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 :	Electronics and Instrumentation Engineering 20th June 2023 Shift 2
Duration :	180
Total Marks :	200
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No

Show Progress Bar :	No
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Mathematics

Section Id :	418099380
Section Number :	1
Mandatory or Optional :	Mandatory
Number of Questions :	50
Section Marks :	50
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 1 Question Id : 41809919003 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $A\begin{bmatrix}0 & 1\\2 & -1\end{bmatrix}=\begin{bmatrix}2 & 1\\-1 & 0\end{bmatrix}$, where A is a square matrix of order 2 then A =

Options :

1. ✖ $\begin{bmatrix}2 & 1\\0 & 0\end{bmatrix}$

2. ✖ $\begin{bmatrix}0 & 1\\2 & -1\end{bmatrix}$

3. ✖ $\begin{bmatrix} 2 & 1 \\ -1 & 0 \end{bmatrix}$

4. ✔ $\begin{bmatrix} 2 & 1 \\ -1/2 & -1/2 \end{bmatrix}$

Question Number : 2 Question Id : 41809919004 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the matrix $A = \begin{bmatrix} 2 & 3 \\ 5 & -1 \end{bmatrix}$ is expressed as the sum of a symmetric and a skew symmetric. Then the symmetric matrix is

Options :

1. ✖ $\begin{bmatrix} 2 & 1 \\ 2 & 4 \end{bmatrix}$

2. ✖ $\begin{bmatrix} 2 & 4 \\ 4 & 1 \end{bmatrix}$

3. ✔ $\begin{bmatrix} 2 & 4 \\ 4 & -1 \end{bmatrix}$

4. ✖ $\begin{bmatrix} 4 & 2 \\ 2 & -1 \end{bmatrix}$

Question Number : 3 Question Id : 41809919005 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If A is any square matrix of order n, then $|adj\ A|$ is equal to

Options :

1. ✔ $|A|^{n-1}$

2. ✖ $|A|^{n}$

3. ✖ $|A|$

4. ✖ $\frac{1}{|A|}$

Question Number : 4 Question Id : 41809919006 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $A-B=\begin{bmatrix}1 & 0\\ 0 & -1\end{bmatrix}$, $A+B=\begin{bmatrix}3 & 4\\ 2 & 5\end{bmatrix}$ then AB =

Options :

1. ✔ $\begin{bmatrix}4 & 10\\ 3 & 8\end{bmatrix}$

2. ✖ $\begin{bmatrix}4 & 3\\ 10 & 8\end{bmatrix}$

3. ✖ $\begin{bmatrix}4 & -10\\ -3 & 8\end{bmatrix}$

4. ✖ $\begin{bmatrix}4 & 10\\ -3 & 8\end{bmatrix}$

Question Number : 5 Question Id : 41809919007 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✖ -1

2. ✔ 0

3. ✖ 2

4. ✖ 1

Question Number : 6 Question Id : 41809919008 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\frac{x+4}{(x^2-4)(x+1)} = \frac{A}{(x-2)} + \frac{B}{(x+2)} + \frac{C}{(x+1)}$ then $A + B - C =$

Options :

1. ✖ -1

2. ✖ 0

3.

✔ 2

4. ✖ 1

Question Number : 7 Question Id : 41809919009 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\frac{x^2-10x+1}{(x^2-5x+6)(x-1)} = \frac{A}{(x-1)} + \frac{B}{(x-2)} + \frac{-4}{(x-3)}$ then A + B

Options :

1. ✖ -2

2. ✖ 3

3. ✔ 5

4. ✖ 4

Question Number : 8 Question Id : 41809919010 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\frac{\sec x+1-\tan x}{\tan x-\sec x+1} =$

Options :

1. ✖ $\frac{1-\cos x}{\sin x}$

2. ✔ $\frac{1+\cos x}{\sin x}$

3. ✖ $\frac{1+\sin x}{\cos x}$

4. ✖ $\frac{1-\sin x}{\cos x}$

Question Number : 9 Question Id : 41809919011 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The least value of $2\sin^2\theta + 3\cos^2\theta$ is

Options :

1. ✖ 1

2. ✔ 2

3. ✖ 3

4. ✖ 5

Question Number : 10 Question Id : 41809919012 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

The value of $tan\ 10^o + tan\ 70^o - tan\ 50^o$ is

Options :

1. ✖ $-\sqrt{3}$

2. ✔ $\sqrt{3}$

3. ✖ $\frac{1}{\sqrt{2}}$

4. ✖ $-\frac{1}{\sqrt{2}}$

Question Number : 11 Question Id : 41809919013 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $tan\ 3A - tan\ 2A - tan\ A$ is equal to

Options :

1. ✔ $tan\ 3A\ \tan 2A\ \tan A$

2. ✖ $-\ tan\ 3A\ \tan 2A\ \tan A$

3. ✖ $\tan A\ \tan 2A - \tan 2A\ tan3A - tan3A\ tanA$

4. ✖ $\tan A\ \tan 2A + \tan 2A\ tan3A - tan3A\ tanA$

Question Number : 12 Question Id : 41809919014 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $sin\ \frac{\pi}{14}\ sin\ \frac{3\pi}{14}\ sin\ \frac{5\pi}{14}$ is

Options :

1. ✖ $\frac{1}{16}$

2. ✔ $\frac{1}{8}$

3. ✖ $\frac{1}{2}$

4. ✖ 1

Question Number : 13 Question Id : 41809919015 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $tan^2\theta + \sec\theta = 5$ then the value of $\cos\theta$ is

Options :

1. ✔ $\frac{-1}{3}\ or\ \frac{1}{2}$

2. ✖ $\frac{-11}{12}$ *or* $\frac{1}{2}$

3. ✖ $\frac{13}{12}$ *or* $\frac{1}{3}$

4. ✖ $\frac{5}{4}$ *or* $\frac{1}{2}$

Question Number : 14 Question Id : 41809919016 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The number of solutions of the equation tan x + sec x = 2 cos x lying in the interval [0, 2π] is

Options :

1. ✖ 0

2. ✖ 1

3. ✖ 2

4. ✔ 3

Question Number : 15 Question Id : 41809919017 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

If $\cos\theta = \frac{1}{2}\left(a + \frac{1}{a}\right)$ then $cos3\theta = K(a^3 + \frac{1}{a^3})$ where K is equal to

Options :

1. ✔ $\frac{1}{2}$

2. ✖ $-\frac{1}{2}$

3. ✖ 1

4. ✖ $\frac{3}{2}$

Question Number : 16 Question Id : 41809919018 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $Sin\,\theta + Sin\,3\theta + Sin\,5\theta = 0, 0 \leq \theta \leq \frac{\pi}{2}$ $then$ $\theta =$

Options :

1. ✔ $0, \frac{\pi}{3}$

2. ✖ $0, \frac{\pi}{2}$

3. ✖ $1, \frac{\pi}{2}$

4. ✖ $2, \frac{\pi}{3}$

Question Number : 17 Question Id : 41809919019 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $sin^{-1}\frac{12}{13} + cos^{-1}\frac{4}{5} + tan^{-1}\frac{63}{16}$ is

Options :

1. ✖ $-\pi$

2. ✔ π

3. ✖ $tan^{-1}\frac{4}{5}$

4. ✖ $-tan^{-1}\frac{4}{5}$

Question Number : 18 Question Id : 41809919020 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $2 + i\sqrt{3}$ is a root of the equation $x^2 + px + q = 0$ where p and q are real, the (p, q) =

Options :

1. ✖ (-3, 7)

2. ✖ (-4, 9)

3. ✔ (-4, 7)

4. ✖ (-3, 9)

Question Number : 19 Question Id : 41809919021 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $i^2 + i^4 + i^6 + \ldots (2n+1)\ terms =$

Options :

1. ✖ 1

2. ✔ -1

3. ✖ 0

4. ✖ i

Question Number : 20 Question Id : 41809919022 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The locus of the point equidistant from the points $(a,\ b)$ and $(b,\ a)$ is ___

Options :

1. ✖ $bx - ay = 0$

2. ✖ $bx + ay = 0$

3. ✖ $ax - by = 0$

4. ✔ $x - y = 0$

Question Number : 21 Question Id : 41809919023 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The point $(-1,0)$ lies on the circle $x^2 + y^2 - 4x + 8y + k = 0$. The radius of the circle is

Options :

1. ✖ 4

2. ✔ 5

3. ✖ 3

4. ✖ 2

Question Number : 22 Question Id : 41809919024 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The equation of the circle whose centre is the point (1, -3) and touches the line $2x - y - 4 = 0$ is

Options :

1. ✖ $x^2 + y^2 - 4x + 8y + \frac{49}{5} = 0$

2. ✖ $x^2 + y^2 - 2x + 8y + \frac{49}{5} = 0$

3. ✔ $x^2 + y^2 - 2x + 6y + \frac{49}{5} = 0$

4. ✖ $x^2 + y^2 + 2x + 6y + \frac{49}{5} = 0$

Question Number : 23 Question Id : 41809919025 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The line $y = mx + 1$ is a tangent to the parabola $y^2 = 4x$ if

Options :

1. ✔ $m = 1$

2. ✖ $m = 2$

3. ✖ $m = 3$

4. ✖ $m = 4$

Question Number : 24 Question Id : 41809919026 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The angle between the tangents drawn from the origin to the parabola $y^2 = 4a(x - a)$ is

Options :

1. ✖ 30^o

2. ✖ 45^o

3. ✖ 60^o

4. ✔ 90^o

Question Number : 25 Question Id : 41809919027 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The length of the latus rectum and eccentricity of the ellipse $25x^2 + 16y^2 = 400$ is

Options :

1. ✔ $(\frac{32}{5}, \frac{3}{5})$

2. ✖

$(\frac{32}{5}, \frac{-3}{5})$

3. ✖ $(\frac{-32}{5}, \frac{3}{5})$

4. ✖ $(\frac{-32}{5}, \frac{-3}{5})$

Question Number : 26 Question Id : 41809919028 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $y = tan^{-1}\frac{\cos x}{1+\sin x}$ then $\frac{dy}{dx} =$

Options :

1. ✖ $\frac{1}{2}$

2. ✔ $\frac{-1}{2}$

3. ✖ 0

4. ✖ 1

Question Number : 27 Question Id : 41809919029 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $y = 10^{\log \sin x} + \tan h^{-1}(\sqrt{x})$ then $\frac{dy}{dx} =$

Options :

1. ✔ $10^{\log \sin x} \log_e 10 \cot x + \frac{1}{2\sqrt{x}} \sec h^2(\sqrt{x})$

2. ✖ $10^{\log \sin x} \log_e 10 \cot x - \frac{1}{2\sqrt{x}} \sec h^2(\sqrt{x})$

3. ✖ $10^{\log \sin x} \log_e 10 \tan x + \frac{1}{2\sqrt{x}} \sec h^2(\sqrt{x})$

4. ✖ $10^{\log \sin x} \log_e 10 \tan t x - \frac{1}{2\sqrt{x}} \sec h^2(\sqrt{x})$

Question Number : 28 Question Id : 41809919030 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $f(x) = \begin{cases} 3^x \cdot 4, & for\ x < 0 \\ 2a + x, & for\ x \geq 0 \end{cases}$ is continuous at $x = 0$ then a =

Options :

1. ✖ 0

2. ✔ 2

3. ✖ 1

4. ✖ 3

Question Number : 29 Question Id : 41809919031 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $x = a(\cos\theta + \theta \sin\theta), y = a(\sin\theta - \theta \cos\theta)$ then the value of $\frac{dy}{dx}$ at $\theta = \frac{\pi}{4}$ is

Options :

1. ✖ 0

2. ✖ $\frac{1}{\sqrt{3}}$

3. ✔ 1

4. ✖ $\sqrt{3}$

Question Number : 30 Question Id : 41809919032 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $u = \frac{x^3+y^3}{x-y}$ and if $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} = ku, then\ k = \_\_$

Options :

1. ✖ 3

2. ✖ -3

3. ✔ 2

4. ✖ -1

Question Number : 31 Question Id : 41809919033 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The maximum value of $\frac{logx}{x}, 0 < x < \infty$ is

Options :

1. ✖ e

2. ✔ $\frac{1}{e}$

3. ✖ 1

4. ✖ $e+1$

Question Number : 32 Question Id : 41809919034 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The maximum value of the function $2x^3 - 3x^2 - 12x + 4$ is

Options :

1. ✖ 13

2. ✖ 12

3. ✔ 11

4. ✖ 10

Question Number : 33 Question Id : 41809919035 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $u = f(x + ay) + g(x - ay)$, then $\frac{\partial^2 u}{\partial y^2}$ is equal to

Options :

1. ✖ $\frac{\partial^2 u}{\partial x^2}$

2. ✖ $a\frac{\partial^2 u}{\partial x^2}$

3. ✔ $a^2\frac{\partial^2 u}{\partial x^2}$

4. ✖ $\frac{\partial^2 u}{\partial x \partial y}$

Question Number : 34 Question Id : 41809919036 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the curves $y^2 = 4(x+1)$ and $y^2 = k(9-x)$ cut orthogonally at $(1, 1)$, then k =

Options :

1. ✔ 1

2. ✖ - 1

3. ✖ 2

4. ✖ 9

Question Number : 35 Question Id : 41809919037 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The stationary point and the corresponding stationary value of the function $f(x) = x^3 - 3x^2 - 9x + 22$ is

Options :

1. ✖ (1, 27)

2. ✔ (-1, 27)

3. ✖ (-1, 29)

4. ✖ (-1, 25)

Question Number : 36 Question Id : 41809919038 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\int e^x \left(\frac{2+\sin 2x}{1+\cos 2x}\right) dx =$$

Options :

1. ✖ $e^x \sec x + c$

2. ✔ $e^x \tan x + c$

3. ✖ $e^x \cot x + c$

4. ✖ $e^x \operatorname{cosec} x + c$

Question Number : 37 Question Id : 41809919039 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\int_0^{\pi} \frac{1}{5+4\cos x} dx =$$

Options :

1. ✖ $\frac{\pi}{2}$

2. ✔ $\frac{\pi}{3}$

3. ✖ $\frac{\pi}{4}$

4. ✖ π

Question Number : 38 Question Id : 41809919040 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The length of the arc of the curve $y = \log \sec x$ from $x = 0$ to $x = \frac{\pi}{3}$ is

Options :

1. ✔ $\log(2+\sqrt{3})$

2. ✖ $\log(2-\sqrt{3})$

3. ✖ $\log(1+\sqrt{3})$

4. ✖ $\log(1-\sqrt{3})$

Question Number : 39 Question Id : 41809919041 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✔ $\frac{20}{3}$

2. ✖ $-\frac{20}{3}$

3. ✖ $\frac{10}{3}$

4. ✖ $\frac{15}{3}$

Question Number : 40 Question Id : 41809919042 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✖ $\log(e^x + e^{-x}) + C$

2. ✔ $tan^{-1}e^x + C$

3. ✖ $\frac{1}{e^x+e^{-x}} + C$

4. ✖ $cot^{-1}e^x + C$

Question Number : 41 Question Id : 41809919043 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\int \frac{x^3}{\sqrt{(x^2+1)}}\,dx = A\,(x^2+1)^{\frac{3}{2}} - B\,(x^2+1)^{\frac{1}{2}} + c$ then A + B =

Options :

1. ✖ $-\frac{3}{4}$

2. ✖ $\frac{2}{3}$

3. ✔ $\frac{4}{3}$

4. ✖ $\frac{5}{4}$

Question Number : 42 Question Id : 41809919044 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $S_n = \int_0^{\pi/2} \frac{\sin(2n-1)x}{\sin x}\,dx$ and n is an integer then $S_{n+1} - S_n$ =

Options :

1. ✖ $-\frac{\pi}{2}$

2. ✔ 0

3. ✖ 1

4. ✖ $\frac{\pi}{2}$

Question Number : 43 Question Id : 41809919045 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $f(x) = \begin{cases} x^2, & for \quad 0 \le x < 1 \\ \sqrt{x}, & for \quad 1 < x \le 2 \end{cases}$, then $\int_0^2 f(x)\, dx =$

Options :

1. ✖ $\left(\frac{4\sqrt{2}+1}{3}\right)$

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

3. ✔ $\left(\frac{4\sqrt{2}-1}{3}\right)$

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

Question Number : 44 Question Id : 41809919046 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The number of arbitrary constants in a general solution of second order differential equation contains

Options :

1. ✖ Zero

2. ✖ One

3. ✔ Two

4. ✖ Three

Question Number : 45 Question Id : 41809919047 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The general solution of $\frac{x\,dx+y\,dy}{x^2+y^2} = 0$ is

Options :

1. ✖ $\log(x+y) = c$

2. ✔ $\log(x^2+y^2) = c$

3. ✖ $\log(xy) = c$

4. ✖ $\log(x-y) = c$

Question Number : 46 Question Id : 41809919048 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The integrating factor for the differential equation $(x+1)\frac{dy}{dx} - y = e^{3x}(x+1)^2$ is _____

Options :

1. ✔ $\frac{1}{x+1}$

2. ✖ $x+1$

3. ✖ $\frac{1}{x^2+1}$

4. ✖ x^2+1

Question Number : 47 Question Id : 41809919049 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Particular Integral of $(D^2 - 2D + 1)y = \cos hx$ is

Options :

1. ✔ $\frac{x^2e^x}{4} + \frac{e^{-x}}{8}$

2. ✖ $\frac{x^2e^{-x}}{4} + \frac{e^x}{8}$

3. ✖ $\frac{x^2e^x}{4} - \frac{e^{-x}}{8}$

4. ✖

$\frac{x^2e^{-x}}{4} - \frac{e^x}{8}$

Question Number : 48 Question Id : 41809919050 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The solution of the differential equation $\frac{dy}{dx} + \frac{y}{x} = x^2$ under the condition that $y = 1$ when $x = 1$ is

Options :

1. ✖ $4xy = x^3 + 3$

2. ✔ $4xy = x^4 + 3$

3. ✖ $4xy = y^3 + 3$

4. ✖ $4xy = y^4 + 3$

Question Number : 49 Question Id : 41809919051 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The general solution of the differential equation $\frac{d^4y}{dx^4} + 2\frac{d^2y}{dx^2} + y = 0$ is

Options :

1. ✔ $y = (c_1 + c_2x)\sin x + (c_3 + c_4x)\cos x$

2. ✖ $y = (c_1 \sin x + c_2 \cos x + x \sin x + x \cos x)$

3. ✖ $y = (c_1 \sin x + c_2 \cos x + c_3 \tan x + c_4 \cot x)$

4. ✖ $y = (c_1 \sin x + c_2 \cos x + c_3 x + c_4)$

Question Number : 50 Question Id : 41809919052 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The general solution of $(D^2 - 4)y = \sin 3x$ is

Options :

1. ✖ $c_1 e^{-2x} + c_2 e^{2x} + \frac{1}{13}\sin 3x$

2. ✔ $c_1 e^{-2x} + c_2 e^{2x} - \frac{1}{13}\sin 3x$

3. ✖ $c_1 e^{-2x} + c_2 e^{2x} - \frac{1}{5}\sin 3x$

4. ✖ $c_1 e^{-2x} + c_2 e^{2x} + \frac{1}{5}\sin 3x$

Physics

Section Id :	418099381
Section Number :	2
Mandatory or Optional :	Mandatory
Number of Questions :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 51 Question Id : 41809919053 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the force (F), velocity (V) and time (T) are taken as fundamental units,

then the dimensions of mass are

Options :

1. ✔ $[FV^{-1}T]$

2. ✖ $[FVT^{-1}]$

3. ✖ $[FV^{-1}T^{-1}]$

4. ✖ $[FVT^{-2}]$

Question Number : 52 Question Id : 41809919054 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the units of force and velocity are doubled, then the units of power will

Options :

1. ✖ be halved

2. ✖ be doubled

3. ✔ be quadrupled

4. ✖ remain unaffected.

Question Number : 53 Question Id : 41809919055 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The magnitude of vector $3i+2j+12k$ is given by

Options :

1. ✔ $\sqrt{157}$

2. ✖ $\sqrt{112}$

3. ✖ $\sqrt{213}$

4. ✖ $9\sqrt{3}$

Question Number : 54 Question Id : 41809919056 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A vector makes equal angle with the positive direction of all the three coordinate axes. Then each angle is equal to

Options :

1. ✖ $\text{Cos}^{-1}(-1/3)$

2. ✖ $\text{Cos}^{-1}(-2/3)$

3. ✔ $\text{Cos}^{-1}(1/\sqrt{3})$

4. ✖ $\text{Cos}^{-1}(2/3)$

Question Number : 55 Question Id : 41809919057 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Four bodies P, Q, R& S are projected with equal velocities having angle of projection 15 ,30 ,45 &60 with the horizontal plane respectively. The body having low horizontal range is

Options :

1. ✖

Q

2. ✔ P

3. ✖ S

4. ✖ R

Question Number : 56 Question Id : 41809919058 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Co-efficient of rolling friction is _____ Co-efficient of sliding friction.

Options :

1. ✖ Equal to

2. ✖ Greater than

3. ✔ Smaller than

4. ✖ Some times greater and some times smaller than

Question Number : 57 Question Id : 41809919059 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A body is thrown horizontally from the top of a tower of 20 m height. It touches the ground at a distance of 10 m from the foot of the tower. The initial velocity of the body is($g=10ms^{-2}$)

Options :

1. ✖ $2.5\ ms^{-1}$

2. ✔ $5\ ms^{-1}$

3. ✖ $10\ ms^{-1}$

4. ✖ $20\ ms^{-1}$

Question Number : 58 Question Id : 41809919060 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 10 Newton force is applied on a body produce in it an acceleration of $2\ ms^{-2}$. The mass of the body is given by

Options :

1. ✖ 15 kg

2. ✖ 20 kg

3. ✖ 10 kg

4. ✔ 5 kg

Question Number : 59 Question Id : 41809919061 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The horizontal range and maximum height of a projectile are equal. The angle of projection of particle is given by

Options :

1. ✔ $\theta = \tan^{-1} 4$

2. ✖ $\theta = \tan^{-1}(1/4)$

3. ✖ $\theta = \tan^{-1} 2$

4. ✖ $\theta = 45^0$

Question Number : 60 Question Id : 41809919062 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The displacement of a particle moving in a straight line is given by

$x=2t^2+t+5$, where x is expressed in meter and t in seconds. The acceleration

at t=2s is

Options :

1. ✖ $10ms^{-2}$

2. ✖ $8ms^{-2}$

3. ✔ $4ms^{-2}$

4. ✖ $15ms^{-2}$

Question Number : 61 Question Id : 41809919063 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A position-dependant force, $F = 8 – 4x + 3x^2$ N acts on a body of mass 2 kg,

and displaces it from x = 0 to x = 5 m. The work done is

Options :

1. ✔ 115 J

2. ✖ 110 J

3. ✖ 250 J

4. ✖ 270 J

Question Number : 62 Question Id : 41809919064 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An object of mass 5 kg falls from rest through a vertical distance of 20 m and attains a velocity of 10 ms^{-1}. How much work is done by the resistance of air on the object? (Consider acceleration due to gravity, g= 10 ms^{-2}).

Options :

1. ✖ -250 J

2. ✔ -750 J

3. ✖ -500 J

4. ✖ -300 J

Question Number : 63 Question Id : 41809919065 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the heart pushes 1 cc of blood in one second under pressure 19500 Nm^{-2}, the power of heart is

Options :

1. ✔ 0.0195 W

2. ✖ 0.1950 W

3. ✖ 19.50 W

4. ✖ 9.50 W

Question Number : 64 Question Id : 41809919066 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a necessary condition for simple harmonic motion?

Options :

1. ✖ proportionality between acceleration and velocity

2. ✔ proportionality between restoring force and displacement

3. ✖ constant time period

4. ✖ constant acceleration

Question Number : 65 Question Id : 41809919067 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The phase, at a given time 't', of a particle undergoing simple harmonic motion describes

Options :

1. ✖ only the direction of motion of the particle at time t

2. ✖ only the position of the particle at time t

3. ✔ both the position and direction of the particle at time t

4. ✖ only about the wavelength of the particle at time t

Question Number : 66 Question Id : 41809919068 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The length of a second's pendulum at the surface of the earth is

Options :

1. ✔ 100 cm

2. ✖ 98 cm

3. ✖ 98 m

4. ✖ 100 m

Question Number : 67 Question Id : 41809919069 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The reverberation time of a room is one second. What will be the reverberation time for another room having all the dimensions double that of the first room

Options :

1. ✖ $\frac{1}{2}$ Sec

2. ✔ 2 Sec

3. ✖ $\frac{1}{4}$ Sec

4. ✖ 4 Sec

Question Number : 68 Question Id : 41809919070 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Calculate the beat frequency if the interfering wave frequencies are 500Hz and 1000Hz respectively.

Options :

1. ✖ 1500 Hz

2. ✖ 250 Hz

3. ✖ 750 Hz

4. ✔ 500 Hz

Question Number : 69 Question Id : 41809919071 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Every gas behaves as an ideal gas at

Options :

1. ✖ high temperature and high pressure

2. ✖ Low temperature and low pressure

3. ✔ High temperature and low pressure

4. ✖

High pressure and low temperature

Question Number : 70 Question Id : 41809919072 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A perfect Carnot engine utilizes an ideal gas and works between the temperatures 227°C and 127°C. If the work output of the engines is 10^4 J, then the amount of heat received from the source will be

Options :

1. ✖ $1x10^4 J$

2. ✖ $3x10^4 J$

3. ✔ $5x10^4 J$

4. ✖ $4x10^4 J$

Question Number : 71 Question Id : 41809919073 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For an adiabatic process of an ideal gas, the value of $\frac{dp}{p}$ is equal to

Options :

1. ✔

$-\gamma\frac{dv}{v}$

2. ✖ $-\gamma\frac{v}{dv}$

3. ✖ $\frac{dv}{v}$

4. ✖ $-\gamma^2\frac{dv}{v}$

Question Number : 72 Question Id : 41809919074 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A system is given 400 calories of heat and 1000 joule of work is done by the system, then the change in internal energy of the system will be

Options :

1. ✔ 680 Joule

2. ✖ 680 erg

3. ✖ 860 Joule

4. ✖

-860 Joule

Question Number : 73 Question Id : 41809919075 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A perfect gas at 27°c is heated at constant pressure, so as to triple its volume. The temperature of the gas is

Options :

1. ✖ 627 K

2. ✔ 900 K

3. ✖ 300 K

4. ✖ 427 K

Question Number : 74 Question Id : 41809919076 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Work function of a metal is 10 eV. Photons of 20 eV are bombarded on it. The photoelectric threshold frequency will be

Options :

1. ✔ equal to $\frac{10}{h}$

2. ✖ greater than $\frac{10}{h}$

3. ✖ less than $\frac{10}{h}$

4. ✖ greater than or equal to $\frac{10}{h}$

Question Number : 75 Question Id : 41809919077 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Superconducting material exhibits

Options :

1. ✖ zero conductivity & diamagnetism

2. ✖ zero resistivity & paramagnetism

3. ✖ infinite conductivity & paramagnetism

4. ✔ zero resistivity & diamagnetism

Chemistry

Section Id :	418099382
Section Number :	3
Mandatory or Optional :	Mandatory
Number of Questions :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 76 Question Id : 41809919078 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a hydrogen atom, if the energy of an electron in the ground state is 13.6 eV, then that in the 2nd excited state is

Options :

1. ✔ 1.51 eV

2. ✖ 3.02 eV

3. ✖ 6.04 eV

4. ✖ 1.36 eV

Question Number : 77 Question Id : 41809919079 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following sets of quantum numbers is correct for an electron present in 4f orbital?

Options :

1. ✖ $n = 4, l = 4, m = -4, s = -½$

2. ✖ $n = 3, l = 2, m = -2, s = +½$

3. ✖ $n = 4, l = 3, m = +4, s = -½$

4. ✔ $n = 4, l = 3, m = +1, s = +½$

Question Number : 78 Question Id : 41809919080 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following statements in relation to the hydrogen atom is true?

Options :

1. ✖ 3s and 3p orbitals are of lower energy than 3d orbital

2. ✔ 3s, 3p and 3d orbitals all have the same energy

3. ✖ 3p orbital is lower in energy than 3d orbital

4. ✖ 3s orbital is lower in energy than 3p orbital

Question Number : 79 Question Id : 41809919081 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Variable valency is shown by

Options :

1. ✖ s-block elements

2. ✖ s- and p- block elements

3. ✔ p- and d-block elements

4. ✖ All elements

Question Number : 80 Question Id : 41809919082 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The compound in which C uses its sp^3 hybrid orbitals for bond formation is

Options :

1. ✔ $(CH_3)_3CH$

2. ✖ CH_3COOH

3. ✖ CH_3CHO

4. ✖ CH_3COCH_3

Question Number : 81 Question Id : 41809919083 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The concentrated sulphuric acid that is sold commercially is 95% H_2SO_4 by weight. If the density of this commercial acid is 1.83 g cm^{-3}, the molarity of this solution is :-

Options :

1. ✖ 8.9

2. ✖ 9.8

3. ✖ 19.6

4. ✔ 18.3

Question Number : 82 Question Id : 41809919084 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The density of a solution prepared by dissolving 100 g of urea (mol. mass = 60 u) in 1000 g of water is 1.15 g/mL. The molarity of this solution is

Options :

1. ✖ 2.04

2. ✖ 1.68

3. ✖ 0.92

4. ✔ 1.73

Question Number : 83 Question Id : 41809919085 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a crystal of a solute is introduced into a super saturated solution of the solution, which of the following is true

Options :

1. ✖ The solution becomes unsaturated

2. ✔ The excess solute crystallizes out

3. ✖ The solute dissolves

4. ✖ The solution becomes saturated

Question Number : 84 Question Id : 41809919086 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The conjugate acid of $S_2O_8^{2-}$ is

Options :

1. ✖ H_2SO_4

2. ✖ $H_2S_2O_7$

3. ✔ $HS_2O_8^-$

4. ✖ $H_2S_2O_8$

Question Number : 85 Question Id : 41809919087 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following gases on dissolution in water make the solution acidic (A) CO (B) CO_2 (C) SO_3 (D) PH_3

Options :

1. ✖ (A) and (B)

2. ✔ (B) and (C)

3. ✖ (A) and (D)

4. ✖ (C) and (D)

Question Number : 86 Question Id : 41809919088 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

On electrolysing a solution of dilute H_2SO_4 between platinum electrodes, the gas evolved at the anode and cathode are respectively

Options :

1. ✖ SO_2 and O_2

2. ✖ SO_3 and H_2

3. ✔ O_2 and H_2

4. ✖ H_2 and O_2

Question Number : 87 Question Id : 41809919089 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In an electrolytic cell, flow of electrons is from

Options :

1. ✖ cathode to anode in solution

2. ✔ cathode to anode through external supply

3. ✖ cathode to anode through internal supply

4. ✖ anode to cathode through external supply

Question Number : 88 Question Id : 41809919090 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The thermodynamic efficiency of a cell is given by

Options :

1. ✔ $nFE/\Delta H$

2. ✖ $\Delta H/\Delta G$

3. ✖ $nFE/\Delta G$

4. ✖ nFE°

Question Number : 89 Question Id : 41809919091 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

At 25 °C, the standard e.m.f. of cell having reactions involving two electron change is found to be 0.295 V. The equilibrium constant of the reaction is

Options :

1. ✖ 29.5×10^{-2}

2. ✖ 10

3. ✔ 10^{10}

4. ✖ 29.5×10^{10}

Question Number : 90 Question Id : 41809919092 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the chemical formula of Calgon

Options :

1. ✔ $[Na(PO)_3]_6$

2. ✖ $[Ca_2(P_6O_{18})]^{2-}$

3. ✖ H_2CO_3

4. ✖ $Na_2CO_3+Ca(OH)_2$

Question Number : 91 Question Id : 41809919093 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Alkalinity of water is due to the presence of _____

(A) OH^- (B) CO_3^{2-} (C) HCO_3^-

Options :

1. ✖ Only (A)

2. ✖ Both (A) and (B)

3. ✖ Both (B) and (C)

4. ✔ All the three (A). (B) and (C)

Question Number : 92 Question Id : 41809919094 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Brackish water means

Options :

1. ✖ Ground water

2. ✖ Fresh Water

3. ✖ River Water

4. ✔ Salt Water

Question Number : 93 Question Id : 41809919095 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following two metals are corrosion resistant

Options :

1. ✖ Iron and Nickel

2. ✔ Nickel and Copper

3. ✖ Copper and Molybdenum

4. ✖ Iron and Molybdenum

Question Number : 94 Question Id : 41809919096 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The coating which protects the base metal 'sacrificially' is

Options :

1. ✖ Metallic coating

2. ✔ Anodic coating

3. ✖

Metal oxide coating

4. ✖ Phosphate coating

Question Number : 95 Question Id : 41809919097 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is also known as elastomers

Options :

1. ✖ PVC

2. ✖ Nylon 6,6

3. ✔ Synthetic rubber

4. ✖ Polycarbonate

Question Number : 96 Question Id : 41809919098 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is an inorganic polymer?

Options :

1. ✔ Silicone

2. ✖

Epoxy resin

3. ✖ Polyurethane

4. ✖ Teflon

Question Number : 97 Question Id : 41809919099 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The termination step in the cationic polymerization is caused by

Options :

1. ✖ Free radical

2. ✖ cation

3. ✔ anion

4. ✖ carbene

Question Number : 98 Question Id : 41809919100 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The sulphur compounds from gasoline are removed by

Options :

1. ✖ Lead sulphate

2. ✖ Lead nitrate

3. ✖ Lead sulphide

4. ✔ Sodium plumbite

Question Number : 99 Question Id : 41809919101 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Fluoride pollution mainly affects

Options :

1. ✔ Teeth

2. ✖ Heart

3. ✖ Kidneys

4. ✖ Liver

Question Number : 100 Question Id : 41809919102 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Silicosis is caused by

Options :

1. ✖ Acid rain

2. ✔ Inhalation of aerosols

3. ✖ Inhalation of sulphurdioxide

4. ✖ Depletion of ozone

Electronics and Instrumentation Engineering

Section Id :	418099383
Section Number :	4
Mandatory or Optional :	Mandatory
Number of Questions :	100
Section Marks :	100
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 101 Question Id : 41809919103 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which law deals with the algebraic sum of the currents at a junction equal to zero?

Options :

1. ✖ Kirchhoff's voltage law

2. ✔ Kirchhoff's current law

3. ✖ Ohm's law

4. ✖ Faraday's law

Question Number : 102 Question Id : 41809919104 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Three resistors with resistance R connected in delta connection, the equivalent resistance in star connection is

Options :

1. ✖ $\frac{2}{3R}$

2. ✖ $\frac{3}{2R}$

3. ✔ $\frac{1}{3}R$

4. ✖ $\frac{3}{2}R$

Question Number : 103 Question Id : 41809919105 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Direction of rotation of a DC motor is based on

Options :

1. ✖ Ampere's law

2. ✔ Fleming's left-hand rule

3. ✖ Fleming's right-hand rule

4. ✖ Lenz's law

Question Number : 104 Question Id : 41809919106 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The condition for maximum efficiency for a DC generator is__

Options :

1. ✖ Eddy current losses are equal to stray losses

2. ✖

Hysteresis losses are equal to eddy current losses

3. ✔ Variable losses are equal to constant losses

4. ✖ Copper losses is equal to zero

Question Number : 105 Question Id : 41809919107 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The function of a commutator in a D.C. Generator is to

Options :

1. ✖ Prevent sparking

2. ✖ Reduce iron losses

3. ✖ Reduce friction

4. ✔ Change alternating voltage to direct voltage

Question Number : 106 Question Id : 41809919108 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If one of the phases is short-circuited in a three-phase synchronous motor,

the motor will

Options :

1. ✖ Run normally

2. ✔ Overheated and later burn

3. ✖ Not start

4. ✖ Burn

Question Number : 107 Question Id : 41809919109 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Solar cell works on the principle of

Options :

1. ✖ Photoelectric

2. ✖ Photosynthesis

3. ✖ Photo emissive

4. ✔ Photovoltaic

Question Number : 108 Question Id : 41809919110 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In which of the following, electrical resistance is change due to illuminated by light?

Options :

1. ✔ Photoconductive

2. ✖ Photo emissive

3. ✖ Photo voltaic

4. ✖ Photomultiplier

Question Number : 109 Question Id : 41809919111 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Choose the wrong statement.

Options :

1. ✖ Optocoupler is also known as Opto-isolator

2. ✔ No changes in the conductivity of the material due to change in light intensity.

Phototransistor is a three-terminal device.

3. ✖

4. ✖ Solar cell consists of PN junction.

Question Number : 110 Question Id : 41809919112 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which segments of a seven-segmented LED should be lighted on to display

the digit '2'

Options :

1. ✔ Segments a, b, g, e, d

2. ✖ Segments a, b, g, c, d

3. ✖ Segments a, f, g, c, d

4. ✖ Segments a, b, g, f, c

Question Number : 111 Question Id : 41809919113 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Dot matrix is a type of

Options :

1. ✖ Tap

2. ✖ Disk

3. ✖ Bus

4. ✔ Printer

Question Number : 112 Question Id : 41809919114 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following types of electric heating is not considered as high-frequency heating?

Options :

1. ✔ Arc

2. ✖ Induction

3. ✖ Dielectric

4. ✖ Infrared

Question Number : 113 Question Id : 41809919115 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Signal flow graph is

Options :

1. ✖ To determine the stability of the system

2. ✔ To determine the transfer function of the system

3. ✖ To determine the bandwidth of the system

4. ✖ To determine the speed of the system

Question Number : 114 Question Id : 41809919116 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The open loop transfer function of the feedback control system is given by $(S) = \frac{K(S+3)}{S(S+4)^2(S+5)(S+6)}$. The centroid of asymptotes of the root loci of closed loop system is

Options :

1. ✖ 3

2. ✖ -3

3. ✖ 4

4. ✔ -4

Question Number : 115 Question Id : 41809919117 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a bode magnitude plot, which one of the following slopes would be exhibited at high frequencies by a 4th order all-pole system?

Options :

1. ✔ -80dB/decade

2. ✖ 80dB/decade

3. ✖ -40 dB/decade

4. ✖ 40 dB/decade

Question Number : 116 Question Id : 41809919118 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An electron in the conduction band

Options :

1. ✔ Has higher energy than the electron in the valance band

2. ✖ Has lower energy than the electron in the valance band

3. ✖ Loses its charge easily

4. ✖ Jumps to the top of the crystal

Question Number : 117 Question Id : 41809919119 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a bipolar transistor, the emitter base junction has

Options :

1. ✖ Zero bias

2. ✔ Forward bias

3. ✖ Reverse bias

4. ✖ Zero and reverse bias

Question Number : 118 Question Id : 41809919120 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The drain characteristics of an enhancement type of MOSFET has

Options :

1. ✖ Only an ohmic region

2. ✖ Only a saturation region

3. ✔ An ohmic region at low voltage value followed by a saturation region at higher voltages

4. ✖ An ohmic region at large voltage values preceded by a saturation region at lower voltages

Question Number : 119 Question Id : 41809919121 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An npn bipolar junction transistor is operating in the active region. If the reverse bias across the base-collector junction is increased, then

Options :

1. ✖ the effective base width increases and common-emitter gain increases

2. ✖ the effective base width increases and common-emitter gain decreases

3. ✔ the effective base width decreases and common-emitter gain increases

4. ✖ the effective base width decreases and common-emitter gain decreases

Question Number : 120 Question Id : 41809919122 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

MOSFET can be used as

Options :

1. ✖ Voltage controlled inductor

2. ✔ Voltage controlled capacitor

3. ✖ Current controlled inductor

4. ✖ Current controlled capacitor

Question Number : 121 Question Id : 41809919123 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a class B push-pull amplifier, the transistors are biased slightly above cut off to avoid

Options :

1. ✔ crossover distortion

2. ✖ unusually high efficiency

3. ✖ low input impedance

4. ✖ negative feedback

Question Number : 122 Question Id : 41809919124 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A bistable multivibrator is a

Options :

1. ✖ Free running oscillator

2. ✔ Triggered oscillator

3. ✖ Sawtooth wave generator

4. ✖ Crystal oscillator

Question Number : 123 Question Id : 41809919125 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a resistor, the silver stripe indicates

Options :

1. ✖ 1% tolerance

2. ✖ 2% tolerance

3. ✖ 5% tolerance

4. ✔ 10% tolerance

Question Number : 124 Question Id : 41809919126 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Ripple factor of full wave rectifier

Options :

1. ✖ 0.241

2. ✔ 0.482

3. ✖ 0.5

4. ✖ 1

Question Number : 125 Question Id : 41809919127 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the number of capacitors and inductors used in a CLC filter?

Options :

1. ✖ 1, 2 respectively

2. ✖ 1, 1 respectively

3. ✖ 2, 2 respectively

4. ✔ 2, 1 respectively

Question Number : 126 Question Id : 41809919128 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The relation between common-emitter, forward-current, amplification factor

β and common-base, short-circuit, amplification factor α is

Options :

1. ✖ $\alpha = \frac{\beta}{\beta - 1}$

2. ✔ $\alpha = \frac{\beta}{\beta + 1}$

3. ✖ $\alpha = \frac{1}{\beta - 1}$

4. ✖ $\alpha = \frac{1}{\beta + 1}$

Question Number : 127 Question Id : 41809919129 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the miller voltage sweep circuit, the amplifier used should have

Options :

1. ✔ gain of $-\infty$

2. ✖ gain of $+\infty$

3. ✖ gain of -1

4. ✖ gain of +1

Question Number : 128 Question Id : 41809919130 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hexadecimal value of decimal 30 is

Options :

1. ✖ 1C

2. ✖ 1D

3. ✔ 1E

4. ✖ 1F

Question Number : 129 Question Id : 41809919131 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The string of 8 bits is knows as

Options :

1. ✖ Nibble

2. ✔ Byte

3. ✖ Octed

4. ✖ Quad

Question Number : 130 Question Id : 41809919132 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An exclusive NOR gate is logically equal to

Options :

1. ✖ Inverter followed by an exclusive XOR gate

2. ✖ NOT gate followed by an exclusive XOR gate

3. ✔ Exclusive OR gate followed by an inverter

4. ✖ Complement of a NOR gate

Question Number : 131 Question Id : 41809919133 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is known as modulo two adder?

Options :

1. ✔ XOR gate

2. ✖ XNOR gate

3. ✖ OR gate

4. ✖ NOR gate

Question Number : 132 Question Id : 41809919134 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An R-S latch is a __

Options :

1. ✖ Combinational circuit

2. ✖ Sequential circuit

3. ✖ One clock delay element

4. ✔ One bit memory element

Question Number : 133 Question Id : 41809919135 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The minimum number of flipflop required for a mod 10 ripple counter are

Options :

1. ✖ 3

2. ✔ 4

3. ✖ 5

4. ✖

Question Number : 134 Question Id : 41809919136 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The fastest A/D converter is

Options :

1. ✖ Counter type

2. ✖ Single slope ramp comparator

3. ✖ Dual slope integrator

4. ✔ Flash type convertor

Question Number : 135 Question Id : 41809919137 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The resolution of a D/A converter is approximately 0.4% of its full-scale range. It is a____ converter.

Options :

1. ✔ 8-bit

2. ✖ 12-bit

3. ✖ 16-bit

4. ✖ 32-bit

Question Number : 136 Question Id : 41809919138 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Convert binary mixed number 100.110 into its decimal equivalent

Options :

1. ✖ 4.0

2. ✖ 4.25

3. ✖ 4.5

4. ✔ 4.75

Question Number : 137 Question Id : 41809919139 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Computer memory which allows simultaneous read and write operation is

Options :

1. ✖ EEPROM

2. ✔ RAM

3. ✖ ROM

4. ✖ EPROM

Question Number : 138 Question Id : 41809919140 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 4-range milliammeter having ranges of 0-10 mA, 0-50 mA, 0-100 mA and 0-500 mA. At what range the selector switch of the ammeter should be first placed in order to prevent damage to the instrument for an unknown measurement of current?

Options :

1. ✖ 0-10 mA

2. ✖ 0-50 mA

3. ✖ 0-100 mA

4.

✔ 0-500 mA

Question Number : 139 Question Id : 41809919141 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The instrument required to measure current is

Options :

1. ✖ voltmeter

2. ✔ ammeter

3. ✖ wattmeter

4. ✖ ohmmeter

Question Number : 140 Question Id : 41809919142 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ac voltmeter using PMMC measures

Options :

1. ✔ average value

2. ✖ instantaneous value

3. ✖ RMS value

4. ✖ peak value

Question Number : 141 Question Id : 41809919143 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

SAR type DVM uses the principle of

Options :

1. ✖ voltage to time conversion

2. ✖ voltage to frequency conversion

3. ✔ voltage to binary conversion

4. ✖ voltage to current conversion

Question Number : 142 Question Id : 41809919144 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which instrument is used to measure the quality of the coil?

Options :

1. ✖ CRO

2. ✖ Spectrum Analyzer

3. ✖ Logic Analyzer

4. ✔ Q meter

Question Number : 143 Question Id : 41809919145 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The distance between two peaks measured on the X-axis is 2cm. at 1ms/div. The frequency of the signal is

Options :

1. ✖ 5Hz

2. ✖ 50Hz

3. ✔ 500Hz

4. ✖ 1KHz

Question Number : 144 Question Id : 41809919146 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Post deflection acceleration is used to

Options :

1. ✖ enhance the intensity of the beam

2. ✖ focus the beam

3. ✖ repel the electron beam

4. ✔ increase the velocity of the electron beam

Question Number : 145 Question Id : 41809919147 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two equal voltages of the same frequency applied to the X and Y plates of a CRO, produce a circle on the screen. The phase difference between the two voltages is

Options :

1. ✖ 30°

2. ✖ 60°

3. ✔ 90°

4. ✖ 180^{o}

Question Number : 146 Question Id : 41809919148 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Thermocouple works on

Options :

1. ✖ Peltier effect

2. ✔ Seebeck effect

3. ✖ Thomson effect

4. ✖ Piezoresistive effect

Question Number : 147 Question Id : 41809919149 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the active transducer

Options :

1. ✖ RTD

2. ✖ Inductive

3. ✔ Piezoelectric

4. ✖ Capacitive

Question Number : 148 Question Id : 41809919150 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The relation between gauge factor and resistance changes due to change of

length, change in area and piezoresistive effect

Options :

1. ✖ $1 - 2\nu + \frac{\partial\rho/\rho}{\varepsilon}$

2. ✔ $1 + 2\nu + \frac{\partial\rho/\rho}{\varepsilon}$

3. ✖ $1 - 2\nu - \frac{\partial\rho/\rho}{\varepsilon}$

4. ✖ $1 + 2\nu - \frac{\partial\rho/\rho}{\varepsilon}$

Question Number : 149 Question Id : 41809919151 Display Question Number : Yes Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

RTD, Thermistors and Thermocouples are used for temperature measurement. Identify the order based on the sensitivity (highest to lowest).

Options :

1. ✔ Thermistors, RTDs, thermocouples

2. ✖ Thermocouples, RTDs, thermistors

3. ✖ RTDs, thermistors, thermocouples

4. ✖ RTDs, thermocouples, thermistors

Question Number : 150 Question Id : 41809919152 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hygrometer is used to measure

Options :

1. ✖ Temperature

2. ✔ Humidity

3. ✖

Velocity

Pressure

4. ✖

Question Number : 151 Question Id : 41809919153 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the correct statement

Options :

Rosettes is the combination of multi strain gauge

1. ✔

Thermopile is also called as thermocouple

2. ✖

LVDT is used for angular measurement

3. ✖

Piezoelectric transducers used for static measurements.

4. ✖

Question Number : 152 Question Id : 41809919154 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the inverse transducer

Options :

RTD

1. ✖

2. ✖ Inductive

3. ✔ Piezoelectric

4. ✖ Capacitive

Question Number : 153 Question Id : 41809919155 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which flowmeter cannot measure bidirectional flow?

Options :

1. ✖ Ultrasonic flowmeter

2. ✔ Turbine flowmeter

3. ✖ Electromagnetic flowmeter

4. ✖ Coriolis Mass flowmeter

Question Number : 154 Question Id : 41809919156 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

A hot wire anemometer is used to measure

Options :

1. ✖ Temperature

2. ✖ Humidity

3. ✔ Velocity

4. ✖ Pressure

Question Number : 155 Question Id : 41809919157 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following represents the correct position of strain gauges in torque measurement?

Options :

1. ✖ 90^0 with each other

2. ✖ Parallel to shaft axis

3. ✖ Perpendicular to shaft axis

45^0 from shaft axis

4. ✔

Question Number : 156 Question Id : 41809919158 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Orifice type viscometer covert viscosity to _____

Options :

Force

1. ✖

Pressure

2. ✔

Displacement

3. ✖

Potential Difference

4. ✖

Question Number : 157 Question Id : 41809919159 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is the formula for pH calculation?

Options :

log10[H+]

1. ✔

2.

✖ -log10[H+]

3. ✖ log2[H+]

4. ✖ -log2[H+]

Question Number : 158 Question Id : 41809919160 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a type of radiation detectors?

Options :

1. ✖ Geiger Muller counter

2. ✖ Proportional counter

3. ✖ Semiconductor detector

4. ✔ Flame emission detector

Question Number : 159 Question Id : 41809919161 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which among the following elements has the highest thermal conductivity?

Options :

1. ✖ Nitrogen

2. ✖ Chlorine

3. ✖ Oxygen

4. ✔ Hydrogen

Question Number : 160 Question Id : 41809919162 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The relation between proportional band (PB) and gain (K) of the system is

Options :

1. ✖ PB = 1/ 10K

2. ✖ PB = 5/ K

3. ✔ PB = 1 / K

4. ✖ PB = K

Question Number : 161 Question Id : 41809919163 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Analog signal transmission in process control industry is

Options :

1. ✔ 4 – 20mA

2. ✖ 4 – 20mV

3. ✖ 0 – 5V

4. ✖ 0 – 20mA

Question Number : 162 Question Id : 41809919164 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hysteresis is associated with

Options :

1. ✖ Integral control

2. ✖ Derivative Control

3. ✖ Feed forward control

4. ✔ ON-OFF control

Question Number : 163 Question Id : 41809919165 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The function of the proportional plus integral mode is to

Options :

1. ✖ Provide gain

2. ✔ Eliminate offsets

3. ✖ Speed up the response

4. ✖ Minimize the overshoot

Question Number : 164 Question Id : 41809919166 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which controller cannot be used alone?

Options :

1. ✖ Proportional control

2. ✔ Derivative Control

3. ✖ Feed forward control

4. ✖ ON-OFF control

Question Number : 165 Question Id : 41809919167 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Anti-windup occurs in which controller?

Options :

1. ✔ Integral control

2. ✖ Derivative Control

3. ✖ Feed forward control

4. ✖ ON-OFF control

Question Number : 166 Question Id : 41809919168 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The number of operational amplifiers required for designing the electronic PID controller is

Options :

1. ✖ 1

2. ✖ 2

3. ✔ 3

4. ✖ 4

Question Number : 167 Question Id : 41809919169 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

LIC indicates in the PI&D diagrams

Options :

1. ✔ Level indicating controller

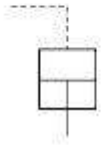
2. ✖ Level indicator control

3. ✖ Level transducer

4. ✖ Level hand control

Question Number : 168 Question Id : 41809919170 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The following symbol indicates



Options :

1. ✖ Solenoid actuator

2. ✖ Pneumatic actuator

3. ✔ Spring opposed electric actuator

4. ✖ Motor actuator

Question Number : 169 Question Id : 41809919171 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

PID controllers are tuned on the frequency response of the closed-loop system by_____.

Options :

1. ✔ Using the open-loop gain corresponding to marginal stability

2. ✖ Using the maximum amplitude of response

3. ✖ Using maximum value of phase

4. ✖ Using minimum value of the phase

Question Number : 170 Question Id : 41809919172 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The basic function of the spring in a control valve is to

Options :

1. ✖ Open the valve if air failure occurs

2. ✖ Close the valve if air failure occurs

3. ✔ Oppose the diaphragm so as to position the valve according to signal pressure

4. ✖ Characterize the flow

Question Number : 171 Question Id : 41809919173 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The following PI&D diagram represents

Options :

1. ✔ PLC

2. ✖ Computer function

3. ✖ Stand-alone instrument

4. ✖ Shared display

Question Number : 172 Question Id : 41809919174 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Control valve regulates the

Options :

1. ✔ Flow rate

2. ✖ Pressure

3. ✖ Force

4. ✖ Displacement

Question Number : 173 Question Id : 41809919175 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A technology for the application of mechanical, electrical and computer based systems to control and operate the system is called

Options :

1. ✖ PLC

2. ✖ Sequential controller

3. ✖ Microprocessor based system

4. ✔ Automation

Question Number : 174 Question Id : 41809919176 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An optical fibre is characterised by

Options :

1. ✖ Total internal reflection

2. ✔ A core material of refractive index lower than that of cladding

3. ✖ Scattering loss

4. ✖ Diffraction

Question Number : 175 Question Id : 41809919177 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A sinusoidal signal of frequency 1KHz is used to produce an FM signal with a modulation index 5. The bandwidth of the FM signal is

Options :

1. ✖ 2 KHz

2. ✖ 3 KHz

3. ✖ 6 KHz

4. ✔ 12 KHz

Question Number : 176 Question Id : 41809919178 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Modulation index of AM is lies between

Options :

1. ✖ 0-10

2. ✔ 0-1

3. ✖ 1-10

4. ✖ 1-100

Question Number : 177 Question Id : 41809919179 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which modulation scheme is preferred for digital communication?

Options :

1. ✔ Pulse code modulation

2. ✖ Pulse width modulation

3. ✖ Pulse amplitude modulation

4. ✖ Pulse position modulation

Question Number : 178 Question Id : 41809919180 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which communication channel for the transmission of a message signal that has a bandwidth of 200kHz?

Options :

1. ✖ TV transmission

2. ✖ Optical fiber

3. ✖ AM radio

4. ✔ FM radio

Question Number : 179 Question Id : 41809919181 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Schmitt trigger circuit generates __ waveform.

Options :

1. ✖ Sine wave

2. ✔ Square wave

3. ✖ Triangular wave

4. ✖ Pulse wave

Question Number : 180 Question Id : 41809919182 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A buffer amplifier has gain of

Options :

1. ✖ Infinity

2. ✔ Unity

3. ✖ Zero

4. ✖ Dependent upon the circuit parameters

Question Number : 181 Question Id : 41809919183 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How many operational amplifiers are required to construct an instrumentation amplifier?

Options :

1. ✖ 1

2. ✖ 2

3. ✔ 3

4. ✖ 4

Question Number : 182 Question Id : 41809919184 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The wavelength of the visible region

Options :

1. ✖ 1mm – 25μm

2. ✖ 25μm – 750nm

3. ✔ 750nm – 400nm

4. ✖ 400nm – 1pm

Question Number : 183 Question Id : 41809919185 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Spectrophotometer is used to measure

Options :

1. ✔ The amount of light absorbs by the sample

2. ✖ The amount of light reflects by the sample

3. ✖ The amount of light refracts by the sample

4. ✖ The intensity of light

Question Number : 184 Question Id : 41809919186 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In flame emission photometers, the measurement of ____ used for qualitative analysis.

Options :

1. ✔ Colour

2. ✖ Velocity

3. ✖ Intensity

4. ✖ Frequency

Question Number : 185 Question Id : 41809919187 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following detector is used in spectroscopy?

Options :

1. ✖ Photoresistor

2. ✔ Photomultiplier tube

3. ✖ Optocoupler

4. ✖ PIN diode

Question Number : 186 Question Id : 41809919188 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a feature of carrier gas used in gas chromatography?

Options :

1. ✖ It must be chemically inert

2. ✖ It should be suitable for the detector employed

3. ✔ It should not be completely pure

4. ✖ It should be cheap

Question Number : 187 Question Id : 41809919189 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which instrument is works based on separation of compounds?

Options :

1. ✖ Spectrophotometer

2. ✖ Flame Photometer

3. ✖ Gas Analyzers

4. ✔ Chromatograph

Question Number : 188 Question Id : 41809919190 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

The frequency range of ECG is

Options :

1. ✔ 0.05-150 HZ

2. ✖ 500-1500 Hz

3. ✖ 5-500 kHz

4. ✖ 0.5-150 MHz

Question Number : 189 Question Id : 41809919191 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which wave can help to detect the brain tumour?

Options :

1. ✖ Alpha wave

2. ✖ Beta wave

3. ✔ Delta wave

4. ✖

Gamma wave

Question Number : 190 Question Id : 41809919192 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Electrooculography (EOG/E.O.G.) is a technique for measuring of

Options :

1. ✖ abnormal function of the retina

2. ✖ heart rate

3. ✖ respiration rate

4. ✔ cornea-retinal standing potential

Question Number : 191 Question Id : 41809919193 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following correct statement?

Options :

1. ✖ EEG is device to record electrical activity of the muscle.

2. ✔ Sinoatrial node is also called as Natural pacemaker.

3. ✖ Ultrasonic method is used for measurement of flowrate of the blood.

4. ✖ Irregular heart rate is called arrythmia.

Question Number : 192 Question Id : 41809919194 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following one is therapeutic instrument?

Options :

1. ✖ ECG

2. ✖ EMG

3. ✖ EEG

4. ✔ Pacemaker

Question Number : 193 Question Id : 41809919195 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the bit-size of the 8051 microcontroller?

Options :

1. ✖ 4-bit

2. ✔ 8-bit

3. ✖ 16-bit

4. ✖ 32-bit

Question Number : 194 Question Id : 41809919196 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How many interrupts in the 8051 microcontroller?

Options :

1. ✖ 2

2. ✖ 3

3. ✖ 4

4. ✔ 5

Question Number : 195 Question Id : 41809919197 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

How many bytes of bit addressable memory is present in 8051 based microcontrollers?

Options :

1. ✖ 8 bytes

2. ✔ 16 bytes

3. ✖ 32 bytes

4. ✖ 128 bytes

Question Number : 196 Question Id : 41809919198 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In 8251A, the pin that controls the rate at which the character is to be transmitted is

Options :

1. ✔ TXC(active low)

2. ✖ TXC(active high)

3. ✖ TXD(active low)

4. ✖ RXC(active low)

Question Number : 197 Question Id : 41809919199 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In unsigned number addition, the status of which bit is important?

Options :

1. ✖ OV

2. ✔ CY

3. ✖ AC

4. ✖ PSW

Question Number : 198 Question Id : 41809919200 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

PLC stands for

Options :

1. ✖ Proportional logic controller

2. ✖ Programmable logic computer

3. ✖ Professional logic controller

4. ✔ Programmable logic controller

Question Number : 199 Question Id : 41809919201 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which programming language is used in PLC?

Options :

1. ✖ C Programming

2. ✖ Python Programming

3. ✖ Java Programming

4. ✔ Ladder Programming

Question Number : 200 Question Id : 41809919202 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following functions are not performed by PLCs?

Options :

1. ✔ Rescheduling

2. ✖ Timing

3. ✖ Counting

4. ✖ Sequencing