

4. $x^2y^3 = c$

Question Number : 48 Question Id : 67809418271 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of $\frac{dy}{dx} + y = e^{-x}$ is

Options :

1. $(x + c)e^{-x}$

2. $(x - c)e^{x}$

3. $(x + c)e^{x}$

4. $(x + c)e^{-2x}$

Question Number : 49 Question Id : 67809418272 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The particular integral of $(D^2 + 5D + 6)y = e^{x}$ is

Options :

1. $\frac{-e^{-x}}{12}$

2. $\frac{e^{2x}}{12}$

3. $\frac{e^{x}}{12}$

4. $\frac{e^{x}}{6}$

Question Number : 50 Question Id : 67809418273 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The complementary function of $(D^2 + 3D + 2)y = 8sin5x$ is

Options :

1. $c_1 e^{-x} + c_2 e^{-2x}$

2. $c_1 e^{x} + c_2 e^{2x}$

3. $c_1 e^{-x} + c_2 e^{2x}$

4. $c_1 e^{2x} + c_2 e^{3x}$

Physics

Number of Questions:	25
Display Number Panel:	Yes
Group All Questions:	No

Question Number : 51 Question Id : 67809418274 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not the unit of energy?

Options :

1. watt second

2. Pascal metre

3. Newton metre

4. Kilowatt hour

Question Number : 52 Question Id : 67809418275 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The height of Mercury barometer is 76 cm and density of Mercury is 13.6 g/cc. The corresponding height of water barometer in SI system is

Options :

1. 10.336 m

2. 103.36 m

3. 3.6m

4. 1.0336 m

Question Number : 53 Question Id : 67809418276 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Angle made by the vector $(\sqrt{3}\ \bar{i} + \bar{j})$ with the X-axis is

Options :

1. $\pi/2$

2. $\pi/4$

3. $\pi/3$

4. $\pi/6$

Question Number : 54 Question Id : 67809418277 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The minimum number of unequal forces in a plane that can keep a particle in equilibrium is

Options :

1. 4

2. 2

3. 3

4. 6

Question Number : 55 Question Id : 67809418278 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A body is thrown with a velocity of $(4\bar{i} + 3\bar{j})$ m/s. The maximum height attained by the body is ($g=10\ ms^{-2}$)

Options :

1. 2.5 m

2. 4.5 m

3. 0.8 m

4. 0.45 m

Question Number : 56 Question Id : 67809418279 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A person in a lift, which ascends up with acceleration $10ms^{-2}$, drops a stone from a height of 10m. The time of descent is ($g=10\ ms^{-2}$)

Options :

1. 0.5 s

2. 1 s

3. 1.5 s

4. 2 s

Question Number : 57 Question Id : 67809418280 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a projectile, the ratio of maximum height reached to the square of time of flight is

Options :

1. 5:4

2. 5:2

3. 5:1

4. 10:1

Question Number : 58 Question Id : 67809418281 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The ratio of distances travelled by a body, starting from rest and travelling with uniform acceleration, in successive intervals of time of equal duration will be

Options :

1. 1:2:3

2. 1:4:9

3. 1:3:5

4. 1:9:16

Question Number : 59 Question Id : 67809418282 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A force of 12 N acts on a body of mass 4 kg placed on a rough surface. The coefficient of friction between body and surface is 0.2 and take g= 10 ms^{-2}. The acceleration of the body in ms^{-2} is

Options :

1. 1

2. 0.5

3. 0.25

4. Zero

Question Number : 60 Question Id : 67809418283 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Brakes stop a train in a certain distance d. When the braking force is made one fourth, the brakes will stop the train in a distance which is

Options :

1. d/2
2. 4d
3. 2d
4. d

Question Number : 61 Question Id : 67809418284 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The product of linear momentum and velocity of a body represents

Options :

1. Kinetic energy of the body
2. Potential energy of the body
3. Half the Kinetic energy of the body
4. Twice the kinetic energy of the body

Question Number : 62 Question Id : 67809418285 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A man weighing 60 kg eats plum cake whose energy content is 9800 calories. If all this energy could be utilised by him, he can ascend to a height of

Options :

1. 17 m
2. 100 m
3. 70 m
4. 60m

Question Number : 63 Question Id : 67809418286 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A crane can lift up 10,000 kg of coal in 1 hour from a mine of depth 180m. If the efficiency of the crane is 80%, its input power must be ($g=10\ ms^{-2}$)

Options :

1. 62.5 kW

2. 6.25 kW

3. 50 kW

4. 5 kW

Question Number : 64 Question Id : 67809418287 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The graph of acceleration as a function of displacement in the case of a body executing simple harmonic motion is

Options :

1. Parabola

2. Hyperbola

3. Straight line with positive slope

4. Straight line with negative slope

Question Number : 65 Question Id : 67809418288 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The pendulum of length 'L' swings from mean position to mean position 'n' times in one second.The value of acceleration due to gravity is

Options :

1. π^2n^2L

2. $2\pi^2n^2L$

3. $(\pi^2 n^2 L)/2$

4. $4\pi^2 n^2 L$

Question Number : 66 Question Id : 67809418289 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When a source of sound is in motion towards a stationary observer, the effect observed is

Options :

1. Decrease in velocity of sound

2. Increase in velocity of sound

3. increase in frequency of sound

4. decrease in frequency of sound

Question Number : 67 Question Id : 67809418290 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The voice of a male person is different from that of a female person because

Options :

1. Two sounds have different phases

2. Two persons are of different size

3. Two sounds travel with different velocities

4. Two sounds have different pitch

Question Number : 68 Question Id : 67809418291 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the sound absorption of a hall is changed by 2%, then the percentage change in the reverberation time is

Options :

1. 2%

2. 4%

3. 1%

4. No change

Question Number : 69 Question Id : 67809418292 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In which of the following process, the internal energy of the system remains constant?

Options :

1. Adiabatic

2. Isothermal

3. Isobaric

4. Isochoric

Question Number : 70 Question Id : 67809418293 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Heat required to raise the temperature of one gram of water through 1 K is

Options :

1. 1.0 Kcal

2. 0.1 Kcal

3. 0.01 Kcal

4. 0.001 Kcal

Question Number : 71 Question Id : 67809418294 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The specific heat of a gas in an isothermal process is

Options :

1. infinity

2. Zero

3. Finite positive

4. Finite negative

Question Number : 72 Question Id : 67809418295 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Specific heat of aluminium is 0.25 cal/g/°C. The water equivalent of an aluminium vessel of mass one kilogram is

Options :

1. 40 cal/°C

2. 400 cal/°C

3. 250 cal/°C

4. 25 cal/°C

Question Number : 73 Question Id : 67809418296 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What should be the percentage increase in the pressure so that the volume of a gas may decrease by 5% at constant temperature?

Options :

1. 5%

2. 5.26%

3. 10%

4. 4.26%

Question Number : 74 Question Id : 67809418297 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the maximum kinetic energy of emitted photo electrons from a metal is 0.9 eV and work function is 2.2 eV, then the wavelength of incident radiation is

Options :

1. 4000Å
2. 8000Å
3. 3000Å
4. 2000Å

Question Number : 75 Question Id : 67809418298 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the angle of incidence of a ray is greater than the critical angle at the core – cladding interface in an optical fiber, then the ray travels

Options :

1. in the core
2. in the cladding
3. in the buffer
4. along the interface

Chemistry

Number of Questions:	25
Display Number Panel:	Yes
Group All Questions:	No

Question Number : 76 Question Id : 67809418299 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Pauli's Exclusion principle states that two electrons in same orbital have

Options :

1. same spins

2. different spins

3. opposite spins

4. vertical spins

Question Number : 77 Question Id : 67809418300 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Orbits in which electrons move according to Bohr are

Options :

1. elliptical

2. cylindrical

3. circular

4. oval

Question Number : 78 Question Id : 67809418301 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Phosphorus has an atomic number of 15. A stable phosphorus atom has an electronic configuration of

Options :

1. $1s^2 2s^2 2p^6 3p^5$

2. $1s^2 2s^2 2p^6 3s^2 3p^3$

3. $1s^2 2s^2 2p^6 3s^2 3p^1 4s^2$

4. $1s^2 1p^6 1d^7$

Question Number : 79 Question Id : 67809418302 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

NaCl is classified as having what kind of bonds in the solid phase?

Options :

1. Covalent

2. Ionic

3. Polar

4. vander Waals

Question Number : 80 Question Id : 67809418303 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Bond formed due to sharing of electrons is

Options :

1. Ionic bond

2. Metallic bond

3. Polar bond

4. Covalent bond

Question Number : 81 Question Id : 67809418304 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The normality of solution obtained by dissolving 5.3 grams of Na_2CO_3 in 1 litre solution is

Options :

1. 1N

2. 0.1N

3. 0.05N

4. 0.5N

Question Number : 82 Question Id : 67809418305 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The following solution has same molarity and normality

Options :

1. Na_2CO_3

2. NaCl

3. H_2SO_4

4. $K_2Cr_2O_7$

Question Number : 83 Question Id : 67809418306 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

5 moles of a solute is dissolved in 10 litres of solution. What is its molarity?

Options :

1. 5 M

2. 2M

3. 0.5M

4. 0.2M

Question Number : 84 Question Id : 67809418307 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Process in which acids (H^+) and bases (OH^-) react to form salts and water is called

Options :

1. Neutralization

2. Halogenation

3. Hydrogenation

4. Hydrolysis

Question Number : 85 Question Id : 67809418308 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A substance that donates a pair of electrons to form coordinate covalent bond is called

Options :

1. Lewis acid

2. Lewis base

3. Bronsted-Lowry acid

4. Bronsted-Lowry base

Question Number : 86 Question Id : 67809418309 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

One Faraday is equal to

Options :

1. 99650 C

2. 93100 C

3. 96500 C

4. 94500 C

Question Number : 87 Question Id : 67809418310 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The cell reaction of a cell is $Mg(s) + 2\ H^{+}(aq) \rightarrow Mg^{2+}(aq) + H_2(g)$. If the standard reduction potential of Zn is -2.372 V, then the emf of the cell is

Options :

1. +2.372 V

2. − 2.372 V

3. 0.00 V

4. -1.372 V

Question Number : 88 Question Id : 67809418311 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Galvanic cells are the cells which convert

Options :

1. Electrical energy to chemical energy

2. Chemical energy to electrical energy

3. Chemical energy to free energy

4. Potential energy to kinetic energy

Question Number : 89 Question Id : 67809418312 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Mass of substance produced at electrode is directly proportional to the quantity of electricity passed. This is known as

Options :

1. Faraday's second law

2. Faraday's first law

3. Newton's third law

4. Newton's first law

Question Number : 90 Question Id : 67809418313 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Hardness of water is expressed in terms of equivalent of

Options :

1. Na_2CO_3

2. K_2CO_3

3. $MgCO_3$

4. $CaCO_3$

Question Number : 91 Question Id : 67809418314 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Temporary hardness is caused by

Options :

1. Carbonates of calcium and magnesium

2. Chlorides of calcium and magnesium

3. Sulphates of calcium and magnesium

4. Nitrates of Calcium

Question Number : 92 Question Id : 67809418315 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The exhausted zeolite bed can be regenerated by washing with

Options :

1. NaCl

2. dil. NaOH

3. dil. HCl

4. Distilled water

Question Number : 93 Question Id : 67809418316 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Corrosion is an example of

Options :

1. Oxidation

2. Reduction

3. Electrolysis

4. Halogenation

Question Number : 94 Question Id : 67809418317 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The composition of rust is

Options :

1. $Fe(OH)_3$

2. $FeCl_3$

3. FeO

4. $Fe_2O_3.\ xH_2O$

Question Number : 95 Question Id : 67809418318 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following statement is not true?

Options :

1. Natural rubber has the trans-configuration at every double bond

2. Buna-S is a copolymer of butadiene and styrene

3. Natural rubber is a 1, 4-polymer of isoprene

4. In vulcanization, the formation of sulphur bridges between different chains makes rubber harder and stronger

Question Number : 96 Question Id : 67809418319 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The monomers of Buna-S rubber are

Options :

1. Styrene and butadiene

2. Styrene and 2-propene

3. Isoprene and butadiene

4. Styrene and sulphur

Question Number : 97 Question Id : 67809418320 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The plastics which soften when heat is applied with or without pressure, but require cooling to set them to shape are called as

Options :

1. Thermosofting materials

2. Thermosetting materials

3. Thermoplastic materials

4. Thermostatting materials

Question Number : 98 Question Id : 67809418321 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following statement is not true about ideal fuel?

Options :

1. High calorific value

2. High moisture content

3. Low cost

4. Moderate ignition temperature

Question Number : 99 Question Id : 67809418322 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Environmental pollution affects

Options :

1. Humans only

2. Plants only

3. Biotic components

4. Both abiotic and biotic components

Question Number : 100 Question Id : 67809418323 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Layer of atmosphere in which ozone layer lies is

Options :

1. Troposphere

2. Stratosphere

3. Exosphere

4. Mesosphere

Mechanical Engineering

Number of Questions:	100
Display Number Panel:	Yes
Group All Questions:	No

Question Number : 101 Question Id : 67809418324 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Auto collimator is used for measurement of

Options :

1. Small angular differences

2. Flatness

3. Linear surfaces

4. Concavity

Question Number : 102 Question Id : 67809418325 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Fullers are used

Options :

1. For finishing flat surfaces

2. To finish the punched hole

3. For necking down a piece of work

4. For punching a hole

Question Number : 103 Question Id : 67809418326 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The accuracy of the micrometer can be checked by

Options :

1. Limit gauges

2. Plug gauges

3. Angle gauge

4. Slip gauge

Question Number : 104 Question Id : 67809418327 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The operation of making a cone shaped enlargement at the end of a hole is known as

Options :

1. Counter-sinking

2. Counter-boring

3. Trepanning

4. Spot facing

Question Number : 105 Question Id : 67809418328 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Seam welding is a

Options :

1. Continuous spot welding process

2. Multi spot welding process

3. Arc welding process

4. Process used for joining round bars

Question Number : 106 Question Id : 67809418329 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Tumbler gears in lathe are used to

Options :

1. Cut gear

2. Cut thread

3. Reduce spindle speeds

4. Give direction of movement to the lathe carriage.

Question Number : 107 Question Id : 67809418330 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The spindle speed for a 30mm diameter twist drill cutting at 30m/min. is

Options :

1. 1/π rpm

2. 1000/ π rpm

3. 60/π rpm

4. 60000/π rpm

Question Number : 108 Question Id : 67809418331 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Quick return motion is used in a

Options :

1. Lathe

2. Shaper

3. Grinder

4. Drilling machine

Question Number : 109 Question Id : 67809418332 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The advantage of four jaw chuck is

Options :

1. Self centering can be easily achieved

2. Irregular jobs can be mounted

3. Vibration of the job can be controlled

4. Useful in facing operations

Question Number : 110 Question Id : 67809418333 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Hardened gears are finished by

Options :

1. Milling

2. Gear grinding

3. Gear shaping

4. Gear shaving

Question Number : 111 Question Id : 67809418334 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Lapping is a

Options :

1. Fastening process

2. Grinding process

3. Surface finishing process

4. Sheet metal process

Question Number : 112 Question Id : 67809418335 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Rebating is the process of

Options :

1. Making a hole

2. Making a thread

3. Making a tool

4. Making a recess

Question Number : 113 Question Id : 67809418336 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Spoke shave is used like

Options :

1. Chisel

2. Plane

3. Saw

4. guage

Question Number : 114 Question Id : 67809418337 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Bevel gears are manufactured by

Options :

1. Milling

2. Hobbing

3. Generating process

4. broaching

Question Number : 115 Question Id : 67809418338 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In TIG welding, the following gas is used

Options :

1. Ozone

2. Argon

3. CO_2

4. Neon

Question Number : 116 Question Id : 67809418339 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Disposable patterns are made of

Options :

1. wood

2. polystyrene

3. rubber

4. metal

Question Number : 117 Question Id : 67809418340 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Type of the electrode used in MIG welding

Options :

1. Non – consumable electrode

2. Consumable electrode

3. Base-coated tungsten electrode

4. Coated electrode

Question Number : 118 Question Id : 67809418341 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Stakes are

Options :

1. Like a pair of scissors

2. Sheet metal anvils

3. Riveting tool

4. Cutting tool in sheet metal work

Question Number : 119 Question Id : 67809418342 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A joint made by fastening two edges together is called

Options :

1. Seam

2. Hem

3. Lancing

4. nobbing

Question Number : 120 Question Id : 67809418343 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The scale formed in arc welding is in the form of

Options :

1. Liquid

2. Powder

3. Black flakes

4. gas

Question Number : 121 Question Id : 67809418344 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In which of the following process two tungsten electrodes are used?

Options :

1. Submerged arc welding

2. Ultrasonic welding

3. Atomic hydrogen welding

4. Carbon arc welding

Question Number : 122 Question Id : 67809418345 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Swaging is an operation of

Options :

1. Hot rolling

2. Forging

3. Extrusion

4. Piercing

Question Number : 123 Question Id : 67809418346 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Mechanical properties of the metals can be improved in hot working due to

Options :

1. Recovery of grains

2. Recrystallization

3. Grain growth

4. Refinement of grain size

Question Number : 124 Question Id : 67809418347 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Friction coefficient is

Options :

1. High in cold working

2. High in hot working

3. Same in cold working and hot working

4. It will not affect the metal forming

Question Number : 125 Question Id : 67809418348 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Principle of jolt machine is

Options :

1. Creating vibration

2. Reciprocating mechanism

3. Rotary cam mechanism

4. Pouring of sand with high velocity

Question Number : 126 Question Id : 67809418349 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Rapping plaster is used to

Options :

1. Lifting the pattern

2. Reinforcement of sand

3. Clamp drag and cope

4. Smooth pattern surface

Question Number : 127 Question Id : 67809418350 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Casting defect resulting from lack of fluidity is

Options :

1. Inclusion

2. Cold shut

3. Shrinkage

4. Blow holes

Question Number : 128 Question Id : 67809418351 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Izod test is conducted to measure

Options :

1. hardness

2. fatigue strength

3. tensile strength

4. impact strength

Question Number : 129 Question Id : 67809418352 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is a non-destructive test?

Options :

1. Radiography test

2. Hardness test

3. Tensile test

4. Compression test

Question Number : 130 Question Id : 67809418353 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not the objective of annealing ?

Options :

1. Removing internal stresses

2. Refine grain structure

3. Reduces softness

4. Improve machinability

Question Number : 131 Question Id : 67809418354 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

While nitriding of steel, the following atmosphere is generally used in the furnace

Options :

1. Nascent steel

2. Carbondioxide

3. Liquid Helium

4. Chlorine Gas

Question Number : 132 Question Id : 67809418355 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Killed steels

Options :

1. Have minimum impurity level

2. Have almost zero percentage of carbon

3. Are produced by LD process

4. Are free from oxygen

Question Number : 133 Question Id : 67809418356 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Muntz metal consists of

Options :

1. 40% Cu, 60% Zn

2. 60%Cu, 40% Zn

3. 75% Cu, 25%Zn

4. 88%Cu, 12% Zn

Question Number : 134 Question Id : 67809418357 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A bar of length L meters extends by a mm under a tensile force of P. The strain produced in the bar is

Options :

1. a/L

2. 0.1 a/L

3. 0.01 a/L

4. 0.001 a/L

Question Number : 135 Question Id : 67809418358 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The units of modulus of elasticity are same as those of

Options :

1. Stress, strain and pressure

2. Stress, force and modulus of rigidity

3. Stress, force and pressure

4. Stress, pressure and modulus of rigidity

Question Number : 136 Question Id : 67809418359 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A simply supported beam, is subjected to a point load 50kN at a distance 5m from left support. Total span is 10m . The maximum bending moment is

Options :

1. 50kNm

2. 125Nm

3. 125KNm

4. 12.5Nm

Question Number : 137 Question Id : 67809418360 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Point of contraflexure is the point where

Options :

1. The Shear Force is zero

2. Hinged end

3. The beam is supported

4. Where the bending moment changes its sign.

Question Number : 138 Question Id : 67809418361 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two closed coil springs are made from the same diameter wire, one wound on 2.5 cm diameter core and the other on 1.25 cm diameter core. If both the springs have same number of coils, then the ratio of their spring constants should be

Options :

1. 1 /16
2. 1 /8
3. 1/ 4
4. 1/2

Question Number : 139 Question Id : 67809418362 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two closely coiled helical springs 'A' and 'B' are equal in all respects but the number of turns of spring 'A' is half that of spring 'B'. The ratio of deflections in spring 'A' to spring 'B' is

Options :

1. 1/ 12
2. 1/ 8
3. 1/ 2
4. 1/4

Question Number : 140 Question Id : 67809418363 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Due to slip of belt, the velocity ratio of the belt drive

Options :

1. Increases
2. Remains same
3. Decreases

4. Not related

Question Number : 141 Question Id : 67809418364 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The module of a gear wheel of reference pitch 6π is

Options :

1. $1 / 6$

2. 6

3. π

4. $\pi/6$

Question Number : 142 Question Id : 67809418365 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When both pinion and gear are made of same material, then from the design point of view

Options :

1. Pinion is determining factor

2. Gear is the determining factor

3. Pinion is not a determining factor

4. Gear is not a determining factor

Question Number : 143 Question Id : 67809418366 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A porter governor is a

Options :

1. Pendulum type governor

2. Dead weight governor

3. Spring loaded governor

4. Inertia governor

Question Number : 144 Question Id : 67809418367 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Gear train used in screw cutting mechanism of lathe is a

Options :

1. Reversed train

2. Epicyclic train

3. Simple train

4. Compound train

Question Number : 145 Question Id : 67809418368 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Low pressure angle on gears is likely to result in

Options :

1. Weaker teeth

2. Stronger teeth

3. Wear

4. Abrasion

Question Number : 146 Question Id : 67809418369 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When two spur gears are to be in mesh, their

Options :

1. Module must be same

2. Direction of rotation must be same

3. Number of teeth must be same

4. Clearance must be same

Question Number : 147 Question Id : 67809418370 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The angle between the line of stroke (line of motion of the follower) and the normal to the pitch curve at any point is referred to as

Options :

1. Cam angle

2. Prime angle

3. Pressure angle

4. Base angle

Question Number : 148 Question Id : 67809418371 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum shear stress theory is used for

Options :

1. Brittle materials

2. Ductile materials

3. Plastic materials

4. Non ferrous materials

Question Number : 149 Question Id : 67809418372 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A solid circular shaft is to transmit power P kW when turning at N rpm. For a given maximum shear stress, the shaft diameter will be proportional to

Options :

1. $\left(\frac{P}{N}\right)^{1/3}$

2. P/N

3. $\left(\frac{P}{N}\right)^{2/3}$

4. $\left(\frac{P}{N}\right)^{3}$

Question Number : 150 Question Id : 67809418373 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a hollow shaft of external and internal diameters 10cm and 5cm respectively, the torsional sectional modulus in cm^3 will be approximately

Options :

1. $937.5\pi/16$

2. $375\pi/16$

3. $9375\pi/16$

4. $10000\pi/16$

Question Number : 151 Question Id : 67809418374 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The ratio of C_p to C_v for an ideal gas is represented by

Options :

1. Delta

2. Gamma

3. Lambda

4. Pie

Question Number : 152 Question Id : 67809418375 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Second law of thermodynamics is sometimes called the law of

Options :

1. Degradation of energy

2. Change in enthalphy

3. Change in temperature

4. Change of pressure

Question Number : 153 Question Id : 67809418376 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A reversible polytropic process can be described by the equation

Options :

1. $PV^n = C$

2. $(PV)^n = C$

3. $(P/V)^n = C$

4. $P/V^n = C$

Question Number : 154 Question Id : 67809418377 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the isothermal process, the internal energy

Options :

1. Increases

2. Decreases

3. Remains constant

4. First decreases and then increases

Question Number : 155 Question Id : 67809418378 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the Heat supplied during the constant volume process is 30 kJ, its internal energy would be

Options :

1. 20kJ

2. 30 kJ

3. 27kJ

4. 17 kJ

Question Number : 156 Question Id : 67809418379 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The efficiency of the diesel cycle depends upon

Options :

1. Temperature limits

2. Pressure ratio

3. Compression ratio

4. Cut-off ratio and compression ratio

Question Number : 157 Question Id : 67809418380 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the compression ratio of diesel cycle is 18 and cut off occurs at 5% of stroke, then the cut- off ratio is

Options :

1. 1.85

2. 1.95

3. 2.5

4. 3.5

Question Number : 158 Question Id : 67809418381 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Scavenging is usually employed in

Options :

1. Four stroke CI engines

2. Four stroke SI engines

3. Two stroke engine

4. Multi cylinder engine.

Question Number : 159 Question Id : 67809418382 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Morse test is used to determine mechanical efficiency of

Options :

1. Two stroke engine

2. Multi cylinder engine

3. Four stroke engine

4. Gas engines

Question Number : 160 Question Id : 67809418383 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Specific fuel consumption is defined as

Options :

1. Fuel consumption per hour

2. Fuel consumption per km

3. Fuel consumption per BHP

4. Fuel consumption per hour per BHP

Question Number : 161 Question Id : 67809418384 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Compressor capacity is highest, when the intake air temperature is

Options :

1. Highest

2. Lowest

3. Moderate

4. zero

Question Number : 162 Question Id : 67809418385 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Gas turbine works on

Options :

1. Brayton cycle

2. Carnot cycle

3. Rankine cycle

4. Ericson cycle

Question Number : 163 Question Id : 67809418386 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a reaction turbine, vacuum gauge is fitted

Options :

1. At inlet

2. In the casing

3. At outlet

4. In front of control valve

Question Number : 164 Question Id : 67809418387 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Compared to Francis turbine, hydraulic efficiency of Kaplan turbine is

Options :

1. Less

2. Higher

3. Equal

4. Can`t say

Question Number : 165 Question Id : 67809418388 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The cavitation in a hydraulic machine

Options :

1. Causes noise and vibration of various parts

2. Makes the surface rough

3. Reduces the discharge of a turbine

4. Causes sudden drop in power output and efficiency.

Question Number : 166 Question Id : 67809418389 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ is a device which increases the intensity of pressure of a given liquid with the help of a low pressure liquid of large quantity.

Options :

1. Hydraulic press

2. Hydraulic crane

3. Hydraulic accumulator

4. Hydraulic intensifier

Question Number : 167 Question Id : 67809418390 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A device used for storing the energy of liquid temporarily is known as

Options :

1. accumulator

2. intensifier

3. Power saving device

4. separator

Question Number : 168 Question Id : 67809418391 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The ratio of the Manometric head of the Centrifugal Pump to the Energy supplied by the impeller is known as

Options :

1. Overall efficiency

2. Manometric efficiency

3. Mechanical efficiency

4. Thermal efficiency

Question Number : 169 Question Id : 67809418392 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a vane pump the shaft rotates in the casing

Options :

1. Concentrically

2. Eccentrically

3. Angularly

4. centrally

Question Number : 170 Question Id : 67809418393 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Manometric efficiency and Mechanical efficiency of a centrifugal pump are 50% and 90%

respectively. Its overall efficiency will be

Options :

1. 40%

2. 45%

3. 50%

4. 90%

Question Number : 171 Question Id : 67809418394 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A screw pump belongs to the classification of

Options :

1. Rotary pump

2. Reciprocating pump

3. Centrifugal pump

4. Gear pump

Question Number : 172 Question Id : 67809418395 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The sensible heat of wet steam having dryness fraction 0.7 is 400kJ. The latent heat is 600kJ.

Then the total heat content would be

Options :

1. 820 kJ

2. 400kJ

3. 600kJ

4. -20kJ

Question Number : 173 Question Id : 67809418396 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Supersonic flow can be obtained from

Options :

1. Convergent nozzle

2. Convergent divergent nozzle

3. Divergent nozzle

4. Divergent-Convergent Nozzle

Question Number : 174 Question Id : 67809418397 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If One kg of steam sample contains 0.75kg dry steam, its dryness fraction is

Options :

1. 0.25

2. 0.75

3. 0.375

4. 0.5

Question Number : 175 Question Id : 67809418398 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The pressure on the two sides of the moving blades of a reaction steam turbine is

Options :

1. Same

2. Higher at inlet

3. Lower at inlet

4. May be higher or lower depending upon quality of steam

Question Number : 176 Question Id : 67809418399 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The flow through a nozzle is regarded as

Options :

1. Isentropic flow

2. Constant volume flow

3. Isothermal flow

4. Constant Pressure flow

Question Number : 177 Question Id : 67809418400 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Effect of friction in steam nozzle is to

Options :

1. Increase velocity and increase dryness fraction

2. Increase velocity and decrease dryness fraction

3. Decrease velocity and increase dryness fraction

4. Decrease velocity and decrease dryness fraction

Question Number : 178 Question Id : 67809418401 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Stage efficiency of steam turbine is

Options :

1. $\eta_{nozzle} \times \eta_{blade}$

2. $\eta_{nozzle} / \eta_{blade}$

3. $\eta_{blade} / \eta_{nozzle}$

4. $\eta_{nozzle} + \eta_{blade}$

Question Number : 179 Question Id : 67809418402 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Natural draught is produced by

Options :

1. Induced fan

2. Forced fan

3. Chimney

4. Grate

Question Number : 180 Question Id : 67809418403 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a part of vapour compression refrigeration cycle?

Options :

1. compressor

2. condenser

3. Absorber

4. Evaporator

Question Number : 181 Question Id : 67809418404 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

CO_2 refrigeration is also called as

Options :

1. Dry ice refrigeration

2. Gas refrigeration

3. Critical refrigeration

4. Solid refrigeration

Question Number : 182 Question Id : 67809418405 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

During sensible cooling process, wet bulb temperature

Options :

1. Remains same

2. Increases

3. Decreases

4. unpredictable

Question Number : 183 Question Id : 67809418406 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The ambient temperature as recorded by ordinary thermometer is called

Options :

1. Wet bulb temperature

2. Dew point temperature

3. Dry bulb temperature

4. Saturation temperature

Question Number : 184 Question Id : 67809418407 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The following is not the method study tool

Options :

1. Cycle graph

2. SIMO chart

3. Man machine chart

4. Gantt chart

Question Number : 185 Question Id : 67809418408 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Sample inspection is also called as

Options :

1. Screening inspection

2. Lot by lot inspection

3. Process inspection

4. One component inspection

Question Number : 186 Question Id : 67809418409 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Break-even point gives the production level at which

Options :

1. Annual Contribution is equal to fixed cost

2. Annual Fixed cost is equal to variable cost

3. Annual Sales revenue is equal to fixed cost

4. Annual Sales revenue is equal to variable cost

Question Number : 187 Question Id : 67809418410 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Bin card is used in

Options :

1. Purchase department

2. Stores department

3. Production department

4. Quality control department

Question Number : 188 Question Id : 67809418411 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

AOQL stands for

Options :

1. Accepted outgoing quality level

2. Accepted outgoing quality limit

3. Average outgoing quality limit

4. Average outgoing quality level

Question Number : 189 Question Id : 67809418412 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The process capability is given by

Options :

1. 6 Sigma

2. 3 Sigma

3. 4 Sigma

4. 5 Sigma

Question Number : 190 Question Id : 67809418413 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two alternative processes can produce the same product. The first one has a fixed cost of Rs.1500 and a variable cost of Rs.30 per piece. The second one has a fixed cost of Rs.2000 and a variable cost of Rs.20 per piece. The breakeven quantity between the two alternatives is

Options :

1. 100

2. 25

3. 50

4. 75

Question Number : 191 Question Id : 67809418414 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In time study, the rating factor is applied to determine

Options :

1. standard time of a job

2. merit rating of the worker

3. fixation of incentive rate

4. normal time of a worker

Question Number : 192 Question Id : 67809418415 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The partner who contributes money and does not take part in the function of the firm is known as

Options :

1. Ordinary partner

2. Active partner

3. Dormant partner

4. Nominal partner

Question Number : 193 Question Id : 67809418416 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

CPM and PERT techniques are used for

Options :

1. Layout planning

2. Financial management

3. Executing a new project

4. Increasing productivity

Question Number : 194 Question Id : 67809418417 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Normally the clutch is mounted between the

Options :

1. Engine and gearbox

2. Gear box and propeller shaft

3. Propeller shaft and final drive

4. Final drive and differential

Question Number : 195 Question Id : 67809418418 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The parking brake generally acts on

Options :

1. Front wheels

2. Rear wheels

3. Front and Rear wheels

4. Differential

Question Number : 196 Question Id : 67809418419 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Hypoid gears require special lubricant because

Options :

1. Teeth are made of soft material

2. Teeth are made of Hard material

3. Such gears rotate faster

4. Sliding action is there between the teeth

Question Number : 197 Question Id : 67809418420 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The axle bevel gears in the differential, mesh with

Options :

1. Ring gear

2. Differential pinion gears

3. Drive pinion

4. Main gear

Question Number : 198 Question Id : 67809418421 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Engine dynamo is usually driven by

Options :

1. Gear drive

2. V-belt drive

3. Chain drive

4. PIV drive

Question Number : 199 Question Id : 67809418422 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In Automobiles, ABS stands for

Options :

1. Anti –lock braking system

2. Anlog braking system

3. Air based system

4. Air blow system

Question Number : 200 Question Id : 67809418423 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The device used to reduce the exhaust noise is known as

Options :

1. Exhaust manifold

2. Exhaust pipe

3. Muffler

4. Tail pipe