Andhra Pradesh State Council of Higher Education

Notations :

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

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

Question Paper Name :	Mechanical Engineering 06th May 2025 Shift 2
Subject Name :	Mechanical Engineering
Creation Date :	2025-05-06 20:31:58
Duration :	180
Total Marks :	200
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No

Mechanical Engineering

Group Number :	1
Group Id :	89040177
Group Maximum Duration :	0
Group Minimum Duration :	180
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	200

Mathematics

Section Id :	890401299
Section Number :	1
Section type :	Online

Mandatory or Optional :	Mandatory
Number of Questions :	50
Number of Questions to be attempted :	50
Section Marks :	50
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	890401323
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 89040115213 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Order of the matrix $\begin{bmatrix} 1 & 6 \\ 2 & 0 \\ 7 & -1 \end{bmatrix}$ is

Options :

1. ✖ 1×3

2. ✔ 3×2

3. ✖ 2×2

4. ✖ 3×3

Question Number : 2 Question Id : 89040115214 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If two rows (or columns) of a determinant of order 3 are identical then the value of determinant is

Options :

1. ✔ 0

2. ✖ 1

3. ✖ 1

4. ✖ -1

Question Number : 3 Question Id : 89040115215 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Co-factor of -4 in $\begin{vmatrix} 1 & 2 & 3 \\ -4 & 3 & 6 \\ 2 & -7 & 9 \end{vmatrix}$ is

Options :

1. ✖ 3

2. ✖ 11

3. ✖ 39

4. ✔ -39

Question Number : 4 Question Id : 89040115216 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The Matrix $\begin{bmatrix} a & h & g \\ h & b & f \\ g & f & c \end{bmatrix}$ is

Options :

1. ✖ skew symmetric

2. ✔ Symmetric

3. ✖ symmetric if a=b

4. ✖ Skew symmetric if b=c

Question Number : 5 Question Id : 89040115217 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $A = \begin{bmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{bmatrix}$ then $(A^{-1}) =$

Options :

1. ✔ A

2. ✖ $-A$

3. ✖ -2A

4. ✖ 0

Question Number : 6 Question Id : 89040115218 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If deg f(x)≥deg g(x), then the rational fraction $f(x)/g(x)$ is called

Options :

1. ✖ Polynomial

2. ✖ Proper fraction

3. ✔ Improper fraction

4. ✖ irrational fraction

Question Number : 7 Question Id : 89040115219 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\frac{3x}{x^2+x-2} = \frac{A}{x+2} + \frac{B}{x-1}$ then the ordered pair (A, B) is

Options :

1. ✖ $(1, 2)$

2. ✖ $(-1, 2)$

3. ✖ $(2, -1)$

4. ✔ $(2, 1)$

Question Number : 8 Question Id : 89040115220 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $\tan A = \frac{4}{3}$ then the value of $\cos 2A$ is

Options :

1. ✔ $-\frac{7}{25}$

2. ✖ $-\frac{7}{24}$

3. ✖ $-\frac{24}{7}$

4. ✖ $-\frac{7}{25}$

Question Number : 9 Question Id : 89040115221 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $-1 \leq x \leq 1$, then $\cos^{-1} x + \sin^{-1} x =$

Options :

1. ✖ $-\frac{\pi}{2}$

2. ✖ $\frac{\pi}{4}$

3. ✔ $\frac{\pi}{2}$

4. ✖ $-\frac{\pi}{16}$

Question Number : 10 Question Id : 89040115222 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$\text{Sin } 15^0 =$

Options :

1. ✖ $\frac{\sqrt{3}-1}{\sqrt{3}+2}$

2. ✔ $\frac{\sqrt{6}-\sqrt{2}}{4}$

3. ✖ $\sqrt{6} \pm 1$

4. ✖ $\frac{\sqrt{6}+\sqrt{2}}{4}$

Question Number : 11 Question Id : 89040115223 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $2\cos\theta = x + \frac{1}{x}$ then $2\cos 3\theta =$

Options :

1. ✖ $x^3 - \frac{1}{x^3}$

2. ✖ $-x^3 + \frac{1}{x^3}$

3. ✔ $x^3 + \frac{1}{x^3}$

4. ✖ $x^2 + \frac{1}{x^3}$

Question Number : 12 Question Id : 89040115224 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In any ΔABC, $\tan\frac{B+C}{2} =$

Options :

1. ✖ $c\cot\frac{A}{2}$

2. ✔ $\cot\frac{A}{2}$

3. ✖ $\tan\frac{A}{2}$

4. ✖ $\tan\frac{C}{2}$

Question Number : 13 Question Id : 89040115225 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In a triangle ΔABC, the value of $\cos\left(\frac{B+C}{2}\right)$ in terms of angle A

Options :

1. ✖ $\sqrt{\sin\frac{A}{2}}$

2. ✖ $\sqrt{A/2}$

3. ✔ $\sin\frac{A}{2}$

4. ✖ $\sqrt{2A}$

Question Number : 14 Question Id : 89040115226 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The value of $\sin 45^0$ is

Options :

1. ✖ $\sqrt{2}$

2. ✖ 1

3. ✖ 0

4. ✔ $1/\sqrt{2}$

Question Number : 15 Question Id : 89040115227 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In a ΔABC, if $a = 13, b = 14$ and $c = 15$ then the value of $\tan\left(\frac{A}{2}\right)$ is

Options :

1. ✖ $\frac{1}{4}$

2. ✖ $\frac{3}{4}$

3. ✔ $\frac{1}{2}$

4. ✖ $\frac{1}{6}$

Question Number : 16 Question Id : 89040115228 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a ΔABC, $\sum a^3 \cos(B - C) =$

Options :

1. ✖ 4abc

2. ✔ 3abc

3. ✖ 4a+b+c

4. ✖ abc

Question Number : 17 Question Id : 89040115229 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Principle value of $\cot^{-1}(-1)$ is

Options :

1. ✖ $\frac{2\pi}{3}$

2. ✖ $-\frac{2\pi}{3}$

3. ✖ π

4. ✔ $\frac{3\pi}{4}$

Question Number : 18 Question Id : 89040115230 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$(-1+2\mathrm{i})+\left(\frac{1}{2}-\mathrm{i}\right)=$

Options :

1. ✖ $\frac{1}{2}+\mathrm{i}$

2. ✖ $-\frac{1}{2}-\mathrm{i}$

3. ✔ $-\frac{1}{2}+\mathrm{i}$

4. ✖ $\frac{1}{2}\pm\mathrm{i}$

Question Number : 19 Question Id : 89040115231 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For any real θ, $(\cos\theta+i\sin\theta)(\cos\theta-i\sin\theta)=$

Options :

1. ✔ 1

2. ✖ -1

3. ✖ 0

4. ✖ $4i$

Question Number : 20 Question Id : 89040115232 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The centre and radius of the circle $x^2 + y^2 - 4x - 8y - 41 = 0$ are

Options :

1. ✖ $(1, -2), 5$

2. ✖ $(2,1), 3$

3. ✔ $(2,4), \sqrt{61}$

4. ✖ $(1, -2), \sqrt{51}$

Question Number : 21 Question Id : 89040115233 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The number of common tangents to the circles $x^2 + y^2 - x = 0$ and $x^2 + y^2 + x = 0$ is

Options :

1. ✖ 2

2. ✖ 1

3. ✖ 4

4. ✔ 3

Question Number : 22 Question Id : 89040115234 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Equation of the circle with centre $(-3, 2)$ and radius 4 is

Options :

1. ✖ $(x^2 + 3)^2 + (y + 2)^2 = 4^2$

2. ✖ $(x - 3)^2 + (y + 2)^2 = 16$

3. ✔ $(x + 3)^2 + (y - 2)^2 = 16$

4. ✖ $(x - 2) + (y + 3)^2 = 4^2$

Question Number : 23 Question Id : 89040115235 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The length of the latus rectum of the parabola $y^2 = 12x$ and the focal distance of the point $(3, -6)$ is

Options :

1. ✖ $3,\ 4$

2. ✖ $2,\ 6$

3. ✖ $-12,\ 6$

4. ✔ $12,\ 6$

Question Number : 24 Question Id : 89040115236 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The equation of the Parabola, whose focus is (0,-2) and the vertex is (0,0), is

Options :

1. ✖ $y^2=32x$

2. ✔ $x^2=-8y$

3. ✖ $x^2=4y$

4. ✖ $y^2=-32x$

Question Number : 25 Question Id : 89040115237 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The eccentricity of $x^2+2y^2=3$ is

Options :

1. ✖ $\frac{1}{\sqrt{2}}$

2. ✖ $\sqrt{2}$

3. ✖ $\pm\sqrt{2}$

4. ✔ $\frac{\sqrt{3}}{2}$

Question Number : 26 Question Id : 89040115238 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$\frac{d}{dx}[e^x(x^2+1)] =$

Options :

1. ✔ $e^x(2x+x^2+1)$

2. ✖ $e^x(2x-x^2+1)$

3. ✖ $e^x(2x+x^3+1)$

4. ✖ $e^{-x}(2x+x^2+1)$

Question Number : 27 Question Id : 89040115239 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

When a>0, $\lim_{x\to 0} \frac{a^x-1}{x} =$

Options :

1. ✔ log a

2. ✖ 0

3. ✖ log (x-1)

4. ✖ log (x-a)

Question Number : 28 Question Id : 89040115240 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$\frac{d}{dx}[\tan^{-1}x] =$

Options :

1. ✔ $\frac{1}{x^2+1}$

2. ✖ $-\frac{1}{x^2-1}$

3. ✖ $\frac{2}{x^2+2}$

4. ✖ $-\frac{1}{x^2+1}$

Question Number : 29 Question Id : 89040115241 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If 4x-7y+15=0 then derivative of y with respect to x is

Options :

1. ✖ -4/7

2. ✖ 0

3. ✖ 4

4. ✔ 4/7

Question Number : 30 Question Id : 89040115242 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $y = \cos x$ then $\frac{d^2y}{dx^2} =$

Options :

1. ✔ $-\cos x$

2. ✖ $-\sin x$

3. ✖ $\cos x$

4. ✖ $\sin x$

Question Number : 31 Question Id : 89040115243 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If u= $e^x \sin y$ then first partial derivative of u with respect to y is

Options :

1. ✖ $e^x \sin y$

2. ✔ $e^x \cos y$

3. ✖ $-e^x \cos y$

4. ✖ 0

Question Number : 32 Question Id : 89040115244 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$\frac{d}{dx}\left(e^{3\log x}\right) =$

Options :

1. ✖ $\log x$

2. ✖

$3x$

3. ✖ x^3

4. ✔ $3x^2$

Question Number : 33 Question Id : 89040115245 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $u(x,y) = \text{Sin}^{-1}\frac{x}{y} + \text{Tan}^{-1}\frac{y}{x}$ then $xu_x + yu_y =$

Options :

1. ✖ $u'(x,y)$

2. ✔ 0

3. ✖ 1

4. ✖ $u(x,\ y)$

Question Number : 34 Question Id : 89040115246 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $S = 12t - 3t^2$ then $\frac{ds}{dt} =$

Options :

1. ✔ $12 - 6t$

2. ✖ $12t - 6$

3. ✖

$12 - 3t$

4. ✖ $12 - 6t^2$

Question Number : 35 Question Id : 89040115247 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

$\int \cot^2 x \, dx =$

Options :

1. ✖ $-\cot x + x + c$

2. ✖ $\cot x - x + c$

3. ✖ $\cot^2 x - x + c$

4. ✔ $-\cot x - x + c$

Question Number : 36 Question Id : 89040115248 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

$\int \frac{1}{\sqrt{a^2 - x^2}} \, dx =$

Options :

1. ✖ $\log\left|x + \sqrt{x^2 + a^2}\right| + c$

2. ✖ $\log\left|x + \sqrt{x^2 - a^2}\right| + c$

3. ✔ $\sin^{-1}\frac{x}{a} + c$

4. ✖ $\sin^{-1}x$

Question Number : 37 Question Id : 89040115249 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$\int e^x \cos x \, dx =$

Options :

1. ✔ $\frac{1}{2}e^x(\cos x + \sin x) + c$

2. ✖ $\frac{1}{2}e^x \cos x$

3. ✖ $\frac{1}{2}e^x(\cos x + \operatorname{cosec} x) + c$

4. ✖ $\frac{1}{2}e^x(\cos x - \sin x) + c$

Question Number : 38 Question Id : 89040115250 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$\int \frac{dx}{\sqrt{x}} =$

Options :

1. ✖ $-2\sqrt{x} + c$

2. ✖ $\sqrt{x} + c$

3. ✔ $2\sqrt{x} + c$

4. ✖ $x + c$

Question Number : 39 Question Id : 89040115251 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$\int \sin\frac{y}{2}dy =$

Options :

1. ✖ $2\cos\frac{y}{2} + c$

2. ✖ $2\sin x/2 + c$

3. ✖ $2\cos 2y + c$

4. ✔ $-2\cos\frac{y}{2} + c$

Question Number : 40 Question Id : 89040115252 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

$\int_0^{\pi} dx =$

Options :

1. ✖ $\frac{\pi}{2}$

2. ✖ $-\frac{\pi}{2}$

3. ✔ π

4. ✖ $\frac{\pi}{8}$

Question Number : 41 Question Id : 89040115253 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $f(x)$ is an even function, then $\int_{-a}^{a} f(x)dx=$

Options :

1. ✖ $\int_{0}^{a} f(x)dx$

2. ✔ $2\int_{0}^{a} f(x)dx$

3. ✖ $2a$

4. ✖ 0

Question Number : 42 Question Id : 89040115254 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The area under the curve $f(x) = \sin x$ in $[0,2\pi]$ is

Options :

1. ✖ 1

2. ✖ 3

3. ✖ -4

4. ✔ 4

Question Number : 43 Question Id : 89040115255 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

When a=b then $\int_a^b f(x)dx =$

Options :

1. ✖ b

2. ✔ 0

3. ✖ a

4. ✖ 2a

Question Number : 44 Question Id : 89040115256 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Order of the differential equation $\left[\frac{d^2y}{dx^2} + \left(\frac{dy}{dx}\right)^3\right]^{6/5} = 6y$ is

Options :

1. ✖ 3

2. ✔ 2

3. ✖ 6/5

4. ✖ 3

Question Number : 45 Question Id : 89040115257 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The Integrating factor of $\frac{dy}{dx} + 3x = 2y$ is

Options :

1. ✖

e^{3x}

2. ✔ e^{-2x}

3. ✖ e^{x}

4. ✖ 0

Question Number : 46 Question Id : 89040115258 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Transform $dx + xdy = e^{-y}\sec^2 y\, dy$ into linear form

Options :

1. ✖ $\frac{dx}{dy} - x = e^{-y}\sec^2 y$

2. ✖ $\frac{dx}{dy} = e^{-y}\sec^2 y$

3. ✖ $\frac{dx}{dy} + x = e^{-y}\sec^2 y + c$

4. ✔ $\frac{dx}{dy} + x = e^{-y}\sec^2 y$

Question Number : 47 Question Id : 89040115259 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The necessary and sufficient condition for the differential equation $Mdx + Ndy = 0$ to be exact is

Options :

1. ✖

$$\frac{\partial M}{\partial y} = \frac{\partial N}{\partial y}$$

2. ✔ $\frac{\partial M}{\partial y} = \frac{\partial N}{\partial x}$

3. ✖ $\frac{\partial M}{\partial y} \neq \frac{\partial N}{\partial x}$

4. ✖ $\frac{\partial M}{\partial x} = \frac{\partial N}{\partial x}$

Question Number : 48 Question Id : 89040115260 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Complementary function of the differential equation $(D^3 - 8)y = x$ is

Options :

1. ✖ $c_1e^{2x} + e^x\{c_2\cos(x\sqrt{3}) + c_3\sin x\sqrt{3}\}$

2. ✖ $c_1e^{2x} + e^{-x}(\cos\sqrt{3} + \sin\sqrt{3})$

3. ✖ $c_1e^{-2x} + c_2e^{-x} + c_3\cos x$

4. ✔ $c_1e^{2x} + e^{-x}\{c_2\cos(x\sqrt{3}) + c_3\sin(x\sqrt{3})\}$

Question Number : 49 Question Id : 89040115261 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Bernoulli's equation is of the form

Options :

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

2. ✖ $\left(\frac{dy}{dx}\right)^2 + y^n = Qy$

3. ✔ $\left(\frac{dy}{dx}\right) + Py = Qy^n$

4. ✖ $\left(\frac{d^2y}{dx^2}\right) + Py = Qy^n$

Question Number : 50 Question Id : 89040115262 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Particular integral of $f(D)y = \cos ax$ is

Options :

1. ✔ $\frac{1}{f(-a^2)}\ cosax\ if f(-a^2) \neq 0$

2. ✖ $\frac{1}{f(a^2)}\ cosax\ if f(-a^2) \neq 0$

3. ✖ $\frac{1}{f(a)}\ cosax\ if f(-a^2) \neq 0$

4. ✖ $\frac{1}{2}\ cosax\ if f(-a^2) \neq 0$

Physics

Section Id :	890401300
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	890401324
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 89040115263 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the unit of mass is 1 Kg, the unit of length is 1m and the unit of time is 1 minute, the unit of pressure in Nm^{-2} is

Options :

1. ✖ $1/60$

2. ✖ 60

3. ✔ $1/3600$

4. ✖ 3600

Question Number : 52 Question Id : 89040115264 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

MLT^{-1} is the dimensional formula for

Options :

1. ✖

Speed

2. ✖ Acceleration

3. ✔ Impulse

4. ✖ Force

Question Number : 53 Question Id : 89040115265 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If $|\vec{A} \times \vec{B}| = \sqrt{3}\,\vec{A}\,.\,\vec{B}$ then the value of $|\vec{A} + \vec{B}|$ is

Options :

1. ✔ $(A^2 + B^2 + AB)^{1/2}$

2. ✖ $(A^2 + B^2 + \frac{AB}{\sqrt{2}})^{1/2}$

3. ✖ $A + B$

4. ✖ $(A^2 + B^2 + \sqrt{3}AB)^{1/2}$

Question Number : 54 Question Id : 89040115266 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Of the vectors given below, the parallel vectors are

$\vec{A} = 6\hat{\imath} + 8\hat{\jmath}$ $\vec{B} = 210\hat{\imath} + 280\hat{k}$ $\vec{C} = 5.1\hat{\imath} + 6.8\hat{\jmath}$ $\vec{D} = 3.6\hat{\imath} + 8\hat{\jmath} + 48\hat{k}$

Options :

1. ✔ $\vec{A}$ and $\vec{C}$

2. ✖ $\vec{A}$ and $\vec{B}$

3. ✖ $\vec{A}$ and $\vec{D}$

4. ✖ $\vec{C}$ and $\vec{D}$

Question Number : 55 Question Id : 89040115267 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The position x of a particle with respect to time 't ' along x- axis is given by $x = 9t^2 - t^3$ where x is in metres and t in seconds. The position of this particle when it achieves maximum speed along the x direction is

Options :

1. ✖ 24 m

2. ✖ 32 m

3. ✔ 54 m

4. ✖ 81 m

Question Number : 56 Question Id : 89040115268 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A ball is projected vertically up with a velocity of 40 ms^{-1} from ground. At the same time another ball is dropped from a height of 100 m. The magnitudes of their velocities are equal after

Options :

1. ✖ 1 s

2. ✔ 2 s

3. ✖ 3 s

4. ✖ 4 s

Question Number : 57 Question Id : 89040115269 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✖ 336

2. ✖ 224

3. ✖ 56

4. ✔ 34

Question Number : 58 Question Id : 89040115270 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A projectile is thrown into air with velocity u at an angle θ to the horizontal.
The time at which its direction of motion is perpendicular to its initial direction is

Options :

1. ✔ $\frac{u}{g \sin \theta}$

2. ✖

$\frac{u}{g\cos\theta}$

3. ✖ $\frac{u}{g\tan\theta}$

4. ✖ $\frac{u}{g\cot\theta}$

Question Number : 59 Question Id : 89040115271 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

When a bicycle is in motion and pedalled, the force of friction exerted by ground on the two wheels is such that it acts

Options :

1. ✔ In the backward direction on the front wheel and in the forward direction on the rear wheel

2. ✖ In the forward direction on the front wheel and in the backward direction on the rear wheel

3. ✖ In the backward direction on both the front and rear wheels

4. ✖ In the forward direction on both the front and rear wheels

Question Number : 60 Question Id : 89040115272 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Two blocks of masses 4 Kg and 2 Kg are connected by a heavy string and placed on rough horizontal plane. The 2 Kg block is pulled with a constant force F. The coefficient of friction between the blocks and the ground is 0.5. The value of F so that tension in the string is constant throughout during the motion of the blocks is

Options :

1. ✖

40 N

2. ✔ 30 N

3. ✖ 50 N

4. ✖ 60 N

Question Number : 61 Question Id : 89040115273 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a hydroelectric power station, the height of the dam is 10 m. How many kilograms of water must fall per second on the blades of a turbine in order to generate 1 MW of electrical power? [$g = 10\ m/s^2$].

Options :

1. ✖ $10^3\ Kg/s$

2. ✔ $10^4\ Kg/s$

3. ✖ $10^5\ Kg/s$

4. ✖ $10^6\ Kg/s$

Question Number : 62 Question Id : 89040115274 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The kinetic energy at the highest point of the trajectory of a projectile is 200 J. If the mass of the projectile is 1 Kg and the maximum height reached by it is 20 m, then velocity of the projectile from the ground is

Options :

1. ✖ 20 m/s

2. ✖ 10 m/s

3. ✔ $20\sqrt{2}$ m/s

4. ✖ $10\sqrt{2}$ m/s

Question Number : 63 Question Id : 89040115275 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A force applied by an engine on train of mass 2.05×10^6 Kg changes its velocity from 5 m/s to 25 m/s in 5 minutes. The power of the engine is

Options :

1. ✖ 1.025 MW

2. ✔ 2.05 MW

3. ✖ 5 MW

4. ✖ 6 MW

Question Number : 64 Question Id : 89040115276 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Two identical wires have a fundamental frequency of 100 Hz when kept under the same tension. If the tension of one of the wires is increased by 21%, the number of beats produced is

Options :

1. ✖ 11

2. ✔ 10

3. ✖ 9

4. ✖ 8

Question Number : 65 Question Id : 89040115277 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A body executing S.H.M. has a maximum velocity of 1 ms^{-1} and a maximum acceleration of 4 ms^{-2}. Its amplitude in metres is:

Options :

1. ✖ 1

2. ✖ 0.75

3. ✖ 0.5

4. ✔ 0.25

Question Number : 66 Question Id : 89040115278 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A simple pendulum of length l_1 has frequency $\frac{1}{4}$ Hz and another simple pendulum of length l_2 has frequency $\frac{1}{3}$ Hz. Then time period of pendulum of length (l_1 - l_2) is

Options :

1. ✖ 5 s

2. ✖ 1 s

3. ✔ $\sqrt{7}$ s

4. ✖ $\sqrt{12}$ s

Question Number : 67 Question Id : 89040115279 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A source of sound producing wavelength of 50 cm is moving away from stationary observer with $\frac{1^{th}}{5}$ speed of sound. The wavelength of the sound heard by the observer is

Options :

1. ✖ 70 cm

2. ✖ 55 cm

3. ✖ 40 cm

4. ✔ 60 cm

Question Number : 68 Question Id : 89040115280 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

To have a good sound effect inside a hall

Options :

1. ✖ the hall should not have any sound absorbing material

2. ✖ the reverberation time has to be maximum

3. ✖ the reverberation time has to be zero

4. ✔ the reverberation time has to be optimum

Question Number : 69 Question Id : 89040115281 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the pressure of an ideal gas contained in a closed vessel is increased by 0.5%, the increase in temperature is 2°C. The initial temperature of the gas is

Options :

1. ✖ 27°C

2. ✔ 127°C

3. ✖ 300°C

4. ✖ 400°C

Question Number : 70 Question Id : 89040115282 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

During the free expansion of an ideal gas, which of the following physical quantity remains constant

Options :

1. ✔ Temperature

2. ✖ Pressure

3. ✖ Volume

4. ✖ Ratio of pressure to volume

Question Number : 71 Question Id : 89040115283 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The specific heat at constant volume for a monoatomic gas is 0.075 cal/kg/K and its gram molecular specific heat is 3 cal/mol/K. Then mass of one atom of that gas is

Options :

1. ✔ 6.67×10^{-23} gm

2. ✖ 6.67×10^{23} gm

3. ✖ 2×10^{-23} gm

4. ✖ 2×10^{23} gm

Question Number : 72 Question Id : 89040115284 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A rigid diatomic ideal gas undergoes an adiabatic process at room temperature. The relation between temperature and volume of this process is TV^x = constant. Then x is

Options :

1. ✖ $\frac{5}{3}$

2. ✔ $\frac{2}{5}$

3. ✖ $\frac{2}{3}$

4. ✖ $\frac{3}{5}$

Question Number : 73 Question Id : 89040115285 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A carnot engine having an efficiency of $\frac{1}{10}$ as heat engine, is used as a refrigerator. If the work done on the system is 10 J, the amount of energy absorbed from the reservoir at lower temperature is

Options :

1. ✖ 100 J

2. ✖ 99 J

3. ✔ 90 J

4. ✖ 80 J

Question Number : 74 Question Id : 89040115286 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Two photons of energy 2.5 eV and 3.5 eV fall on a metal surface of work function 1.5 eV.

The ratio of the maximum velocities of the photoelectrons emitted from the metal surface is

Options :

1. ✖ 1 : 4

2. ✖ 2 : 1

3. ✖ 1 : 2

4. ✔ $1 : \sqrt{2}$

Question Number : 75 Question Id : 89040115287 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

At critical angle, the angle of refraction is

Options :

1. ✖ 45^0

2. ✔ 90^0

3. ✖ 120^0

4. ✖ 180^0

Chemistry

Section Id :	890401301
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	25
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	890401325
Question Shuffling Allowed :	Yes

Question Number : 76 Question Id : 89040115288 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The quantum number which describes the shape of an atomic orbital is indicated by the symbol

Options :

1. ✔ l

2. ✖ m_l

3. ✖

m_s

4. ✖ n

Question Number : 77 Question Id : 89040115289 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

"No two electrons in an atom can have the same set of four quantum numbers".
This is known as

Options :

1. ✖ Pauli`s Principle

2. ✔ Hund`s Rule

3. ✖ Aufbau Principle

4. ✖ Lewis Rule

Question Number : 78 Question Id : 89040115290 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In the elements with atomic number Z=1 to Z=20,
how many of them have no unpaired electrons in their ground state?

Options :

1. ✖ 8

2. ✖ 4

3. ✖ 10

4. ✔ 6

Question Number : 79 Question Id : 89040115291 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is not a property of covalent compounds?

Options :

1. ✖ They are generally insoluble in water

2. ✖ They consist of molecules

3. ✖ They exist as solids, liquids or gases

4. ✔ The reactions between them are fast

Question Number : 80 Question Id : 89040115292 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The sum of covalent bonds in H_2, N_2 and HCl is

Options :

1. ✖ 4

2. ✔ 5

3. ✖ 6

4. ✖ 3

Question Number : 81 Question Id : 89040115293 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

How many grams of NaOH is required to prepare 5.0 litre of 0.1 N solution?
(Given: At. wt: H=1, O=16, Na=23)

Options :

1. ✔ 20

2. ✖ 30

3. ✖ 10

4. ✖ 50

Question Number : 82 Question Id : 89040115294 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A gaseous mixture contains 8g of oxygen, 14 g of nitrogen and 8 g of hydrogen.
Total number of molecules present in the gaseous mixture is
(Given: At. wt: H=1, N=14, O=16, N_A= 6 x 10^{23} mol^{-1})

Options :

1. ✖ 1.43 X 10^{23}

2. ✖ 2.85 X 10^{23}

3. ✔ 2.85 X 10^{24}

4. ✖ 1.85 X 10^{24}

Question Number : 83 Question Id : 89040115295 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The equivalent weight of which of the following is the highest?

Options :

1. ✖ Na_2CO_3 (molecular weight = 106)

2. ✖ H_3PO_4 (molecular weight = 98)

3. ✔ $H_2C_2O_4.\ 2H_2O$ (molecular weight = 126)

4. ✖ $AlCl_3$ (molecular weight = 133.5)

Question Number : 84 Question Id : 89040115296 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

At 25^0C, ionic product (Kw) of 0.01M HCl solution is

Options :

1. ✖ 1.0×10^{-13} mol^2/L^2

2. ✖ 1.0×10^{-12} mol^2/L^2

3. ✔ 1.0×10^{-14} mol^2/L^2

4. ✖ 1.0×10^{-15} mol^2/L^2

Question Number : 85 Question Id : 89040115297 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following combinations give a buffer solution?

Options :

1. ✖ HCl + NaCl

2. ✔ $CH_3COOH + CH_3COONa$

3. ✖ $CH_3COOH + NaCl$

4. ✖ $NH_4OH + NaOH$

Question Number : 86 Question Id : 89040115298 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A current of 0.5 amp is passed through molten $AlCl_3$ for 96.5 seconds. The volume of Cl_2 gas liberated at STP at anode (in ml) is (Cl = 35.5 u) (1F=96500 C mol^{-1})

Options :

1. ✖ 11.2

2. ✖ 22.4

3. ✔ 5.6

4. ✖ 33.6

Question Number : 87 Question Id : 89040115299 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The amount of substance deposited due to passage of 1F of electricity is called

Options :

1. ✖ Atomic weight

2. ✔ Equivalent weight

3. ✖ Electrochemical equivalent

4. ✖ Molecular weight

Question Number : 88 Question Id : 89040115300 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

What is the emf of the cell?

$Sn|Sn^{2+}\,(1M)||Ag^{+}\,(1M)|Ag$

[Given $E^{0}_{Sn^{2+}|Sn} = -0.14V$ *and* $E^{0}_{Ag^{+}|Ag} = +0.80\,V$]

Options :

1. ✖ 0.66 V

2. ✖ 0.80 V

3. ✖ 1.08 V

4. ✔ 0.94 V

Question Number : 89 Question Id : 89040115301 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the standard reduction potentials of A,B,C are respectively 0.68V, -2.54V and -0.50 V, then the order of their reducing power is

Options :

1. ✖ A>B>C

2. ✖ A>C>B

3. ✖ C>B>A

4. ✔ B>C>A

Question Number : 90 Question Id : 89040115302 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

With which of the following anions, Mg^{2+} and Ca^{2+} ions form salts responsible for permanent hardness of water?

Options :

1. ✔ Cl^-, SO_4^{2-}

2. ✖ Cl^-, NO_2^-

3. ✖ HCO_3^-, Cl^-

4. ✖ CO_3^{2-}, HCO_3^-

Question Number : 91 Question Id : 89040115303 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Exhausted permutit is regenerated by washing with

Options :

1. ✖ Dilute NaOH solution

2. ✔ Dilute NaCl solution

3. ✖ Dilute HCl solution

4. ✖ Dilute $AlCl_3$ solution

Question Number : 92 Question Id : 89040115304 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

27.2 mg of $CaSO_4$ and 2.4 mg of $MgSO_4$ are present in a 2 kg water sample.
What is the total hardness of water (in ppm) in terms of equivalents of $CaCO_3$?
(molecular weight of $CaSO_4$ = 136 & molecular weight of $MgSO_4$ = 120)

Options :

1. ✔ 11

2. ✖ 10

3. ✖ 20

4. ✖ 22

Question Number : 93 Question Id : 89040115305 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Statement I: The lower the pH greater is the corrosion

Statement II: Electrochemical Corrosion always occurs at the anodic area.

The correct answer is

Options :

1. ✔ Both statement – I and Statement – II are correct

2. ✖ Both statement – I and Statement – II are not correct

3. ✖ Statement – I is correct but statement – II is not correct

4. ✖ Statement – I is not correct but statement – II is correct

Question Number : 94 Question Id : 89040115306 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Rust is chemically

Options :

1. ✔ Hydrated Ferric Oxide

2. ✖ Hydrated Copper (II) Chloride

3. ✖ Hydrated Ferrous Sulphate

4. ✖ Hydrated Ferric Sulphate

Question Number : 95 Question Id : 89040115307 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The monomer of Teflon is X. The number of fluorine atoms in X is

Options :

1. ✖ 2

2. ✖ 3

3. ✔ 4

4. ✖ 1

Question Number : 96 Question Id : 89040115308 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Bakelite is an example of

Options :

1. ✖ Thermoplastic Polymer

2. ✖ Elastomer

3. ✖ Fibre

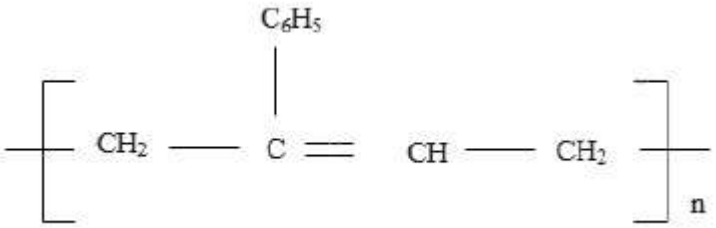
4. ✔ Thermosetting polymer

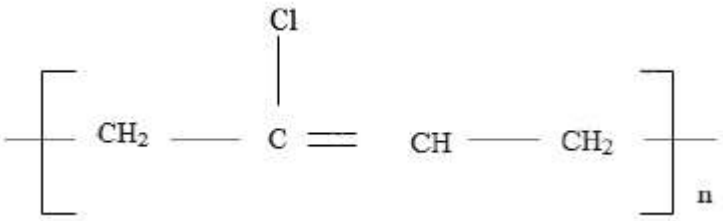
Question Number : 97 Question Id : 89040115309 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

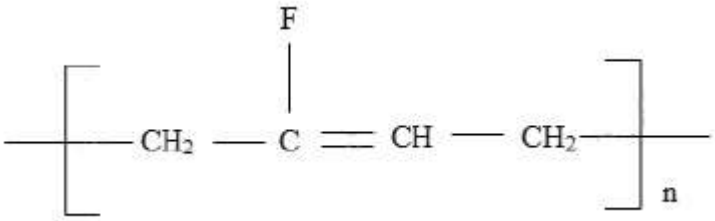
Correct Marks : 1 Wrong Marks : 0

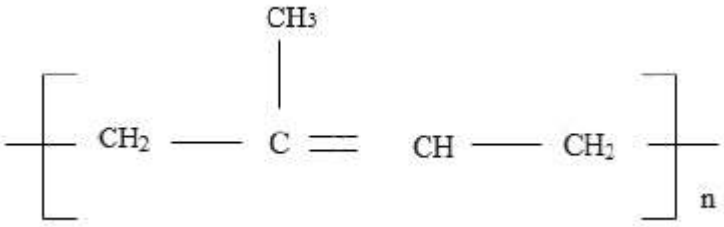
The correct structure of neoprene rubber is

Options :

1. ✖ 

2. ✔ 

3. ✖ 

4. ✖ 

Question Number : 98 Question Id : 89040115310 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is NOT regarded as a primary fuel?

Options :

1. ✖ Natural gas

2. ✔ Coal gas

3. ✖ Lignite

4. ✖ Crude oil

Question Number : 99 Question Id : 89040115311 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

pH of acid rain water is generally in the range of

Options :

1. ✖ 1.0 - 3.0

2. ✔ 3.5 - 5.6

3. ✖ 5.9 - 6.9

4. ✖ 7.1 - 7.5

Question Number : 100 Question Id : 89040115312 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In _____ part of the atmosphere ozone layer is present.

Options :

1. ✖ Troposphere

2. ✖ Thermosphere

3. ✔ Stratosphere

4. ✖ Mesosphere

Mechanical Engineering

Section Id :	890401302
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	100
Number of Questions to be attempted :	100
Section Marks :	100
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	890401326
Question Shuffling Allowed :	Yes

Question Number : 101 Question Id : 89040115313 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The hammer used in carpentry (Wood working) is:

Options :

1. ✖ Cross peen hammer

2. ✔ Claw hammer

3. ✖ Ballpeen hammer

4. ✖ Sledge hammer

Question Number : 102 Question Id : 89040115314 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In fitting, the file having rectangular cross section, tapered towards the tip both in width and thickness, double cut teeth on faces and single cut on edges, is called:

Options :

1. ✖ Hand file

2. ✔ Flat file

3. ✖ Pillar file

4. ✖ Ward file

Question Number : 103 Question Id : 89040115315 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following method is NOT a sheet metal common method of layout a Pattern or development of surface of the object:

Options :

1. ✖ Parallel line method

2. ✖ Radial line method

3. ✖ Triangulation Method

4. ✔ Nibbling Method

Question Number : 104 Question Id : 89040115316 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In forging operation, tool (used in pair) having rounded working edges, used for necking down the cross-section of the work-piece, is known as:

Options :

1. ✖ Swages

2. ✔ Fullers

3. ✖ Flatters

4. ✖ Chisels

Question Number : 105 Question Id : 89040115317 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In cold working of metals:

Options :

1. ✖ strength, hardness and ductility increase

2. ✖ strength, hardness and ductility decrease

3. ✔ strength, hardness increase, but ductility decreases

4. ✖ strength, hardness decrease but ductility increases

Question Number : 106 Question Id : 89040115318 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The pattern used for preparing moulds of large and axis-symmetrical castings (e.g., Bells, large gears, wheels etc.,) is known as:

Options :

1. ✖ Skelton pattern

2. ✔ Sweep pattern

3. ✖ Single piece pattern

4. ✖ Match plate pattern

Question Number : 107 Question Id : 89040115319 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

When the molten metal fails to reach all the sections of the mould, such that a certain part of it remains unfilled, resulting incomplete casting, the defect is called:

Options :

1. ✖ Cold shut

2. ✖ Pour short

3. ✖ Hot tears

4. ✔ Misrun

Question Number : 108 Question Id : 89040115320 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The capability of moulding sand to withstand higher temperatures of the molten metal, is called:

Options :

1. ✔ Refractoriness

2. ✖ Green strength

3. ✖ Permeability

4. ✖ Collapsibility

Question Number : 109 Question Id : 89040115321 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The purpose of chaplets in moulding is:

Options :

1. ✖ to support chills

2. ✖ to support the pattern

3. ✔ to support core

4. ✖ to achieve directional solidification

Question Number : 110 Question Id : 89040115322 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is NOT a basic series of Preferred numbers used in standardization?

Options :

1. ✖ R5

2. ✖ R10

3. ✔ R15

4. ✖ R20

Question Number : 111 Question Id : 89040115323 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

With respect to limits, fits and tolerances of machine components, how many grades of tolerances are there?

Options :

1. ✖ 14

2. ✖ 20

3. ✖ 16

4. ✔ 18

Question Number : 112 Question Id : 89040115324 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

During the evaluation of surface roughness (in a given sample length), the average height from a mean line of all ordinates of surface, regardless of sign, is the

Options :

1. ✖ R_m value

2. ✖ R_z value

3. ✖ R_p value

4. ✔ R_a value

Question Number : 113 Question Id : 89040115325 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is NOT a arc welding equipment?

Options :

1. ✖ Earthing clamp

2. ✖ Cable lug

3. ✖ Hand shield

4. ✔ Blow pipe

Question Number : 114 Question Id : 89040115326 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In oxy-acetylene gas welding equipment, the outside surface of oxygen cylinder is usually painted with _____ colour.

Options :

1. ✖ Red

2. ✔ Black

3. ✖ Maroon

4. ✖ Yellow

Question Number : 115 Question Id : 89040115327 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Two non-consumable tungsten electrodes are used in _____ process.

Options :

1. ✔ Atomic hydrogen welding

2. ✖ Plasma arc welding

3. ✖ Submerged arc welding

4. ✖ Tungsten inert gas welding

Question Number : 116 Question Id : 89040115328 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

During welding, tiny electrode metal particles are blown out of the arc, which get deposited on the surface of the weld bead and base metal. This weld defect is called

Options :

1. ✔ Spatter

2. ✖ Overlapping

3. ✖ Inclusions

4. ✖ Porosity

Question Number : 117 Question Id : 89040115329 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✖ Arthematic progression

2. ✔ Geometric progression

3. ✖ Harmonic progression

4. ✖ Logarithmic progression

Question Number : 118 Question Id : 89040115330 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In which of the following machine tool; 'clapper box' in which the cutting tool is clamped, is used:

Options :

1. ✖ Lathe

2. ✖ Drilling Machine

3. ✔ Shaping Machine

4. ✖ Milling Machine

Question Number : 119 Question Id : 89040115331 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is NOT an indexing method used in milling machines?

Options :

1. ✖ Direct indexing

2. ✖ Compound indexing

3. ✖ Differential indexing

4. ✔ Integral indexing

Question Number : 120 Question Id : 89040115332 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The angle between the two cutting edges of a drill bit is called:

Options :

1. ✖ Helix angle

2. ✔ Point angle

3. ✖ Chisel edge angle

4. ✖ Lip angle

Question Number : 121 Question Id : 89040115333 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In which of the following machining operation, jig is used:

Options :

1. ✖ Turning

2. ✔ Drilling

3. ✖ Milling

4. ✖ Grinding

Question Number : 122 Question Id : 89040115334 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The mechanism of material removal in Electric Discharge Machining (EDM) process is:

Options :

1. ✔ melting and evaporation

2. ✖ melting and corrosion

3. ✖ corrosion and cavitation

4. ✖ cavitation and evaporation

Question Number : 123 Question Id : 89040115335 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following modern machining process, does not cause tool wear?

Options :

1. ✖ Ultrasonic machining

2. ✔ Electro-chemical machining

3. ✖ Electric discharge machining

4. ✖ Electron beam machining

Question Number : 124 Question Id : 89040115336 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In which of the following surface finishing operation: the relative motion between tool and the previously machined surface is a combination of reciprocation and rotary motions?

Options :

1. ✖ Lapping

2. ✖ Buffing

3. ✖ Tumbling

4. ✔ Honing

Question Number : 125 Question Id : 89040115337 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

With reference to the part program on CNC Lathe; code M05 refers to:

Options :

1. ✖ Spindle start clockwise

2. ✖ Spindle start counter clockwise

3. ✖ Spindle orientation

4. ✔ Spindle stop

Question Number : 126 Question Id : 89040115338 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In which of the following 3 – Degree of freedom robot arm configuration gives a partial spherical shell space as work volume to the manipulator ?

Options :

1. ✖ Cylindrical coordinate system

2. ✖ Cartesian coordinate system

3. ✔ Polar coordinate system

4. ✖ Selective Compliance Assembly Robot Arm

Question Number : 127 Question Id : 89040115339 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

With respect to rapid prototyping, the full form of SLS is:

Options :

1. ✖ Stereolithography Laser Simulation

2. ✖ Selective Laser Simulation

3. ✖ Sintering Laser Simulation

4. ✔ Selective Laser Sintering

Question Number : 128 Question Id : 89040115340 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The property of a material due to which it can be rolled or hammered into thin sheets is known as:

Options :

1. ✖ Brittleness

2. ✖ Ductility

3. ✔ Malleability

4. ✖ Fatigue

Question Number : 129 Question Id : 89040115341 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the following test is used to measure the toughness of a material?

Options :

1. ✖ Brinell test

2. ✖ Shore Scleroscope test

3. ✔ Charpy test

4. ✖ Compression test

Question Number : 130 Question Id : 89040115342 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

With reference to Iron-Carbon diagram, Pearlite is a combination of :

Options :

1. ✔ Ferrite and Cementite

2. ✖ Austenite and Ferrite

3. ✖ Austenite and Cementite

4. ✖

Ferrite and Graphite

Question Number : 131 Question Id : 89040115343 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The process, which involves addition of carbon and nitrogen to carbon steels and alloy steels to increase hardness at the surface, is known as:

Options :

1. ✖ Carburising

2. ✔ Cyaniding

3. ✖ Nitriding

4. ✖ Spheroidizing

Question Number : 132 Question Id : 89040115344 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

German silver is an alloy of:

Options :

1. ✔ Copper, Zinc and Nickle

2. ✖ Copper, Nickle and Manganese

3. ✖ Copper, Tin and Phosphor

4. ✖ Copper, Zinc and Lead.

Question Number : 133 Question Id : 89040115345 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The resultant of two forces, magnitude of each is equal to 'P' and the acting angle between them is 60^0; is

Options :

1. ✖ $\sqrt{2}\,P$

2. ✔ $\sqrt{3}\,P$

3. ✖ $2\,P$

4. ✖ $\sqrt{5}\,P$

Question Number : 134 Question Id : 89040115346 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Efficiency of a simple lifting machine is:

Options :

1. ✖ $\frac{\text{Velocity ratio}}{\text{Mechanical advantage}}$

2. ✔ $\frac{\text{Mechanical advantage}}{\text{Velocity ratio}}$

3. ✖ Mechanical advantage x Velocity ratio

4. ✖ $\sqrt{\text{Mechanical advantage x Velocity ratio}}$

Question Number : 135 Question Id : 89040115347 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If G is the modulus of rigidity, K is the bulk modulus and μ is the poison's ratio of a material, then the ratio of modulus of rigidity to bulk modulus is:

Options :

1. ✖ $\frac{3(1+2\mu)}{2(1+\mu)}$

2. ✖ $\frac{3(1+2\mu)}{2(1-\mu)}$

3. ✔ $\frac{3(1-2\mu)}{2(1+\mu)}$

4. ✖ $\frac{3(1-2\mu)}{2(1-\mu)}$

Question Number : 136 Question Id : 89040115348 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

With reference to shear force and bending moment diagrams, along the length of a beam subjected to loads, at the point of contraflexure, bending moment is

Options :

1. ✔ Zero

2. ✖ Constant

3. ✖ Minimum

4. ✖ Maximum

Question Number : 137 Question Id : 89040115349 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A bar of length L and having its area of cross-section A, is subjected to a gradually applied tensile load W. Modulus of elasticity of the bar material is E. The strain energy stored in the bar is:

Options :

1. ✖ $\frac{W L}{2AE}$

2. ✖ $\frac{W L}{AE}$

3. ✖ $\frac{W^2 L}{AE}$

4. ✔ $\frac{W^2 L}{2AE}$

Question Number : 138 Question Id : 89040115350 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A simply supported beam having length = L, width = B and depth = H, carries a concentrated load W at its centre and under goes a deflection δ under the load. If the width and depth are interchanged, the deflection at the centre of the beam would attain a value:

Options :

1. ✖ $\left(\frac{H}{B}\right) \delta$

2. ✔ $\left(\frac{H}{B}\right)^2 \delta$

3. ✖ $\left(\frac{H}{B}\right)^3 \delta$

4. ✖ $\left(\frac{H}{B}\right)^{1.5} \delta$

Question Number : 139 Question Id : 89040115351 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A solid shaft of diameter D carries a twisting moment that develops a maximum shear stress τ. If the solid shaft is replaced by a hollow shaft having outside diameter D and inside diameter D/2; then the maximum shear stress in the hollow shaft will be:

Options :

1. ✔ $\frac{16}{15}\tau$

2. ✖ $\frac{8}{7}\tau$

3. ✖ $\frac{4}{3}\tau$

4. ✖ 2τ

Question Number : 140 Question Id : 89040115352 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In case of flat belt open drive, if the centre distance between pulleys is 2 m and both pulleys are equal in diameter of 1 m; then the length of the belt in meters is:

Options :

1. ✖ $(2+\pi)$

2. ✔ $(4+\pi)$

3. ✖ $(6+\pi)$

4. ✖ $(8+\pi)$

Question Number : 141 Question Id : 89040115353 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In involute gear terminology, the difference between the tooth space and tooth thickness measured along the pitch circle, is known as:

Options :

1. ✖ Clearance

2. ✔ Backlash

3. ✖ Fillet

4. ✖ Module

Question Number : 142 Question Id : 89040115354 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For a flywheel, if ω_{Max} is the maximum speed and ω_{Min} is the minimum speed, then the coefficient of fluctuation of speed will be:

Options :

1. ✖ $\frac{(\omega_{Max}-\omega_{Min})}{(\omega_{Max}+\omega_{Min})}$

2. ✖ $\frac{(\omega_{Max}+\omega_{Min})}{(\omega_{Max}-\omega_{Min})}$

3. ✔ $\frac{2(\omega_{Max}-\omega_{Min})}{(\omega_{Max}+\omega_{Min})}$

4. ✖ $\frac{2(\omega_{Max}+\omega_{Min})}{(\omega_{Max}-\omega_{Min})}$

Question Number : 143 Question Id : 89040115355 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a centrifugal governor, the mean force acting on the sleeve to raise or lower it for a given change of equilibrium speed; is called:

Options :

1. ✖ Power

2. ✔ Effort

3. ✖ Hunting

4. ✖ Isochronous

Question Number : 144 Question Id : 89040115356 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In cam and follower mechanism; if the rise motion is given by an equation:

$S = \frac{h}{2}\left\{1 - \cos\left(\frac{\pi\theta}{\emptyset}\right)\right\}$, then the motion is called:

(Where, h = total rise; θ = cam shaft angle; $\emptyset$ = total angle of rise interval; and S = follower rise at any position in the cam rise interval.)

Options :

1. ✔ Simple Harmonic Motion

2. ✖ Uniform Acceleration and Retardation Motion

3. ✖ Cycloidal Motion

4. ✖ Constant Velocity Motion

Question Number : 145 Question Id : 89040115357 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In screw fastenings, which of the following machine element has threads at its both ends?

Options :

1. ✖ Through bolt

2. ✖ Tap bolt

3. ✔ Stud

4. ✖ Set screw

Question Number : 146 Question Id : 89040115358 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the ratio of the diameter of rivet hole to the pitch of rivets is 0.25, then the efficiency of the circumferential lap joint is:

Options :

1. ✖ 25 %

2. ✖ 50 %

3. ✔ 75 %

4. ✖ 87 %

Question Number : 147 Question Id : 89040115359 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following key fits in the keyway of the hub only (i.e., there is no keyway on the shaft.)

Options :

1. ✖

Sunk key

2. ✔ Saddle key

3. ✖ Feather key

4. ✖ Woodruff key

Question Number : 148 Question Id : 89040115360 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The bolts in a rigid flange coupling, connecting two shafts transmitting power, are subjected to:

Options :

1. ✖ Axial force only

2. ✖ Torsion only

3. ✖ Bending moment only

4. ✔ Shear force and bending moment

Question Number : 149 Question Id : 89040115361 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A Hydrodynamic journal bearing of diameter 250 mm and length 400 mm carries a load of 250 kN. The average bearing pressure is:

Options :

1. ✖ $0.25\ N/mm^2$

2. ✔

2.5 N/mm^2

3. ✖ 25 N/mm^2

4. ✖ 50 N/mm^2

Question Number : 150 Question Id : 89040115362 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a closely coiled helical spring of circular wire; if d = diameter of spring wire; D = Mean diameter of spring coil; n = no. of active coils; C = spring Index (D/d); G = Modulus of rigidity of the spring wire material, then the stiffness of the spring is:

Options :

1. ✔ $\frac{G\,d}{8\,C^3 n}$

2. ✖ $\frac{G\,D}{8\,C^3 n}$

3. ✖ $\frac{8\,C^3 n}{G\,D}$

4. ✖ $\frac{8\,C^3 n}{G\,d^2}$

Question Number : 151 Question Id : 89040115363 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Ice cube kept in a well-insulated thermos flask, is an example of which system?

Options :

1. ✖ Closed system

2. ✖

Open system

3. ✔ Isolated system

4. ✖ Heterogeneous system

Question Number : 152 Question Id : 89040115364 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a throttling process, which one of the following parameters remain constant?

Options :

1. ✖ Temperature

2. ✖ Pressure

3. ✔ Enthalpy

4. ✖ Entropy

Question Number : 153 Question Id : 89040115365 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For a thermodynamic cycle to be reversible, it is necessary that

Options :

1. ✔ $\oint \frac{dQ}{T} = 0$

2. ✖ $\oint \frac{dQ}{T} < 0$

3. ✖

$\oint \frac{dQ}{T} > 0$

4. ✖ $\oint \frac{dQ}{T} = \infty$

Question Number : 154 Question Id : 89040115366 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which thermodynamic cycle consists of two reversible isotherms and two reversible isobars?

Options :

1. ✖ Carnot cycle

2. ✖ Stirling cycle

3. ✔ Ericson cycle

4. ✖ Brayton cycle

Question Number : 155 Question Id : 89040115367 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For the given same compression ratio and the same heat input the air standard efficiency of otto, diesel and dual combustion cycles are in the order of:

Options :

1. ✖ $\eta_{otto} > \eta_{diesel} > \eta_{dual}$

2. ✔ $\eta_{otto} > \eta_{dual} > \eta_{diesel}$

3. ✖ $\eta_{diesel} > \eta_{otto} > \eta_{dual}$

4. ✖ $\eta_{dual} > \eta_{diesel} > \eta_{otto}$

Question Number : 156 Question Id : 89040115368 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The ratio of brake power to indicated power of an internal combustion engine is called:

Options :

1. ✖ brake thermal efficiency

2. ✖ volumetric efficiency

3. ✖ relative efficiency

4. ✔ mechanical efficiency

Question Number : 157 Question Id : 89040115369 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In four stroke internal combustion engine, the period during which both inlet and exhaust valves remain open, is called:

Options :

1. ✔ Overlap period

2. ✖ Blowdown period

3. ✖ Supercharging period

4. ✖ Scavenging period

Question Number : 158 Question Id : 89040115370 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following device is used to measure the speed of Internal Combustion Engine?

Options :

1. ✖ Odometer

2. ✖ Dynamometer

3. ✔ Tachometer

4. ✖ Rotameter

Question Number : 159 Question Id : 89040115371 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a single stage reciprocating air compressor, the work done on air to compress it from suction pressure to delivery pressure will be minimum, when the compression is:

Options :

1. ✔ Isothermal process

2. ✖ Adiabatic process

3. ✖ Polytropic process

4. ✖ Constant pressure process

Question Number : 160 Question Id : 89040115372 Question Type : MCQ Option Shuffling : No

Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the air compressors, is NOT a rotary type compressor?

Options :

1. ✖ Screw type compressor

2. ✖ Scroll type compressor

3. ✖ Vane type compressor

4. ✔ Piston type compressor

Question Number : 161 Question Id : 89040115373 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

The air standard efficiency of closed gas turbine cycle is given by:

Where r = Pressure ratio for compression and turbine; and γ = Isentropic index of air.

Options :

1. ✔ $\eta = \{1 - \frac{1}{r^{\left(\frac{\gamma-1}{\gamma}\right)}}\}$

2. ✖ $\eta = \{1 - \frac{1}{r^{(\gamma-1)}}\}$

3. ✖ $\eta = \{1 - r^{(\gamma-1)}\}$

4. ✖ $\eta = \{r^{(\gamma-1)} - 1\}$

Question Number : 162 Question Id : 89040115374 Question Type : MCQ Option Shuffling : No
Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the following Jet Propulsion System does not contain compressor and turbine?

Options :

1. ✖ Turbo-jet

2. ✖ Turbo-Prop

3. ✖ Screw Propeller

4. ✔ Ram-Jet

Question Number : 163 Question Id : 89040115375 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Units of Kinematic Viscosity is:

Options :

1. ✖ $\frac{m}{s}$

2. ✖ $\frac{m}{s^2}$

3. ✔ $\frac{m^2}{s}$

4. ✖ $m - s$

Question Number : 164 Question Id : 89040115376 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the surface tension at the soap bubble-air interface is 0.09 N/m; then what is the internal pressure in a soap bubble of 24 mm diameter?

Options :

1. ✖ $7.5\ \frac{N}{m^2}$

2. ✖ $15\ \frac{N}{m^2}$

3. ✖ $20\ \frac{N}{m^2}$

4. ✔ $30\ \frac{N}{m^2}$

Question Number : 165 Question Id : 89040115377 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If the flow of an incompressible fluid is irrotational as well as steady, then it is known as:

Options :

1. ✖ Non-uniform flow

2. ✖ Uniform flow

3. ✔ Potential flow

4. ✖ Laminar flow

Question Number : 166 Question Id : 89040115378 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In flow through pipes, according to Darcy-Weisbach formula the loss of head due to friction is proportional to _____, Where, V = Mean velocity of flow.

Options :

1. ✖ $\sqrt{V}$

2. ✖ V

3. ✔ V^2

4. ✖ V^3

Question Number : 167 Question Id : 89040115379 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A jet of water coming out of a nozzle with a velocity of 20 m/s strikes a hinged plate at the centre. Nozzle area is $2x10^{-3}\ m^2$; density of water is 1000 $\frac{kg}{m^3}$. If the angle of the swing of the plate from the vertical is 30^0, then the weight of the plate is

Options :

1. ✖ 800 N

2. ✖ 1000 N

3. ✖ 1200 N

4. ✔ 1600 N

Question Number : 168 Question Id : 89040115380 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In order to have maximum power from a Pelton turbine, the bucket speed must be

Options :

1. ✖ equal to the jet speed.

2. ✔ equal to half of the jet speed.

3. ✖

equal to twice the jet speed.

4. ✖ independent of the jet speed.

Question Number : 169 Question Id : 89040115381 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

Which of the following hydraulic turbine is known as mixed flow turbine?

Options :

1. ✖ Pelton turbine

2. ✔ Francis turbine

3. ✖ Propeller turbine

4. ✖ Kaplan turbine.

Question Number : 170 Question Id : 89040115382 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In a single acting reciprocating pump (hydraulic), work saved in friction due to fitting of air vessel is:

Options :

1. ✖ 39.2 %

2. ✖ 50.0 %

3. ✖ 65.5 %

4. ✔ 84.8 %

Question Number : 171 Question Id : 89040115383 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A hydraulic actuator works on which of the following law?

Options :

1. ✖ Darcy Law

2. ✔ Pascal's law

3. ✖ Faraday's Law

4. ✖ Hick's law

Question Number : 172 Question Id : 89040115384 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The process of superheating of steam is always carried at constant _____.

Options :

1. ✖ Volume

2. ✖ Entropy

3. ✖ Dryness Fraction

4. ✔ Pressure

Question Number : 173 Question Id : 89040115385 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In Mollier chart, an isentropic process is represented by a _____ line.

Options :

1. ✖ Horizontal

2. ✔ Vertical

3. ✖ Inclined

4. ✖ Curved

Question Number : 174 Question Id : 89040115386 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following boiler is a horizontal double fire tube boiler?

Options :

1. ✖ Cochran

2. ✖ Cornish

3. ✔ Lancashire

4. ✖ Locomotive

Question Number : 175 Question Id : 89040115387 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The device is used to protect the boiler when the water level falls below a minimum level, is called:

Options :

1. ✖ Economiser

2. ✔ Fusible plug

3. ✖ Blow-off cock

4. ✖ Safety valve

Question Number : 176 Question Id : 89040115388 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For a steam nozzle, if p_1 = Inlet pressure; p_2 = Exit Pressure and n = Index of Isentropic expansion, the mass flow rate per unit area is maximum, when $\frac{p_2}{p_1}$ is equal to:

Options :

1. ✖ $\left(\frac{2}{n+1}\right)^{\left(\frac{n-1}{n}\right)}$

2. ✖ $\left(\frac{2}{n-1}\right)^{\left(\frac{n-1}{n}\right)}$

3. ✔ $\left(\frac{2}{n+1}\right)^{\left(\frac{n}{n-1}\right)}$

4. ✖ $\left(\frac{2}{n-1}\right)^{\left(\frac{n}{n-1}\right)}$

Question Number : 177 Question Id : 89040115389 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following steam turbine is NOT compounded?

Options :

1. ✔ De Laval turbine

2. ✖ Curtis turbine

3. ✖ Rateau turbine

4. ✖ Parson's turbine

Question Number : 178 Question Id : 89040115390 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

For Parson's reaction turbine, degree of reaction is _____.

Options :

1. ✔ 50 %

2. ✖ 60 %

3. ✖ 75 %

4. ✖ 100 %

Question Number : 179 Question Id : 89040115391 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The process of draining steam from the turbine, at certain points during its expansion and using this steam for heating the feed water is known as _____.

Options :

1. ✔ Bleeding

2. ✖ Cooling

3. ✖ Compounding

4. ✖ Governing

Question Number : 180 Question Id : 89040115392 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In jet type steam condensers; _____.

Options :

1. ✖ cooling water passes through the tubes and steam surrounds them.

2. ✖ steam passes through the tubes and cooling water surrounds them.

3. ✔ mixing of steam and cooling water.

4. ✖ partially mixing of steam and cooling water.

Question Number : 181 Question Id : 89040115393 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is NOT a type of surface steam condenser:

Options :

1. ✖ Evaporative type

2. ✖ Regenerative type

3. ✖ Inverted-flow type

4. ✔ Ejector type

Question Number : 182 Question Id : 89040115394 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following component is NOT used in vapour compression refrigeration system?

Options :

1. ✖ Compressor

2. ✖ Condenser

3. ✖ Evaporator

4. ✔ Rectifier

Question Number : 183 Question Id : 89040115395 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

A machine is used as a both Refrigeration Unit and Heat pump. For the same limits of temperatures, if the ratio of Coefficient of Performance of Heat Pump to Coefficient of Performance of Refrigeration Unit is 1.2, then the Coefficient of Performance of Refrigeration Unit is:

Options :

1. ✖ 4

2. ✔ 5

3. ✖ 6

4. ✖ 7

Question Number : 184 Question Id : 89040115396 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Vapour Absorption Refrigeration System, normally uses _____ refrigerant.

Options :

1. ✖ R-12

2. ✖ R-22

3. ✖ R-134a

4. ✔ R-717

Question Number : 185 Question Id : 89040115397 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In a psychrometric process, the sensible heat added is 30 kJ/s and the latent heat added is 20 kJ/s. The sensible heat factor for the process will be:

Options :

1. ✔ 0.60

2. ✖ 0.67

3. ✖ 1.50

4. ✖ 1.67

Question Number : 186 Question Id : 89040115398 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Humidification process on a psychrometric chart is represented by _____

Options :

1. ✖ Horizontal line moving towards right direction.

2. ✖ Horizontal line moving towards left direction.

3. ✖ Vertical line moving towards downward direction.

4. ✔ Vertical line moving towards upward direction.

Question Number : 187 Question Id : 89040115399 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In motion study, the "Therblig" symbol  represents:

Options :

1. ✔ Find

2. ✖ Search

3. ✖ Assembly

4. ✖ Inspection

Question Number : 188 Question Id : 89040115400 Question Type : MCQ Option Shuffling : No Display Question Number : Yes
Correct Marks : 1 Wrong Marks : 0

In work study the relation between Standard time, Observed time is:

Options :

1. ✖ Standard time = Observed time x Rating factor x (1- Allowances)

2. ✖ Standard time = (Observed time x Rating factor) / (1+ Allowances)

3. ✔ Standard time = Observed time x Rating factor x (1+ Allowances)

4. ✖ Standard time = Observed time x (1+ Allowances) / Rating factor

Question Number : 189 Question Id : 89040115401 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following control chart is used for the number of defects in a piece or in a sample?

Options :

1. ✖ R-Chart

2. ✖ $\bar{X}$ - Chart

3. ✖ p – Chart

4. ✔ C-Chart

Question Number : 190 Question Id : 89040115402 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

VED analysis in inventory control system stands for:

Options :

1. ✖ Very Essential and Dependable

2. ✖ Vital Easy and Dependable

3. ✔ Vital Essential and Desirable

4. ✖ Very Equal and Desirable

Question Number : 191 Question Id : 89040115403 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In Break-Even Analysis diagram, at the break-even point:

Options :

1. ✖ Total cost = Variable cost – Fixed cost.

2. ✖ Fixed cost = Total cost + Variable cost

3. ✔ Total cost = Total revenue.

4. ✖ Total revenue = Total cost – Variable cost

Question Number : 192 Question Id : 89040115404 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which type of plant lay-out is suitable for "Refrigerator" manufacturing industry?

Options :

1. ✖ Product

2. ✖ Process

3. ✖ Fixed position

4. ✔ Combination of product and process.

Question Number : 193 Question Id : 89040115405 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is NOT a type of maintenance of machinery:

Options :

1. ✖ Break-down maintenance

2. ✖ Preventive maintenance

3. ✖ Predictive maintenance

4. ✔ Random maintenance

Question Number : 194 Question Id : 89040115406 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Related to industrial safety, the shape of warning sign is _____.

Options :

1. ✖ Circular

2. ✖ Square

3. ✔ Triangular

4. ✖ Rectangular

Question Number : 195 Question Id : 89040115407 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

Which of the following is NOT a renewable energy source?

Options :

1. ✔

Nuclear

2. ✖ Solar

3. ✖ Wind

4. ✖ Tidal

Question Number : 196 Question Id : 89040115408 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In solar radiation geometry, the angle made in a horizontal plane between the horizontal line due south and the projection of the normal to the surface (tilted plane), is called:

Options :

1. ✖ Solar attitude angle

2. ✖ Declination

3. ✖ Zenith angle

4. ✔ Surface azimuth angle

Question Number : 197 Question Id : 89040115409 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

If ρ = air density; V = wind speed and A = swept frontal area of the machine (wind mill); then the amount of energy available in the wind is _____.

Options :

1. ✖ $\frac{1}{2}\rho A V^2$

2. ✖ $\rho A V$

3. ✔ $\frac{1}{2} \rho A V^3$

4. ✖ $\sqrt{\rho A V}$

Question Number : 198 Question Id : 89040115410 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In Magneto Hydro Dynamic (MHD) power generation systems, the hot flue gas is seeded with a small amount of an ionized alkali metal to increase _____ of the gas.

Options :

1. ✔ Electrical conductivity

2. ✖ Thermal diffusivity

3. ✖ Temperature

4. ✖ Velocity

Question Number : 199 Question Id : 89040115411 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

The law of radioactive decay equation is:

(Where, T = Half-life period and λ = radioactive disintegration constant)

Options :

1. ✔ $T = \frac{log_e^2}{\lambda}$

2. ✖ $T = \frac{log_e^3}{\lambda}$

3. ✖ $T = \frac{log_e^4}{\lambda}$

4. ✖ $T = \frac{log_e^5}{\lambda}$

Question Number : 200 Question Id : 89040115412 Question Type : MCQ Option Shuffling : No Display Question Number : Yes

Correct Marks : 1 Wrong Marks : 0

In nuclear power plants, the moderator is used to:

Options :

1. ✖ reduce the water temperature

2. ✖ increase the water pressure

3. ✔ reduce the speed of the neutrons

4. ✖ increase the speed of the neutrons