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 Communication 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 :	418099376
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 : 41809918803 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 : 41809918804 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 : 41809918805 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 : 41809918806 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 : 41809918807 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 : 41809918808 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 : 41809918809 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 : 41809918810 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 : 41809918811 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 : 41809918812 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 : 41809918813 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 : 41809918814 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 : 41809918815 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 : 41809918816 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 : 41809918817 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 : 41809918818 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 : 41809918819 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 : 41809918820 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 : 41809918821 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 : 41809918822 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 : 41809918823 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 : 41809918824 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 : 41809918825 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 : 41809918826 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 : 41809918827 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 : 41809918828 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 : 41809918829 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 : 41809918830 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 : 41809918831 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 : 41809918832 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 : 41809918833 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 : 41809918834 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 : 41809918835 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 : 41809918836 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 : 41809918837 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 : 41809918838 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 : 41809918839 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 : 41809918840 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 : 41809918841 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 : 41809918842 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 : 41809918843 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 : 41809918844 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 : 41809918845 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 : 41809918846 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 : 41809918847 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 : 41809918848 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 : 41809918849 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 : 41809918850 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 : 41809918851 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 : 41809918852 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 :	418099377
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 : 41809918853 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 : 41809918854 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 : 41809918855 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 : 41809918856 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. ✖ $Cos^{-1}(-1/3)$

2. ✖ $Cos^{-1}(-2/3)$

3. ✔ $Cos^{-1}(1/\sqrt{3})$

4. ✖ $Cos^{-1}(2/3)$

Question Number : 55 Question Id : 41809918857 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 : 41809918858 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 : 41809918859 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 : 41809918860 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 : 41809918861 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 : 41809918862 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 : 41809918863 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 : 41809918864 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 : 41809918865 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 : 41809918866 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 : 41809918867 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 : 41809918868 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 : 41809918869 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 : 41809918870 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 : 41809918871 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 : 41809918872 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 : 41809918873 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 : 41809918874 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 : 41809918875 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 : 41809918876 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 : 41809918877 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 :	418099378
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 : 41809918878 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 : 41809918879 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 : 41809918880 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 : 41809918881 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 : 41809918882 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 : 41809918883 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 : 41809918884 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 : 41809918885 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 : 41809918886 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 : 41809918887 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 : 41809918888 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 : 41809918889 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 : 41809918890 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 : 41809918891 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 : 41809918892 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 : 41809918893 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 : 41809918894 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 : 41809918895 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 : 41809918896 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 : 41809918897 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 : 41809918898 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 : 41809918899 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 : 41809918900 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 : 41809918901 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 : 41809918902 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 Communication Engineering

Section Id :	418099379
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 : 41809918903 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A p-type semiconductor carries net:

Options :

1. ✖ Positively charged

2. ✖ Negatively charged

3. ✔ Uncharged

4. ✖ Charged at higher temperatures

Question Number : 102 Question Id : 41809918904 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The intrinsic carrier concentration of silicon sample at 300 K is $1.5 \times 10^{16}/m^3$. If after doping, the number of majority carriers is $5 \times 10^{20}/m^3$, the minority carrier density is

Options :

1. ✔ $4.5 \times 10^{11}/m^3$

2. ✖ $3.33 \times 10^{4}/m^3$

3. ✖ $5 \times 10^{20}/m^3$

4. ✖ $3 \times 10^{-5}/m^3$

Question Number : 103 Question Id : 41809918905 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ratio of mobility to the diffusion current in a semiconductor has the units

Options :

1. ✔ V^{-1}

2. ✖ $Cm.V^{-1}$

3. ✖ $V.Cm^{-1}$

4. ✖ $V.s$

Question Number : 104 Question Id : 41809918906 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A half wave rectifier uses a diode with a forward resistance R_f. The voltage is $V_m \sin \omega t$ and the load resistance is R_L. The DC current is given by

Options :

1. ✖ $\frac{V_m}{\sqrt{2}R_L}$

2. ✔ $\frac{V_m}{\pi(R_f + R_L)}$

3. ✖ $\frac{2V_m}{\sqrt{\pi}}$

4. ✖ $\frac{V_m}{R_L}$

Question Number : 105 Question Id : 41809918907 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 is a frequency controlled device?

Options :

1. ✖ MOSFET

2. ✔ Quartz oscillator

3. ✖ IGBT

4. ✖ BJT

Question Number : 106 Question Id : 41809918908 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which type of special purpose diode is formed by a metal and semiconductor?

Options :

1. ✔ Schottky

2. ✖ Varactor

3. ✖ Tunnel

4. ✖ Zener

Question Number : 107 Question Id : 41809918909 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A differential amplifier has a differential gain of 20,000 and CMRR is 80 dB. The common mode gain is given by

Options :

1. ✔ 2

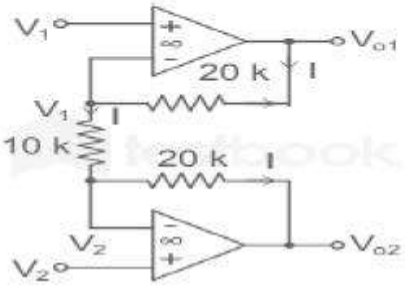
2. ✖ 1

3. ✖ 0.5

4. ✖ 25

Question Number : 108 Question Id : 41809918910 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the circuit combination of figure given below the output voltage (V_{01}-V_{02}) is:



Options :

1. ✖ $2(V_1-V_2)$

2. ✖ $3(V_1-V_2)$

3. ✔ $5(V_1-V_2)$

4. ✖ $7(V_1-V_2)$

Question Number : 109 Question Id : 41809918911 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Transconductance in a FET indicates how effectively the input voltage controls the

Options :

1. ✔ Output current

2. ✖ Input current

3. ✖ Supply voltage

4. ✖ Voltage gain

Question Number : 110 Question Id : 41809918912 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 true?

Options :

1. ✔ A silicon wafer heavily doped with boron is a p^+ substrate

2. ✖ A silicon wafer lightly doped with boron is a p^+ substrate

3. ✖ A silicon wafer heavily doped with arsenic is a p^+ substrate

4. ✖ A silicon wafer lightly doped with arsenic is a p^+ substrate

Question Number : 111 Question Id : 41809918913 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The DC current gain (β) of a BJT is 50. Assuming that the emitter injection efficiency is 0.995, the base transport factor is

Options :

1. ✖ 0.980

2. ✔ 0.985

3. ✖ 0.990

4. ✖ 0.995

Question Number : 112 Question Id : 41809918914 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Group I lists four different semiconductor devices. Match each device in Group I with its characteristic property in Group II

Group I	Group II
P. BJT	1. Population inversion
Q. MOS capacitor	2. Pinch-off voltage
R. LASER diode	3. Early effect
S. JFET	4. Flat-band voltage

Options :

1. ✖ P-3, Q-1, R-4, S-2

2. ✖ P-1, Q-4, R-3, S-2

3. ✔ P-3, Q-4, R-1, S-2

4. ✖ P-3, Q-2, R-1, S-4

Question Number : 113 Question Id : 41809918915 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The DC current gain (β) of a BJT is 50. Assuming that the emitter injection efficiency is 0.995, the base transport factor is

Options :

1. ✖ 0.980

2. ✔ 0.985

3. ✖ 0.990

4. ✖ 0.995

Question Number : 114 Question Id : 41809918916 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A good transimpedance amplifier has

Options :

1. ✖ Low input impedance and high output impedance

2. ✖ High input impedance and high output impedance

3. ✖ High input impedance and low output impedance

4. ✔ Low input impedance and low output impedance

Question Number : 115 Question Id : 41809918917 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If a small value of capacitance is connected in parallel with a large value, the combined capacitance will be_____

Options :

1. ✖ The same

2. ✔ Higher

3. ✖ Lower

4. ✖ Medium

Question Number : 116 Question Id : 41809918918 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A capacitor that can store 100 μC of charge with 10V across its plates has a capacitance of

Options :

1. ✖ 0.01 μF

2. ✖ 0.1 μF

3. ✔ 10.0 μF

4. ✖ 1.0 μF

Question Number : 117 Question Id : 41809918919 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The resistance of a conductor of diameter d and length l is R Ω. If the diameter of the conductor is halved and its length is doubled, the resistance will be

Options :

1. ✖ R Ω

2. ✖ 2R Ω

3. ✖ 4R Ω

4. ✔ 8R Ω

Question Number : 118 Question Id : 41809918920 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In an ideal regulated power supply is one which has voltage regulation of_____

Options :

1. ✔ 0%

2. ✖

5%

3. ✖ 10%

4. ✖ 1%

Question Number : 119 Question Id : 41809918921 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A PN junction acts as a_____

Options :

1. ✖ Controlled switch

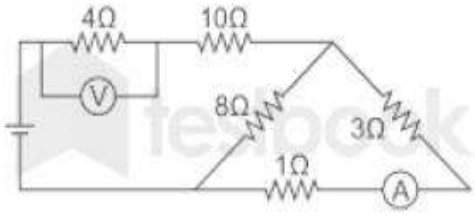
2. ✖ Bidirectional switch

3. ✔ Unidirectional switch

4. ✖ Filter

Question Number : 120 Question Id : 41809918922 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What will be the reading of the ammeter in the figure given below, if voltmeter reads 12V?



Options :

1. ✔ 2 A

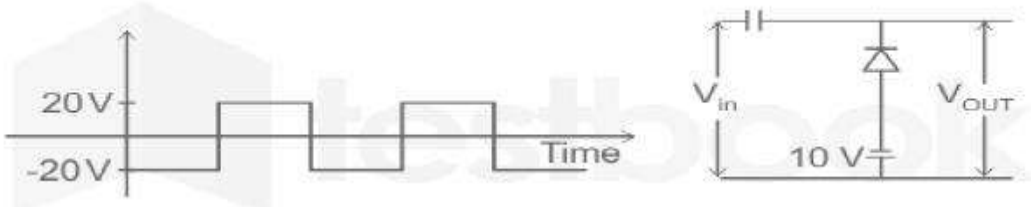
2. ✖ 1 A

3. ✖ 3 A

4. ✖ 5 A

Question Number : 121 Question Id : 41809918923 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A square wave of ±20 V is given to the clamper circuit given below. What is the minimum and maximum value of the output voltage (V_{OUT})? Assume ideal diode.



Options :

1. ✖ -10 V, 0V

2. ✖ -20 V, +20V

3. ✖ -30 V, +10V

4. ✔ -10 V, +30V

Question Number : 122 Question Id : 41809918924 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a series RLC circuit, at low frequency the circuit is_____

Options :

1. ✖ Inductive

2. ✖ Resistive

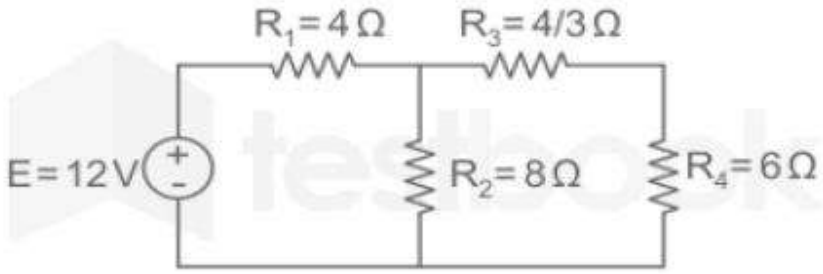
3. ✔ Capacitive

4. ✖ Resonantic

Question Number : 123 Question Id : 41809918925 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Find out the current flowing in resistor R4 in the figure given below



Options :

1. ✖ 0.6 A

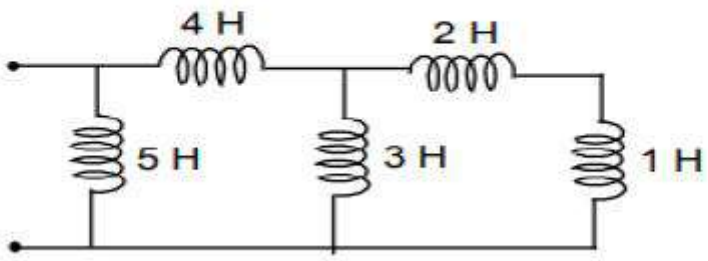
2. ✔ 0.8 A

3. ✖ 0.5 A

4. ✖ 1.0 A

Question Number : 124 Question Id : 41809918926 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Calculate the equivalent inductance of the following circuit:



Options :

1. ✔ 2.619 H

2. ✖ 9.126 H

3. ✖ 6.219 H

4. ✖ 1.296 H

Question Number : 125 Question Id : 41809918927 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An ideal constant-voltage source has _____ resistance.

Options :

1. ✖ Infinite

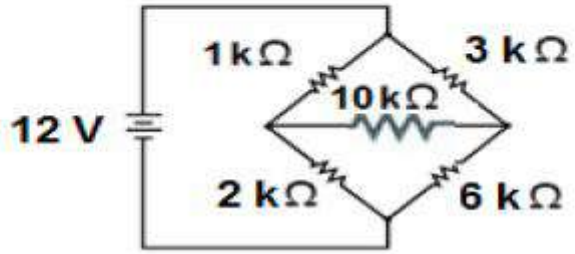
2. ✖ Low

3. ✔ Zero

4. ✖ High

Question Number : 126 Question Id : 41809918928 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the following circuit, what is the voltage across 2 kΩ resistor?



Options :

1. ✖ 0 V

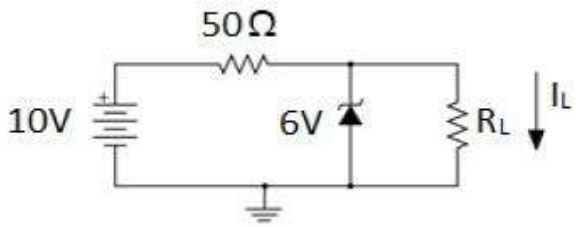
2. ✖ 4 V

3. ✔ 8 V

4. ✖ 12 V

Question Number : 127 Question Id : 41809918929 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The 6V Zener diode shown in Figure has zero Zener resistance and a knee current of 5mA. The minimum value of R_L, so that the voltage across it does not fall below 6V is



Options :

1. ✖ 1.2 kΩ

2. ✔ 80 Ω

3. ✖ 50 Ω

4. ✖ 0 Ω

Question Number : 128 Question Id : 41809918930 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In an RC phase shift oscillator using BJT, oscillations happen at the frequency where the feedback network shifts the phase of the amplifier output by

Options :

1. ✖ 60^0

2. ✖ 90^0

3. ✔ 180^0

4. ✖ 360^0

Question Number : 129 Question Id : 41809918931 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 achieving distortion-less demodulation of amplitude modulated signal using an envelope detector is

Options :

1. ✖ Modulation index <0

2. ✔ Modulation index <1

3. ✖ Modulation index >1

4. ✖ independent of modulation index

Question Number : 130 Question Id : 41809918932 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a PCM system with uniform quantization, increasing the number of bits from 8 to 9 will reduce the quantization noise power by a factor of

Options :

1. ✖ 9

2. ✖ 8

3. ✔ 4

4. ✖ 2

Question Number : 131 Question Id : 41809918933 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 type of multiplexing techniques in which the signals are transmitted in the form of data samples?

Options :

1. ✖ PPM

2. ✖ PCM

3. ✖ PWM

4. ✔ TDM

Question Number : 132 Question Id : 41809918934 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A signal of maximum frequency of 10 kHz is sampled at Nyquist rate. The time interval between two successive samples is

Options :

1. ✔ 50 μs

2. ✖ 100 μs

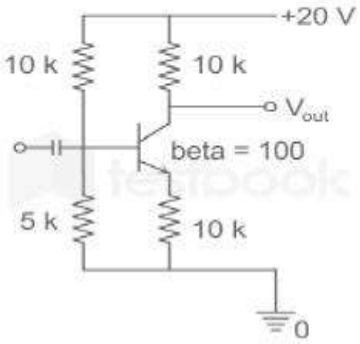
3. ✖ 500 μs

4. ✖ 1000 μs

Question Number : 133 Question Id : 41809918935 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Given figure shows a silicon transistor connected as a common emitter amplifier.

The quiescent collector voltage of the circuit approximately.



Options :

1. ✖ 20/3 V

2. ✖ 10 V

3. ✔ 14 V

4. ✖ 20 V

Question Number : 134 Question Id : 41809918936 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the mathematical expression for amplitude modulated wave:

Options :

1. ✖ $A_c \sin [\{w_c+k_1V_m(t)\}t+\phi]$

2. ✖ $A_c \sin\{w_ct+k_2V_m(t)+\phi\}$

3. ✔ $\{A_c+ k_2V_m(t)\} \sin (w_ct+\phi)$

4. ✖ $A_cV_m(t) \sin (w_ct+\phi)$

Question Number : 135 Question Id : 41809918937 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The data rate of QPSK is _____ as that of BPSK for the same symbol rate.

Options :

1. ✖ Same

2. ✔ Twice

3. ✖

Thrice

4. ✖ Four times

Question Number : 136 Question Id : 41809918938 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 value of capacitor of the Wien bridge oscillator operating at resonant frequency of 10 kHz with resistance of 100 kΩ?

Options :

1. ✖ 149 pF

2. ✔ 159 pF

3. ✖ 169 pF

4. ✖ 189 pF

Question Number : 137 Question Id : 41809918939 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A superheterodyne AM broadcast receiver has an IF of 455 kHz. If it is tuned to a frequency of 700 kHz, the image frequency is

Options :

1.

✔ 1610 kHz

2. ✖ 1155 kHz

3. ✖ 245 kHz

4. ✖ 210 kHz

Question Number : 138 Question Id : 41809918940 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 hamming distance between the codes '11001011' and '10000111'

Options :

1. ✖ 2

2. ✔ 3

3. ✖ 4

4. ✖ 5

Question Number : 139 Question Id : 41809918941 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Consider a message signal as $m(t)=3\cos(100\pi t)+2\cos(200\pi t)$. If the signal undergoes frequency modulation with frequency sensitivity constant 20 Hz/Volts, then the bandwidth of the modulated signal is:

Options :

1. ✖ 300 Hz

2. ✖ 100 Hz

3. ✔ 400 Hz

4. ✖ 200 Hz

Question Number : 140 Question Id : 41809918942 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 used for the generation of SSB modulation?

Options :

1. ✖ PLL

2. ✔ Hilbert transform

3. ✖ Balanced modulator

4. ✖ Square law modulator

Question Number : 141 Question Id : 41809918943 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The conversion of 10101111001.0111_2 to octal is

Options :

1. ✖ 2561.34_8

2. ✖ 2542.34_8

3. ✔ 2571.34_8

4. ✖ 2671.32_8

Question Number : 142 Question Id : 41809918944 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 IC families has minimum value of fan-out?

Options :

1. ✖ ECL

2. ✖ CMOS

3. ✖ Low power Schottky TTL

4. ✔ Standard TTL

Question Number : 143 Question Id : 41809918945 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Boolean function AB+AC is equivalent to _____

Options :

1. ✖ $AB + AC + BC$

2. ✖ $A'B'C' + ABC' + A'BC$

3. ✖ $ABC + A'BC + B'C'$

4. ✔ $ABC + ABC' + AB'C$

Question Number : 144 Question Id : 41809918946 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For the given Boolean function $F(x, y, z) = \sum(0,2,4,5,6)$ simplified output

will be

Options :

1. ✖ $F = z + xy'$

2. ✖ $F = z + x'y$

3. ✖ $F = z' + x'y$

4. ✔ $F = z' + xy'$

Question Number : 145 Question Id : 41809918947 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When two asynchronous active low inputs PRESET and CLEAR are applied to a J-K flip flop the output will be

Options :

1. ✖ 0

2. ✔ Undefined

3. ✖ Previous state

4. ✖ 1

Question Number : 146 Question Id : 41809918948 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If input to T flip flop is 200 Hz signal, then what will be the output signal frequency if four T flip flops are connected in cascade

Options :

1. ✖ 200 Hz

2. ✖ 50 Hz

3. ✖ 800 Hz

4. ✔ 12.5 Hz

Question Number : 147 Question Id : 41809918949 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 4-bit synchronous counter uses flip flops with propagation delay of 20 ms each. The maximum possible time required to change of state will be:

Options :

1. ✔ 20 ms

2. ✖ 40 ms

3. ✖ 60 ms

4. ✖ 80 ms

Question Number : 148 Question Id : 41809918950 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The full scale output of a digital to analog converter is 20 mA. If the resolution is 80 μA, then the percentage resolution is:

Options :

1. ✖ 8

2. ✖ 7

3. ✖ 3.9

4. ✔ 0.39

Question Number : 149 Question Id : 41809918951 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 6-bit ladder digital to analog converter has a maximum output of 10 V. The output for input 101001 is approximately

Options :

1. ✖ 4.2

2. ✔ 6.5

3. ✖ 5.5

4. ✖ 9.2

Question Number : 150 Question Id : 41809918952 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 non-volatile memory

Options :

1. ✔ ROM

2. ✖ RAM

3. ✖ PLA

4. ✖ PLD

Question Number : 151 Question Id : 41809918953 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a microprocessor, the term 'pipelining' refers to

Options :

1. ✖ Address decoding

2. ✖ Memory writes

3. ✔ Fetching next instruction while the current instruction is executed

4. ✖ Virtual memory addressing

Question Number : 152 Question Id : 41809918954 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 size of RAM in 8051 microcontroller?

Options :

1. ✔ 128 bytes

2. ✖ 256 bytes

3. ✖ 1024 bytes

4. ✖ 2048 bytes

Question Number : 153 Question Id : 41809918955 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In 8051 microcontrollers, which register is used for serial communication

Options :

1. ✖ TMOD

2. ✖ SCON

3. ✔ SBUF

4. ✖ PCON

Question Number : 154 Question Id : 41809918956 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The first machine cycle of an instruction is always a

Options :

1. ✖ Memory read cycle

2. ✖ I/O cycle

3. ✔

Fetch cycle

4. ✖ Memory write cycle

Question Number : 155 Question Id : 41809918957 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The external interrupts of 8051 microcontroller are

Options :

1. ✖ TRAP and INT1

2. ✔ INT0 and INT1

3. ✖ INT2 and INT1

4. ✖ TRAP and INTR

Question Number : 156 Question Id : 41809918958 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 control register in 8051 microcontroller.

Options :

1.

IE ✖

2. IP ✖

3. TMOD ✖

4. SP ✔

Question Number : 157 Question Id : 41809918959 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In 8085, the XCHG instruction is _____ bytes instruction.

Options :

1. 1 ✔

2. 2 ✖

3. 4 ✖

4. 8 ✖

Question Number : 158 Question Id : 41809918960 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The addressing mode, in which the instructions has no source and destination operands is

Options :

1. ✖ Register instructions

2. ✔ Register specific instructions

3. ✖ Direct addressing

4. ✖ Indirect addressing

Question Number : 159 Question Id : 41809918961 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Number of pins in 8051 microcontroller with_____package.

Options :

1. ✖ 40 pin with Leadless chip carrier

2. ✖ 60 pin with Quad flap package

3. ✔ 40 pin with Dual in line package

4. ✖ 32 pin with Quad flap package

Question Number : 160 Question Id : 41809918962 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In 8051, PSEN stands for_____

Options :

1. ✖ Program Select Enable

2. ✖ Peripheral Store Enable

3. ✔ Program Store Enable

4. ✖ Peripheral Select Enable

Question Number : 161 Question Id : 41809918963 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The step involved in PUSH operation is

Options :

1. ✖ Increment stack by 2 and store 8-bit content to address pointed by SP

2. ✖ Decrement stack by 1 and store 16-bit content to address pointed by SP

3. ✔ Increment stack by 1 and store 8-bit content to address pointed by SP

4. ✖ Store 8-bit content to address pointed by SP and then increment stack by 1

Question Number : 162 Question Id : 41809918964 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The DMA controller transfers data directly between _____

Options :

1. ✖ Memory and processor

2. ✖ Processor and I/O devices

3. ✔ I/O devices and memory

4. ✖ Memory and Register

Question Number : 163 Question Id : 41809918965 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Three terminals of an IGBT are

Options :

1. ✖ Gate, source and drain

2. ✔ Gate, emitter and collector

3. ✖ Base, emitter and collector

4. ✖ Base, source and drain

Question Number : 164 Question Id : 41809918966 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 3-phase bridge rectifier has the average output voltage as 286.48 V. Find

the maximum value of line voltage

Options :

1. ✖ 100 V

2. ✖ 200 V

3. ✔ 300 V

4. ✖ 400 V

Question Number : 165 Question Id : 41809918967 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Choose the correct statement

Options :

1. ✖ circulating current exist only in circulating current mode

2. ✖ circulating current exist only in non-circulating current mode

3. ✔ circulating current exist in both the circulating and non-circulating current modes

4. ✖ circulating current does not exist in both the circulating and non-circulating current modes

Question Number : 166 Question Id : 41809918968 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A cycloconverter is a

Options :

1. ✖ one stage power converter

2. ✖ one stage voltage converter

3. ✔ one stage frequency converter

4. ✖

one stage current converter

Question Number : 167 Question Id : 41809918969 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The UJT may be used as

Options :

1. ✖ an amplifier

2. ✔ a saw tooth generator

3. ✖ a rectifier

4. ✖ regulator

Question Number : 168 Question Id : 41809918970 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Power electronics essentially deals with control of a.c. power at

Options :

1. ✖ frequencies above 20 kHz

2. ✖ frequencies above 1000 kHz

3. ✖ frequencies less than 10 Hz

4. ✔ 50 Hz frequency

Question Number : 169 Question Id : 41809918971 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A TRIAC can pass a portion of _____ half cycle through the load.

Options :

1. ✖ only positive

2. ✖ only negative

3. ✔ both positive and negative

4. ✖ Only first half of positive

Question Number : 170 Question Id : 41809918972 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Thyristor is a semiconductor switch which is

Options :

1. ✖ Bistable and astable

2. ✖ unilateral and astable

3. ✖ Bilateral and bistable

4. ✔ unilateral and bistable

Question Number : 171 Question Id : 41809918973 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Anode current in an SCR consists of

Options :

1. ✖ holes only

2. ✖ electrons only

3. ✔ both electrons and holes

4. ✖ neither electrons nor holes

Question Number : 172 Question Id : 41809918974 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A semiconductor photo device uses

Options :

1. ✖ Photo emissive effect

2. ✔ Photo conductive effect

3. ✖ Photo voltaic effect

4. ✖ Photo reflective effect

Question Number : 173 Question Id : 41809918975 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Aspect ratio of HDTV is

Options :

1. ✖ 3:2

2. ✖ 4:3

3. ✖ 2:1

4. ✔ 16:9

Question Number : 174 Question Id : 41809918976 Display Question Number : Yes Is Question

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

RS 232 communication is

Options :

1. ✔ Full duplex

2. ✖ Half duplex

3. ✖ Simplex

4. ✖ Command response system

Question Number : 175 Question Id : 41809918977 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which topology is used for a central network controller

Options :

1. ✔ Star

2. ✖ Mesh

3. ✖ Ring

4. ✖ Point to point

Question Number : 176 Question Id : 41809918978 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which multiple access technique is used by IEEE 802.11standard for wireless LAN

Options :

1. ✖ CDMA

2. ✔ CSMA/CA

3. ✖ ALOHA

4. ✖ TDMA

Question Number : 177 Question Id : 41809918979 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A certain optical fiber has refractive index of clad is 1.40 and that of core is 1.05. Its numerical aperture will be:

Options :

1. ✖ 0.8575

2. ✔ 0.9260

3. ✖ 0.3500

4. ✖ 0.1585

Question Number : 178 Question Id : 41809918980 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The internetworking protocol is known as_____

Options :

1. ✖ SMTP

2. ✖ PPP

3. ✔ TCP/IP

4. ✖ NNTP

Question Number : 179 Question Id : 41809918981 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The most commonly used UTP connector is_____

Options :

1. ✖ Category 5 connector

2. ✖ EIA 232

3. ✔ RJ 45

4. ✖ RJ 54

Question Number : 180 Question Id : 41809918982 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Voltmeter sensitivity is expressed in _____

Options :

1. ✔ Ohm/V

2. ✖ V/Ohm

3. ✖ Ohm-V

4. ✖ Volts

Question Number : 181 Question Id : 41809918983 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

The principle of Q-meter is based on

Options :

1. ✔ Series resonance

2. ✖ Parallel resonance

3. ✖ Self inductance

4. ✖ Mutual inductance

Question Number : 182 Question Id : 41809918984 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An LCR meter is used to measure

Options :

1. ✖ Current

2. ✖ Power

3. ✔ Inductance

4. ✖ Voltage

Question Number : 183 Question Id : 41809918985 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 advantage of the analog multimeter over the digital multimeter?

Options :

1. ✖ No loading effect

2. ✖ High accuracy

3. ✖ Smaller size

4. ✔ Less electric noise

Question Number : 184 Question Id : 41809918986 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Why we use low internal resistance in series of an ammeter?

Options :

1. ✖ low sensitivity

2. ✖ high sensitivity

3. ✔ low voltage drop on ammeter

4. ✖ high voltage drop across ammeter

Question Number : 185 Question Id : 41809918987 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____are integrated instruments.

Options :

1. ✖ Ammeter

2. ✖ Voltmeter

3. ✖ Watt meters

4. ✔ Ampere-hour and watt-hour meters

Question Number : 186 Question Id : 41809918988 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An integrating digital voltmeter measures _____

Options :

1. ✔ True average value

2. ✖ RMS value

3. ✖ Peak value

4. ✖ True AC value

Question Number : 187 Question Id : 41809918989 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The technique of adding a precise amount of time between the trigger point and the beginning of the scope sweep in a CRO is known as

Options :

1. ✖ Free running sweep

2. ✔ Delayed sweep

3. ✖ Triggered sweep

4. ✖ Non-saw tooth sweep

Question Number : 188 Question Id : 41809918990 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

A 10 mA ammeter has a resistance of 50 Ω. It has to be converted to 1 A ammeter. The value of Shunt resistance is

Options :

1. ✖ 5 Ω

2. ✖ 0.05 Ω

3. ✔ 0.5 Ω

4. ✖ 50 Ω

Question Number : 189 Question Id : 41809918991 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Lissajous pattern is used to measure _____ using an oscilloscope.

Options :

1. ✖ Power

2. ✖ Current

3. ✖ Voltage

4. ✔ Frequency

Question Number : 190 Question Id : 41809918992 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Closeness with which and instrument reading approaches the true value of

the quantity being measured

Options :

1. ✔ Accuracy

2. ✖ Resolution

3. ✖ Repeatability

4. ✖ Conformity

Question Number : 191 Question Id : 41809918993 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Up to which frequency the ground wave propagation is used

Options :

1. ✔ 2 MHz

2. ✖ 2 GHz

3. ✖ 30 MHz

4. ✖ 30 GHz

Question Number : 192 Question Id : 41809918994 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Units of radiation intensity is

Options :

1. ✔ Watts/ unit solid angle

2. ✖ Watts/m^2

3. ✖ Watts-m^2

4. ✖ Watts

Question Number : 193 Question Id : 41809918995 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

To make antenna more directional, either its size must be increased or

Options :

1. ✖ the number of its feed horns must be increased

2. ✔ the frequency of its transmission must be increased

3. ✖ its effective isotropic radiated (EIRP)power must increase

4. ✖ its footprint must be increased

Question Number : 194 Question Id : 41809918996 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Antenna employed in Television receivers

Options :

1. ✖ Half wave dipole

2. ✔ Yagi antenna

3. ✖ Rhombic antenna

4. ✖ Horn antenna

Question Number : 195 Question Id : 41809918997 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Reflex klystron is a

Options :

1. ✖ Amplifier

2. ✔ Oscillator

3. ✖ Attenuator

4. ✖ Filter

Question Number : 196 Question Id : 41809918998 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The earth area covered by a satellite radio beam is_____

Options :

1. ✔ Footprint

2. ✖ Bandwidth

3. ✖ Beam width

4. ✖ Zone

Question Number : 197 Question Id : 41809918999 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A CDMA signal is transmitted at a chip rate of 3.84M chips/sec with a processing gain of 16. Then the bit rate is

Options :

1. ✖ 3840Kbps

2. ✖ 6144Kbps

3. ✔ 240Kbps

4. ✖ 256Kbps

Question Number : 198 Question Id : 41809919000 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the minimum range is to be double in a RADAR, the peak power has to be increased by a factor of

Options :

1. ✖ 4

2. ✖ 8

3. ✔ 16

4. ✖ 32

Question Number : 199 Question Id : 41809919001 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An air-filled rectangular waveguide of dimension 7 cm × 3.5 cm operates in the dominant TE_{10} mode. The value of phase velocity of the wave in the waveguide

Options :

1. ✔ 3.78×10^8 m/s

2. ✖ 3.18×10^8 m/s

3. ✖ 5.78×10^8 m/s

4. ✖ 5.18×10^8 m/s

Question Number : 200 Question Id : 41809919002 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Magic Tee is a combination of

Options :

1. ✔ One H-plane tee and one E-plane tee

2. ✖ One H-plane tee and two E-plane tees

3. ✖ Two H-plane tees and one E-plane tee

4. ✖ Two E-plane tees and two H-plane tees