Telangana State Council Higher Education

Notations :

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

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

Question Paper Name:	Mechanical Engineering 11th May 2019 Shift1
Subject Name:	Mechanical Engineering
Creation Date:	2019-05-11 13:35:20
Duration:	180
Total Marks:	200
Display Marks:	No
Share Answer Key With Delivery Engine:	Yes
Actual Answer Key:	Yes
Calculator:	None
Magnifying Glass Required?:	No
Ruler Required?:	No
Eraser Required?:	No
Scratch Pad Required?:	No
Rough Sketch/Notepad Required?:	No
Protractor Required?:	No
Show Watermark on Console?:	Yes
Highlighter:	No
Auto Save on Console?:	No

Mechanical Engineering

Group Number :	1
Group Id :	89465822
Group Maximum Duration :	0
Group Minimum Duration :	180
Revisit allowed for view? :	No
Revisit allowed for edit? :	No
Break time:	0
Group Marks:	200

Mathematics

Section Id :	89465883
Section Number :	1
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	50
Number of Questions to be attempted:	50
Section Marks:	50
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	89465893
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 8946584209 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Let $M=(a_{ij})$ be a 10×10 matrix such that $a_{ij}=\begin{cases}1, & \text{if } i+j=11\\ 0, & \text{otherwise}\end{cases}$. Then, the determinant of M is _____.

Options :

1. ✖ 0

2. ✖ 1

3. ✔ -1

4. ✖ 11

Question Number : 2 Question Id : 8946584210 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Let A and B be two square matrices of order n. If $AB=A$, $BA=B$ then $A^2+B^2=$ ___.

Options :

1. ✖ AB

2. ✖ $A-B$

3. ✖ 0

4. ✔ $A+B$

Question Number : 3 Question Id : 8946584211 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Consider the system of linear equations $x+y+z=3, x-y-z=4, x-5y+\alpha z=6$. Then, the value of α for which this system has an infinite number of solutions is _____.

Options :

1. ✔ -5

2. ✖ 5

3. ✖ 3

4. ✖ 1

Question Number : 4 Question Id : 8946584212 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $A(\alpha,\beta)=\begin{pmatrix}\cos\alpha & \sin\alpha & 0\\ -\sin\alpha & \cos\alpha & 0\\ 0 & 0 & e^{\beta}\end{pmatrix}$, then the inverse of the matrix $A(\alpha,\beta)$ is _____.

Options :

1. ✖ $A(\alpha,\beta)$

2. ✖ $A(\alpha,-\beta)$

3. ✔ $A(-\alpha,-\beta)$

4. ✖ $A(-\alpha,\beta)$

Question Number : 5 Question Id : 8946584213 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The rational fraction $\frac{x^2+1}{(x^2+4)(x-2)}$ is equal to _____

Options :

1. ✖ $\frac{3x+6}{8(x^2+4)}+\frac{5}{4(x-2)}$

2. ✖ $\frac{3x+6}{4(x^2+4)}+\frac{5}{8(x-2)}$

3. ✔ $\frac{3x+6}{8(x^2+4)}+\frac{5}{8(x-2)}$

4. ✖ $\frac{3x+6}{(x^2+4)}+\frac{5}{(x-2)}$

Question Number : 6 Question Id : 8946584214 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $\log_2 3 = a, \log_3 5 = b, \log_7 2 = c$, then $\log_{140} 63 =$ _____.

Options :

1. ✖ $\frac{1-2ac}{2c+abc+1}$

2. ✖ $\frac{1-2ac}{2c-abc-1}$

3. ✖ $\frac{1+2ac}{2c-abc-1}$

4. ✔ $\frac{1+2ac}{2c+abc+1}$

Question Number : 7 Question Id : 8946584215 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\cos\frac{2\pi}{7}+\cos\frac{4\pi}{7}+\cos\frac{6\pi}{7} =$ ____.

Options :

1. ✖ 1

2. ✖ $\frac{1}{2}$

3. ✔ $\frac{-1}{2}$

4. ✖ 0

Question Number : 8 Question Id : 8946584216 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the angles A, B and C of a triangle are in an arithmetic progression and if a, b and c denote the lengths of the sides opposite to A, B and C respectively, then the value of the expression $\frac{a}{c}\sin 2C + \frac{c}{a}\sin 2A$ is ___.

Options :

1. ✔ $\sqrt{3}$

2. ✖ $\frac{\sqrt{3}}{2}$

3. ✖ 1

4. ✖ $\frac{1}{2}$

Question Number : 9 Question Id : 8946584217 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $\sin x + \sin y = \frac{1}{4}$ and $\cos x + \cos y = \frac{1}{3}$, then $\cot(x+y) =$ _____.

Options :

1. ✔ $\frac{7}{24}$

2. ✖ $\frac{24}{7}$

3. ✖ $\frac{3}{4}$

4. ✖ 1

Question Number : 10 Question Id : 8946584218 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $\sin(x^\circ + 28^\circ) = \cos(3x^\circ - 78^\circ)$ and $0^\circ < x^\circ < 90^\circ$, then, which of the following is the value of x°?

Options :

1. ✖ 50°

2. ✖ 30°

3. ✖ 16°

4. ✔ 8°

Question Number : 11 Question Id : 8946584219 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $x = \tan\left(\text{Cosec}^{-1}\frac{65}{63}\right)$ and $y = \sec^2\left(Cot^{-1}\frac{1}{2}\right) + \cos ec^2\left(Tan^{-1}\frac{1}{3}\right)$, then $(x, y) =$ _____.

Options :

1. ✔ $\left(\frac{63}{16}, 15\right)$

2. ✖ $\left(\frac{16}{63}, 15\right)$

3. ✖ $\left(\frac{63}{16}, 5\right)$

4. ✖ $\left(\frac{16}{63}, 5\right)$

Question Number : 12 Question Id : 8946584220 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The equation $\text{Tan}^{-1}\left(\frac{x+1}{x-1}\right)+T\,\text{an}^{-1}\left(\frac{x-1}{x}\right)=T\,\text{an}^{-1}(-7)$ has _____.

Options :

1. ✔ unique solution $x=2$

2. ✖ two solutions $x=1,2$

3. ✖ no solution

4. ✖ infinite number of solutions

Question Number : 13 Question Id : 8946584221 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a triangle ABC, let a,b and c denote the lengths of the sides opposite to A, B and C respectively. If $\frac{1}{a+c}+\frac{1}{b+c}=\frac{3}{a+b+c}$, then the angle C is ____.

Options :

1. ✖ 30°

2. ✖ 90°

3. ✔ 60°

4. ✖ 45°

Question Number : 14 Question Id : 8946584222 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $\sin hx=3$ then $x=$ _____.

Options :

1. ✔ $\log(3+\sqrt{10})$

2. ✖ $\log(3-\sqrt{10})$

3. ✖ $\log(6+\sqrt{10})$

4. ✖ 1

Question Number : 15 Question Id : 8946584223 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is NOT true for the complex numbers z_1 and z_2 ?

Options :

1. ✖ $\frac{z_1}{z_2}=\frac{z_1\bar{z}_2}{|z_2|^2}$

2. ✖ $|z_1+z_2|\le|z_1|+|z_2|$

3. ✔ $|z_1+z_2|\le\big||z_1|-|z_2|\big|$

4. ✖ $|z_1+z_2|^2+|z_1-z_2|^2=2|z_1|^2+2|z_2|^2$

Question Number : 16 Question Id : 8946584224 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a complex number $z=\frac{\sqrt{3}}{2}+i\frac{1}{2}$, then z^4 is _____.

Options :

1. ✖ $2\sqrt{2}+2i$

2. ✔ $\frac{-1}{2}+i\frac{\sqrt{3}}{2}$

3. ✖ $\frac{\sqrt{3}}{2}-i\frac{1}{2}$

4. ✖ $\frac{\sqrt{3}}{8}-i\frac{1}{8}$

Question Number : 17 Question Id : 8946584225 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The equation of the straight line which makes intercepts r and s on the coordinate axes such that $r+s=5$ and $rs=6$ is $ax+by+c=0$, then $a+b+c=$ ____.

Options :

1. ✖ 11

2. ✖ 5

3. ✖ -7

4. ✔ -1

Question Number : 18 Question Id : 8946584226 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a straight line $ax+by+\sqrt{5}=0$ touches the circle $x^2+y^2=5$, then which of the following is TRUE?

Options :

1. ✖ $5(a^2+b^2)=1$

2. ✖ $a^2+b^2=\sqrt{5}$

3. ✔ $a^2+b^2=1$

4. ✖ $\sqrt{a^2+b^2}=5$

Question Number : 19 Question Id : 8946584227 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a chord of length 12 cm is at a distance of $4\sqrt{10}$ cm from the centre of the circle, then the radius of the circle is _____.

Options :

1. ✔ 14 cm

2. ✖ $\sqrt{304}$ cm

3. ✖ 4 cm

4. ✖ $\sqrt{124}$ cm

Question Number : 20 Question Id : 8946584228 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The 2019^{th} derivative of the function $(x-1)e^{-x}$ is _____

Options :

1. ✖ $\frac{x-2019}{e^x}$

2. ✖ $\frac{2019-x}{e^x}$

3. ✖ $\frac{x-2020}{e^x}$

4. ✔ $\frac{2020-x}{e^x}$

Question Number : 21 Question Id : 8946584229 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $z = f(x+ct) + \varphi(x-ct)$, then $\frac{\partial^2 z}{\partial t^2} =$ _____.

Options :

1. ✔ $c^2 \frac{\partial^2 z}{\partial x^2}$

2. ✖ $-c^2\frac{\partial^2 z}{\partial x^2}$

3. ✖ $\frac{1}{c^2}\frac{\partial^2 z}{\partial x^2}$

4. ✖ $-\frac{1}{c^2}\frac{\partial^2 z}{\partial x^2}$

Question Number : 22 Question Id : 8946584230 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $x = r\cos\theta,\ y = r\sin\theta$ and $U = \frac{f(\theta)}{r}$ then $x\frac{\partial U}{\partial x} + y\frac{\partial U}{\partial y} =$ _____.

Options :

1. ✖ 0

2. ✖ U

3. ✔ $-U$

4. ✖ $2U$

Question Number : 23 Question Id : 8946584231 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Let $f(x+y) = f(x)f(y),\ \forall x, y$ and $f'(0) = 5,\ f(2019) = 15$. Then the value of $f'(2019)$ is _____.

Options :

1. ✖ 3

2. ✔ 75

3. ✖ $\frac{1}{3}$

4. ✖ $\frac{1}{75}$

Question Number : 24 Question Id : 8946584232 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The set of values of x for which the function $f(x)=2x^3-9x^2+12x+4$ is increasing is _____.

Options :

1. ✖ $1<x<2$

2. ✖ all $x\in\mathbb{R}$

3. ✔ $\mathbb{R}-[1, 2]$

4. ✖ $x\geq 2$

Question Number : 25 Question Id : 8946584233 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\lim\limits_{x\to\infty} x\left(\log\left(1+\frac{x}{2}\right)-\log\left(\frac{x}{2}\right)\right)=$ _____.

Options :

1. ✖ e^2

2. ✖ ∞

3. ✖ 1

4. ✔ 2

Question Number : 26 Question Id : 8946584234 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $f(x,y,z)=x^3+xz^2+y^3+xyz,\ x=e^t,\ y=\cos t,\ z=t^3$ then $\frac{df}{dt}$ at $t=0$ is _____.

Options :

1. ✖ 2

2. ✖ 4

3. ✖ e

4. ✔ 3

Question Number : 27 Question Id : 8946584235 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is the value of $5050\times\frac{\int_0^1(1-(1-x)^{50})^{100}x^{49}dx}{\int_0^1(1-x^{50})^{101}x^{49}dx}$?

Options :

1. ✔ 5100

2. ✖ 1

3. ✖ 5050

4. ✖ $\frac{1}{2}$

Question Number : 28 Question Id : 8946584236 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\int_0^1 \max\left\{x, \frac{1}{2}-x\right\}dx =$ _____.

Options :

1. ✖ 0

2. ✖ $\frac{1}{2}$

3. ✔ $\frac{9}{16}$

4. ✖ $\frac{9}{8}$

Question Number : 29 Question Id : 8946584237 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\lim_{n\to\infty} \frac{1}{n^6} \sum_{k=1}^{n} k^5 =$ _____.

Options :

1. ✔ $\frac{1}{6}$

2. ✖ $\frac{1}{5}$

3. ✖ 1

4. ✖ 6

Question Number : 30 Question Id : 8946584238 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$\int_{-1}^{1} \frac{x^{15}(1-x^2)^{12}}{(1+x^2)^8} dx =$ _____.

Options :

1. ✖ 0

2. ✔ $\frac{22}{7} - \pi$

3. ✖ $\frac{2}{105}$

4. ✖ $\frac{71}{15} - \frac{3\pi}{4}$

Question Number : 31 Question Id : 8946584239 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The area of the region bounded by the curves $y = 2 - x^2$ and $y = -x$ is _____.

Options :

1. ✖ 1

2. ✖ $\frac{8}{19}$

3. ✖ $\frac{35}{4}$

4. ✔ $\frac{27}{6}$

Question Number : 32 Question Id : 8946584240 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The volume of the solid obtained by revolving the region bounded by the curves $y = x^3$, $y = 8$ and $x = 0$ about the y-axis is _____

Options :

1. ✖ $\frac{96}{5}$

2. ✔ $\frac{96\pi}{5}$

3. ✖ $\frac{32\pi}{5}$

4. ✖ $\frac{32}{5}$

Question Number : 33 Question Id : 8946584241 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The value of $\int_0^{\pi} \theta \sin^2\theta \cos^4\theta \, d\theta$ is _____.

Options :

1. ✔ $\frac{\pi^2}{32}$

2. ✖ $\frac{\pi}{32}$

3. ✖ $\frac{\pi^2}{16}$

4. ✖ $\frac{\pi}{16}$

Question Number : 34 Question Id : 8946584242 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The average value of the function $f(x) = 4 - x^2$ over the interval $[-1, 3]$ is _____.

Options :

1. ✖ 5

2. ✖ $\frac{20}{3}$

3. ✔ $\frac{5}{3}$

4. ✖ 1

Question Number : 35 Question Id : 8946584243 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The differential equation $x\frac{dy}{dx} = y + x^2,\ x > 0$ satisfying $y(0) = 0$ has _____.

Options :

1. ✔ infinitely many solutions

2. ✖ no solution

3. ✖ a unique solution

4. ✖ exactly two solutions

Question Number : 36 Question Id : 8946584244 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The differential equation $(a\,xy^3 + y\cos x)dx + (x^2y^2 + b\sin x)dy = 0$ is an exact differential equation for _____.

Options :

1. ✖ $a = 1,\ b = \frac{3}{2}$

2. ✖ $a = \frac{3}{2},\ b = 1$

3. ✔ $a = \frac{2}{3},\ b = 1$

4. ✖ $a = 1,\ b = \frac{2}{3}$

Question Number : 37 Question Id : 8946584245 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $\sin x$ is a solution of the differential equation $\frac{d^4y}{dx^4} + 2\frac{d^3y}{dx^3} + 6\frac{d^2y}{dx^2} + 2\frac{dy}{dx} + 5y = 0$, then the general solution is _____.

Options :

1. ✔ $y = c_1 \sin x + c_2 \cos x + e^{-x}(c_3 \sin 2x + c_4 \cos 2x)$

2. ✖ $y = c_1 \sin x + c_2 \cos x + c_3 \sin 2x + c_4 \cos 2x$

3. ✖ $y = c_1 \sin x + c_2 \cos x + c_3 e^{-3x} + c_4 e^{-2x}$

4. ✖ $y = c_1 \sin x + c_2 \cos x + c_3 e^{3x} + c_4 e^{2x}$

Question Number : 38 Question Id : 8946584246 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $D \equiv \frac{d}{dx}$, then $\frac{1}{D^2 - 4D + 13}(6e^{2x} \sin 3x)$ is _____.

Options :

1. ✔ $-xe^{2x} \cos 3x$

2. ✖ $xe^{2x} \cos 3x$

3. ✖ $-xe^{2x} \sin 3x$

4. ✖ $xe^{2x} \sin 3x$

Question Number : 39 Question Id : 8946584247 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The general solution of $\left(\frac{e^{-2\sqrt{x}}}{\sqrt{x}} - \frac{y}{\sqrt{x}}\right)\frac{dx}{dy} = 1$ is _____.

Options :

1. ✖ $y = e^{2\sqrt{x}}\ (2\sqrt{x} + c)$

2. ✖ $y = 2\sqrt{x}\ e^{2\sqrt{x}} + c$

3. ✖ $y = 2\sqrt{x}\ e^{-2\sqrt{x}} + c$

4. ✔ $y = e^{-2\sqrt{x}}\ (2\sqrt{x} + c)$

Question Number : 40 Question Id : 8946584248 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Let y be the solution of the differential equation $\frac{dy}{dx} + y = x,\ x \in \mathbb{R}$ and $y(-1) = 0$.

Then, y(1) is equal to _____.

Options :

1. ✖ $\frac{2}{e}-\frac{2}{e^2}$

2. ✔ $2e^{-2}$

3. ✖ $2-\frac{2}{e}$

4. ✖ $2-2e$

Question Number : 41 Question Id : 8946584249 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the substitution $x=X+h,\ y=Y+k$ transforms the differential equation $(y-x+1)dy-(y+x+2)dx=0$ into a homogeneous equation, then the value of (h,k) is _____.

Options :

1. ✖ $\left(\frac{1}{2},\frac{3}{2}\right)$

2. ✔ $\left(\frac{-1}{2},\frac{-3}{2}\right)$

3. ✖ $\left(\frac{3}{2},\frac{1}{2}\right)$

4. ✖ $\left(\frac{-3}{2},\frac{-1}{2}\right)$

Question Number : 42 Question Id : 8946584250 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The general solution of $\frac{dy}{dx}-y=y^2(\sin x+\cos x)$ is _____.

Options :

1. ✖ $y=\frac{1}{ce^{x}-\sin x}$

2. ✖ $y=ce^{-x}-e^{x}\sin x$

3. ✖ $y=ce^{-x}-\sin x$

4. ✔ $y=\frac{1}{ce^{-x}-\sin x}$

Question Number : 43 Question Id : 8946584251 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Laplace transform of the function $f(t)=\begin{cases}\sin t, & \text{for } 0\le t\le \pi\\ 0, & \text{for } t>\pi\end{cases}$

is _____.

Options :

1. ✖ $\frac{1}{(1+s^{2})}$ for all $s>0$

2. ✖ $\frac{1}{(1+s^{2})}$ for all $s<\pi$

3. ✔ $\frac{(1+e^{-\pi s})}{(1+s^{2})}$ for all $s>0$

4. ✖ $\frac{e^{-\pi s}}{(1+s^{2})}$ for all $s>0$

Question Number : 44 Question Id : 8946584252 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The inverse Laplace transform of $\frac{5}{s}-\frac{3e^{-3s}}{s}-\frac{2e^{-7s}}{s}$ is _____.

Options :

1. ✖ $$f(x)=\begin{cases}5, & 0<x<3\\ 0, & 3<x<7\\ 2, & x>7\end{cases}$$

2. ✖ $$f(x)=\begin{cases}5, & 0<x<7\\ 2, & x>7\end{cases}$$

3. ✔ $$f(x)=\begin{cases}5, & 0<x<3\\ 2, & 3<x<7\\ 0, & x>7\end{cases}$$

4. ✖ $$f(x)=\begin{cases}5, & 0<x<7\\ 0, & x>7\end{cases}$$

Question Number : 45 Question Id : 8946584253 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Laplace transform of a function $f(x)$ is $F(s)=\dfrac{1}{s^3+2s^2+2s}$ Then, $\lim\limits_{x\to 0} f(x)=$

_____.

Options :

1. ✔ 0

2. ✖ 3

3. ✖ ∞

4. ✖ $\dfrac{1}{2}$

Question Number : 46 Question Id : 8946584254 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Laplace transform of the solution of the differential equation $\frac{dy}{dx} - 2y = e^{5x}$ with the initial condition $y(0) = 3$ is _____.

Options :

1. ✖ $\frac{1}{3(s-2)} + \frac{1}{3(s-5)}$

2. ✖ $\frac{8}{3(s-2)} + \frac{1}{s-5}$

3. ✔ $\frac{8}{3(s-2)} + \frac{1}{3(s-5)}$

4. ✖ $\frac{8}{s-2} + \frac{1}{3(s-5)}$

Question Number : 47 Question Id : 8946584255 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $L(y(x)) = Y(s)$ and $y(x) = x^3 + \int_0^x \sin(x-t)\, y(t)dt$ then $\frac{1}{6}Y(s) =$ _____.

Options :

1. ✔ $\left(\frac{1}{s^4} + \frac{1}{s^6}\right)$

2. ✖ $\left(\frac{1}{s^3} + \frac{1}{s^5}\right)$

3. ✖ $\left(\frac{1}{s^3} + \frac{1}{s^7}\right)$

4. ✖ $\left(\frac{1}{s} + \frac{1}{s^3}\right)$

Question Number : 48 Question Id : 8946584256 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For $x > 0$, $\int_0^\infty \frac{\sin xt}{t} dt$ is _____.

Options :

1. ✖ 0

2. ✖ $\frac{\pi}{2x}$

3. ✖ $\frac{1}{x}$

4. ✔ $\frac{\pi}{2}$

Question Number : 49 Question Id : 8946584257 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $f(x) = \frac{1}{2}a_0 + \sum_{n=1}^{\infty}(a_n \cos nx + b_n \sin nx)$ is the Fourier series of the function

$f(x) = \begin{cases} 0, & -\pi \le x < 0 \\ \pi, & 0 \le x \le \pi \end{cases}$ then, which of the following is TURE?

Options :

1. ✖ $a_n = 0$, for all $n \ge 0$

2. ✖ $a_0 = \frac{\pi}{2}$ and $a_n = 0$, for all $n \ge 1$

3. ✖ $b_n \ne 0$, for all $n \ge 1$

4. ✔ $a_0 = \pi$ and $a_n = 0$, for all $n \ge 1$

Question Number : 50 Question Id : 8946584258 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A function $f(x)$ is such that $f(x+2\pi) = f(x)$ and $f(x) = x$, $-\pi \le x \le \pi$. The Fourier series of $f(x)$ is _____.

Options :

1. $2(\sin x - \frac{1}{2}\sin 2x + \frac{1}{3}\sin 3x - .....)$

2. $2(\sin x + \frac{1}{2}\sin 2x + \frac{1}{3}\sin 3x + ...)$

3. $2(\cos x - \frac{1}{2}\cos 2x + \frac{1}{3}\cos 3x - .....)$

4. $2(\cos x + \frac{1}{2}\cos 2x + \frac{1}{3}\cos 3x + ...)$

Physics

Section Id :	89465884
Section Number :	2
Section type :	Online
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:	No

Sub-Section Number:	1
Sub-Section Id:	89465894
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 8946584259 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The dimensional formula for gravitational constant is_____.

Options :

1. $L^3T^{-2}M^{-1}$

2. $L^3T^2M^{-1}$

3. $L^2T^3M^{-2}$

4. $L^3T^1M^{-3}$

Question Number : 52 Question Id : 8946584260 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The dimensions of the quantities in one of the following pairs are same. Identify the pairs.

Options :

1. ✔ torque and work

2. ✖ angular momentum and work

3. ✖ energy and Young's modules

4. ✔ light year and wavelength

Note: For this question, ambiguity is found in question/answer. Candidate will get full marks for this question if any of the correct options are chosen.

Question Number : 53 Question Id : 8946584261 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is not correct?

Options :

1. ✖ $j \times i = -k$

2. ✖ $k \times j = -i$

3. ✖ $i \times k = -j$

4. ✔ $k \times i = -j$

Question Number : 54 Question Id : 8946584262 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If $0.5\,i + 0.8\,j + c\,k$ is a unit vector then c is_____.

Options :

1. ✖ $\sqrt{0.89}$

2. ✖ 0.2

3. ✖ 0.3

4. ✔ $\sqrt{0.11}$

Question Number : 55 Question Id : 8946584263 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is correct?

Options :

1. ✖ $A.B \neq B.A$

2. ✔ $A.(B+C) = A.B + C.A$

3. ✖ $A.B = A.B - A.C$

4. ✖ $A.B = -B.A$

Question Number : 56 Question Id : 8946584264 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The acceleration due to gravity on the surface of the earth is given by_____

Options :

1. ✖ G

2. ✔ GM/R^2

3. ✖ GM/R

4. ✖ GM

Question Number : 57 Question Id : 8946584265 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The value of g is maximum at_____.

Options :

1. ✖ equator

2. ✔ Pole

3. ✖ higher altitudes

4. ✖ at the centre of the earth

Question Number : 58 Question Id : 8946584266 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When the speed of rotation of earth increases your weight_____

Options :

1. ✖ increases

2. ✔ decreases

3. ✖ remains constant

4. ✖ becomes zero

Question Number : 59 Question Id : 8946584267 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The value of G is zero at_____

Options :

1. ✔ nowhere

2. ✖ the centre of the earth

3. ✖ surface of the earth

4. ✖ pole

Question Number : 60 Question Id : 8946584268 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the linear momentum is increased by 50%, the kinetic energy will be increased by_____

Options :

1. ✖ 50%

2. ✖ 100%

3. ✔ 125%

4. ✖ 25%

Question Number : 61 Question Id : 8946584269 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A metallic block slides down a smooth inclined plane when released from the top, while the other falls freely from the same point, then_____

Options :

1. ✔ both will reach the ground with the same velocity

2. ✖ both will reach the ground together

3. ✖ both will reach the ground travelling with same acceleration

4. ✖ the block sliding down the plane will strike earlier

Question Number : 62 Question Id : 8946584270 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A long spring is stretched by 2 cm and its potential energy is u. If the spring is stretched by 10 cm, then the potential energy stored in it will be_____.

Options :

1. ✖ u/24

2. ✖ u/5

3. ✖ 5u

4. ✔ 25u

Question Number : 63 Question Id : 8946584271 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Two masses of 1 gm and 4 gm are moving with equal kinetic energies. The ratio of the magnitudes of their linear momentum is _____

Options :

1. ✖ 4:1

2. ✖ $\sqrt{2}$:1

3. ✔ 1:2

4. ✖ 1:16

Question Number : 64 Question Id : 8946584272 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A body is dropped from rest at height 0.5 m. What will be its velocity when it just strikes the ground?

Options :

1. ✖ 7 m/s

2. ✖ 9.8 m/s

3. ✖ 4.9 m/s

4. ✔ $\sqrt{9.8}$ m/s

Question Number : 65 Question Id : 8946584273 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A particle moves such that its acceleration a is given by $a = -bx$ where x is the displacement from equilibrium and b is a constant. The period of Oscillation is_____ .

Note: For this question, discrepancy is found in question/answer. Full Marks is being awarded to all candidates.

Options :

1. $2\Pi b$

2. $2\Pi\sqrt{b}$

3. $2\Pi/b$

4. $2\sqrt{\Pi}/b$

Question Number : 66 Question Id : 8946584274 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A particle is vibrating in simple harmonic motion with amplitude of 4 cm. At what displacement from the equilibrium position is its energy half potential and half kinetic?

Options :

1. ✖ 1 cm

2. ✖ $\sqrt{2}$ cm

3. ✖ 2 cm

4. ✔ $2\sqrt{2}$ cm

Question Number : 67 Question Id : 8946584275 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When a star approaches the earth, the waves are shifted towards _____

Options :

1. ✖ green colour

2. ✖ yellow colour

3. ✔ blue end

4. ✖ red end

Question Number : 68 Question Id : 8946584276 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a tuning fork of frequency 90 is sounded and moved towards an observer with a velocity equal to one tenth the velocity of sound, then the note heard by the observer will have frequency_____.

Options :

1. ✔ 100

2. ✖ 90

3. ✖ 80

4. ✖ 900

Question Number : 69 Question Id : 8946584277 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the most important factor which helps to recognise a person by his/her voice alone_____

Options :

1. ✔ quality

2. ✖ pitch

3. ✖ intensity

4. ✖ quality, pitch and intensity

Question Number : 70 Question Id : 8946584278 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The quality of tone_____

Options :

1. ✖ decreases with loudness

2. ✖ varies inversely as amplitude

3. ✖ varies directly as pitch

4. ✔ depends on the overtones present

Question Number : 71 Question Id : 8946584279 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The conduction of heat from hot body to cold body is an example of_____.

Options :

1. ✖ reversible process

2. ✔ irreversible process

3. ✖ isothermal process

4. ✖ isobaric process

Question Number : 72 Question Id : 8946584280 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

From the isothermal drawn from Andrews experiment, it can be inferred that_____

Options :

1. ✖ CO_2 is a perfect gas

2. ✔ there is continuity of state

3. ✖ there is discontinuity of state

4. ✖ gases like CO_2 and H_2 cannot be liquefied

Question Number : 73 Question Id : 8946584281 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A diesel cycle works at_____

Options :

1. ✖ constant volume

2. ✔ constant pressure

3. ✖ constant temperature

4. ✖ both constant volume and constant temperature

Question Number : 74 Question Id : 8946584282 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The transition temperature of most low temperature superconducting elements is in the range of _____

Options :

1. ✔ zero to 10 k

2. ✖ 10 k to 20 k

3. ✖ 20 k to 50 k

4. ✖ 50 k alone

Question Number : 75 Question Id : 8946584283 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Propagation of light through fiber core is due to_____

Options :

1. ✖ diffraction

2. ✖ interference

3. ✔ total internal reflection

4. ✖ reflection

	Chemistry
Section Id :	89465885
Section Number :	3
Section type :	Online
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: No

Sub-Section Number: 1
Sub-Section Id: 89465895
Question Shuffling Allowed : Yes

Question Number : 76 Question Id : 8946584284 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

Which of the following energy orders is correct?

Options :

1. ✔ 6s<4f<5d<6p

2. ✖ 4f<5d<6s<6p

3. ✖ 4f<6s<6p<5d

4. ✖ 6s<6p<5d<4f

Question Number : 77 Question Id : 8946584285 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

An element A of atomic number 11 combines with an element B of atomic number 17. The compound formed is _____.

Options :

1. ✖ Covalent AB

2. ✔ Ionic AB

3. ✖ Covalent AB_2

4. ✖ Ionic AB_2

Question Number : 78 Question Id : 8946584286 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The oxidation number of 'S' in S_8, S_2F_2, H_2S respectively are _____.

Options :

1. ✔ 0, +1 and -2

2. ✖ +2, +1 and-2

3. ✖ 0, +1 and +2

4. ✖ -2, +1 and -2

Question Number : 79 Question Id : 8946584287 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The elements A, B, C and D have the following electronic configurations:

A: $1S^2, 2S^2, 2P^1$

B: $1S^2, 2S^2, 2P^6, 3S^2, 3P^1$

C: $1S^2, 2S^2, 2P^6, 3S^2, 3P^3$

D: $1S^2, 2S^2, 2P^6, 3S^2, 3P^5$

The elements that belong to same group are _____.

Options :

1. ✖ A and C

2. ✖ C and D

3. ✖ A and D

4. ✔ A and B

Question Number : 80 Question Id : 8946584288 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

4.9 gm of H_2SO_4 is present in 2 lit of its solution. The molarity of the solution is _____.

Options :

1. ✖ 0.1 M

2. ✔ 0.025 M

3. ✖ 0.25 M

4. ✖ 0.01 M

Question Number : 81 Question Id : 8946584289 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The molecular weight of H_3PO_4 is 98. The equivalent weight is _____ gram / equivalents.

.

Options :

1. ✖ 98

2. ✖ 49

3. ✔ 32.66

4. ✖ 24.5

Question Number : 82 Question Id : 8946584290 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is the Bronsted acid?

Options :

1. ✖ Cl^-

2. ✖ NH_2^-

3. ✖ CH_3COO^-

4. ✔ NH_4^+

Question Number : 83 Question Id : 8946584291 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The pH of 1 M KOH is ____.

Options :

1. ✖ 12

2. ✖ 11

3. ✔ 14

4. ✖ 13

Question Number : 84 Question Id : 8946584292 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Froth floatation process is used for the _____.

Options :

1. ✖ Oxide ores

2. ✔ Sulphide ores

3. ✖ Chloride ores

4. ✖ Oxide ores and Chloride ores

Question Number : 85 Question Id : 8946584293 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The composition of brass is _____.

Options :

1. ✔ Cu and Zn

2. ✖ Cu and Ni

3. ✖ Cu and Mn

4. ✖ Cu and Fe

Question Number : 86 Question Id : 8946584294 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following statements is correct?

Options :

1. ✖ Cathode is positive terminal in an electrolytic cell

2. ✖ Cathode is negative terminal in a galvanic cell

3. ✔ Reduction occurs at cathode in either of cells

4. ✖ Oxidation occurs at cathode in either of cells

Question Number : 87 Question Id : 8946584295 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the electrolysis of $CuCl_2$ solution using copper electrode, if 2.5 gm of Cu is deposited at cathode, then at anode _____.

Options :

1. ✖ 890 mL of Cl_2 at STP is liberated

2. ✖ 445 mL of O_2 at STP is liberated

3. ✖ 2.5 gm of copper is deposited

4. ✔ a decrease of 2.5 gm of mass takes place

Question Number : 88 Question Id : 8946584296 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The unit of resistivity is _____.

Options :

1. ✖ Ω

2. ✔ Ω m

3. ✖ Ω /m

4. ✖ $\Omega\ m^2$

Question Number : 89 Question Id : 8946584297 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following metals provide cathodic protection to iron?

Options :

1. ✖ Cu and Ni

2. ✔ Al and Zn

3. ✖ Al and Cu

4. ✖ Co and Ni

Question Number : 90 Question Id : 8946584298 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The chemical composition of rust is _____.

Options :

1. ✖ Fe_3O_4

2. ✖ Fe_3O_3

3. ✔ $Fe_2O_3.\ nH_2O$

4. ✖ $Fe_3O_3.\ xH_2O$

Question Number : 91 Question Id : 8946584299 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

1 ppm of hardness of water is equal to _____.

Options :

1. ✔ 1 part of $CaCO_3$ hardness in 10^6 parts of water

2. ✖ 1 part of $CaCO_3$ hardness in 10^8 parts of water

3. ✖ 1 part of $CaCO_3$ hardness in 10^7 parts of water

4. ✖ 1 part of $CaCO_3$ hardness in 10^5 parts of water

Question Number : 92 Question Id : 8946584300 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The temporary hardness of water is due to the presence of _____.

Options :

1. ✖ $MgCl_2$ and $CaCl_2$

2. ✖ $Ca(NO_3)_2$ and $Mg(NO_3)_2$

3. ✖ $CaSO_4$ and $MgSO_4$

4. ✔ $Ca(HCO_3)_2$ and $Mg(HCO_3)_2$

Question Number : 93 Question Id : 8946584301 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The basic buffer solution is a mixture of _____.

Options :

1. ✔ $NH_3 + NH_4Cl$

2. ✖ $HCl + NH_4Cl$

3. ✖ $NaCl + NH_4Cl$

4. ✖ $KOH + NH_4Cl$

Question Number : 94 Question Id : 8946584302 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following polymers has amide linkage?

Options :

1. ✖ Terylene

2. ✖ Bakelite

3. ✔ Nylon

4. ✖ PVC

Question Number : 95 Question Id : 8946584303 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The monomer of natural rubber is _____.

Options :

1. ✖ Butadiene

2. ✖ Chloroprene

3. ✖ 2-methyl 1,2 butadiene

4. ✔ 2-methyl 1,3 butadiene

Question Number : 96 Question Id : 8946584304 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is a thermo setting?

Options :

1. ✔ Bakelite

2. ✖ Polyethylene

3. ✖ Nylon-6

4. ✖ Natural rubber

Question Number : 97 Question Id : 8946584305 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The composition of water gas is _____.

Options :

1. ✔ CO and H_2 are combustible gases and CO_2 and N_2 are non-combustible gases

2. ✖ $CO + CO_2$ are combustible gases and H_2O and N_2 non-combustible gases

3. ✖ $CO + N_2$ are combustible gases and H_2O and H_2 are non-combustible gases

4. ✖ $N_2 + H_2$ are combustible gases and $CO + H_2O$ are non-combustible gases

Question Number : 98 Question Id : 8946584306 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Earth is protected from UV radiation by _____.

Options :

1. ✖ Nitrogen layer

2. ✔ Ozone layer

3. ✖ Carbon dioxide layer

4. ✖ Oxygen layer

Question Number : 99 Question Id : 8946584307 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of following statements is not correct?

Options :

1. ✖ CO is the main air pollutant

2. ✖ All pollutants are not wastes

3. ✔ Water is polluted by dissolved Oxygen

4. ✖ Lichens are pollution indicators

Question Number : 100 Question Id : 8946584308 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Minamata disease is caused due to the presence of _____.

Options :

1. ✖ Cd

2. ✖ Pb

3. ✖ As

4. ✔ Hg

Mechanical Engineering

Section Id :	89465886
Section Number :	4
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	100
Number of Questions to be attempted:	100
Section Marks:	100
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	89465896
Question Shuffling Allowed :	Yes

Question Number : 101 Question Id : 8946584309 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The purpose of dies used in fitting trade is for _____.

Options :

1. ✖ cutting internal threads

2. ✔ making external threads

3. ✖ filing

4. ✖ finishing

Question Number : 102 Question Id : 8946584310 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Hammers are specified by the _____ .

Options :

1. ✖ length of handle

2. ✖ thickness of face

3. ✔ weight

4. ✖ width of flat face

Question Number : 103 Question Id : 8946584311 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The cutting saw blade which is very thin and stiffened with a thick back strip is_____ .

Options :

1. ✔ tenon saw

2. ✖ rip saw

3. ✖ compass saw

4. ✖ coping saw

Question Number : 104 Question Id : 8946584312 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Casting defect caused by mixing of two streams of molten metal that are too cold to fuse properly is_____.

Options :

1. ✖ scab

2. ✖ swell

3. ✔ cold shuts

4. ✖ shrinkage

Question Number : 105 Question Id : 8946584313 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Property of sand due to which it evolves a large amount of steam and other gases is known as_____ .

Options :

1. ✔ permeability

2. ✖ cohesiveness

3. ✖ adhesiveness

4. ✖ collapsibility

Question Number : 106 Question Id : 8946584314 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Cold working of metal increases _____.

Options :

1. ✔ tensile strength

2. ✖ ductility

3. ✖ scale formation

4. ✖ plastic deformation

Question Number : 107 Question Id : 8946584315 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The riser is provided to compensate _____.

Options :

1. ✔ solidification shrinkage

2. ✖ solid shrinkage

3. ✖ machining allowance

4. ✖ distortion

Question Number : 108 Question Id : 8946584316 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When size of smallest shaft is more than size of biggest hole then it is_____.

Options :

1. ✖ clearance fit

2. ✔ interference fit

3. ✖ transition fit

4. ✖ both transition and clearance

Question Number : 109 Question Id : 8946584317 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In foundry, the tool made of iron rods bent at one end or both ends is used for reinforcement of sand in the top of the moulding box and to support hanging bodies of sand is known as _____.

Options :

1. ✔ gagger

2. ✖ gate cutter

3. ✖ flask

4. ✖ trovel

Question Number : 110 Question Id : 8946584318 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A screw is specified as M20. Then 20 refers to_____

Options :

1. ✔ diameter (in mm) of the rod on which the screw is cut

2. ✖ root diameter (in mm)

3. ✖ core diameter (in mm)

4. ✖ mean diameter (in mm) of the screw thread

Question Number : 111 Question Id : 8946584319 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The phenomenon of slow and progressive deformation with time at high temperature is called _____

Options :

1. ✖ breaking

2. ✖ yielding

3. ✔ creeping

4. ✖ fatigue

Question Number : 112 Question Id : 8946584320 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Corrosion resistance of steel is increased by adding _____

Options :

1. ✔ chromium

2. ✖ nickel

3. ✖ aluminum

4. ✖ tungsten

Question Number : 113 Question Id : 8946584321 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The materials with the following crystal structures are more ductile

Options :

1. ✖ BCC

2. ✔ FCC

3. ✖ HCP

4. ✖ CUBIC

Question Number : 114 Question Id : 8946584322 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Alpha iron exists _____

Options :

1. ✔ below 768^0C

2. ✖ from 769^0C to 900^0C

3. ✖ from 901^0C to 1400^0C

4. ✖ from 1401^0C to 1530^0C

Question Number : 115 Question Id : 8946584323 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Degradation of Mechanical properties leading to failure of component due to cyclic loading is called _____

Options :

1. ✖ breaking

2. ✖ yielding

3. ✖ creeping

4. ✔ fatigue

Question Number : 116 Question Id : 8946584324 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is applied on the cap while opening the cap of a tooth paste tube?

Options :

1. ✖ force

2. ✖ moment

3. ✔ couple

4. ✖ force and moment

Question Number : 117 Question Id : 8946584325 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A block weighing 100 N is resting on a horizontal rough surface with coefficient of friction of 0.1. The friction force would be_____

Options :

1. ✖ 0 N

2. ✖ 2 N

3. ✖ 8 N

4. ✔ 10 N

Question Number : 118 Question Id : 8946584326 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the condition for a lifting machine to be reversible?

Options :

1. ✖ efficiency should be less than 50%

2. ✔ efficiency should be more than 50%

3. ✖ mechanical advantage is greater than the velocity ratio

4. ✖ maximum efficiency =1/velocity ratio

Question Number : 119 Question Id : 8946584327 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The kinetic energy of the body becomes four times of its initial value, then the momentum will be _____.

Options :

1. ✖ unchanged

2. ✖ four times of its initial value

3. ✔ twice its initial value

4. ✖ eight times of its initial value

Question Number : 120 Question Id : 8946584328 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A ping pong ball is kept in a spherical bowl. The ball is in _____.

Options :

1. ✔ stable equilibrium

2. ✖ unstable equilibrium

3. ✖ neutral equilibrium

4. ✖ nothing can be said with the given information

Question Number : 121 Question Id : 8946584329 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A steel rod of diameter 20 mm is carrying an axial load of 12 kN. If the yield point stress of the material is 350 MPa, what would be the factor of safety?

Options :

1. ✖ 2

2. ✖ 3

3. ✖ 6

4. ✔ 9

Question Number : 122 Question Id : 8946584330 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When an axial load of 23 kN was applied on a rod, an elongation of 2 mm was observed. What was the strain energy stored in the rod?

Options :

1. ✖ 64 J

2. ✖ 46 J

3. ✖ 32 J

4. ✔ 23 J

Question Number : 123 Question Id : 8946584331 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A simply supported beam of span length 2 m is carrying a uniformly distributed load of intensity 300 N/m.

(a) The maximum shear force is 300 N

(b) The maximum shear force occurs at the mid span

(c) The maximum bending moment is 150 N.m

(d) The maximum bending moment occurs at the mid span

Which of the following is true with regard to the above?

Options :

1. ✖ (a), (b) and (c) are correct

2. ✖ (b), (c) and (d) are correct

3. ✔ (c), (d) and (a) are correct

4. ✖ (d), (a) and (b) are correct

Question Number : 124 Question Id : 8946584332 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The bending moment (in N.m) for a particular beam is expressed as,

$M(x) = 600x - 500\,(x - 0.2) - 300\,x^2 \quad 0 \leq x \leq 0.4$ m.

What is the shear force at $x = 0.3$ m?

Options :

1. ✔ -80 N

2. ✖ 80 N

3. ✖ 92 N

4. ✖ -140 N

Question Number : 125 Question Id : 8946584333 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A solid steel rod of diameter 50 mm is to transmit a torque of 200 N.m. What is the maximum shear stress induced?

Options :

1. ✖ 16.2 MPa

2. ✔ 8.1 MPa

3. ✖ 6.5 MPa

4. ✖ 4.2 MPa

Question Number : 126 Question Id : 8946584334 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A steel cantilever beam (E = 200 GPa) of length 1 m carrying some load showed a maximum deflection of 2 mm. If the free end is provided with a simple support, what would be the reaction at this support? (The cross sectional dimensions are, width 100 mm and depth 200 mm)

Options :

1. ✖ 20 kN

2. ✖ 40 kN

3. ✔ 80 kN

4. ✖ 90 kN

Question Number : 127 Question Id : 8946584335 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A helical spring is applied with an axial tensile load causing an elongation. The nature of stresses induced in the material of the spring wire is _____

Options :

1. ✖ tensile stresses

2. ✖ compressive stresses

3. ✔ shear stresses

4. ✖ crushing stresses

Question Number : 128 Question Id : 8946584336 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A hydraulic cylinder of diameter 1.5 m and wall thickness 10 mm is containing a fluid under a pressure 0.5 MPa. What is the hoop stress induced?

Options :

1. ✖ 9.38 MPa

2. ✖ 18.75 MPa

3. ✔ 37.50 MPa

4. ✖ 75.00 MPa

Question Number : 129 Question Id : 8946584337 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The advantage of adaptive control used in CNC is_____

Options :

1. ✗ it improves machinability

2. ✗ it improves surface finish

3. ✓ it adjusts feed rate depending upon cutting tool conditions and work piece

4. ✗ it improves stability

Question Number : 130 Question Id : 8946584338 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which source of energy is used to move and regulate the robot's drive mechanism, have high pay load capacities and are relatively easy to maintain?

Options :

1. ✗ electric

2. ✓ hydraulic

3. ✗ pneumatic

4. ✗ manual

Question Number : 131 Question Id : 8946584339 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The principal stresses at a point in a tri-axially loaded member are 50 MPa (tensile), 80 MPa (compressive) and 150 MPa (compressive). What is the maximum shear stress?

Options :

1. ✗ 35 MPa

2. ✗ 65 MPa

3. ✓ 100 MPa

4. ✗ 150 MPa

Question Number : 132 Question Id : 8946584340 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following keys transmits turning moment and permits axial movement also?

Options :

1. ✖ Woodruff Key

2. ✖ Kennedy Key

3. ✖ Square Key

4. ✔ Feather Key

Question Number : 133 Question Id : 8946584341 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Doctor's injection syringe can be an example of _____

Options :

1. ✖ a revolute pair

2. ✖ a prismatic pair

3. ✔ a cylindrical pair

4. ✖ a spherical pair

Question Number : 134 Question Id : 8946584342 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A flange coupling is with n clamping bolts each of diameter d, arranged on a pitch circle of diameter D. If T is the torque transmitted by the coupling, what is the shear stress induced in the bolt body?

Options :

1. ✖ $2T / (n\, D\, \pi\, d^2)$

2. ✖ $4T / (n\, D\, \pi\, d^2)$

3. ✔ $8T / (n D \pi d^2)$

4. ✖ $8T / (n D^2 \pi d)$

Question Number : 135 Question Id : 8946584343 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Consider the following statements in the context of belt drives

(a) In a cross belt arrangement, the pulleys rotate in opposite directions

(b) In a cross belt arrangement, the angle of wrap is same for both the pulleys

(c) The belt experiences compressive stress on the slack side

(d) Speed of the larger pulley is always more than the speed of the smaller pulley

Which of the following is true with regard to the above?

Options :

1. ✔ (a) and (b) are correct

2. ✖ (b) and (c) are correct

3. ✖ (c) and (d) are correct

4. ✖ (d) and (a) are correct

Question Number : 136 Question Id : 8946584344 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The motion between the contact surfaces of two gear teeth is_____

Options :

1. ✖ pure rolling

2. ✖ pure sliding

3. ✔ rolling associated with sliding

4. ✖ neither rolling nor sliding

Question Number : 137 Question Id : 8946584345 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The purpose of using a flywheel in an IC engine is to minimize the fluctuations in the speed of the engine which are due to variations in _____.

Options :

1. ✖ the load on the engine

2. ✖ the properties of the fuel input

3. ✔ the torque produced

4. ✖ the compression ratio

Question Number : 138 Question Id : 8946584346 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The sensitiveness of an isochronous governor is_____

Options :

1. ✖ zero

2. ✖ one

3. ✔ infinity

4. ✖ indeterminate

Question Number : 139 Question Id : 8946584347 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a disc type cam drive, the pitch point is a point _____.

Options :

1. ✖ on the base circle where pressure angle is zero

2. ✖ on the pitch curve where pressure angle is zero

3. ✔ on the pitch curve where pressure angle is maximum

4. ✖ on the prime circle where pressure angle is maximum

Question Number : 140 Question Id : 8946584348 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a band brake arrangement, the tensions are T_1 and T_2. If the angle of wrap is θ, then the coefficient of friction would be_____

Options :

1. ✖ $(1/\theta)e^{(T1/T2)}$

2. ✖ $\theta\, e^{(T1/T2)}$

3. ✔ $(1/\theta)\ln(T_1/T_2)$

4. ✖ $\theta \ln(T_1/T_2)$

Question Number : 141 Question Id : 8946584349 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The relationship between tool life (T) and cutting speed (V) m/min is given as_____

Options :

1. ✖ $V^nT = C$

2. ✔ $VT^n = C$

3. ✖ $V^n/T = C$

4. ✖ $T^n/V = C$

Question Number : 142 Question Id : 8946584350 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Ceramic tools are fixed to tool body by_____

Options :

1. ✖ soldering

2. ✖ welding

3. ✖ clamping

4. ✔ brazing

Question Number : 143 Question Id : 8946584351 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The process of enlarging the already drilled hole is known as_____

Options :

1. ✔ boring

2. ✖ reaming

3. ✖ drilling

4. ✖ Swaging

Question Number : 144 Question Id : 8946584352 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Very hard grade grinding wheels are denoted by the letters from_____

Options :

1. ✖ A to E

2. ✖ G to K

3. ✖ L to O

4. ✔ T to Z

Question Number : 145 Question Id : 8946584353 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For welding of thin plates, the power source used is_____

Options :

1. ✖ DCSP

2. ✖ AC

3. ✔ DCRP

4. ✖ Half wave AC

Question Number : 146 Question Id : 8946584354 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In oxy-acetylene flame cutting, the metal is cut by_____

Options :

1. ✖ burning metal

2. ✔ intensive oxidation

3. ✖ reduction process

4. ✖ molecular transfer

Question Number : 147 Question Id : 8946584355 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Oxidizing flame is used to weld _____

Options :

1. ✖ magnesium

2. ✖ steel

3. ✔ brass

4. ✖ aluminum

Question Number : 148 Question Id : 8946584356 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Process in which two or more cutters are used simultaneously is known as_____

Options :

1. ✔ gang milling

2. ✖ face milling

3. ✖ saw milling

4. ✖ helical milling

Question Number : 149 Question Id : 8946584357 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Knurling is an operation of _____

Options :

1. ✖ cutting smooth collars

2. ✖ under cutting

3. ✔ roughing the surface for hand grip

4. ✖ smoothening the surface

Question Number : 150 Question Id : 8946584358 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Weld penetration is increased by_____

Options :

1. ✖ increasing welding current and welding speed

2. ✔ increasing welding current and decreasing welding speed

3. ✖ decreasing welding current and welding speed

4. ✖ decreasing welding current and increasing welding speed

Question Number : 151 Question Id : 8946584359 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In thermodynamic parlance, Heat and work are_____

Options :

1. ✖ intensive properties

2. ✖ extensive properties

3. ✖ point functions

4. ✔ path functions

Question Number : 152 Question Id : 8946584360 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A Carnot cycle is having an efficiency of 75%. If the temperature of the high temperature reservoir is 727 ^{0}C, then what is the temperature of the low temperature reservoir?

Options :

1. ✖ 23 ^{0}C

2. ✔ -23 ^{0}C

3. ✖ 0 ^{0}C

4. ✖ 250 ^{0}C

Question Number : 153 Question Id : 8946584361 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A mass 'm' of a perfect gas at pressure p_1 and volume V_1 undergoes an isothermal process. The final pressure is p_2 and the final volume is V_2. If R is the Gas constant and T is the temperature, then the work done in the process is_____.

Options :

1. ✔ $p_1 V_1 \ln (V_2 / V_1)$

2. ✖ $p_1 V_1 \ln (V_1 / V_2)$

3. ✖ $RT \ln (V_2 / V_1)$

4. ✖ $RT \ln (V_1 / V_2)$

Question Number : 154 Question Id : 8946584362 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An air-standard Otto cycle consists of the following reversible processes

Options :

1. ✖ two isobaric processes and two adiabatic processes

2. ✔ two isochoric processes and two adiabatic processes

3. ✖ two isothermal processes and two adiabatic processes

4. ✖ one isobaric process, one isochoric process and two adiabatic processes

Question Number : 155 Question Id : 8946584363 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Knocking tendency in an S.I. engine reduces with increasing_____

Options :

1. ✖ compression ratio

2. ✖ wall temperature

3. ✖ supercharging

4. ✔ engine speed

Question Number : 156 Question Id : 8946584364 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In order to burn 1 kilogram of CH_4 completely, the minimum number of kilograms of Oxygen needed is (take the atomic weights of H, C and O as 1, 12 and 16 respectively) _____.

Options :

1. ✖ 3

2. ✔ 4

3. ✖ 5

4. ✖ 6

Question Number : 157 Question Id : 8946584365 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Brake thermal efficiency of three types of reciprocating engines commonly used in road vehicles are given in the increasing order as_____.

Options :

1. ✔ 2 stroke SI engine, 4 stroke SI engine, 4 stroke CI engine

2. ✖ 2 stroke SI engine, 4 stroke CI engine, 4 stroke SI engine

3. ✖ 4 stroke SI engine, 2 stroke SI engine, 4 stroke CI engine

4. ✖ 4 stroke CI engine, 4 stroke SI engine, 2 stroke SI engine

Question Number : 158 Question Id : 8946584366 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For determining the ignition quality of compression ignition engine fuels, the reference fuels used are_____

Options :

1. ✖ Iso-octane and n-heptane

2. ✔ Cetane and α-methylnaphthalene

3. ✖ Hexadecane and n-heptane

4. ✖ Cetane and iso-octane

Question Number : 159 Question Id : 8946584367 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

During Morse test on a 4 cylinder engine, the following measurements of brake power were taken at constant speed:

All cylinders firing: 3037 kW,

Number 1 cylinder not firing: 2102 kW,

Number 2 cylinder not firing: 2102 kW,

Number 3 cylinder not firing: 2100 kW,

Number 4 cylinder not firing: 2098 kW.

The mechanical efficiency of the engine is_____

Options :

1. ✖ 91.53%

2. ✖ 71.65%

3. ✔ 81.07%

4. ✖ 61.22 %

Question Number : 160 Question Id : 8946584368 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Valve overlapping in a 4-stroke S.I. Engine results in_____.

Options :

1. ✖ increasing the brake thermal efficiency

2. ✖ increasing the indicated thermal efficiency

3. ✔ effective scavenging

4. ✖ effective cooling

Question Number : 161 Question Id : 8946584369 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When wet steam flows through a throttle valve and remains wet at exit, _____.

Options :

1. ✖ its temperature and quality increase

2. ✔ its temperature decreases but quality increases

3. ✖ its temperature increases but quality decreases

4. ✖ its temperature and quality decrease

Question Number : 162 Question Id : 8946584370 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Select the correct statement for a stage of Parsons reaction steam turbine

Options :

1. ✖ the rotor blade is symmetrical

2. ✖ the stator blade is symmetrical

3. ✖ the absolute inlet flow angle is equal to absolute exit flow angle

4. ✔ the absolute exit flow angle is equal to inlet angle of rotor blade

Question Number : 163 Question Id : 8946584371 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a power plant, water (density = 1000 kg/m^3) is pumped from 80 kPa to 3 MPa. The isentropic work input to the pump in kJ/kg is _____.

Options :

1. ✖ 0.34

2. ✖ 2.48

3. ✖ 3.43

4. ✔ 2.92

Question Number : 164 Question Id : 8946584372 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Considering the variation of static pressure and absolute velocity in an impulse steam turbine, across one row of moving blades_____

Options :

1. ✖ both pressure and velocity decrease

2. ✖ both pressure and velocity increase

3. ✖ pressure decreases and velocity increases

4. ✔ pressure remains constant, while velocity decreases

Question Number : 165 Question Id : 8946584373 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is a boiler mounting?

Options :

1. ✔ Blow off clock

2. ✖ Feed pump

3. ✖ Economizer

4. ✖ Superheater

Question Number : 166 Question Id : 8946584374 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Diverging portion of a convergent divergent nozzle will act as nozzle only when the Mach Number at throat is _____.

Options :

1. ✖ less than 1

2. ✔ equal to 1

3. ✖ greater than 1

4. ✖ equal to 0

Question Number : 167 Question Id : 8946584375 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A single acting two stage air compressor with perfect intercooling delivers air at 16 bar. Assuming an intake state of 1 bar at 15 ^{0}C, the pressure ratio per stage is_____

Options :

1. ✖ 16

2. ✖ 8

3. ✔ 4

4. ✖ 2

Question Number : 168 Question Id : 8946584376 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An aeroplane is cruising at a speed of 800 kmph at an altitude of 4000 m. The air temperature at this altitude is 0 ^{0}C and the local sonic velocity is 331.2 m/s. The flight Mach number is nearly _____

Options :

1. ✖ 1.5

2. ✖ 0.25

3. ✔ 0.67

4. ✖ 0.90

Question Number : 169 Question Id : 8946584377 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Clearance volume of a reciprocating compressor is 100 ml and the volume of the cylinder at the bottom dead centre is 1.0 litre. The ratio of the clearance volume to the stroke volume is _____.

Options :

1. ✖ 1/11

2. ✖ 1/10

3. ✔ 1/9

4. ✖ 1/12

Question Number : 170 Question Id : 8946584378 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

In a shell and tube type of steam condenser, baffles are mainly used to _____

Options :

1. ✖ increase the mixing of fluids

2. ✖ increase the heat transfer area

3. ✔ deflect the flow in desired direction

4. ✖ reduce the fouling of the tube surface

Question Number : 171 Question Id : 8946584379 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

For a Newtonian fluid _____.

Options :

1. ✖ shear stress is proportional to shear strain

2. ✖ rate of shear stress is proportional to shear strain

3. ✔ shear stress is proportional to rate of shear strain

4. ✖ rate of shear stress is proportional to rate of shear strain

Question Number : 172 Question Id : 8946584380 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The parameters which determine the friction factor for turbulent flow in a rough pipe are_____

Options :

1. ✖ Froude number and relative roughness

2. ✖ Froude number and Mach number

3. ✔ Reynolds number and relative roughness

4. ✖ Mach number and relative roughness

Question Number : 173 Question Id : 8946584381 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For laminar flow through a pipe of diameter 0.04 m, having a centre line velocity of 1.5 m/s, the discharge in m^3/s is_____

Options :

1. ✖ $3\pi/50$

2. ✖ $3\pi/2,500$

3. ✔ $3\pi/5,000$

4. ✖ $3\pi/10,000$

Question Number : 174 Question Id : 8946584382 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In order to have the maximum power from Pelton wheel, the bucket speed must be_____

Options :

1. ✖ equal to the jet speed

2. ✔ equal to half the jet speed

3. ✖ equal to twice the jet speed

4. ✖ independent of the jet speed

Question Number : 175 Question Id : 8946584383 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Specific speed of a Kaplan turbine ranges between_____

Options :

1. ✖ 30 and 60

2. ✖ 61 and 300

3. ✔ 301 and 600

4. ✔ 601 and 1000

Note: For this question, ambiguity is found in question/answer. Candidate will get full marks for this question if any of the correct options are chosen.

Question Number : 176 Question Id : 8946584384 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Cavitation in a turbine is most likely to occur at the turbine_____

Options :

1. ✖ rotor entry

2. ✖ stator entry

3. ✖ stator exit

4. ✔ rotor exit

Question Number : 177 Question Id : 8946584385 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The ratio of normal force of jet of water on a plane inclined at an angle of 30° as compared to that when plate is normal to jet is _____.

Options :

1. ✖ 1

2. ✔ 1/2

3. ✖ $1/\sqrt{2}$

4. ✖ $\sqrt{2}$

Question Number : 178 Question Id : 8946584386 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A hydraulic accumulator is a device used for storing _____ energy, which may be supplied to a machine later.

Options :

1. ✖ potential

2. ✖ kinetic

3. ✖ strain

4. ✔ pressure

Question Number : 179 Question Id : 8946584387 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a hydraulic coupling_____

Options :

1. ✔ the magnitudes of input and output torques are equal

2. ✖ the magnitude of input torque is greater than output torque

3. ✖ the magnitude of input torque is less than output torque

4. ✖ the magnitude of input torque is negligible as compared to output torque

Question Number : 180 Question Id : 8946584388 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A hydraulic press has a ram of 20 cm diameter and a plunger of 5 cm diameter. The force required at the plunger to lift a weight of 16×10^4 N will be_____.

Options :

1. ✖ 256×10^4 N

2. ✖ 64×10^4 N

3. ✖ 4×10^4 N

4. ✔ 1×10^4 N

Question Number : 181 Question Id : 8946584389 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In breakeven analysis, the total cost consists of _____

Options :

1. ✔ fixed cost + variable cost

2. ✖ fixed cost + profits

3. ✖ fixed cost + sales revenue

4. ✖ fixed cost + variable cost + profits

Question Number : 182 Question Id : 8946584390 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

F.W. Taylor introduced a system of working, known as_____

Options :

1. ✖ line organization

2. ✖ line and staff organization

3. ✖ effective organization

4. ✔ functional organization

Question Number : 183 Question Id : 8946584391 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Objective of time study is to determine the time taken by_____

Options :

1. ✖ expert worker

2. ✖ new employer

3. ✖ apprentice

4. ✔ average worker

Question Number : 184 Question Id : 8946584392 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The economic order quantity is obtained by the quantity, whose procurement cost is equal to inventory carrying cost, in _____.

Options :

1. ✔ inventory control

2. ✖ perpetual inventory control

3. ✖ A-B-C Analysis

4. ✖ Scheduling

Question Number : 185 Question Id : 8946584393 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In process layout, _____

Options :

1. ✔ all machines of similar nature are grouped together in one area of production facility

2. ✖ machines are located in order of operations to be performed upon the product

3. ✖ mass production of articles is convenient

4. ✖ fixed cost is higher than that of product layout

Question Number : 186 Question Id : 8946584394 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Gantt chart provides information on_____

Options :

1. ✖ proper utilization of men and machine

2. ✖ proper flow of material

3. ✔ production schedule

4. ✖ material handling devices

Question Number : 187 Question Id : 8946584395 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

SIMO charts are used in_____.

Options :

1. ✖ method study

2. ✔ micro motion study

3. ✖ process analysis

4. ✖ layout analysis

Question Number : 188 Question Id : 8946584396 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Principles related to the use of human body and arrangement of the work place is known as_____.

Options :

1. ✖ motion study

2. ✖ work study

3. ✖ time study

4. ✔ motion economy

Question Number : 189 Question Id : 8946584397 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

CPM is a technique that is based on_____

Options :

1. ✖ event

2. ✖ event and activity

3. ✖ neither event nor activity

4. ✔ activity

Question Number : 190 Question Id : 8946584398 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Large inventories are permitted in case of _____

Options :

1. ✖ A and B items

2. ✖ only B items

3. ✖ B and C items

4. ✔ only C items

Question Number : 191 Question Id : 8946584399 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a vapour compression refrigeration system, liquid to suction heat exchanger is used to _____

Options :

1. ✖ keep the COP constant

2. ✔ prevent the liquid refrigerant from entering the compressor

3. ✖ superheat the vapour entering the condenser

4. ✖ subcool the vapour entering the condenser

Question Number : 192 Question Id : 8946584400 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Electrolux refrigerator is also called as _____ fluid absorption system.

Options :

1. ✖ four

2. ✔ three

3. ✖ two

4. ✖ single

Question Number : 193 Question Id : 8946584401 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which one of the following is CFC refrigerant?

Options :

1. ✖ R744

2. ✖ R290

3. ✔ R502

4. ✖ R718

Question Number : 194 Question Id : 8946584402 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Global warming is caused by _____

Options :

1. ✖ Ozone

2. ✔ Carbon dioxide

3. ✖ Nitrogen

4. ✖ Oxygen

Question Number : 195 Question Id : 8946584403 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a mass of moist air contained in a closed metallic vessel is heated, then its_____.

Options :

1. ✔ relative humidity decreases

2. ✖ relative humidity increases

3. ✖ specific humidity decreases

4. ✖ specific humidity increases

Question Number : 196 Question Id : 8946584404 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Moist air at 35 ^{0}C and 100% relative humidity is entering a psychrometric device and leaving at 25 ^{0}C and 100% relative humidity. The name of this psychrometric device is_____.

Options :

1. ✖ humidifier

2. ✔ dehumidifier

3. ✖ sensible heater

4. ✖ sensible cooler

Question Number : 197 Question Id : 8946584405 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Water at 42 ^{0}C is sprayed into a stream of air at atmospheric pressure and dry bulb temperature 40 ^{0}C and wet bulb temperature of 20 ^{0}C. The air leaving the humidifier is not saturated. Which of the following statements is TRUE?

Options :

1. ✖ air gets cooled and humidified

2. ✔ air gets heated and humidified

3. ✖ air gets heated and dehumidified

4. ✖ air gets cooled and dehumidified

Question Number : 198 Question Id : 8946584406 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the window air-conditioner, the expansion device used is _____

Options :

1. ✔ capillary tube

2. ✖ thermostatic expansion valve

3. ✖ automatic expansion valve

4. ✖ float valve

Question Number : 199 Question Id : 8946584407 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Uranium 238 is represented by $_{92}U^{238}$. It represents _____.

Options :

1. ✖ 92 neutrons and 238 protons

2. ✖ 92 protons and 238 neutrons

3. ✖ 92 neutrons and 146 protons

4. ✔ 92 protons and 146 neutrons

Question Number : 200 Question Id : 8946584408 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Moderator in a nuclear plant is used to_____.

Options :

1. ✖ protect against the neutrons and gamma rays

2. ✖ absorb excess neutrons

3. ✔ slow down the speed of fast-moving neutrons

4. ✖ return the neutrons back into the core of the reactor