

# Question Paper Preview

<b>Question Paper Name :</b>	Mechanical Engineering 14th Sep 2020 S2
<b>Subject Name :</b>	Mechanical Engineering
<b>Duration :</b>	180
<b>Total Marks :</b>	200
<b>Display Marks:</b>	No
<b>Share Answer Key With Delivery Engine :</b>	Yes
<b>Actual Answer Key :</b>	Yes
<b>Is this Group for Examiner? :</b>	No

## Mathematics

<b>Section Number :</b>	1
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	50
<b>Number of Questions to be attempted :</b>	50
<b>Section Marks :</b>	50
<b>Display Number Panel :</b>	Yes
<b>Group All Questions :</b>	Yes
<b>Mark As Answered Required? :</b>	Yes

**Question Number : 1 Question Id : 61097514429 Question Type : MCQ Display Question  
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical**

If  $A = \begin{bmatrix} 3 & 1 \\ 1 & 4 \end{bmatrix}$  and  $A^2 - kA - 4I_2 = 0$  then  $k =$

**Options :**

1. 1

2. 2

3. -2

4. -1

Ans : no correct option

**Question Number : 2 Question Id : 61097514430 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

If  $A = \begin{bmatrix} 0 & 2 & 1 \\ -2 & 0 & -2 \\ -1 & x & 0 \end{bmatrix}$  is a skew-symmetric matrix, then  $x$  is

**Options :**

1. 0

2. 1

3. 2

4. -2

Question Number : 3 Question Id : 61097514431 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If  $a+b+c=0$ , one root of  $\begin{vmatrix} a-x & c & b \\ c & b-x & a \\ b & a & c-x \end{vmatrix} = 0$  is

Options :

1.  $x=0$

2.  $x=1$

3.  $x=2$

4.  $x=a^2+b^2+c^2$

Question Number : 4 Question Id : 61097514432 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The co-factors of the elements 2,-5 in the matrix  $\begin{pmatrix} -1 & 0 & 5 \\ 1 & 2 & -2 \\ -4 & -5 & 3 \end{pmatrix}$  is

Options :

1. 16, 3

2. 17, -3

3. 17, 3

4.  $-17, -3$

**Question Number : 5 Question Id : 61097514433 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The solution of a system of linear equations  $2x-y+3z=9$  ,  $x+y+z=6$  ,  $x-y-z=2$  is

**Options :**

1.  $x = -1, y = -2, z = -3$

2.  $x = -1, y = -2, z = 3$

3.  $x = -1, y = 2, z = -3$

4.  $x = 1, y = 2, z = 3$

**Question Number : 6 Question Id : 61097514434 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If  $\frac{2x+4}{(x-1)^3} = \frac{S_1}{(x-1)} + \frac{S_2}{(x-1)^2} + \frac{S_3}{(x-1)^3}$  Then  $\sum_{j=1}^3 S_j$  is equal to

**Options :**

1.  $S_2$

2.  $2S_2$

3.  $4S_2$

4.  $4S_1$

Question Number : 7 Question Id : 61097514435 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If  $\frac{3x^3 - 2x^2 - 1}{x^4 + x^2 + 1} = \frac{Ax + B}{x^2 + x + 1} + \frac{Cx + D}{x^2 + kx + 1}$  then k =

Options :

1. 0

2. 1

3. -1

4. 2

Question Number : 8 Question Id : 61097514436 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If  $\sin 780^\circ \sin 480^\circ - \cos 120^\circ \sin 330^\circ = k$  then k is

Options :

1. 0

2.  $1$

3.  $1/2$

4.  $-1/2$

**Question Number : 9 Question Id : 61097514437 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If A,B,C,D are the angles of cyclic quadrilateral taken in order. then

$$\cos A + \cos B + \cos C + \cos D =$$

**Options :**

1.  $0$

2.  $2$

3.  $-1$

4.  $-2$

**Question Number : 10 Question Id : 61097514438 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

$$\text{If } \tan \theta = \frac{4}{3} \text{ then } \sqrt{\frac{1 - \sin \theta}{1 + \sin \theta}} =$$

**Options :**

1.

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

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

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

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

**Question Number : 11 Question Id : 61097514439 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The period of the function  $f(x)=|\sin x|$  is

**Options :**

1.  $2\pi$

2.  $\pi$

3.  $3\pi$

4.  $4\pi$

**Question Number : 12 Question Id : 61097514440 Question Type : MCQ Display Question**

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The value of  $\tan 1^\circ \tan 2^\circ \tan 3^\circ \dots \tan 89^\circ$  is

Options :

1.  $1$

2.  $0$

3.  $-1$

4.  $\infty$

Question Number : 13 Question Id : 61097514441 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If  $f(x) = \cos^2 x + \sec^2 x$  then its value always is

Options :

1.  $f(x) < 1$

2.  $f(x) = 1$

3.  $2 > f(x) < 1$

4.  $f(x) \geq 2$



Question Number : 14 Question Id : 61097514442 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If n is odd, then  $\left(\frac{\cos x + \cos y}{\sin x - \sin y}\right)^n + \left(\frac{\sin x + \sin y}{\cos x - \cos y}\right)^n =$

Options :

1. -1

2. 1

3. 0

4. 2

Question Number : 15 Question Id : 61097514443 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

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

Options :

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

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

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

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

**Question Number : 16 Question Id : 61097514444 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The trigonometric equation  $\sin^{-1}x=2\sin^{-1} a$  . has a solution for

**Options :**

1.  $|a| < \frac{1}{2}$

2.  $|a| \geq \frac{1}{\sqrt{2}}$

3.  $\frac{1}{2} < |a| < \frac{1}{\sqrt{2}}$

4.  $|a| \leq \frac{1}{\sqrt{2}}$

**Question Number : 17 Question Id : 61097514445 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The solution set of the system of equations  $x + y = \frac{2\pi}{3}$  and  $\cos x + \cos y = \frac{3}{2}$  is

**Options :**

1.

$\phi$

2.  $\left\{ n\pi + \frac{2\pi}{3}, n = 1, 2, 3, \dots \right\}$

3.  $\left\{ n\pi - \frac{2\pi}{3}, n = 1, 2, 3, \dots \right\}$

4. 0

Question Number : 18 Question Id : 61097514446 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

if  $z = \frac{7-i}{3-4i}$  then  $z^{14}$  is

Options :

1.  $2^7$

2.  $2^7 i$

3.  $-2^7 i$

4.  $-2^7$

Question Number : 19 Question Id : 61097514447 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

$i^2+i^4+i^6+\dots+(2n+1)$  terms is

Options :

1.  $0$

2.  $-1$

3.  $-i$

4.  $i$

Question Number : 20 Question Id : 61097514448 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The equation of the polar of  $(-2,3)$  with respect to  $x^2+y^2-4x-6y+5=0$  is

Options :

1.  $x=y$

2.  $x+y=0$

3.  $x=0$

4.  $y=0$

**Question Number : 21 Question Id : 61097514449 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A parabolic arc has a height of 12m and a span of 20m. The height of the arc, 5m away on either side of the centre is

**Options :**

1. 2m
2. 3m
3. 6m
4. 9m

**Question Number : 22 Question Id : 61097514450 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The eccentricity of the ellipse whose latus-rectum is one third of its minor axis is

**Options :**

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

4.  $2\sqrt{\frac{2}{3}}$

**Question Number : 23 Question Id : 61097514451 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A conic with eccentricity  $\frac{3}{2}$  is

**Options :**

1. Parabola
2. Ellipse
3. hyperbola
4. Circle

**Question Number : 24 Question Id : 61097514452 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The focus of the parabola  $(y-1)^2=8(x-3)$  is

**Options :**

1. (4,2)
2. (3,5)

3. (5,1)

4. (2,1)

**Question Number : 25 Question Id : 61097514453 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The tangents drawn from the point P(-2,19) to the parabola  $y^2=8x$  are perpendicular to each other. Then the point P lies on the parabola at

**Options :**

1. Tangent at the vertex

2. directrix

3. latus-rectum

4. diameter through the focus

**Question Number : 26 Question Id : 61097514454 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

**Options :**

1. 0

2.  $e$

3.  $e^2$

4.  $1 e^2$

**Question Number : 27 Question Id : 61097514455 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If  $x=y\log xy$  then  $\frac{dy}{dx} =$

**Options :**

1.  $\frac{x-y}{1+\log xy}$

2.  $\frac{x-y}{x(1+\log xy)}$

3.  $\frac{x+y}{x(1+\log xy)}$

4.  $\frac{x+y}{x \log y}$

**Question Number : 28 Question Id : 61097514456 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**



If  $f(x) = \frac{x}{1+|x|}$ ,  $x \in R$  then  $f'(0) =$

**Options :**

1. 0

2. 1

3. 2

4. 4

**Question Number : 29 Question Id : 61097514457 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

If  $y = (x^x)^x$  then  $\frac{dy}{dx} =$

**Options :**

1.  $x \cdot x^x (1 + 2 \log x)$

2.  $(1 + 2 \log x) x^{(x^2+1)}$

3.  $(1 + 2 \log x) x^{x^2}$

4.  $x \cdot x^x (1 - 2 \log x)$

**Question Number : 30 Question Id : 61097514458 Question Type : MCQ Display Question**

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If  $x=e^{3t}\cos 3t$  then  $\frac{d^2x}{dt^2}$  at  $t = \frac{\pi}{2}$  is

Options :

1.  $6e^\pi$

2.  $12e^\pi$

3.  $-12e^\pi$

4.  $-6e^\pi$

Question Number : 31 Question Id : 61097514459 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The maximum area of a rectangle with perimeter 176cm is

Options :

1.  $1936\text{cm}^2$

2.  $1854\text{cm}^2$

3.  $2110\text{cm}^2$

4.  $1735\text{cm}^2$

**Question Number : 32 Question Id : 61097514460 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Two positive numbers whose sum is 64 and sum of whose cubes is minimum are given by

**Options :**

1. 32.32

2. 48.16

3. 40.24

4. 32.24

**Question Number : 33 Question Id : 61097514461 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If  $u$  be a homogeneous function of degree  $n$ , then  $x \frac{\partial^2 u}{\partial x^2} + y \frac{\partial^2 u}{\partial y^2} =$

**Options :**

1.  $nu$

2.  $n \frac{\partial u}{\partial x}$

3.  $(n-1) \frac{\partial u}{\partial x}$

4.  $n(n-1) \frac{\partial u}{\partial x}$

Ans : no correct option

**Question Number : 34 Question Id : 61097514462 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If  $u=f(x-y, y-z, z-x)$  then  $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z}$  is

**Options :**

1.  $3$

2.  $-3$

3.  $u$

4.  $0$

**Question Number : 35 Question Id : 61097514463 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A stone is dropped into a quite lake and waves move in a circle at a speed of 6cm sec. At the instant when the radius of the circular wave is 16cm , the enclosed area increases at the rate

**Options :**

1.  $100 \pi \text{ cm}^2 \cdot \text{sec}$

2.  $32 \pi \text{ cm}^2 \cdot \text{sec}$

3.  $192 \pi \text{ cm} \cdot \text{sec}$

4.  $192 \pi \text{ cm}^2 \cdot \text{sec}$

**Question Number : 36 Question Id : 61097514464 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

$$\int \frac{dx}{1 + \sin x + \cos x} =$$

**Options :**

1.  $\log \left( \tan \left( \frac{x}{2} \right) \right) + c$

2.  $\log \left( 1 + \tan \left( \frac{x}{2} \right) \right) + c$

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

4.  $\log \left( 1 + \sec \left( \frac{x}{2} \right) \right) + c$

**Question Number : 37 Question Id : 61097514465 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

$$\int_0^1 \frac{\log(1+x)}{x} dx \text{ is}$$

**Options :**

1. 0

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

3.  $\frac{\pi^2}{4}$

4.  $\frac{\pi^2}{12}$

**Question Number : 38 Question Id : 61097514466 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

$$\int \frac{e^x - 1}{e^x + 1} dx =$$

**Options :**

1.  $2\log(e^x+1)+c$

2.  $\log(e^{2x}-1)+c$

3.  $2\log(e^x+1)-x+c$

4.  $\log(e^{2x}+1)+c$

Question Number : 39 Question Id : 61097514467 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The mean value of the ordinate of a semi circle of radius  $a$  taken along the diameter is

Options :

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

2.  $2a\pi$

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

4.  $24a\pi$

Question Number : 40 Question Id : 61097514468 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The area enclosed by the curve  $|x| + |y| = 1$  is

Options :

1.  $2$

2.  $\pi$

3.  $\pi^2$

4. <sup>1</sup>

**Question Number : 41 Question Id : 61097514469 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

$$\int_a^b f(x) dx \text{ represents}$$

**Options :**

1. The area bounded by the curve and the x-axis
2. The area bounded by the curve and the ordinates  $x=a, x=b$
3. The area bounded by the curve, the x-axis and the ordinates  $x=a, x=b$
4. The area not bounded by the curve

**Question Number : 42 Question Id : 61097514470 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

$$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sin|x| dx \text{ is}$$

**Options :**

1. <sup>0</sup>



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

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

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

Question Number : 43 Question Id : 61097514471 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

Mean value of  $\frac{1}{1+x^2}$  on  $[-1,1]$  is

Options :

1.  $0$

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

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

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

Question Number : 44 Question Id : 61097514472 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The order and degree of the differential equation  $y = x \frac{dy}{dx} + \frac{3}{\frac{dy}{dx}}$  is

**Options :**

1. 1.2

2. 2.1

3. 1.1

4. 2.2

**Question Number : 45 Question Id : 61097514473 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The differential equation  $y \frac{dy}{dx} + x = a$  represents

**Options :**

1. a set of circles whose centers are on the x-axis

2. a set of circles whose centers are on the y-axis

3. a set of parabolas

4. a set of ellipses

Question Number : 46 Question Id : 61097514474 Question Type : MCQ Display Question  
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical

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

Options :

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

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

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

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

Question Number : 47 Question Id : 61097514475 Question Type : MCQ Display Question  
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical

Particular solution of  $(D^2 - D - 2)y = \sin 2x$  is

Options :

1.  $\frac{\cos 2x - 3 \sin 2x}{20}$

2.  $\frac{\cos x}{2}$

3.

$$\frac{\sin x}{2}$$

4.  $\frac{x \sin 2x}{8}$

**Question Number : 48 Question Id : 61097514476 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The integrating factor of  $y(xy+2x^2y^2)dx+x(xy-x^2y^2) = 0$  is

**Options :**

1.  $\frac{1}{3x^3y^3}$

2.  $\frac{1}{x^3}$

3.  $\frac{1}{y^3}$

4.  $\frac{3}{x^3y^3}$

**Question Number : 49 Question Id : 61097514477 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If  $y=Ae^x+Be^{2x}$ , where A and B are arbitrary constants, then the differential equation is

**Options :**

1.  $x_2 + 3x_1 + 2y = 0$

2.  $x_2 - 3x_1 - 2y = 0$

3.  $x_2 + 3x_1 - 2y = 0$

4.  $x_2 - 3x_1 + 2y = 0$

**Question Number : 50 Question Id : 61097514478 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The length of the sub normal at any point on  $y^2=4ax$  is

**Options :**

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

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

3.  $a$

4.  $2a$

**Physics**

<b>Section Number :</b>	2
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	25
<b>Number of Questions to be attempted :</b>	25
<b>Section Marks :</b>	25
<b>Display Number Panel :</b>	Yes
<b>Group All Questions :</b>	Yes
<b>Mark As Answered Required? :</b>	Yes

**Question Number : 51 Question Id : 61097514479 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The dimensional formula for magnetic flux is

**Options :**

1.  $[ML^2T^{-2}A^{-1}]$

2.  $[ML^3T^{-2}A^{-2}]$

3.  $[M^0L^{-2}T^{-2}A^{-2}]$

4.  $[ML^2T^{-1}A^2]$

**Question Number : 52 Question Id : 61097514480 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The unit for angular frequency is

**Options :**

1. Hertz

2. Newton
3. Degrees (or) radians per second
4. Steradian

**Question Number : 53 Question Id : 61097514481 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The sum of two vectors A and B is at right angles to their difference. Then

**Options :**

1.  $A = B$
2.  $A = 2B$
3.  $B = 2A$
4. A and B have the same direction

**Question Number : 54 Question Id : 61097514482 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The resultant of two forces, one double the other in magnitude, is perpendicular to the smaller of the two forces. The angle between the two forces is

**Options :**

1.  $120^\circ$
2.  $60^\circ$

3.  $90^\circ$

4.  $150^\circ$

**Question Number : 55 Question Id : 61097514483 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A body starts from rest travels a distance  $x$  in first two seconds and a distance  $y$  in next two seconds. The relation between  $x$  and  $y$  is

**Options :**

1.  $y = 4x$

2.  $y = x$

3.  $y = 3x$

4.  $y = 2x$

**Question Number : 56 Question Id : 61097514484 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Two bodies are projected from the ground with the same speed. If the angles of their projection from the ground are  $45^\circ$  and  $15^\circ$  respectively, the ratio of their ranges is

**Options :**

1.  $1 : 2$



2.  $2 : 1$

3.  $\sqrt{3} : 2$

4.  $1 : \sqrt{2}$

**Question Number : 57 Question Id : 61097514485 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Two bodies of different masses are dropped from heights of 2 m and 8 m respectively.

then the ratio of the time taken by them is \_\_\_\_\_.

**Options :**

1.  $1 : 4$

2.  $1 : 1$

3.  $1 : 2$

4.  $1 : 3$

**Question Number : 58 Question Id : 61097514486 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The angle of projection of a projectile for which the horizontal range and maximum height are equal is

**Options :**

1.  $\sin^{-1}(4)$

2.  $\tan^{-1}(4)$

3.  $\cos^{-1}(4)$

4.  $\tan^{-1}(8)$

**Question Number : 59 Question Id : 61097514487 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If  $\mu_k$  is the coefficient of kinetic friction,  $\mu_r$  is the coefficient of rolling friction and  $\mu_s$  is the coefficient of static friction, then

**Options :**

1.  $\mu_s > \mu_k > \mu_r$

2.  $\mu_s < \mu_k < \mu_r$

3.  $\mu_s < \mu_r < \mu_k$

4.  $\mu_s > \mu_r > \mu_k$

**Question Number : 60 Question Id : 61097514488 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A boy of mass 40 kg is climbing a vertical pole at a constant speed. If the coefficient of friction between his palms and the pole is 0.8 and  $g = 10 \text{ m s}^{-2}$ , the horizontal force that he is applying on the pole is

**Options :**

1. 300 N
2. 400 N
3. 500 N
4. 600 N

**Question Number : 61 Question Id : 61097514489 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

How many 2.5 kg bricks can a man carry up a 3.6 meter staircase in one hour if he works at an average rate of 9.8 watt?

**Options :**

1. 800
2. 200
3. 600
4. 400

**Question Number : 62 Question Id : 61097514490 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A spring of force constant  $800 \text{ N m}^{-1}$  has an extension of 5 cm. The work done in extending it from 5 cm to 15 cm is

**Options :**

1. 16 J
2. 8 J
3. 32 J
4. 24 J

**Question Number : 63 Question Id : 61097514491 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Among the following sources of energy, for which source, sun is not a chief source of energy

**Options :**

1. Hydroelectric power plant
2. Ocean thermal energy
3. Tidal energy
4. Biomass

**Question Number : 64 Question Id : 61097514492 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A particle executes simple harmonic motion along a straight line so that its period is 12 seconds .

The time it takes in traversing a distance equal to half of its amplitude from its equilibrium position is

**Options :**

1. 6 seconds
2. 4 seconds
3. 2 seconds
4. 1 second

**Question Number : 65 Question Id : 61097514493 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A particle executes simple harmonic motion with a frequency  $f$ . The frequency with

which the potential energy oscillates is

**Options :**

1.  $f$
2.  $f^2$
3.  $2f$
4. zero

**Question Number : 66 Question Id : 61097514494 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A tuning fork A of frequency 512 Hz produces 4 beats per second when sounded with a tuning fork B. Due to filing of the prongs of the tuning fork B, the number of the beats per second becomes 6. The actual frequency of B is

**Options :**

1. 516 Hz
2. 508 Hz
3. 512 Hz
4. 500 Hz

**Question Number : 67 Question Id : 61097514495 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A car sounding a horn of frequency 1000 Hz passes an observer. The ratio of frequencies of the horn noted by the observer before and after passing of car is 11: 9. If the speed of sound is  $v$ , then the speed of the car is

**Options :**

1.  $v/10$
2.  $v/20$
3.  $v/2$

4.  $v^5$

**Question Number : 68 Question Id : 61097514496 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The reverberation time is

**Options :**

1. Directly proportional to sound absorption
2. Inversely proportional to volume
3. Inversely proportional to sound absorption
4. Directly proportional to pressure

**Question Number : 69 Question Id : 61097514497 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The pressure  $P_1$  and density  $d_1$  of a diatomic gas ( $\gamma = 7/5$ ) change to  $P_2$  and  $d_2$  during an

adiabatic operation. If  $\frac{d_2}{d_1} = 32$ , then  $\frac{P_2}{P_1}$  is

**Options :**

1. 125
2. 128
3. 32

4. 256

**Question Number : 70 Question Id : 61097514498 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The first law of thermodynamics is concerned with conservation of

**Options :**

1. No. of molecules
2. No. of moles
3. Energy
4. Temperature

**Question Number : 71 Question Id : 61097514499 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

When ice cube melts into water.

**Options :**

1. Entropy decreases and internal energy decreases
2. Entropy decreases and internal energy increases
3. Entropy increases and internal energy increases
4. Entropy increases and internal energy decreases



**Question Number : 72 Question Id : 61097514500 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

For nitrogen,  $C_p - C_v = x$  and for argon,  $C_p - C_v = y$ . The relation between  $x$  and  $y$  is

**Options :**

1.  $x = y$
2.  $x = 7y$
3.  $y = 7x$
4.  $x = y^2$

**Question Number : 73 Question Id : 61097514501 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A Carnot's engine extracts  $1.5 \times 10^3$  kilocalories of heat from a reservoir at  $627^\circ\text{C}$  and exhausts it to a sink maintained at  $27^\circ\text{C}$ . The work performed by the engine is

**Options :**

1. 4.2 J
2.  $4.2 \times 10^2$  J
3.  $4.2 \times 10^{-6}$  J
4.  $4.2 \times 10^6$  J

**Question Number : 74 Question Id : 61097514502 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

At critical angle, the angle of refraction is

**Options :**

1.  $45^{\circ}$
2.  $90^{\circ}$
3.  $180^{\circ}$
4.  $60^{\circ}$

**Question Number : 75 Question Id : 61097514503 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Superconductivity is due to the formation of

**Options :**

1. Domain walls
2. Electron-hole pairs
3. Hysteresis
4. Cooper pairs

## Chemistry

Section Number :	3
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Display Number Panel :	Yes
Group All Questions :	Yes
Mark As Answered Required? :	Yes

Question Number : 76 Question Id : 61097514504 Question Type : MCQ Display Question  
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical

The atomic weight and atomic number of an element are A and Z respectively.

The number of neutrons in the atom of that element is.

Options :

1. A
2. Z
3.  $Z - A$
4.  $A - Z$

Question Number : 77 Question Id : 61097514505 Question Type : MCQ Display Question  
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical

The two electrons present in an orbital are distinguished by :

**Options :**

1. Principal Quantum number
2. Spin Quantum number
3. Magnetic Quantum number
4. Azimutal Quantum number

**Question Number : 78 Question Id : 61097514506 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The order of increasing energies of the orbitals follows:

**Options :**

1. 3s, 3p, 3d, 4s, 4p
2. 3s, 3p, 4s, 4p, 3d
3. 3s, 3p, 4s, 3d, 4p
4. 3s, 3p, 3d, 4p, 4s

**Question Number : 79 Question Id : 61097514507 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Ionic bond is formed by

**Options :**

1. Sharing of electrons
2. Donating of electron
3. Transfer of Electrons
4. Donating of electron pair

**Question Number : 80 Question Id : 61097514508 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The total number of electrons that take part in forming bonds in  $N_2$  is

**Options :**

1. 2
2. 4
3. 10
4. 6

**Question Number : 81 Question Id : 61097514509 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Sum of mole fractions of the two components of a solution is always

**Options :**

1. more than one

2. less than one
3. exactly one
4. not fixed

**Question Number : 82 Question Id : 61097514510 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A 10N Solution stands for

**Options :**

1. Normal solution
2. Decanormal solution
3. Decinormal solution
4. Seminormal solution

**Question Number : 83 Question Id : 61097514511 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The molarity of pure water is

**Options :**

1. 55.6
2. 50

3. 100

4. 18

**Question Number : 84 Question Id : 61097514512 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

According to Bronsted –Lowry theory which one of the following is considered as an acid?

**Options :**

1.  $\text{OH}^-$

2.  $\text{HSO}_4^-$

3.  $\text{H}_3\text{O}^+$

4.  $\text{Cl}^-$

**Question Number : 85 Question Id : 61097514513 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The pH of a solution containing  $10^{-6}$  HCl is

**Options :**

1. 4

2. 6

3. 8

4. 10

**Question Number : 86 Question Id : 61097514514 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

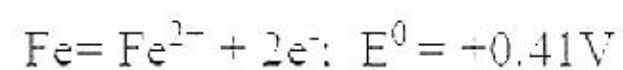
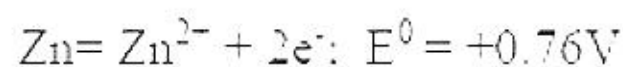
Calculate the quantity of electricity that will be required for liberating 710g of chlorine gas by the electrolysis of a concentrated solution of NaCl.

**Options :**

1. 10 faradays
2. 20 faradays
3. 5 faradays
4. 18 faradays

**Question Number : 87 Question Id : 61097514515 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The standard reduction potentials ( $E^0$ ) for the half reactions are as given below



The EMF for the cell reaction  $\text{Fe}^{2+} + \text{Zn} \rightarrow \text{Zn}^{2+} + \text{Fe}$  is

**Options :**

1. -0.35 V



2. +0.35 V

3. +1.17 V

4. -1.17 V

**Question Number : 88 Question Id : 61097514516 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The best electronic conductor is

**Options :**

1. Copper

2. Aluminium

3. Zinc

4. Silver

**Question Number : 89 Question Id : 61097514517 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The electric charge for electrode deposition of one gram equivalent of a

substance is

**Options :**

1. Charge on one mole of electrons

2. One ampere per second

3. 96500 coulombs per second

4. One ampere for one hour

**Question Number : 90 Question Id : 61097514518 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Hardness of water is expressed in terms of ----- equivalents

**Options :**

1.  $\text{MgCO}_3$

2.  $\text{CaCO}_3$

3.  $\text{Na}_2\text{CO}_3$

4.  $\text{K}_2\text{CO}_3$

**Question Number : 91 Question Id : 61097514519 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Which of the following is a powerful disinfectant?

**Options :**

1.  $\text{O}_2$

2.  $\text{Cl}_2$

3.  $\text{CaOCl}_2$

4.  $N_2$

**Question Number : 92 Question Id : 61097514520 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The process of killing pathogenic bacteria in water is called

**Options :**

1. Softening
2. Osmosis
3. Sterilization
4. Reverse osmosis

**Question Number : 93 Question Id : 61097514521 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The metal oxide film that can easily undergo corrosion is

**Options :**

1. Stable
2. Porous
3. Volatile
4. Unstable

**Question Number : 94 Question Id : 61097514522 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

In galvanised articles, which metal protects the base metal?

**Options :**

1. Fe

2. Cu

3. Zn

4. Pb

**Question Number : 95 Question Id : 61097514523 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Which of the following is thermosetting plastic?

**Options :**

1. PVC

2. Bakelite

3. Polystyrene

4. Teflon

**Question Number : 96 Question Id : 61097514524 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Natural rubber is a polymer of:

**Options :**

1. Isoprene
2. Ethylene
3. Vinyl chloride
4. Styrene

**Question Number : 97 Question Id : 61097514525 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Ebonite is a :

**Options :**

1. PVC
2. Synthetic rubber
3. Highly vulcanised rubber
4. Polystyrene

**Question Number : 98 Question Id : 61097514526 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The coal having the highest ranking is

**Options :**

1. Anthracite
2. Peat
3. Lignite
4. Bituminous

**Question Number : 99 Question Id : 61097514527 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Which of the following causes Minamata disease

**Options :**

1. Argan
2. Sulphur
3. Mercury
4. Nitrogen

**Question Number : 100 Question Id : 61097514528 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Which of the following is not a green house gas?

**Options :**

1. Carbon dioxide
2. Methane gas
3. Water vapour
4. Nitrogen gas

## Mechanical Engineering

<b>Section Number :</b>	4
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	100
<b>Number of Questions to be attempted :</b>	100
<b>Section Marks :</b>	100
<b>Display Number Panel :</b>	Yes
<b>Group All Questions :</b>	Yes
<b>Mark As Answered Required? :</b>	Yes

**Question Number : 101 Question Id : 61097514529 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The type of file used for a wood work in carpentry is:

**Options :**

1. Rasp file
2. Pillar file

3. Rat-tail file
4. Diamond file.

**Question Number : 102 Question Id : 61097514530 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Half round file used in fitting, normally has \_\_\_\_\_ cut teeth on curved surface and \_\_\_\_\_ cut teeth on flat surface.

**Options :**

1. Single. Single
2. Single. Double
3. Double. Single
4. Double. double

**Question Number : 103 Question Id : 61097514531 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following vice is used for holding round section metal tubes:

**Options :**

1. Plain parallel vice
2. Swivel parallel vice



3. Hand vice

4. Pipe vice

**Question Number : 104 Question Id : 61097514532 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The operation of cutting-off a flat sheet to the desired shape is called:

**Options :**

1. Punching

2. Notching

3. Blanking

4. Lancing.

**Question Number : 105 Question Id : 61097514533 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which one of the following instrument is a comparator?

**Options :**

1. Tool maker's micro scope

2. GO NOGO gauge

3. Optical Interferometer

4. Dial gauge

**Question Number : 106 Question Id : 61097514534 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The spindle speed range in a general purpose lathe is divided into steps which approximately follow:

**Options :**

1. Arithmetic Progression

2. Geometric Progression

3. Harmonic Progression

4. Logarithmic Progression

**Question Number : 107 Question Id : 61097514535 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following is not a part of Shaper:

**Options :**

1. Ram

2. Table

3.

Knee

4. Cross slide

**Question Number : 108 Question Id : 61097514536 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The milling operation in which two milling cutters are mounted on the arbor so that two faces of a workpiece are machined simultaneously is called:

**Options :**

1. Gang milling

2. Climb milling

3. Square milling

4. Straddle milling.

**Question Number : 109 Question Id : 61097514537 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The indexing of the turret in a single spindle automatic lathe is done, by using:

**Options :**

1. Geneva mechanism

2. Whit worth mechanism

3. Rack and pinion mechanism

4. Ratchet and pawl mechanism

**Question Number : 110 Question Id : 61097514538 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In which of the following surface finishing operations, the tool relative movement is generally a combination of reciprocation and rotary motion ?

**Options :**

1. Lapping
2. Honing
3. Electro plating
4. grinding

**Question Number : 111 Question Id : 61097514539 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

With reference to the CNC part-program: code G03 refers to:

**Options :**

1. Circular interpolation – clockwise direction
2. Circular interpolation – counter clockwise direction

3. Linear interpolation

4. Retardation

**Question Number : 112 Question Id : 61097514540 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The configuration of a Robot using a telescopic arm that can be raised or lowered on a horizontal pivot mounted on a rotating base, is called:

**Options :**

1. Polar

2. Cartesian coordinated

3. Cylindrical

4. Jointed arm.

**Question Number : 113 Question Id : 61097514541 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Cellular manufacturing is suitable for:

**Options :**

1. A single production in large volumes

2. One-off production of several varieties

3. Production with similar features made in batches
4. Large variety of products in large volumes.

**Question Number : 114 Question Id : 61097514542 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

For welding mild steel, which of the following arc welding is most suitable:

**Options :**

1. AC straight polarity
2. DC straight polarity
3. AC reverse polarity
4. DC reverse polarity

**Question Number : 115 Question Id : 61097514543 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The oxy-acetylene gas used in gas welding produces a flame temperature of:

**Options :**

1. 1800 °C
2. 2100 °C
3. 2400 °C

4. 3200 °C

**Question Number : 116 Question Id : 61097514544 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

For gas welding the pressure desired at the welding torch for acetylene is :

**Options :**

1. 7 to 103 kN m<sup>2</sup>
2. 70 to 280 kN m<sup>2</sup>
3. 280 to 560 kN m<sup>2</sup>
4. 560 to 840 kN m<sup>2</sup>

**Question Number : 117 Question Id : 61097514545 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A large sized punch is used to expand the hole to the desired size and shape after the punching, during forging process is called:

**Options :**

1. Bick iron
2. Fuller
3. Flatter

4. Drift

**Question Number : 118 Question Id : 61097514546 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In forging operation, fullering is done to:

**Options :**

1. Draw out the material
2. Bend the material
3. Upset the material
4. Extrude the material

**Question Number : 119 Question Id : 61097514547 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

All patterns are given a slight taper on all vertical surfaces. This taper is known as:

**Options :**

1. Distortion allowance
2. Draft allowance
3. Shrinkage allowance



4. Machining allowance

**Question Number : 120 Question Id : 61097514548 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The property of the sand which allows the gasses and steam to escape through the sand mould is termed as:

**Options :**

1. Refractoriness
2. Cohesiveness
3. Permeability
4. Adhesiveness

**Question Number : 121 Question Id : 61097514549 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The most commonly and widely used binder, while preparing the moulding sand is:

**Options :**

1. Dextrin
2. Kaolinite
3. Limonite

4. Bentonite

**Question Number : 122 Question Id : 61097514550 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

When the molten metal fails to reach all the sections of the mould, resulting in an incomplete casting, this defect is known as:

**Options :**

1. Misrun
2. Cold shut
3. Hot tears
4. Scabs

**Question Number : 123 Question Id : 61097514551 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

During welding process, a groove is formed in the parent metal at the toe of a weld pass i.e., along the side of the weld bed. This weld defect is called:

**Options :**

1. Distortion
2. Porosity
3. Spatter

4. Undercut

**Question Number : 124 Question Id : 61097514552 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The section lines or hatching lines are drawn at \_\_\_\_\_ to the horizontal line in sectional view of a machine part.

**Options :**

1.  $30^{\circ}$
2.  $60^{\circ}$
3.  $45^{\circ}$
4.  $75^{\circ}$

**Question Number : 125 Question Id : 61097514553 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In a nut, the angle of chamfer with respect to the base of the nut is:

**Options :**

1.  $15^{\circ}$
2.  $30^{\circ}$
3.  $45^{\circ}$

4.  $22^0$

**Question Number : 126 Question Id : 61097514554 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Allowance in limits and fits refer to:

**Options :**

1. Maximum clearance between the shaft and hole
2. Minimum clearance between the shaft and hole
3. Difference between the maximum and minimum size of hole
4. Difference between the maximum and minimum size of shaft

**Question Number : 127 Question Id : 61097514555 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

When the dimension is expressed as  $20^{+0.025}_{-0.025}$  mm. then the tolerance is:

**Options :**

1. 0.035 mm
2. 0.025 mm

3. 0.060 mm

4. 0.010 mm

**Question Number : 128 Question Id : 61097514556 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The property of a material to resist fracture due to impact load is known as:

**Options :**

1. Toughness

2. Stiffness

3. Hardness

4. Plasticity

**Question Number : 129 Question Id : 61097514557 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Percentage of carbon in low carbon steels is:

**Options :**

1. (0.1 to 0.15) %

2. (0.16 to 0.8) %

3. (0.81 to 1.5) %

4. More than 1.5%

**Question Number : 130 Question Id : 61097514558 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Blast furnace is used to produce:

**Options :**

1. Cast Iron

2. Wrought Iron

3. Pig Iron

4. Steel

**Question Number : 131 Question Id : 61097514559 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Corrosion resistance of steel is increased by adding:

**Options :**

1. Chromium

2. Nickel

3. Aluminum

4. Tungsten

**Question Number : 132 Question Id : 61097514560 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Heat treatment process used for castings is:

**Options :**

1. Tempering

2. Annealing

3. Normalizing

4. Hardening

**Question Number : 133 Question Id : 61097514561 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Bronze is an alloy of:

**Options :**

1. Copper and Zinc

2. Copper and Nickel
3. Copper and Tin
4. Copper and Lead

**Question Number : 134 Question Id : 61097514562 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The forces, which meet at one point and their lines of action also lie on the same plane, are known as:

**Options :**

1. Coplanar concurrent forces
2. Coplanar non-concurrent forces
3. Non-coplanar concurrent forces
4. Non-coplanar non-concurrent forces

**Question Number : 135 Question Id : 61097514563 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The resultant of two forces  $P$  and  $Q$  acting at an angle  $\theta$  is:

**Options :**

1.  $\sqrt{P^2 + Q^2 + 2 P Q \sin \theta}$



2.  $\sqrt{P^2 + Q^2 + 2 P Q \cos \theta}$

3.  $\sqrt{P^2 + Q^2 - 2 P Q \sin \theta}$

4.  $\sqrt{P^2 + Q^2 - 2 P Q \cos \theta}$

**Question Number : 136 Question Id : 61097514564 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The ratio of lateral strain to linear strain is known as:

**Options :**

1. Modulus of rigidity
2. Modulus of elasticity
3. Elastic limit
4. Poisson's ratio

**Question Number : 137 Question Id : 61097514565 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The point of contraflexure lies where the:

**Options :**

1. Shear force changes sign
2. Bending moment changes sign
3. Shear force is maximum
4. Bending moment is maximum

**Question Number : 138 Question Id : 61097514566 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

When a bar of length  $L$  and of uniform cross-sectional area  $A$  is subjected to a gradually applied load  $P$ , then the strain energy stored in a bar is:  
(Take  $E$ = Modulus of Elasticity)

**Options :**

1.  $\frac{P L}{A E}$
2.  $\frac{P L^2}{2 A E}$
3.  $\frac{P^2 L}{A E}$
4.  $\frac{P^2 L}{2 A E}$

**Question Number : 139 Question Id : 61097514567 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

### Orientation : Vertical

If  $E$  = Modulus of Elasticity and  $I$  = Moment of Inertia of a beam, then the flexural rigidity of a beam is:

#### Options :

1.  $E I$

2.  $E \cdot I$

3.  $I \cdot E$

4.  $EI^2$

Question Number : 140 Question Id : 61097514568 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

### Orientation : Vertical

In a flat belt drive  $T_1$  and  $T_2$  are the tensions on tight side and slack side respectively;  $\theta$  is the angle of contact and  $\mu$  is the coefficient of friction of belt and pulley; then the ratio  $\frac{T_1}{T_2}$  is:

#### Options :

1.  $\mu\theta$

2.  $e^{\mu\theta}$

3.  $\mu e^\theta$

4.  $\frac{e^\theta}{\mu}$

Question Number : 141 Question Id : 61097514569 Question Type : MCQ Display Question  
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical

If  $m$  = mass of the belt in kg per unit length and  $T$  = Maximum tension in the belt, then for the maximum power transmission, the velocity of the belt is:

Options :

1.  $\frac{T}{\sqrt{m}}$

2.  $\frac{T}{\sqrt{2m}}$

3.  $\frac{T}{\sqrt{3m}}$

4.  $\frac{T}{\sqrt{4m}}$

Ans : no correct option

Question Number : 142 Question Id : 61097514570 Question Type : MCQ Display Question  
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical

A bolt of M 24 x 2 means that the

Options :

1. Pitch of the thread is 24 mm and depth is 2 mm

2. Cross – sectional area of the thread is 24 mm<sup>2</sup>

3. Nominal diameter is 24 mm and pitch is 2 mm

4. Root diameter is 24 mm and pitch is 2 mm

**Question Number : 143 Question Id : 61097514571 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The difference between the tooth space and the tooth thickness as measured on the pitch circle is called:

**Options :**

1. Working depth
2. Clearance
3. Addendum
4. Backlash.

**Question Number : 144 Question Id : 61097514572 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The usual proportion for the width of key is: (d is the diameter of the shaft)

**Options :**

1.  $d/2$
2.  $d/4$
3.  $d/6$

d 8  
4.

**Question Number : 145 Question Id : 61097514573 Question Type : MCQ Display Question  
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical**

In a flange coupling, the bolts are subjected to:

**Options :**

1. Shear stress
2. Compressive stress
3. Tensile stress
4. Bending stress

**Question Number : 146 Question Id : 61097514574 Question Type : MCQ Display Question  
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical**

A thin cylinder is subjected to an internal pressure, then the ratio of circumferential stress to longitudinal stress is:

**Options :**

1. 4
2. 0.5
3. 1

4. <sup>2</sup>

**Question Number : 147 Question Id : 61097514575 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In a helical compression spring, if  $d$  = diameter of the spring wire and  $D$  = spring coil diameter then the ratio  $D/d$  is called:

**Options :**

1. Spring rate
2. Spring constant
3. Spring index
4. Wahl's factor.

**Question Number : 148 Question Id : 61097514576 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The point on the cam with maximum pressure angle is known as:

**Options :**

1. Cam center
2. Pitch point
3. Trace point

4. Prime point.

**Question Number : 149 Question Id : 61097514577 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If the mean radius of a rim type flywheel is halved, then its stored energy is \_\_\_\_\_ of the original flywheel at the same speed.

**Options :**

1. One – fourth
2. Half
3. Same as
4. Two times

**Question Number : 150 Question Id : 61097514578 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If the ball masses of a governor have same speed for all radii of rotation, then it is said to be

**Options :**

1. Sensitive
2. Isochronous



3. Stability

4. Hunting.

**Question Number : 151 Question Id : 61097514579 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A perfect gas at  $27^{\circ}\text{C}$  is heated at constant pressure till its volume is doubled, then the final temperature of the gas is:

**Options :**

1.  $117^{\circ}\text{C}$

2.  $54^{\circ}\text{C}$

3.  $253^{\circ}\text{C}$

4.  $327^{\circ}\text{C}$

**Question Number : 152 Question Id : 61097514580 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which one of the following is the extensive property of a thermodynamic system?

**Options :**

1. Volume

2. Pressure

3. Temperature

4. Density

**Question Number : 153 Question Id : 61097514581 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

For a closed system, difference between the heat added to the system and work done by the gas, is equal to the change in:

**Options :**

1. Enthalpy

2. Entropy

3. Internal energy

4. Temperature

**Question Number : 154 Question Id : 61097514582 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

During a cycle of thermo dynamic processes, the heat transfers are the following: +120 kJ, -16 kJ, -48 kJ, and + 12 kJ. The net work done for the cycle is:

**Options :**

1. 60 kN-m

2. 68 kN-m
3. 120 kN-m
4. 44 kN-m

**Question Number : 155 Question Id : 61097514583 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Otto cycle efficiency is higher than diesel cycle efficiency for the same compression ratio and heat input, because in Otto cycle:

**Options :**

1. Combustion is at constant volume
2. Expansion and compression are Isentropic
3. Maximum Temperature is higher
4. Heat rejection is low

**Question Number : 156 Question Id : 61097514584 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

With reference to the IC Engines, the ratio of the brake power to the indicated power is called:

**Options :**

1. Overall efficiency

2. Mechanical efficiency
3. Volumetric efficiency
4. Thermal efficiency

**Question Number : 157 Question Id : 61097514585 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In an Internal combustion engine, the process of removing the burnt gasses from the combustion chamber of the engine cylinder is known as:

**Options :**

1. Scavenging
2. Super charging
3. Detonation
4. Polymerization

**Question Number : 158 Question Id : 61097514586 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The capacity of a compressor is expressed in:

**Options :**

1.  $\text{kg} \cdot \text{m}^2$

2.  $\frac{\text{m}^3}{\text{min}}$

3.  $\frac{\text{m}^3}{\text{kg}}$

4.  $\frac{\text{kg}}{\text{m}^3}$

**Question Number : 159 Question Id : 61097514587 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Clearance ratio as referred to the reciprocating air compressors is given by

**Options :**

1.  $\frac{\text{Total volume of the cylinder}}{\text{Clearance volume}}$

2.  $\frac{\text{Swept volume of the cylinder}}{\text{Clearance volume}}$

3.  $\frac{\text{Clearance volume}}{\text{Swept volume of the cylinder}}$

4.  $\frac{\text{Clearance volume}}{\text{Total volume of the cylinder}}$

**Question Number : 160 Question Id : 61097514588 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following thermodynamic cycle has the highest thermal efficiency for the given maximum and minimum cycle temperatures:

**Options :**

1. Brayton cycle
2. Otto cycle
3. Diesel cycle
4. Stirling cycle

**Question Number : 161 Question Id : 61097514589 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Mechanical efficiency of a gas turbine as compared to internal combustion reciprocating engine is :

**Options :**

1. Lower
2. Higher
3. Same
4. Unpredictable

**Question Number : 162 Question Id : 61097514590 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Neglecting the mass of the fuel, the propulsion efficiency of a Jet plane is given by:  
(  $V_a$  = Velocity of approach of air and  $V_j$  = Velocity of jet relative to Jet plane)

**Options :**

1.  $(2 V_a) \cdot (V_a + V_j)$

2.  $(2 V_j) \cdot (V_a + V_j)$

3.  $(2 V_a) \cdot (V_j - V_a)$

4.  $(2 V_j) \cdot (V_j - V_a)$

**Question Number : 163 Question Id : 61097514591 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The dimensions of Surface Tension is:

**Options :**

1.  $N \cdot m^2$

2.  $J \cdot m$

3.  $J \cdot m^2$

4.  $W \cdot m$

**Question Number : 164 Question Id : 61097514592 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

If the velocity  $V_1$  changes to  $V_2$  in a flow through pipe, when the pipe diameter  $d_1$  suddenly changes to  $d_2$  ( $d_2 > d_1$ ), then the loss of head is given by:

**Options :**

1.  $(V_1 - V_2)/(2g)$
2.  $(V_1^2 - V_2^2)/(2g)$
3.  $2(V_1 - V_2)/g$
4.  $(V_1 - V_2)^2/(2g)$

**Question Number : 165 Question Id : 61097514593 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The efficiency of water jet having a velocity of ' $v$ ' and striking a series of vertical plates moving with a velocity ' $u$ ', is given by:

**Options :**

1.  $\eta = \frac{2v(v-u)}{u^2}$
2.  $\eta = \frac{u^2}{(v-u)v^2}$
3.  $\eta = \frac{2u(v-u)}{v^2}$
4.  $\eta = \frac{v^2}{(v-u)u^2}$



**Question Number : 166 Question Id : 61097514594 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Double hemispherical buckets are used in:

**Options :**

1. Kaplan Turbine
2. Francis Turbine
3. Propeller Turbine
4. Pelton wheel

**Question Number : 167 Question Id : 61097514595 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Francis turbine is :

**Options :**

1. An axial flow impulse turbine
2. A radial flow impulse turbine
3. An axial flow reaction turbine
4. A radial flow reaction turbine

**Question Number : 168 Question Id : 61097514596 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The relation between Hydraulic Efficiency ( $\eta_h$ ), Mechanical Efficiency ( $\eta_m$ ) and Overall Efficiency ( $\eta_o$ ) of a hydraulic turbine is:

**Options :**

1.  $(\eta_o) = (\eta_h) \times (\eta_m)$

2.  $(\eta_o) = (\eta_h) \cdot (\eta_m)$

3.  $(\eta_o) = (\eta_m) \cdot (\eta_h)$

4.  $(\eta_o) = (\eta_h) + (\eta_m)$

**Question Number : 169 Question Id : 61097514597 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Air vessel in a reciprocating pump is used :

**Options :**

1. To obtain continuous supply of water at uniform rate

2. To increase delivery

3. To reduce suction head

4.

To remove any entrapped air from water.

**Question Number : 170 Question Id : 61097514598 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Centrifugal pumps operating in series will result in:

**Options :**

1. Higher discharge
2. Higher head
3. Low speed operation
4. Reduction in power consumption.

**Question Number : 171 Question Id : 61097514599 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In Centrifugal pumps, maximum efficiency is obtained, when the blades are:

**Options :**

1. Straight
2. Radial
3. Bent forward

4. Bent backward

**Question Number : 172 Question Id : 61097514600 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Dryness fraction of a steam is defined as:

**Options :**

1.  $\frac{\text{Mass of dry steam}}{\text{Mass of water vapour in suspension}}$
2.  $\frac{\text{Mass of water vapour in suspension}}{\text{Mass of dry steam}}$
3.  $\frac{\text{Mass of dry steam}}{(\text{Mass of dry steam} + \text{Mass of water vapour in suspension})}$
4.  $\frac{\text{Mass of water vapour in suspension}}{(\text{Mass of dry steam} + \text{Mass of water vapour in suspension})}$

**Question Number : 173 Question Id : 61097514601 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A valve installed between the boiler and feed pump is called:

**Options :**

1. Blow off cock
2. Feed check valve

3. Steam stop valve

4. Safety valve

**Question Number : 174 Question Id : 61097514602 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Cochran boiler may be classified as:

**Options :**

1. Horizontal fire tube boiler

2. Vertical fire tube boiler

3. Horizontal water tube boiler

4. Vertical water tube boiler

**Question Number : 175 Question Id : 61097514603 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

For a steam nozzle, if  $p_1$  is inlet pressure and  $p_2$  is exit pressure and 'n' is the index of isentropic expansion, then the mass flow rate per unit area is maximum, if:

**Options :**

1.  $\frac{p_2}{p_1} \leq \left(\frac{2}{n+1}\right)^{\frac{n}{n+1}}$

$$2. \quad \frac{p_2}{p_1} \leq \left( \frac{1}{n+1} \right)^{\frac{n}{n+1}}$$

$$3. \quad \frac{p_2}{p_1} \leq \left( \frac{2}{n+1} \right)^{\frac{n}{n+1}}$$

$$4. \quad \frac{p_2}{p_1} \leq \left( \frac{1}{n+1} \right)^{\frac{n}{n-1}}$$

**Question Number : 176 Question Id : 61097514604 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The isentropic expansion of steam through nozzle for the steam initially superheated at the inlet is approximated by an equation:  
(where  $p$  is the pressure of the steam and  $v$  is the volume of 1 kg of steam at the pressure  $p$ )

**Options :**

$$1. \quad p v^{1.3} = C$$

$$2. \quad p v^{1.4} = C$$

$$3. \quad p v^{1.125} = C$$

$$4. \quad p v^{1.0} = C$$

**Question Number : 177 Question Id : 61097514605 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

De-lavel turbine is classified as:

**Options :**

1. Simple single wheel impulse turbine
2. Simple single wheel reaction turbine
3. Velocity compounded impulse turbine
4. Pressure compounded impulse turbine

**Question Number : 178 Question Id : 61097514606 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

For multistage steam turbine, the value of reheat factor is in the range of:

**Options :**

1. 1.2 to 1.6
2. 0.5 to 0.6
3. 0.9 to 0.96
4. 1.02 to 1.06

**Question Number : 179 Question Id : 61097514607 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Stage efficiency of steam turbine is:

**Options :**

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

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

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

4.  $\frac{\eta_{nozzle}}{(\eta_{blade} + \eta_{nozzle})}$

**Question Number : 180 Question Id : 61097514608 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

In expansion process of a Refrigeration system , the following property remains constant.

**Options :**

1. Entropy

2. Enthalpy

3. Internal energy

4. External energy



**Question Number : 181 Question Id : 61097514609 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The COP of a Refrigerator is 4.0. The COP of the same machine when used as heat pump will be:

**Options :**

1. 3.0
2. 4.0
3. 5.0
4. 6.0

**Question Number : 182 Question Id : 61097514610 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

During a refrigeration cycle, heat is rejected by the refrigerant in a:

**Options :**

1. Evaporator
2. Expansion valve
3. Compressor
4. Condenser

**Question Number : 183 Question Id : 61097514611 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A Carnot cycle refrigerator operates between 250 K and 300 K. then its Coefficient of Performance is:

**Options :**

1. 0.8
2. 1.2
3. 5.0
4. 6.0

**Question Number : 184 Question Id : 61097514612 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In work study, the symbol 'O' represents:

**Options :**

1. Operation
2. Inspection
3. Transport
- 4.

Storage

**Question Number : 185 Question Id : 61097514613 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In  $\bar{X}$  and R – Charts, “ R ” represents:

**Options :**

1. Rejections
2. Repeatability
3. Randomness
4. Range

**Question Number : 186 Question Id : 61097514614 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In which of the following case, 100% inspection is needed:

**Options :**

1. Bolts and nuts
2. Gauges
3. Pressure vessels

4. Cycle rim

**Question Number : 187 Question Id : 61097514615 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

At the break even point:

**Options :**

1. Fixed cost is equal to the variable cost
2. Total cost is equal to the sales revenue
3. Sales revenue is equal to the fixed cost
4. Sales revenue is equal to the variable cost

**Question Number : 188 Question Id : 61097514616 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The sum of direct material cost, direct labour cost and direct expenses is called:

**Options :**

1. Selling cost
2. Factory cost
- 3.

Office cost

4. Prime cost

**Question Number : 189 Question Id : 61097514617 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Military organization is known as:

**Options :**

1. Functional structure organization
2. Line and staff structure organization
3. Line structure organization
4. Hybrid structure organization

**Question Number : 190 Question Id : 61097514618 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Usage of material handling is higher in case of:

**Options :**

1. Process layout
2. Product layout

3. Group layout

4. Fixed Position layout

**Question Number : 191 Question Id : 61097514619 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Critical Path Method (CPM) is the :

**Options :**

1. Time oriented technique

2. Work oriented technique

3. Event oriented technique

4. Activity oriented technique

**Question Number : 192 Question Id : 61097514620 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In PERT, the distribution of activity times is assumed to be in:

**Options :**

1. Normal distribution

2. Gamma distribution

3. Beta distribution

4. Exponential distribution

**Question Number : 193 Question Id : 61097514621 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Economic Order Quantity (EOQ) is the quantity at which the cost of carrying is:

**Options :**

1. Equal to the cost of ordering

2. Cost of over-stocking.

3. Less than the cost of ordering

4. Minimum

**Question Number : 194 Question Id : 61097514622 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The purpose of transmission in an automobile is to vary the:

**Options :**

1. Speed of automobile

2. Torque at the road wheels
3. Power of the automobile
4. Fuel consumption

**Question Number : 195 Question Id : 61097514623 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In an automobile the clutch is located between the transmission and the:

**Options :**

1. Engine
2. Propeller shaft
3. Differential
4. Rear axle

**Question Number : 196 Question Id : 61097514624 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The central gear of an epi-cyclic gear set is called a:

**Options :**



1. Internal gear
2. Planet gear
3. Sun gear
4. Ring gear

**Question Number : 197 Question Id : 61097514625 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The angle between the king pin center line or steering axis and the vertical, in the plane of the wheel is called:

**Options :**

1. Camber
2. Castor
3. Combined angle
4. Included angle

**Question Number : 198 Question Id : 61097514626 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The longitudinal distance between the center lines of the front and the rear axle is called:

**Options :**

1. Wheel track
2. Wheel width
3. Wheelbase
4. Wheel rake

**Question Number : 199 Question Id : 61097514627 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Which of the following is a steering Mechanism:

**Options :**

1. Watt's Mechanism
2. Robert's Mechanism
3. Hart's Mechanism
4. Ackermann mechanism

**Question Number : 200 Question Id : 61097514628 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

## Orientation : Vertical

The operation of removing trapped air from the hydraulic braking system is known as:

### Options :

1. Trapping
2. Tapping
3. Cleaning
4. Bleeding