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 :	Electrical and Electronics Engineering 20th June 2023 Shift 1
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 :	418099372
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 : 41809918603 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\Delta = \begin{vmatrix} 1 & 1 & 1 \\ 1 & 1+x & 1 \\ 1 & 1 & 1+y \end{vmatrix}$ for $x \neq 0$ and $y \neq 0$, then Δ is

Options :

1. ✖ Divisible by x but not y

2. ✖ Divisible by y but not x

3. ✔

Divisible by both x & y

Divisible by neither x nor y

4. ✖

Question Number : 2 Question Id : 41809918604 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $x^a y^b = e^m$ and $x^c y^d = e^n$, $\Delta_1 = \begin{vmatrix} m & b \\ n & d \end{vmatrix}$, $\Delta_2 = \begin{vmatrix} a & m \\ c & n \end{vmatrix}$ and $\Delta_3 = \begin{vmatrix} a & b \\ c & d \end{vmatrix}$

Then the values of x *and* y *are*

Options :

1. ✖ $\frac{\Delta_1}{\Delta_3}$ *and* $\frac{\Delta_2}{\Delta_3}$

2. ✖ $\frac{\Delta_2}{\Delta_1}$ *and* $\frac{\Delta_3}{\Delta_1}$

3. ✖ $\log\left(\frac{\Delta_1}{\Delta_3}\right)$ *and* $\log\left(\frac{\Delta_2}{\Delta_3}\right)$

4. ✔ $e^{\left(\frac{\Delta_1}{\Delta_3}\right)}$ *and* $e^{\left(\frac{\Delta_2}{\Delta_3}\right)}$

Question Number : 3 Question Id : 41809918605 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

If $A=\begin{bmatrix}0 & 1 & 2\\ 1 & 2 & 3\\ 3 & a & 1\end{bmatrix}$ and $A^{-1}=\begin{bmatrix}1/2 & 1/2 & 1/2\\ -4 & 3 & c\\ 5/2 & -3/2 & 1/2\end{bmatrix}$ then the values of

a *and* c are equal to

Options :

1. ✖ 1 and 1

2. ✔ 1 and -1

3. ✖ 1 and 2

4. ✖ -1 and 1

Question Number : 4 Question Id : 41809918606 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $adj\ B = A$, $|P| = |Q| = 1$ *then* $adj\left(Q^{-1}BP^{-1}\right)$ is

Options :

1. ✖ PQ

2. ✖ QAP

3. ✔ PAQ

4. ✖ $PA^{-1}Q$

Question Number : 5 Question Id : 41809918607 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 x if the matrix $A=\begin{bmatrix} 0 & 2y & z \\ x & y & -z \\ x & -y & z \end{bmatrix}$ satisfies the equation

$A^TA=I$

Options :

1. ✔ $\pm\frac{1}{\sqrt{2}}$

2. ✖ $\pm\frac{1}{\sqrt{3}}$

3. ✖ $\pm\frac{1}{\sqrt{6}}$

4. ✖ $\pm\frac{1}{2\sqrt{2}}$

Question Number : 6 Question Id : 41809918608 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\frac{(x+1)}{(x-a)(x-3)}=\frac{2}{x-a}+\frac{b}{x-3}$ then $(a\,,b\,)=$

Options :

1. ✖ $(-4\,,1\,)$

2. ✔ $(7\,,-1\,)$

3. ✖ $(4\,,1\,)$

4. ✖ $(-4\,,-1\,)$

Question Number : 7 Question Id : 41809918609 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\frac{(x+1)^2}{x^3+x}=\frac{A}{x}+\frac{Bx+C}{x^2+1}$, then $\sin^{-1}\left(\frac{A}{C}\right)=$

Options :

1. ✖ $\frac{\pi}{2}$

2. ✖ $\frac{\pi}{3}$

3. ✖ $\frac{\pi}{4}$

4. ✔ $\frac{\pi}{6}$

Question Number : 8 Question Id : 41809918610 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $4n\alpha = \pi$, then $\cot\alpha \cot 2\alpha \cot 3\alpha \ldots \cot(2n-1)\alpha$ *is equal to*

Options :

1. ✔ 1

2. ✖ -1

3. ✖ ∞

4. ✖ π

Question Number : 9 Question Id : 41809918611 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\frac{\tan 3A}{\tan A} = k$, *then* $\frac{\sin 3A}{\sin A}$ *is equal to*

Options :

1. ✖ $\frac{2k}{k-1}, k \in R$

2. ✖ $\frac{2k}{k-1}, k \in [1/3, 3]$

3. ✔ $\frac{2k}{k-1}, k \notin [1/3, 3]$

4. ✖ $\frac{k-1}{2k}, k \notin [1/3, 3]$

Question Number : 10 Question Id : 41809918612 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If two angles of a ΔABC are $45°$ and $60°$ then the ratio of smallest to greatest sides are

Options :

1. ✔ $(\sqrt{3}-1) : 1$

2. ✖ $\sqrt{3} : \sqrt{2}$

3. ✖ $1 : \sqrt{3}$

4. ✖ $\sqrt{3} : 1$

Question Number : 11 Question Id : 41809918613 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

If $\sin^{-1}x + \sin^{-1}y = \frac{2\pi}{3}$ then $\cos^{-1}x + \cos^{-1}y =$

Options :

1. ✖ $\frac{2\pi}{3}$

2. ✔ $\frac{\pi}{3}$

3. ✖ $\frac{\pi}{6}$

4. ✖ π

Question Number : 12 Question Id : 41809918614 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 $\tan\left\{\sin^{-1}\left(\cos\left(\sin^{-1}x\right)\right)\right\}\tan\left\{\cos^{-1}\left(\sin\left(\cos^{-1}x\right)\right)\right\}$, where

$0 < x < \pi/2$, *is equal to*

Options :

1. ✖ 0

2. ✔ 1

3. ✖ -1

4. ✖ 2

Question Number : 13 Question Id : 41809918615 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$If\ 0 \le x, y \le 2\pi\ and\ \sin x + \sin y = 2,\ then\ x + y =$

Options :

1. ✔ π

2. ✖ $\frac{\pi}{2}$

3. ✖ $\frac{\pi}{4}$

4. ✖ 3π

Question Number : 14 Question Id : 41809918616 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\text{If} \sec\alpha\ and\ \text{cosec}\ \alpha$ are the roots of $x^2 - px + q = 0, then$

Options :

1. ✖ $p^2 = q(q-2)$

2. ✔ $p^2 = q(q+2)$

3. ✖ $p^2 + q^2 = 2q$

4. ✖ $p^2 + q^2 = q$

Question Number : 15 Question Id : 41809918617 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 $\cos\left(\frac{1}{2}\cos^{-1}\frac{1}{8}\right)$ is

Options :

1. ✔ $\frac{3}{4}$

2. ✖ $\frac{3}{8}$

3. ✖ $\frac{1}{16}$

4. ✖ $\frac{1}{4}$

Question Number : 16 Question Id : 41809918618 Display Question Number : Yes Is Question

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

If in ΔABC, sides a, b, c are in A.P. , then

Options :

1. ✖ $B > 60°$

2. ✔ $B \leq 60°$

3. ✖ $B = |A - C|$

4. ✖ $B = 90°$

Question Number : 17 Question Id : 41809918619 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In ΔABC if $b^2 + c^2 = 2a^2$, then the value of $\frac{\cot A}{\cot B + \cot C}$ is

Options :

1. ✔ $\frac{1}{2}$

2. ✖ $\frac{3}{2}$

3. ✖

$\frac{5}{2}$

4. ✖ $\frac{5}{3}$

Question Number : 18 Question Id : 41809918620 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Given that $z = (1+i\sqrt{3})^{100}$, *then* $\left(\frac{\text{Re}(z)}{\text{Im}(z)}\right) =$

Options :

1. ✖ 2^{100}

2. ✖ 2^{50}

3. ✔ $\frac{1}{\sqrt{3}}$

4. ✖ $\sqrt{3}$

Question Number : 19 Question Id : 41809918621 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Sum of the common roots of the equations

$z^3+2z^2+2z+1=0$ *and* $z^{1985}+z^{100}+1=0$ is

Options :

1. ✔ -1

2. ✖ 1

3. ✖ 0

4. ✖ 2

Question Number : 20 Question Id : 41809918622 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 which passes through $(1,0)$ *and* $(0,1)$ and has its

radius as small as possible is

Options :

1. ✔ $x^2+y^2-x-y=0$

2. ✖ $x^2+y^2=1$

3. ✖ $2x^2+2y^2-3x-3y+1=0$

4. ✖ $x^2+y^2-4x-4y+3=0$

Question Number : 21 Question Id : 41809918623 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The focal distance of the point (x, y) on the parabola $x^2-8x+16y=0$ is

Options :

1. ✖ $|x-5|$

2. ✖ $|y-5|$

3. ✖ $|x+5|$

4. ✔ $|y+5|$

Question Number : 22 Question Id : 41809918624 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The area of the greatest rectangle that can be inscribed in the ellipse

$\frac{x^2}{9}+\frac{y^2}{4}=1$ is

Options :

1. ✔ 12 sq. units

2. ✖ 8 sq. units

3. ✖ 15 sq. units

4. ✖ 4 sq.units

Question Number : 23 Question Id : 41809918625 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✖ 2/3

2. ✔ 3/5

3. ✖ 4/3

4. ✖ 1/5

Question Number : 24 Question Id : 41809918626 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The axes of an ellipse are coordinate axes, distance between directrices is 32.

Then the equation of the ellipse , if the distance between the foci is 8 is

Options :

1. ✖ $\frac{x^2}{64}+\frac{y^2}{32}=1$

2. ✖ $\frac{x^2}{64}+\frac{y^2}{16}=1$

3. ✔ $\frac{x^2}{64}+\frac{y^2}{48}=1$

4. ✖ $\frac{x^2}{64}+\frac{y^2}{8}=1$

Question Number : 25 Question Id : 41809918627 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 transverse axis of the hyperbola $4x^2-9y^2+8x+40=0$ is

Options :

1. ✖ 8

2. ✖ 6

3. ✔ 4

4. ✖ 5

Question Number : 26 Question Id : 41809918628 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $f(x)=\frac{1}{3}\left(f(x+1)+\frac{5}{f(x+2)}\right)$ and $f(x)>0$ then for all $x\in R$, then for $\lim_{x\to\infty} f(x) =$

Options :

1. ✖ 0

2. ✖ $\sqrt{\frac{2}{5}}$

3. ✔ $\sqrt{\frac{5}{2}}$

4. ✖ ∞

Question Number : 27 Question Id : 41809918629 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If α and β are the roots of $ax^2+bx+c=0$ then $\lim_{x\to\alpha}(1+ax^2+bx+c)^{1/(x-\alpha)}$ is

Options :

1. ✖ $a(\alpha-\beta)$

2. ✖ $\ln|a(\alpha-\beta)|$

3. ✔ $e^{a(\alpha-\beta)}$

4. ✖ $e^{|a(\alpha-\beta)|}$

Question Number : 28 Question Id : 41809918630 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The derivative of $\sin^{-1}\left(\frac{2x}{1+x^2}\right)$ with respect to $\tan^{-1}\left(\frac{2x}{1-x^2}\right)$

Options :

1. ✖ 0

2. ✔ 1

3. ✖ $\frac{1}{1-x^2}$

4. ✖ $\frac{1}{1+x^2}$

Question Number : 29 Question Id : 41809918631 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $x^y \cdot y^x = 16$ then $\frac{dy}{dx}$ at $(2,2)$ is

Options :

1. ✔ -1

2. ✖ 0

3. ✖ 1

4. ✖ -2

Question Number : 30 Question Id : 41809918632 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The area if the triangle formed by positive x – axis , and the normal and tangent to the circle $x^2 + y^2 = 4$ at $\left(1 , \sqrt{3}\right)$ is

Options :

1. ✖

$\sqrt{3}$ sq. units

2. ✔ $2\sqrt{3}$ sq. units

3. ✖ $4\sqrt{3}$ sq. units

4. ✖ $\sqrt{3}/2$ sq. units

Question Number : 31 Question Id : 41809918633 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $y = \log_{\sin x}(\tan x)$ then $\left(\frac{dy}{dx}\right)_{\pi/4} =$

Options :

1. ✖ $\frac{4}{\log 2}$

2. ✖ $-4 \log 2$

3. ✔ $\frac{-4}{\log 2}$

4. ✖ $2 \log 4$

Question Number : 32 Question Id : 41809918634 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If there is an error of 0.05 cm in the side of a cube 10 cm, then the error in its surface area is

Options :

1. ✔ $6\ cm^2$

2. ✖ $5\ cm^2$

3. ✖ $12\ cm^2$

4. ✖ $3\ cm^2$

Question Number : 33 Question Id : 41809918635 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The curves $4x^2+9y^2=72$ *and* $x^2-y^2=5$ *at* $(3,2)$

Options :

1. ✖ Touch each other

2. ✔ Cut orthogonally

3.

✖ Intersect at 45°

4. ✖ Intersect at 60 °

Question Number : 34 Question Id : 41809918636 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $u = x^y$ then $\frac{\partial^2 u}{\partial x \partial y} =$

Options :

1. ✔ $x^{y-1}(1 + y \log x)$

2. ✖ $y^{x-1}(1 + y \log x)$

3. ✖ $y^{x-1}(1 - x \log y)$

4. ✖ $x^{y-1}(1 - y \log x)$

Question Number : 35 Question Id : 41809918637 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $u = \tan^{-1}(y/x)$ *then* $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} =$

Options :

1. ✔ 0

2. ✖ $\sin 2u$

3. ✖ $\cos u$

4. ✖ $2\tan^{-1}u$

Question Number : 36 Question Id : 41809918638 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$If \int f(x)\cos x\, dx = \frac{1}{2}[f(x)]^2 + c \quad then\ f(x) =$$

Options :

1. ✖ x

2. ✔ $\sin x$

3. ✖ $\cos x$

4. ✖ $\tan x$

Question Number : 37 Question Id : 41809918639 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 $\int_0^{11} [x]^3 \, dx$, *where* $[\bullet]$ denotes the greatest integer function, is

Options :

1. ✖ 0

2. ✖ 14400

3. ✖ 2200

4. ✔ 3025

Question Number : 38 Question Id : 41809918640 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The triangle formed by tangent to the curve $f(x) = x^2 + bx - b$ at the point $(1,1)$ and the coordinate axes lies in the first quadrant. If its area is 2 sq.units then the value of b is

Options :

1. ✔ -3

2. ✖ -2

3.

-1

0

Question Number : 39 Question Id : 41809918641 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $y=\int \frac{dx}{(1+x^2)^{\frac{3}{2}}}$ and $y=0$ *when* $x=0$ then the value of y when $x=1$ is

Options :

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

2. $\sqrt{2}$

3. $2\sqrt{2}$

4. $3\sqrt{2}$

Question Number : 40 Question Id : 41809918642 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\int \frac{dx}{\cos^3 x \sqrt{\sin 2x}} = a(\tan^2 x + b)\sqrt{\tan x} + c$, then

Options :

1. ✖ $a = \frac{\sqrt{2}}{5}$, $b = \frac{1}{\sqrt{5}}$

2. ✔ $a = \frac{\sqrt{2}}{5}$, $b = 5$

3. ✖ $a = \frac{\sqrt{2}}{5}$, $b = -\frac{1}{\sqrt{5}}$

4. ✖ $a = \frac{\sqrt{2}}{5}$, $b = \sqrt{5}$

Question Number : 41 Question Id : 41809918643 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 $\int_{-1}^{1} tan^{-1} x \, dx$ *is*

Options :

1. ✔ 0

2. ✖ $\frac{\pi}{4}$

3. ✖ $-\frac{\pi}{4}$

4. ✖ $\frac{\pi}{2}$

Question Number : 42 Question Id : 41809918644 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $S_n = \left[\frac{1}{1+\sqrt{n}} + \frac{1}{2+\sqrt{2n}} + \frac{1}{3+\sqrt{3n}} + \ldots + \frac{1}{n+\sqrt{n^2}}\right]$ then $\underset{n\to\infty}{lt} S_n =$

Options :

1. ✖ $\log\ 2$

2. ✔ $\log\ 4$

3. ✖ $\log\ 6$

4. ✖ $\log\ 8$

Question Number : 43 Question Id : 41809918645 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The volume of the solid generated by revolving the ellipse $\frac{x^2}{9}+\frac{y^2}{16}=1$ about the minor axis is_____ cubic units.

Options :

1. ✖ $128\ \pi$

2. ✖ $64\ \pi$

3. ✔ $48\ \pi$

4. ✖ $16\ \pi$

Question Number : 44 Question Id : 41809918646 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The differential equation of all parabolas whose axis are parallel to y-axis is

Options :

1. ✔ $\frac{d^3y}{dx^3}=0$

2. ✖ $\frac{d^2y}{dx^2}=C$

3. ✖ $\frac{d^3y}{dx^3}+\frac{d^2y}{dx^2}=0$

4. ✖ $\frac{d^2y}{dx^2}+2\frac{dy}{dx}=C$

Question Number : 45 Question Id : 41809918647 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Integrating factor of the differential equation $\cos x\frac{dy}{dx}+y\sin x=1$ is

Options :

1. ✖ $\cos x$

2. ✖ $\tan\ x$

3. ✔ $\sec\ x$

4. ✖ $\sin\ x$

Question Number : 46 Question Id : 41809918648 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The differential equation associated with the primitive $ax^2+by^2=1$ is

Options :

1. ✖ $x = y\frac{dy}{dx}$

2. ✖ $x + y\frac{dy}{dx} = 0$

3. ✔ $x\left(\frac{dy}{dx}\right)^2 + xy\frac{d^2y}{dx^2} = y\frac{dy}{dx}$

4. ✖ $x = y\frac{d^2y}{dx^2}$

Question Number : 47 Question Id : 41809918649 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The primitive for the differential equation $x\,dy - (y - x)dx = 0$ is

Options :

1. ✖ $\frac{x}{y} + \log|x| = C$

2. ✔ $\frac{y}{x} + \log|x| = C$

3. ✖ $\frac{x}{y}\log|x| = C$

4. ✖ $x^2 + y^2 = C$

Question Number : 48 Question Id : 41809918650 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The degree of the differential equation $y = x\frac{dy}{dx} + \sqrt{1+\left(\frac{dy}{dx}\right)^2}$

Options :

1. ✖ 1

2. ✔ 2

3. ✖ 4

4. ✖ 3

Question Number : 49 Question Id : 41809918651 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The order of the differential equation corresponding to the primitive $y = ae^x + be^{2x} + ce^{3x}$ where a, b and c are arbitrary constants

Options :

1. ✖

1

2. ✖ 2

3. ✔ 3

4. ✖ 4

Question Number : 50 Question Id : 41809918652 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The complimentary function of the differential equation

$$\frac{d^2y}{dx^2} + 4\frac{dy}{dx} + 4y = 4\cos x \text{ is}$$

Options :

1. ✖ $y = c_1 \cos 2x + c_2 \sin 2x$

2. ✔ $y = (c_1 + c_2\ x)e^{-2x}$

3. ✖ $y = c_1^{\ 2} + 4c_2 + 4c_3$

4. ✖ $y = 4\cos c_1 x$

Physics

Section Id :	418099373
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 : 41809918653 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The dimension of the ratio of angular momentum and linear momentum is

Options :

1. ✖ L^0

2. ✔ L^1

3. ✖ L^2

L^{-1}

4. ✖

Question Number : 52 Question Id : 41809918654 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

One Fermi is equivalent to

Options :

10^{-12} meter

1. ✖

10^{12} meter

2. ✖

10^{-15} meter

3. ✔

10^{15} meter

4. ✖

Question Number : 53 Question Id : 41809918655 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A cat is situated at point A (0,3,4) and a rat is situated at point B (5,3,-8).

The cat is free to move but the rat is always at rest. Find the minimum

distance travelled by cat to catch the rat

Options :

5 units

1. ✖

12 units

2. ✖

13 units

3. ✔

17 units

4. ✖

Question Number : 54 Question Id : 41809918656 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Find the values of x and y for which vectors $\vec{A} = (6\hat{i} + x\hat{j} - 2\hat{k})$ and $\vec{B} = (5\hat{i} - 6\hat{j} - y\hat{k})$ may be parallel

Options :

$x=0, y=\frac{2}{3}$

1. ✖

$x=-\frac{36}{5}, y=\frac{5}{3}$

2. ✔

$x=-\frac{15}{3}, y=\frac{23}{5}$

3. ✖

$x = \frac{36}{5}, y = \frac{15}{4}$

4. ✖

Question Number : 55 Question Id : 41809918657 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The velocity of a body moving along a straight line with uniform deceleration 'a' reduces by ¾ of its initial velocity. The total time of motion of the body is

Options :

1. ✔ $\frac{3u}{4a}$

2. ✖ $\frac{4a}{3u}$

3. ✖ 3u x 4a

4. ✖ zero

Question Number : 56 Question Id : 41809918658 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A stone thrown vertically upwards with a speed of 'u' m/s attains a height 'h_1'. Another stone thrown vertically upwards from the same point with a speed of $\frac{u}{3}$ m/s attains a height 'h_2'. Choose the correct relation

Options :

1. ✔ $h_2=\frac{h_1}{9}$

2. ✖ $h_2=\frac{h_1}{19}$

3. ✖ $h_2=\frac{h_1}{3}$

4. ✖ $h_2=3h_1$

Question Number : 57 Question Id : 41809918659 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 of a projectile is $4\sqrt{3}$ times of its maximum height. Its angle of projection will be

Options :

1. ✔ 30^0

2. ✖ 60^0

3. ✖ 90^0

4. ✖ 45^0

Question Number : 58 Question Id : 41809918660 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The range of a projectile fired at an angle of 15° is 30m. If it is fired with the same speed at an angle of 45°, its range will be

Options :

1. ✖ 50m

2. ✖ 30m

3. ✔ 60m

4. ✖ 100m

Question Number : 59 Question Id : 41809918661 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a body slides down an inclined plane with coefficient of friction as μ,

then its acceleration is given by

Options :

1. ✖ $g(\mu \sin\theta + \cos\theta)$

2. ✖ $g(\mu \sin\theta - \cos\theta)$

3. ✖ $g(\sin\theta + \mu \cos\theta)$

4. ✔ $g(\sin\theta - \mu \cos\theta)$

Question Number : 60 Question Id : 41809918662 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 in equilibrium on a rough inclined plane under its own weight. If

the angle of inclination of the inclined plane is 'α' and the angle of friction

is 'λ',then

Options :

1. ✖ $\alpha > \lambda$

2. ✖ $\alpha > \lambda/2$

3. ✔ $\alpha = \lambda$

4. ✖ $\alpha \geq \lambda$

Question Number : 61 Question Id : 41809918663 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A ball of mass 1 kg collides with a wall with speed 8 ms^{-1} and rebounds on the same line with the same speed. If mass of the wall is taken as infinite, the work done by the ball on the wall is

Options :

1. ✖ 6 J

2. ✖ 8 J

3. ✖ 9 J

4. ✔ zero

Question Number : 62 Question Id : 41809918664 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A pump motor is used to deliver water at a certain rate from a given pipe.

To obtain thrice as much water from the same pipe in the same time, power of the motor has to be increased

Options :

1. ✖ 3 times

2. ✖ 9 times

3. ✔ 27 times

4. ✖ 81 times

Question Number : 63 Question Id : 41809918665 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The energy required to accelerate a car from rest to 10 ms^{-1} is E. What energy will be required to accelerate the car from 10 ms^{-1} to 20 ms^{-1}?

Options :

1. ✖ E

2. ✔ 3E

3. ✖ 5E

4. ✖ 7E

Question Number : 64 Question Id : 41809918666 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The time period of a simple pendulum of infinite length is (R_e = radius of earth)

Options :

1. ✔ $T = 2\pi\sqrt{\frac{R_e}{g}}$

2. ✖ $T = 2\pi\sqrt{\frac{2R_e}{g}}$

3. ✖ $T = 2\pi\sqrt{\frac{R_e}{2g}}$

4. ✖ $T = \infty$

Question Number : 65 Question Id : 41809918667 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A particle executes SHM of amplitude 5 cm and period 3 s. The velocity of the particle at a distance 4 cm from the mean position (take $\pi = 3$) is

Options :

1. $8\ cm\ s^{-1}$ ✖

2. $12\ cm\ s^{-1}$ ✖

3. $4\ cm\ s^{-1}$ ✖

4. $6\ cm\ s^{-1}$ ✔

Question Number : 66 Question Id : 41809918668 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A particle is executing SHM with amplitude α and has maximum velocity 'v'. Its speed at displacement $\alpha/2$ will be

Options :

1. $0.866\ v$ ✔

2. ✖ v/2

3. ✖ v

4. ✖ v/4

Question Number : 67 Question Id : 41809918669 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A whistle of frequency 1000 Hz is sounded on a car travelling towards a cliff with velocity of 18 m s^{-1} normal to the cliff. If velocity of sound = 330 m s^{-1}, then the apparent frequency of the echo as heard by the car driver is nearly

Options :

1. ✔ 1115 Hz

2. ✖ 115 Hz

3. ✖ 67 Hz

4. ✖ 47.2 Hz

Question Number : 68 Question Id : 41809918670 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An open window is a perfect

Options :

1. ✖ Reflector of sound

2. ✔ Absorber of sound

3. ✖ Scatterer

4. ✖ Refractor

Question Number : 69 Question Id : 41809918671 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A gas is found to obey P^2V = constant. The initial temperature and volume are T_0& V_0. If the gas expands to volume $2V_0$, then the final temperature is

Options :

1. ✔ $\sqrt{2}\,T_0$

2To

2. ✖

$\frac{T_0}{2}$

3. ✖

$\frac{T_0}{\sqrt{2}}$

4. ✖

Question Number : 70 Question Id : 41809918672 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The constant in ideal gas equation is known as

Options :

Universal gas constant

1. ✔

Pressure constant

2. ✖

Temperature constant

3. ✖

Boltzmann constant

4. ✖

Question Number : 71 Question Id : 41809918673 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 specific heats for a mono atomic gas is given by

Options :

1. ✖ $\frac{7}{5}$

2. ✖ $\frac{5}{2}$

3. ✔ $\frac{5}{3}$

4. ✖ $\frac{9}{5}$

Question Number : 72 Question Id : 41809918674 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two identical samples of a gas are allowed to expand (i) isothermally (ii) adiabatically. Work done is

Options :

1. ✖ More in the adiabatic process

More in the isothermal process

2. ✔

Equal in both processes

3. ✖

No Work done in any process

4. ✖

Question Number : 73 Question Id : 41809918675 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The heat required to raise 0.5 Kg of sand from 30°C to 90 °C is given by

(Specific Heat of sand = 830 J/Kg °C)

Options :

23450J

1. ✖

54560J

2. ✖

4578J

3. ✖

24900J

4. ✔

Question Number : 74 Question Id : 41809918676 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A ray of light will undergo total internal reflection if it

Options :

1. ✔ Travels from denser medium to rarer medium & angle of incidence should be greater than critical angle

2. ✖ Travels from rarer medium to denser medium & angle of incidence should be greater than critical angle

3. ✖ Travels from denser medium to rarer medium & angle of incidence should be less than critical angle

4. ✖ Travels from rarer medium to denser medium& angle of incidence should be less than critical angle

Question Number : 75 Question Id : 41809918677 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The expulsion of a magnetic field from the interior of a superconductor , a phenomenon is known as

Options :

1. ✖ Isotopic effect

2. ✖ BCS theory

3. ✔ Meissner effect

4. ✖ London theory

Chemistry

Section Id :	418099374
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 : 41809918678 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How many electrons in an atom may have the quantum numbers, n=4,

m= -½ ?

Options :

1. ✖ 1

2. ✖ 2

3. ✔ 16

4. ✖ 32

Question Number : 77 Question Id : 41809918679 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Balmer series of Hydrogen atom corresponds to which spectral region?

Options :

1. ✖ X-ray region

2. ✖ Ultraviolet region

3. ✖ Infrared region

4. ✔ Visible region

Question Number : 78 Question Id : 41809918680 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The electronic configuration of the Cu atom violates which principle?

Options :

1. ✖ Hund's rule

2. ✖ Pauli Exclusion Principle

3. ✔ Aufbau Principle

4. ✖ Heisenberg's Uncertainty Principle

Question Number : 79 Question Id : 41809918681 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

As compared to covalent compounds, ionic compounds generally have:

Options :

1. ✖ low melting points and low boiling points

2. ✔ high melting points and high boiling points

3. ✖ low melting points and high boiling points

4. ✖ high melting points and low boiling points

Question Number : 80 Question Id : 41809918682 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The octet rule is not valid for the molecule:

Options :

1. ✖ CO_2

2. ✖ H_2O

3. ✖ O_2

4. ✔ CO

Question Number : 81 Question Id : 41809918683 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two solutions of a substance (non-electrolyte) are mixed in the following manner: 480 mL of 1.5 M first solution, 520 mL of 1.2 M second solution. What is the molarity of the final mixture?

Options :

1. ✖ 1.20 M

2. ✖ 1.50 M

3. ✖ 2.70 M

4. ✔ 1.344 M

Question Number : 82 Question Id : 41809918684 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The equivalent mass of H_3PO_4 in the following equation (let M be the mass of H_3PO_4):

$$H_3PO_4 + Ca(OH)_2 \longrightarrow CaHPO_4 + 2H_2O$$

Options :

1. ✖ M

2. ✔ M/2

3. ✖ M/3

4. ✖ 2M

Question Number : 83 Question Id : 41809918685 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The normality of 4% (mass/volume) NaOH solution is

Options :

1. ✖ 0.1 N

2. ✔ 1.0 N

3. ✖ 0.5 N

4. ✖ 0.01 N

Question Number : 84 Question Id : 41809918686 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 cannot function as both Bronsted acid and base?

Options :

1. ✔ HCl

2. ✖ NH_3

3. ✖ HSO_4^-

HCO_3^-

4. ✖

Question Number : 85 Question Id : 41809918687 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 will make a basic buffer?

Options :

1. ✔ 100 mL of 0.1 M HCl + 200 mL of 0.1 M NH_4OH

2. ✖ 100 mL of 0.1 M HCl + 100 mL of 0.1 M NH_4OH

3. ✖ 50 mL of 0.1 M NaOH +25 mL of 0.1 M CH_3COOH

4. ✖ 100 mL of 0.1 M CH_3COOH + 100 mL of 0.1 M NaOH

Question Number : 86 Question Id : 41809918688 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hydrogen gas is not liberated when the following metal is added to dil. HCl.

Options :

1. ✔ Mg

2.

Zn

3. Ag

4. Cu

Question Number : 87 Question Id : 41809918689 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The reduction potential of hydrogen half-cell will be negative if:

Options :

1. $p(H_2) = 1$ atm and $[H^+] = 1$ M

2. $p(H_2) = 2$ atm and $[H^+] = 2$ M

3. $p(H_2) = 1$ atm and $[H^+] = 2$ M

4. $p(H_2) = 2$ atm and $[H^+] = 1$ M

Question Number : 88 Question Id : 41809918690 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

3 faraday of electricity are passed through molten Al_2O_3, aqueous solution of $CuSO_4$ and molten NaCl taken in three different electrolytic cells. The amount of Al, Cu and Na deposited at the cathodes will be in the ratio of:

Options :

1. ✖ 1 mole : 2 mole : 3mole

2. ✖ 3 mole : 2 mole : 1 mole

3. ✖ 1.5 mole : 2 mole : 3 mole

4. ✔ 1 mole : 1.5 mole : 3 mole

Question Number : 89 Question Id : 41809918691 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 EMF of cell represented as $Zn(s) / Zn^{2+}(Aq) \| H^{+}(1M) /H_2(1atm)$ if $E^0_{Zn2+/Zn} = -0.7618$ V

Options :

1. ✔ + 0.7618 V

2. ✖ 0.0 V

3. ✖ -0.7618 V

4. ✖ +0.540 V

Question Number : 90 Question Id : 41809918692 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In Ion-exchanger, the exhausted cation exchange resin can be regenerated by washing with:

Options :

1. ✖ dil. NaOH

2. ✔ dil. HCl

3. ✖ Distilled water

4. ✖ Brakish water

Question Number : 91 Question Id : 41809918693 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 powerful disinfectant?

Options :

1. ✖ O_2

2.

✔ Cl_2

3. ✖ N_2

4. ✖ $CaOCl_2$

Question Number : 92 Question Id : 41809918694 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A sample of water contain temporary hardness of 56.8 mg/L. Express the temporary hardness in terms of e (Clark degrees)

Options :

1. ✖ 56.8 e

2. ✔ 3.976 e

3. ✖ 5.68 e

4. ✖ 811.43 e

Question Number : 93 Question Id : 41809918695 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Tinning is done by:

Options :

1. ✖ Electroplating

2. ✖ Spraying

3. ✔ Hot dipping

4. ✖ Cementation

Question Number : 94 Question Id : 41809918696 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the oxygen supply is limited during the rusting of iron, corrosion product is:

Options :

1. ✖ Fe_2O_3

2. ✖ $Fe_2O_3.xH_2O$

3. ✖ $Fe_2O_3.2H_2O$

4. ✔ Fe_3O_4

Question Number : 95 Question Id : 41809918697 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Buna-N rubber is made from:

Options :

1. ✖ Butadiene and formaldehyde

2. ✖ Isoprene and Phenol

3. ✔ Butadiene and acrylonitrile

4. ✖ Phenol and styrene

Question Number : 96 Question Id : 41809918698 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A good example of condensation polymer is:

Options :

1. ✖ Teflon

2. ✖ Polythene

3. ✔ Bakelite

4. ✖ Polypropylene

Question Number : 97 Question Id : 41809918699 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Vulcanisation of rubber is mainly by the addition of:

Options :

1. ✖ Oxygen gas

2. ✖ Magnesium oxide

3. ✔ Sulphur

4. ✖ Zinc oxide

Question Number : 98 Question Id : 41809918700 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

During the refining of petroleum, which of the following is used to remove sulphur impurity:

Options :

Copper Oxide

1. ✔

Copper Sulphide

2. ✖

Magnesium chloride

3. ✖

Magnesium sulphate

4. ✖

Question Number : 99 Question Id : 41809918701 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 oxide of nitrogen is not a common pollutant?

Options :

1. ✔ N_2O_5

2. ✖ N_2O

3. ✖ NO

4. ✖ NO_2

Question Number : 100 Question Id : 41809918702 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

DDT is:

Options :

1. ✖ Nitrogen containing insecticide

2. ✖ Biodegradable pollutant

3. ✔ Non-Biodegradable pollutant

4. ✖ An antibiotic

Electrical and Electronics Engineering

Section Id :	418099375
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 : 41809918703 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Ohm's law is not applicable to _____

Options :

1. ✖ dc circuits

2. ✖ high currents

3. ✖ small resistors

4. ✔ semi conductors

Question Number : 102 Question Id : 41809918704 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When 'n' cells, each of emf 'E' volts and internal resistance 'r' ohms are connected in series across an external resistance 'R' ohms. The current 'i' through an external resistance 'R' ohms is given by _____

Options :

1. ✔ $i=nE/(R+nr)$

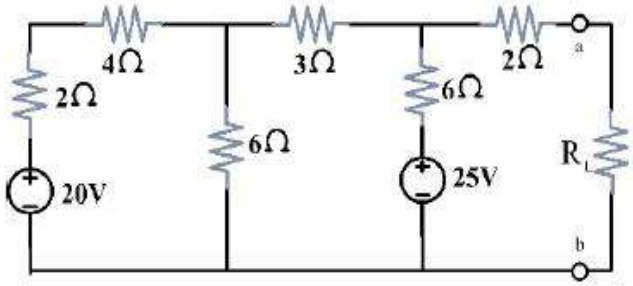
2. ✖ $i=E/(R+r/n)$

3. ✖ $i=nE/(r+nR)$

4. ✖ $i=E/(R+r)$

Question Number : 103 Question Id : 41809918705 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Find the Thevenin's equivalent resistance R_{th} across the terminal a-b of the below network.



Options :

1. ✔ $R_{th} = 5\ \Omega$

2. ✖ $R_{th} = 2\ \Omega$

3. ✖ $R_{th} = 15\ \Omega$

4. ✖ $R_{th} = 3\ \Omega$

Question Number : 104 Question Id : 41809918706 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a capacitor, the electric charge is stored in _____

Options :

1. ✔ Dielectric

2. ✖ metal plates

3. ✖ dielectric as well as metal plates

4. ✖ neither dielectric nor metal plates

Question Number : 105 Question Id : 41809918707 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The line A to neutral voltage is $10\angle 15^{\circ}V$ for a balanced three phase star-connected load with phase sequence ABC. Line voltage V_{BC} is given by

Options :

1. ✖ $10\sqrt{3}\angle 105^{\circ}$

2. ✖ $10\angle 105^{\circ}$

3. ✔ $10\sqrt{3}\angle -75^{\circ}$

4. ✖ $-10\sqrt{3}\angle -90^{\circ}$

Question Number : 106 Question Id : 41809918708 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The magnetic core of a certain material is operated at constant flux density.

The core losses measured at 50Hz and 75Hz are respectively 2000W and

3375 W. The hysteresis and eddy current losses of the core at 100Hz would

respectively be:

Options :

1. ✖ 2500 W, 2000 W

2. ✖ 2000 W, 2500 W

3. ✔ 3000 W, 2000 W

4. ✖ 2000 W, 3000 W

Question Number : 107 Question Id : 41809918709 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 ferromagnetic material?

Options :

1. ✖ Iron

2. ✖ cobalt

3. ✖ nickel

4. ✔ copper

Question Number : 108 Question Id : 41809918710 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 effects is used in measurement of magnetic flux?

Options :

1. ✖ Seeback effect

2. ✔ Hall effect

3. ✖ Piezoelectric effect

4. ✖ Photoelectric effect

Question Number : 109 Question Id : 41809918711 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A dynamometer wattmeter can be used for

Options :

1. ✔ DC and AC power measurement

2.

DC and AC current measurement

3. DC power measurement only

4. AC power measurement only

Question Number : 110 Question Id : 41809918712 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Moving iron and PMMC instruments can be distinguished from each other

by looking at _____

Options :

1. pointer

2. terminal size

3. ✔ scale

4. scale range

Question Number : 111 Question Id : 41809918713 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In two wattmeter method of 3-phase power measurement, one of the wattmeter would read negative if

Options :

1. ✔ The power factor of load is less than 0.5

2. ✖ The power factor of load is greater than 0.5

3. ✖ The power factor of load is equal to 0.5

4. ✖ The power factor of load is unity

Question Number : 112 Question Id : 41809918714 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The fall in speed of a dc generator due to increase in load can be corrected by __

Options :

1. ✖ cooling the armature

2. ✖ increasing the excitation

3. ✖ reducing the load voltage

4. ✔ increasing the input to the prime mover

Question Number : 113 Question Id : 41809918715 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a 4-pole, 25 kW, 200 V wave wound dc separately excited generator, the

current in each parallel path will be _____

Options :

1. ✔ 62.5A

2. ✖ 125A

3. ✖ 31.25A

4. ✖ 250A

Question Number : 114 Question Id : 41809918716 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The direction of rotation of a DC shunt motor can be reversed by reversing

Options :

1. ✖ the supply terminals

2. ✖ the field terminals only

3. ✖

the armature terminals only

4. ✔ either field or the armature terminals

Question Number : 115 Question Id : 41809918717 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The efficiency of a dc motor when developing maximum power will be

about _____

Options :

1. ✖ 100%

2. ✔ 50%

3. ✖ less than 50%

4. ✖ more than 50%

Question Number : 116 Question Id : 41809918718 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A DC shunt machine connected to 250 V mains has its armature resistance of 0.12 Ω and the field resistance of 50 Ω . Find the ratio of the speed as a generator to the speed as a motor, the line current in each case being 80 A.

Options :

1. ✖ 2.024

2. ✔ 1.079

3. ✖ 1.982

4. ✖ 0.623

Question Number : 117 Question Id : 41809918719 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The effect of armature reaction in a dc machine can be reduced by using _____

Options :

1. ✖ Commutating poles only

2. ✖ Compensating winding only

3. ✔ Commutating poles and compensating winding

4. ✖ Damper winding

Question Number : 118 Question Id : 41809918720 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The output of the dc motor depends mainly on _____

Options :

1. ✔ Speed and torque

2. ✖ Speed and applied voltage

3. ✖ Speed and back emf

4. ✖ Torque and applied voltage

Question Number : 119 Question Id : 41809918721 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The speed of a dc motor is

Options :

1. ✖ Directly proportional to the field flux

2. ✖ Inversely proportional to the applied voltage

Directly proportional to the applied voltage and inversely proportional to the

3. ✔ flux

4. ✖ Inversely proportional to the product of applied voltage and the field flux.

Question Number : 120 Question Id : 41809918722 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Transformer action require a:

Options :

1. ✖ Constant magnetic flux

2. ✖ Increasing magnetic flux

3. ✔ Alternating magnetic flux

4. ✖ Alternating electric flux

Question Number : 121 Question Id : 41809918723 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 220/440 V, 50 Hz, 5 kVA single phase transformer operates on 220 V, 40

Hz supply. Then,

Options :

1. ✖ Eddy current loss increases and hysteresis loss increases

2. ✖ Eddy current loss decreases and hysteresis loss increases

3. ✖ Eddy current loss increases and hysteresis loss decreases

4. ✔ Eddy current loss decreases and hysteresis loss decreases

Question Number : 122 Question Id : 41809918724 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The reactance offered by a capacitor to ac of frequency 50 Hz is 10Ω. If the frequency is increased to 100 Hz, reactance becomes _____

Options :

1. ✖ 20Ω

2. ✔ 5Ω

3. ✖ 2.5Ω

4. ✖ 40Ω

Question Number : 123 Question Id : 41809918725 Display Question Number : Yes Is Question

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

A 5 kVA, 200/400 V, 50 Hz single phase transformer gave the following test results:

Open Circuit test: 200 V, 0.7 A, 60 W on low voltage side

Short Circuit test: 22 V, 16 A, 120 W on high voltage side

Determine the load for maximum efficiency

Options :

1. ✔ 4.52 kVA

2. ✖ 3.52 kVA

3. ✖ 5.52 kVA

4. ✖ 2.52 kVA

Question Number : 124 Question Id : 41809918726 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The HV terminals of a 3-phase bank of three single phase transformers are connected to a 3-wire, 3-phase 11 kV (line-line) system. The LV terminals are connected to a 3-wire, 3-phase load rated of 1000 kVA and 2200 V (line-line). Find the kVA ratings of LV winding of each transformer for Star(HV)-Delta(LV) connection

Options :

1. ✖ 1000 kVA

2. ✔ 333.3 kVA

3. ✖ 577.3 kVA

4. ✖ 500 kVA

Question Number : 125 Question Id : 41809918727 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The short-circuit test on a transformer gives its

Options :

1. ✖ Equivalent resistance and core loss

2. ✖ Magnetising impedance

3. ✔ Equivalent resistance and reactance

4. ✖ Magnetising current and core loss

Question Number : 126 Question Id : 41809918728 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

A series RLC circuit will have unity power factor if operated at a frequency

of _

Options :

1. ✖ $1/LC$

2. ✖ $1/\omega\sqrt{LC}$

3. ✖ $1/\omega^2LC$

4. ✔ $1/2\pi\sqrt{LC}$

Question Number : 127 Question Id : 41809918729 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A coil draws 0.5 A from a 120 V, 60 Hz source at a 0.8 lagging power

factor. What are the coil resistance and inductive reactance?

Options :

1. ✖ 182 Ω and 144Ω

2. ✖ 144 Ω and 182Ω

3. ✔ 192 Ω and 144Ω

168 Ω and 240Ω

4. ✖

Question Number : 128 Question Id : 41809918730 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An impedance of Z = (2 + j80) Ω is powered by a source having an angular frequency ω = 1200 rad/s. What element should be connected in parallel to Z so that the current drawn from the source is in phase with the voltage?

Options :

1. ✖ Inductance

2. ✖ Resistance

3. ✔ Capacitance

4. ✖ Both Inductance and resistance

Question Number : 129 Question Id : 41809918731 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How much power is absorbed by a circuit that has an input admittance of (0.3 + j0.4) S carrying a current of 30 A?

Options :

1. ✔ 540 W

2. ✖ 980 W

3. ✖ 640 W

4. ✖ 720 W

Question Number : 130 Question Id : 41809918732 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Transformer will operate at maximum efficiency when _____

Options :

1. ✖ hysteresis loss=eddy current loss

2. ✖ eddy current loss = copper loss

3. ✔ copper loss=iron loss

4. ✖ hysteresis loss=copper loss

Question Number : 131 Question Id : 41809918733 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Transformers are rated in kVA instead of kW because_____

Options :

1. ✖ load pf is often not known

2. ✖ kVA is fixed where kW depends on load pf

3. ✔ total transformer loss depends on volt-amperes

4. ✖ it has become customary

Question Number : 132 Question Id : 41809918734 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The synchronous reactance of an alternator is due to

Options :

1. ✔ Leakage flux as well as armature reaction

2. ✖ Leakage flux only

3. ✖ Reactance because of armature reaction in the machine

4. ✖ Synchronous machine reactance

Question Number : 133 Question Id : 41809918735 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The power input to a 415 V, 6-pole, 3-phase induction motor running at 975 rpm is 40 kW. The stator losses are 1 kW and friction and windage losses total 2 kW. The efficiency of motor is around

Options :

1. ✖ 92.5%

2. ✔ 90%

3. ✖ 91%

4. ✖ 88%

Question Number : 134 Question Id : 41809918736 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For synchronous machines, which one of the following statements is false?

Options :

1. ✖ In salient pole machine, the direct-axis synchronous reactance is greater than the quadrature-axis synchronous reactance

2. ✖ The damper bars help the synchronous motor self-start

Short circuit ratio is the ratio of the field current required to produce the rated voltage on open circuit to the rated open armature current on short circuit

3. ✔

The V-curve of a synchronous motor represents the variation in the armature current with field excitation, at a given output power

4. ✖

Question Number : 135 Question Id : 41809918737 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a single-phase induction motor driving a fan load, the reason for having a high resistance rotor is to achieve

Options :

1. ✖ Low starting torque

2. ✔ Quick acceleration

3. ✖ High efficiency

4. ✖ Reduced size

Question Number : 136 Question Id : 41809918738 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 synchronous motor connected to an infinite bus bar with constant excitation is driving a certain load and operating at a leading power factor. If the shaft load is reduced

Options :

1. ✖ The load angle will increase

2. ✔ The load angle will decrease

3. ✖ Power factor will increase

4. ✖ No change will occur

Question Number : 137 Question Id : 41809918739 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A single phase, 2000 V alternator has armature resistance of and reactance of 0.8 Ω and 4.94 Ω respectively. The voltage regulation of the alternator for a load of 100 A at 0.8 leading power factor is:

Options :

1. ✖ 7%

2. ✔ -11.62%

3. ✖ 14%

4. ✖ 0%

Question Number : 138 Question Id : 41809918740 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A three phase induction motor runs at a speed of 1485 rpm at no load and 1350 rpm at full load when supplied from 50 Hz, 3-phase line. What is the speed (at no load) of rotor field with respect to rotor conductors

Options :

1. ✔ 15 rpm

2. ✖ 150 rpm

3. ✖ 25 rpm

4. ✖ 250 rpm

Question Number : 139 Question Id : 41809918741 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Assume that the stator impedance of an induction motor is negligible. The frequency of voltage applied to the motor is increased keeping V/f constant. The maximum motor torque will be:

Options :

1. ✖ Increase and will occur at smaller values of slip.

2. ✖ Increase and will occur at larger values of slip.

3. ✔ Remain constant but will occur at smaller values of slip.

4. ✖ Remain constant but will occur at larger values of slip.

Question Number : 140 Question Id : 41809918742 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 induction motor is operating at slip 's'. If its supply leads are interchanged, then its slip at that instant will be,

Options :

1. ✖ (1+s)

2. ✖ (2+s)

3. ✔ (2-s)

4. ✖ $(1-s)$

Question Number : 141 Question Id : 41809918743 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For a constant torque load the voltage of a squirrel cage induction motor is reduced by a factor of $\frac{1}{\sqrt{2}}$; its current modify by a factor of:

Options :

1. ✖ 2

2. ✖ $\frac{1}{\sqrt{2}}$

3. ✖ $\frac{1}{2}$

4. ✔ $\sqrt{2}$

Question Number : 142 Question Id : 41809918744 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An 8-pole single phase induction motor is running at 690 rpm. Its slips with respect to the forward and backward fields respectively are

Options :

1. ✔ 0.08, 1.92

2. ✖ 1.92, 0.08

3. ✖ 0.08, 2.0

4. ✖ 1.0, 2.0

Question Number : 143 Question Id : 41809918745 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the equivalent circuit of a double-case induction motor, the two rotor cases can be considered

Options :

1. ✔ to be in parallel

2. ✖ to be in series – parallel

3. ✖ to be in series

4. ✖ to be in parallel with stator

Question Number : 144 Question Id : 41809918746 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

How many number of I/O ports are available in 8051 microcontrollers?

Options :

1. ✔ 4

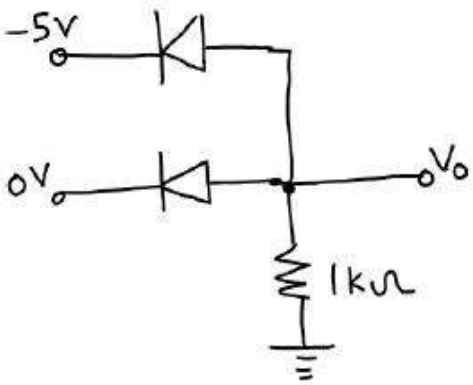
2. ✖ 6

3. ✖ 3

4. ✖ 2

Question Number : 145 Question Id : 41809918747 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 output for the circuit given in figure? Assume ideal diodes.



Options :

1. ✔ -5 V

2. ✖ 0 V

3. ✖ 5V

4. ✖ -5mV

Question Number : 146 Question Id : 41809918748 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The primary function of a filter in a rectifier is to _____

Options :

1. ✖ minimize ac input variations

2. ✖ suppress odd harmonics in the rectifier output

3. ✖ stabilize dc level of the output voltage

4. ✔ remove ripples from the rectified output

Question Number : 147 Question Id : 41809918749 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 diode in a full wave bridge rectifier opens, the output is

_____

Options :

1. ✖ 0 V

2. ✖ one-fourth the amplitude of the input voltage

3. ✔ a half wave rectified voltage

4. ✖ a 120 Hz voltage

Question Number : 148 Question Id : 41809918750 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In voltage amplifiers the load resistance should be _____

Options :

1. ✔ as large as possible

2. ✖ as small as possible

3. ✖ equal to output impedance

4. ✖ equal to input impedance

Question Number : 149 Question Id : 41809918751 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Generally, the gain of a transistor amplifier falls at high frequencies due to the

Options :

1. ✔ internal capacitance of the device

2. ✖ coupling capacitor at the input

3. ✖ skin effect

4. ✖ coupling capacitor at the output

Question Number : 150 Question Id : 41809918752 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Minimize the following boolean function

$F(A, B, C) = \Sigma m(0, 1, 6, 7) + \Sigma d(3, 5)$

Options :

1. ✔ A'B' + AB

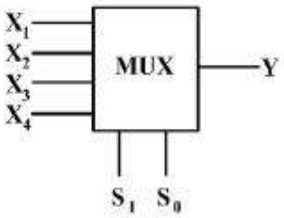
2. ✖ A + A'B'

3. ✖ AB'

4. ✖ AB + B'

Question Number : 151 Question Id : 41809918753 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the Figure shown X_1, X_2, and X_3 are HIGH; X_4 is LOW. S_1 and S_2 are control inputs.



The Multiplexer is equivalent to

Options :

1. ✔ NAND Gate

2. ✖ OR Gate

3. ✖ EXOR Gate

4. ✖ AND gate

Question Number : 152 Question Id : 41809918754 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 devices exhibit negative resistance region during its operation?

Options :

1. ✔ UJT

2. ✖ FET

3. ✖ LED

4. ✖ SCR

Question Number : 153 Question Id : 41809918755 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Barkhausen criterion for sustained oscillations is given by _____

Options :

1. ✖ $A\beta=1$

2. ✔ $|A\beta|\geq 1$

3. ✖ $|A\beta|<1$

4. ✖ $\angle A\beta = 180^0$

Question Number : 154 Question Id : 41809918756 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a Wien bridge oscillator, if the resistances in the positive feedback circuit

are decreased, then the frequency

Options :

1. ✖ decreases

2. ✖ increases

3. ✔ remains the same

4. ✖ fluctuates

Question Number : 155 Question Id : 41809918757 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Digital logic that can be implemented using the following Boolean functions

is

$K=x \oplus y$ and $P=xy$

Options :

1. ✖ Half subtractor

2. ✔ Half adder

3. ✖ Ex-OR

4. ✖ Full adder

Question Number : 156 Question Id : 41809918758 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Mho relay is normally used for the protection of

Options :

1. ✔ Long transmission line

2. ✖ Medium length lines

3. ✖ Short length lines

4. ✖ No length criterion

Question Number : 157 Question Id : 41809918759 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Water hammer occurs in _____

Options :

1. ✔ penstock

2. ✖ surge tank

3. ✖ turbine casing

4. ✖ draft tube

Question Number : 158 Question Id : 41809918760 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The rotation of disc of an induction disc relay under the pole is

Options :

1. ✔ From unshaded pole to shaded pole

2. ✖ From shaded pole to unshaded pole

3. ✖ It depends upon the magnitude of current

4. ✖ It depends upon the C.T. secondary condition

Question Number : 159 Question Id : 41809918761 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For the same rupturing capacity, the actual current to be interrupted by an

HRC fuse is

Options :

1. ✔ Much less than any CB

2. ✖ Much more than any CB

3. ✖ Equal to the CB

4. ✖ Equal to zero always

Question Number : 160 Question Id : 41809918762 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The stability of arc in vacuum depends upon

Options :

1. ✖ The contact material only

2. ✖ The contact material and its vapour pressure

3. ✖ The circuit parameters only

4. ✔ the contact material, its vapour pressure and circuit parameters

Question Number : 161 Question Id : 41809918763 Display Question Number : Yes Is Question

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

In order to have lower cost of electrical energy generation

Options :

1. ✖ The load factor and diversity factor should be low

2. ✖ The load factor should be low but diversity factor should be high

3. ✖ The load factor should be high but diversity factor low

4. ✔ The load factor and diversity factor should be high

Question Number : 162 Question Id : 41809918764 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 11 kV, 10 MVA alternator has impedance of 0.10 pu when referred to its ratings as bases. The new value for base as 110 kV, 20 MVA will be_____

Options :

1. ✖ 0.2 pu

2. ✖ 0.02 pu

3. ✔ 0.002 pu

4. ✖ 0.0002 pu

Question Number : 163 Question Id : 41809918765 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The primary reason for low power factor is owing to installation of _____

Options :

1. ✔ Induction motors

2. ✖ Synchronous motors

3. ✖ DC motors

4. ✖ commutation motors

Question Number : 164 Question Id : 41809918766 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 alternator is used in thermal power plants

Options :

1. ✖ Salient pole type

2. ✔ Non Salient pole type

3. ✖ Squirrel cage

4. ✖ PM type

Question Number : 165 Question Id : 41809918767 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 power plants is most efficient but has high initial cost?

Options :

1. ✖ Thermal Power Plant

2. ✖ Nuclear Power Plant

3. ✔ Hydro-electric Power Plant

4. ✖ Diesel Power Plant

Question Number : 166 Question Id : 41809918768 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For reducing tower footing resistance it is better to use

Options :

1. ✖ Chemical and ground rods only

2. ✖ Chemical and counterpoise only

3. ✔ Ground rod and counterpoise only

4. ✖ Chemical, ground rods and counterpoise

Question Number : 167 Question Id : 41809918769 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 steel wire in an ACSR conductor is to _____

Options :

1. ✖ compensate for skin effect

2. ✖ take care of surges

3. ✔ provide additional mechanical strength

4. ✖ reduce inductance

Question Number : 168 Question Id : 41809918770 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The voltage at the two ends of a line are 132kV and its reactance is 40 ohms. The capacity of the line is

Options :

1. ✔ 435.6 MW

2. ✖ 217.5 MW

3. ✖ 251.5 MW

4. ✖ 500 MW

Question Number : 169 Question Id : 41809918771 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For a lumped inductive load, with increase in supply frequency

Options :

1. ✖ P and Q increases

2. ✖ P increases and Q decreases

3. ✔ P decreases and Q increases

4. ✖ P and Q decreases

Question Number : 170 Question Id : 41809918772 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Ferranti effect on long overhead lines is experienced when it is

Options :

1. ✔ Lightly loaded only

2. ✖ On full load at unity p.f

3. ✖ On full load at 0.8 p.f. lag

4. ✖ For all loads

Question Number : 171 Question Id : 41809918773 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The presence of earth in case of overhead lines

Options :

1. ✔ Increases the capacitance

2. ✖

Increases the inductance

3. ✖ Decreases the capacitance

4. ✖ Decreases the inductance

Question Number : 172 Question Id : 41809918774 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The inductance of a transmission line is minimum when

Options :

1. ✖ GMD is high

2. ✖ GMR is high

3. ✖ both GMD and GMR are high

4. ✔ GMD is low and GMR is high

Question Number : 173 Question Id : 41809918775 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The order of the lightning discharge current is

Options :

1. ✔ 10000 A

2. ✖ 100 A

3. ✖ 1 A

4. ✖ 1 microampere

Question Number : 174 Question Id : 41809918776 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Feeder is designed mainly from the point of view of-

Options :

1. ✔ Its current carrying capacity

2. ✖ Voltage drop in it

3. ✖ Operating voltage

4. ✖ Operating frequency

Question Number : 175 Question Id : 41809918777 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Corona loss increases with _____

Options :

1. ✔ decreases in conductor size and increase in supply frequency

2. ✖ increases in both conductor size and supply frequency

3. ✖ decreases in both conductor size and supply frequency

4. ✖ increase in conductor size and decrease in supply frequency

Question Number : 176 Question Id : 41809918778 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 braking is suggested in electric trains where the equivalent

inertia of motor-load system is high

Options :

1. ✖ Plugging

2. ✖ Dynamic braking

3. ✖ Rheostatic

4. ✔ Regenerative

Question Number : 177 Question Id : 41809918779 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 statements are true related to Traction

A. High starting torque

B. Series speed-torque characteristics

C. Complex speed control

Options :

1. ✖ Statement A only

2. ✔ Statement A and B only

3. ✖ Statement A and C only

4. ✖ Statement B and C only

Question Number : 178 Question Id : 41809918780 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

During the _____ period, the power supply to the motor is cut-off and the train is allowed to run due to its own momentum

Options :

1. ✖ Free running

2. ✖ Notching up

3. ✔ Coasting

4. ✖ Braking

Question Number : 179 Question Id : 41809918781 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The speed-time curve for the urban service has no

Options :

1. ✔ Free running period

2. ✖ Acceleration period

3. ✖ Coasting period

4. ✖ Braking period

Question Number : 180 Question Id : 41809918782 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In tramways which of the following motors is used?

Options :

1. ✖ D.C. shunt motor

2. ✔ D.C. series motor

3. ✖ A.C. three phase motor

4. ✖ AC. single phase capacitor start motor

Question Number : 181 Question Id : 41809918783 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The specific energy consumption of a train will be more for

Options :

1. ✖ greater the distance between stops

2. ✔ lower values of acceleration and retardation

3. ✖ higher value of acceleration and retardation

4. ✖ for lower gradients

Question Number : 182 Question Id : 41809918784 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Coefficient of adhesion for rails which are wet and greasy is approximately

___

Options :

1. ✖ 0.3

2. ✖ 0.25

3. ✔ 0.15

4. ✖ 0.4

Question Number : 183 Question Id : 41809918785 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Coefficient of adhesion is

Options :

1. ✖ Higher in case of DC traction than AC traction

2. ✔ Lower in case of DC traction than AC traction

3. ✖ Same in DC traction and AC traction

4. ✖ zero in both DC traction and AC traction

Question Number : 184 Question Id : 41809918786 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Earthing of electrical equipment is necessary for the protection against

_____

Options :

1. ✖ over loading

2. ✖ voltage fluctuation

3. ✔ danger of electric shock

4. ✖ high conductor temperature

Question Number : 185 Question Id : 41809918787 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Where is the location of main switch in a domestic wiring installation?

Options :

1. ✖ Near to load center

2. ✔ Near to termination of service line

3. ✖ Outside wall of building

4. ✖ Near main door

Question Number : 186 Question Id : 41809918788 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Fuse material must have _____

Options :

1. ✖ high melting point and high specific resistivity

2. ✔ low melting point and high specific resistivity

3. ✖ low melting point and low specific resistivity

4. ✖ high melting point and low specific resistivity

Question Number : 187 Question Id : 41809918789 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which wire is to be connected through switch as per the IE recommendations?

Options :

1. ✖ Neutral

2. ✔ Phase wire

3. ✖ Earth wire

4. ✖ Ground

Question Number : 188 Question Id : 41809918790 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 snubber circuit connected across the SCR is to

Options :

1. ✔ Suppress dv/dt

2. ✖ Increase dv/dt

3. ✖ To maintain 'v' constant

4. ✖ Decrease di/dt

Question Number : 189 Question Id : 41809918791 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In reverse blocking mode of thyristor

Options :

1. ✖ Junction J_1 and J_3 are in forward bias and J_2 is in reverse bias

2. ✖ Junction J_1 and J_2 are in forward bias and J_3 is in reverse bias

3. ✖ Junction J_1 and J_2 are in reverse bias and J_3 is in forward bias

4. ✔ Junction J_1 and J_3 are in reverse bias and J_2 is in forward bias

Question Number : 190 Question Id : 41809918792 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

After firing an SCR, the gate pulse is removed. The current in the SCR will _____

Options :

1. ✔ remain same

2. ✖ immediately fall to zero

3. ✖ rise up

4. ✖ rise a little and then fall to zero

Question Number : 191 Question Id : 41809918793 Display Question Number : Yes Is Question

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

In ac motor control, the ratio of voltage to frequency is maintained at

constant value to make

Options :

1. ✖ maximum use of magnetic circuit

2. ✖ minimum use of magnetic circuit

3. ✖ maximize the current drawn from the supply to provide torque

4. ✔ to provide maximum output torque

Question Number : 192 Question Id : 41809918794 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A single phase full-bridge inverter has a load of 3Ω and d.c. input voltage of

50V. The rms value of output voltage is

Options :

1. ✔ 50 V

2. ✖ 45 V

3. ✖ 50/3 V

4. ✖ 150 V

Question Number : 193 Question Id : 41809918795 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Type-A chopper is used for obtaining which type of mode?

Options :

1. ✖ Reverse motoring mode

2. ✔ Motoring mode

3. ✖ Reverse regenerative braking mode

4. ✖ Regenerative braking mode

Question Number : 194 Question Id : 41809918796 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

dv/dt rating of the TRIAC is _____ when compared to SCR.

Options :

1. ✖ High

2. ✔ low

3. ✖ equal

4. ✖ not comparable

Question Number : 195 Question Id : 41809918797 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 devices is the most suitable for high frequency applications?

Options :

1. ✖ BJT

2. ✖ IGBT

3. ✔ MOSFET

4. ✖ SCR

Question Number : 196 Question Id : 41809918798 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The output voltage of a chopper can be controlled by varying the

Options :

1. ✔ duty cycle

2. ✖ firing angle

3. ✖ reactor position

4. ✖ extinction angle

Question Number : 197 Question Id : 41809918799 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A single phase voltage controller has input of 230 V and a load of 15 Ω resistive. For 6 cycles on and 4 cycles off, determine the RMS output voltage.

Options :

1. ✖ 189 V

2. ✖ 260 V

3. ✖ 156 V

4. ✔ 178 V

Question Number : 198 Question Id : 41809918800 Display Question Number : Yes Is Question

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

In 8051 which interrupt has highest priority?

Options :

1. ✖ IE1

2. ✖ TF0

3. ✔ IE0

4. ✖ TF1

Question Number : 199 Question Id : 41809918801 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The 8051 microcontroller is of ___pin package as a _____ processor.

Options :

1. ✖ 30, 1byte

2. ✖ 20, 1 byte

3. ✔ 40, 8 bit

4. ✖ 40, 8 byte

Question Number : 200 Question Id : 41809918802 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The instruction: MOV A, #100 represents which of the following addressing modes?

Options :

1. ✖ Direct addressing

2. ✖ Indirect addressing

3. ✖ Indexed addressing

4. ✔ Immediate mode of addressing