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 22nd July 2022 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

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Mathematics

Section Id :	722544100
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

Question Number : 1 Question Id : 7225445002 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\begin{vmatrix} 2 & x & 3 \\ 4 & 1 & 6 \\ -1 & 2 & 7 \end{vmatrix}=0$ then the value of x is

Options :

1. ✘ 6

2. ✘ 5/3

3. ✔ 1/2

4. ✘ -6

Question Number : 2 Question Id : 7225445003 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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If $2A + 3B - 4I = \begin{pmatrix} 3 & 15 \\ 20 & 28 \end{pmatrix}$ and $A + B + I = \begin{pmatrix} 4 & 6 \\ 8 & 14 \end{pmatrix}$ then $A =$

Options :

1. ✖ $\begin{pmatrix} 3 & 5 \\ 0 & 8 \end{pmatrix}$

2. ✖ $\begin{pmatrix} 3 & 15 \\ 2 & 8 \end{pmatrix}$

3. ✖ $\begin{pmatrix} 13 & 1 \\ 20 & 2 \end{pmatrix}$

4. ✔ $\begin{pmatrix} 2 & 3 \\ 4 & 7 \end{pmatrix}$

Question Number : 3 Question Id : 7225445004 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The system of the simultaneous linear equations

$$x - y - 2z = 3; \quad 2x + y + z = 5; \quad 4x - y - 2z = 1 \text{ then } z =$$

Options :

1. ✔ -10

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2. ✖ 3

3. ✖ 0

4. ✖ -1

Question Number : 4 Question Id : 7225445005 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $A = \begin{pmatrix} 1 & 2 \\ 2 & 4 \end{pmatrix}$ and $B = \begin{pmatrix} -4 & 6 \\ 2 & -3 \end{pmatrix}$ then $AB =$

Options :

1. ✖ 1

2. ✖ -8

3. ✖ -4

4. ✔ 0

Question Number : 5 Question Id : 7225445006 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 a square matrix such that $A^T = A$ then A is called _____

Options :

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1. ✓ symmetric matrix

2. ✗ skew symmetric matrix

3. ✗ singular matrix

4. ✗ scalar matrix

Question Number : 6 Question Id : 7225445007 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\frac{10-x}{x^2+x-12} = \frac{A}{x+4} + \frac{B}{x-3}$ then $A + B =$

Options :

1. ✓ -1

2. ✗ 1

3. ✗ -2

4. ✗ 5

Question Number : 7 Question Id : 7225445008 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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If $\frac{4x^2+5x+8}{(x^2+5)(x+2)} = \frac{Ax+B}{x^2+5} + \frac{C}{x+2}$ then $B + C$ =

Options :

1. ✗ 12/7

2. ✗ -15/9

3. ✓ 15/9

4. ✗ 17/9

Question Number : 8 Question Id : 7225445009 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $sin\theta = \frac{3}{5}$, θ *is acute,* then $2tan\theta + 3sec\theta + 4sec\theta\ cosec\theta =$

Options :

1. ✗ -1

2. ✓ $\frac{163}{12}$

3. ✗ $\frac{-163}{12}$

4. ✗ $\frac{13}{12}$

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Question Number : 9 Question Id : 7225445010 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $x = asec\theta$, $y = btan\theta$ then $\frac{x^2}{a^2} - \frac{y^2}{b^2} =$

Options :

1. ✖ $\frac{1}{2}$

2. ✖ $-\frac{1}{2}$

3. ✖ $\frac{1}{4}$

4. ✔ 1

Question Number : 10 Question Id : 7225445011 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 $tan^2 60^0 + 2tan^2 45^0$ is

Options :

1. ✔ 5

2. ✖ 2

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3. ✖ -5

4. ✖ -3

Question Number : 11 Question Id : 7225445012 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 $tan20^0\ tan40^0\ tan60^0\ tan80^0$ is

Options :

1. ✖ -2

2. ✖ 2

3. ✖ -3

4. ✔ 3

Question Number : 12 Question Id : 7225445013 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $(1+tanA)(1+tanB)=2$ then $A+B=$

Options :

1. ✖ 65^0

2. ✔ 45^0

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3. ✖ 35^0

4. ✖ 25^0

Question Number : 13 Question Id : 7225445014 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 $sin20^0\ sin40^0\ sin60^0\ sin80^0$ is

Options :

1. ✖ $\frac{-3}{16}$

2. ✖ $\frac{23}{16}$

3. ✖ $\frac{31}{16}$

4. ✔ $\frac{3}{16}$

Question Number : 14 Question Id : 7225445015 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If in a triangle ABC , $a = 13, b = 14, c = 15$ then the area of the triangle is

Options :

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1. ✖ 35 sq. units

2. ✖ 56 sq. units

3. ✔ 84 sq. units

4. ✖ 94 sq. units

Question Number : 15 Question Id : 7225445016 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 $sin^{-1}\frac{5}{13} + \tan^{-1}\frac{12}{5}$ is

Options :

1. ✖ $-\frac{\pi}{2}$

2. ✖ $\frac{\pi}{4}$

3. ✔ $\frac{\pi}{2}$

4. ✖ $-\frac{\pi}{3}$

Question Number : 16 Question Id : 7225445017 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response

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Time : N.A Think Time : N.A Minimum Instruction Time : 0

The general solution of trigonometric equation $sec4\theta - sec2\theta = 2$ is

Options :

1. ✓ $\frac{2n\pi}{5} \pm \frac{\pi}{10}$ or $2n\pi \pm \frac{\pi}{2}$

2. ✗ $\frac{3\pi}{5}$

3. ✗ $\frac{5\pi}{4}$

4. ✗ $\frac{\pi}{4}$

Question Number : 17 Question Id : 7225445018 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 $\tan^{-1}(2sin150^0)$is

Options :

1. ✗ π

2. ✗ 3π

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3. ✖ $\frac{\pi}{2}$

4. ✔ $\frac{\pi}{4}$

Question Number : 18 Question Id : 7225445019 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The modulus of $\frac{(1+i)(i-\sqrt{3})i}{1-i}$ is

Options :

1. ✔ 2

2. ✖ 6

3. ✖ -2

4. ✖ 4

Question Number : 19 Question Id : 7225445020 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $1, \omega, \omega^2$ are the cube roots of unity, then $(1-\omega)(1-\omega^2)(1-\omega^4)(1-\omega^5) =$

Options :

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1. ✖ 3

2. ✔ 9

3. ✖ 1

4. ✖ 0

Question Number : 20 Question Id : 7225445021 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 tangent from(-3,1) to the circle $3x^2 + 3y^2 - 5x - 6y - 12 = 0$ is

Options :

1. ✖ -3

2. ✔ 3

3. ✖ 4

4. ✖ 9

Question Number : 21 Question Id : 7225445022 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 an equilateral hyperbola is

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Options :

1. ✖ 1

2. ✔ $\sqrt{2}$

3. ✖ 3

4. ✖ $\sqrt{3}$

Question Number : 22 Question Id : 7225445023 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 hyperbola $36x^2 - 25y^2 = 900$ is

Options :

1. ✔ $\frac{\sqrt{61}}{5}$

2. ✖ $\frac{9}{2}$

3. ✖ $\frac{3}{2}$

4. ✖ $\frac{5}{2}$

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Question Number : 23 Question Id : 7225445024 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 tangent to parabola $y^2 = 16x$ at an end point of latus rectum is

Options :

1. ✗ $2x - 3y - 4 = 0$

2. ✗ $2x + 2y + 4 = 0$

3. ✓ $x - y + 4 = 0$

4. ✗ $x - y - 4 = 0$

Question Number : 24 Question Id : 7225445025 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $y = 4x + k$ is a tangent to the hyperbola $\frac{x^2}{64} - \frac{y^2}{49} = 1$ then the value of k is

Options :

1. ✗ $\pm\sqrt{775}$

2. ✗ $\pm\sqrt{995}$

3. ✗ $\pm\sqrt{275}$

4. ✓ $\pm\sqrt{975}$

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Question Number : 25 Question Id : 7225445026 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the line $2x + \sqrt{6}\,y = 2$ touches the hyperbola $x^2 - 2y^2 = 4$ then the point of contact is

Options :

1. ✗ $(4, \sqrt{6})$

2. ✓ $(4, -\sqrt{6})$

3. ✗ $(-4,6)$

4. ✗ $(5,7)$

Question Number : 26 Question Id : 7225445027 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 $\lim_{x\to 2}\left(\frac{x^3-3x-2}{2x^2-5x+2}\right)$ is

Options :

1. ✗ $\frac{1}{3}$

2. ✓ 3

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3. ✗ $\frac{1}{5}$

4. ✗ $\frac{1}{2}$

Question Number : 27 Question Id : 7225445028 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $2x^2 - 3xy + 4y^2 = 1$ then $\frac{dy}{dx} =$

Options :

1. ✓ $\frac{4x-3y}{3x-8y}$

2. ✗ $\frac{4x-7y}{3x-8y}$

3. ✗ $\frac{4x-3y}{3x+8y}$

4. ✗ $\frac{4x-3y}{3x-18y}$

Question Number : 28 Question Id : 7225445029 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $x = a\sin^2 t$ and $y = a\cos^2 t$ then $\frac{dy}{dx} =$

Options :

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1. ✖ -2

2. ✖ $\tan t$

3. ✖ $\sin t$

4. ✔ -1

Question Number : 29 Question Id : 7225445030 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The curve $xy^2 = 16$ at the point where the ordinate is -2 then the equation of tangent is

Options :

1. ✖ $x + 4y - 12 = 0$

2. ✖ $2x - 4y - 12 = 0$

3. ✔ $x - 4y - 12 = 0$

4. ✖ $x - 5y - 12 = 0$

Question Number : 30 Question Id : 7225445031 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The equation of the normal to the curve $y^2 = \frac{x^3}{2a-x}$ at the point (a, a) is

Options :

1. ✓ $x + 2y = 3a$

2. ✗ $x - 2y = 4a$

3. ✗ $2x + y = 2a$

4. ✗ $3x - 4y = 5a$

Question Number : 31 Question Id : 7225445032 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 curves $xy = 2$ and $y^2 = 4x$ is

Options :

1. ✗ $-\tan^{-1}(3)$

2. ✓ $\tan^{-1}(3)$

3. ✗ $\sin^{-1}(3)$

4. ✗ $\cos^{-1}(3)$

ZOLLEGE.in

Question Number : 32 Question Id : 7225445033 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 xe^{-x} is

Options :

1. ✔ $\frac{1}{e}$

2. ✖ $-\frac{1}{e}$

3. ✖ $2e$

4. ✖ e

Question Number : 33 Question Id : 7225445034 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The height of the right circular cylinder of greatest volume which is inscribed in a sphere of radius a is

Options :

1. ✖ $\frac{-2a}{7}$

2. ✖ $-\frac{a}{2}$

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3. ✓ $\frac{2a}{\sqrt{3}}$

4. ✗ $\frac{1}{2}$

Question Number : 34 Question Id : 7225445035 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 a spherical ball is increasing at the rate of 4π cc/s, then the rate of increase of the radius, when the volume is $288\pi\ cc$ is

Options :

1. ✗ 36 cm/sec

2. ✗ 6 cm/sec

3. ✓ $\frac{1}{36} cm/sec$

4. ✗ $\frac{1}{6} cm/sec$

Question Number : 35 Question Id : 7225445036 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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If $z = e^{(ax+by)} f(ax-by)$ then $b\frac{\partial z}{\partial x} + a\frac{\partial z}{\partial y} =$

Options :

1. ✖ $-2abz$

2. ✖ $3abz$

3. ✔ 2abz

4. ✖ 5abz

Question Number : 36 Question Id : 7225445037 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 $\int \frac{e^x - e^{-x}}{e^x + e^{-x}} dx$ is

Options :

1. ✖ $\log(e^{2x} - 1) - x + c$

2. ✖ $-\log(e^{2x} + 1) - x + c$

3. ✖ $\log(e^{2x} + 7) - x + c$

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4. ✔ $log(e^{2x}+1)-x+c$

Question Number : 37 Question Id : 7225445038 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 $\int \frac{dx}{\sqrt{4x^2-4x+2}}$ is

Options :

1. ✘ $-\frac{1}{2}\sinh^{-1}(x-1)+c$

2. ✘ $\frac{1}{2}\sinh^{-1}(2x+1)+c$

3. ✔ $\frac{1}{2}\sinh^{-1}(2x-1)+c$

4. ✘ $\frac{1}{2}\sinh^{-1}(3x-1)+c$

Question Number : 38 Question Id : 7225445039 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 $\int logx\,dx$ is

Options :

1. ✘ $logx-x+c$

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2. ✓ $xlogx - x + c$

3. ✗ $2xlogx + x + c$

4. ✗ $-xlogx + x + c$

Question Number : 39 Question Id : 7225445040 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 $\int_0^{\pi/4} \sqrt{1 + sin2x}\, dx$ is

Options :

1. ✓ 1

2. ✗ 2

3. ✗ -1

4. ✗ π

Question Number : 40 Question Id : 7225445041 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The area enclosed between the curves $y^2 = 4x$ and $x^2 = 4y$ is

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Options :

1. ✓ $\frac{16}{3}$ square units

2. ✗ $\frac{5}{2}$ square units

3. ✗ $\frac{3}{2}$ square units

4. ✗ $\frac{9}{2}$ square units

Question Number : 41 Question Id : 7225445042 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The mean value of $\frac{1}{4+x^2}$ on $[-2,2]$ is

Options :

1. ✗ $\frac{\pi}{12}$

2. ✗ $-\frac{\pi}{2}$

3. ✗ $\frac{\pi}{2}$

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4. ✓ $\frac{\pi}{4}$

Question Number : 42 Question Id : 7225445043 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 $\int \frac{1}{1+4x^2}\,dx$ on R is

Options :

1. ✗ $-\frac{1}{2}tan^{-1}(2x)+c$

2. ✗ $\frac{1}{2}tan^{-1}(5x)+c$

3. ✗ $-\frac{1}{2}tan^{-1}(x)+c$

4. ✓ $\frac{1}{2}tan^{-1}(2x)+c$

Question Number : 43 Question Id : 7225445044 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 $\int_0^1 \frac{x\sin^{-1}x}{\sqrt{1-x^2}}\,dx$ is

Options :

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1. ✖ -1

2. ✖ 0

3. ✔ 1

4. ✖ 5

Question Number : 44 Question Id : 7225445045 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The order and degree of the differential equation $\left(\frac{dy}{dx}\right)^2 + 3\left(\frac{dy}{dx}\right) + 2 = 0$ is

Options :

1. ✖ Order=2, degree=2

2. ✖ Order=2, degree=1

3. ✔ order = 1, degree = 2

4. ✖ Order=3, degree=1

Question Number : 45 Question Id : 7225445046 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The general solution of the differential equation $\frac{dy}{dx} + ycotx = 4xcosecx$ is

Options :

1. ✖ $ycosx = 2x^2+c$

2. ✔ $ysinx = 2x^2+c$

3. ✖ $ysinx = -2x^2+c$

4. ✖ $ysinx = 3x^2+c$

Question Number : 46 Question Id : 7225445047 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 linear differential equation $\frac{dy}{dx} - \frac{y}{x+1} = e^{3x}(x+1)$ is

Options :

1. ✖ $y/\sin x = -\frac{e^{4x}}{4} + c$

2. ✔ $\frac{y}{x+1} = \frac{e^{3x}}{3} + c$

3. ✖ $y\,e^{3x}\,x = -\frac{\cos 2x}{4} + ce^{3x}$

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4. ✖ $y \sin x = \frac{e^{3x}}{4} + c$

Question Number : 47 Question Id : 7225445048 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 the differential equation $\frac{d^2y}{dx^2} + 3\frac{dy}{dx} + 2y = e^x$ is

Options :

1. ✖ $-\frac{e^x}{6}$

2. ✖ $\frac{e^x}{16}$

3. ✖ $\frac{e^x}{9}$

4. ✔ $\frac{e^x}{6}$

Question Number : 48 Question Id : 7225445049 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 for the differential equation $(D^2 + 4D + 3)y = sin3x$ is

Options :

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1. ✖ $sinx + 3cos2x$

2. ✖ $cos3x - 2sin4x$

3. ✖ $\frac{2}{30}(2cos2x + sinx)$

4. ✔ $\frac{-1}{30}(2cos3x + sin3x)$

Question Number : 49 Question Id : 7225445050 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 $\frac{dy}{dx} + \frac{y}{x} = y^2x$ is

Options :

1. ✔ $\frac{1}{xy} = -x + c$

2. ✖ $\frac{-1}{xy} = -x + c$

3. ✖ $\frac{2}{xy} = x + c$

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4. ✗ $\frac{1}{y} = -x + c$

Question Number : 50 Question Id : 7225445051 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 $(2x + y + 1)dx + (x + 2y + 1)dy = 0$ is

Options :

1. ✗ $x^2 + xy + 3y^2 + 2x + y = c$

2. ✓ $x^2 + xy + y^2 + x + y = c$

3. ✗ $2x^2 + xy + 2y^2 + x + y = c$

4. ✗ $x^2 - xy + 2y^2 + x + y = c$

Physics

Section Id :	722544101
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

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Maximum Instruction Time : 0

Question Number : 51 Question Id : 7225445052 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The dimensions of permeability is

Options :

1. ✓ $MLT^{-2}A^{-2}$

2. ✗ $MLT^{-1}A^{-2}$

3. ✗ $MLT^{-2}A^{-1}$

4. ✗ $MLT^{-1}A^{-1}$

Question Number : 52 Question Id : 7225445053 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If velocity (V), force (F) and energy (E) are taken as fundamental units, then dimensional formula for mass will be

Options :

1. ✗ V^0FE^2

2. ✗ $VF^{-2}E^0$

3. ✗ $V^{-2}F^0E$

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4. ✓ $V^{-2}F^{0}E$

Question Number : 53 Question Id : 7225445054 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Vector A extends from the origin to a point having polar coordinates $(7, 70^0)$ and vector B extends from the origin to a point having polar coordinates $(4, 130^0)$. Find $A \bullet B$

Options :

1. ✗ 28

2. ✓ 14

3. ✗ 0

4. ✗ 7

Question Number : 54 Question Id : 7225445055 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If two vectors $2\hat{\imath} + 3\hat{\jmath} - \hat{k}$ and $-4\hat{\imath} - 6\hat{\jmath} - \lambda\hat{k}$ are parallel to each other then value of λ be

Options :

1. ✗ 2

2. ✓ 4

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3. ✖ 0

4. ✖ 6

Question Number : 55 Question Id : 7225445056 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 static friction between contact surfaces of two bodies is 1. The contact surface of one body supports the other till the inclination is less than

Options :

1. ✖ 30^0

2. ✔ 45^0

3. ✖ 60^0

4. ✖ 90^0

Question Number : 56 Question Id : 7225445057 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A smooth block is released from rest on a 45^0 inclined plane and it slides a distance 'd'. The time taken to slide is 'n' times that on a smooth inclined plane. The coefficient of friction is

Options :

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1. ✔ $\mu_k = 1 - \frac{1}{n^2}$

2. ✖ $\mu_k = \sqrt{1 - \frac{1}{n^2}}$

3. ✖ $\mu_k = \frac{1}{1-n^2}$

4. ✖ $\mu_k = \sqrt{\frac{1}{1-n^2}}$

Question Number : 57 Question Id : 7225445058 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 projected at an angle other than 90^0 with the horizontal with some velocity. If the time of ascent of the body is 1second, then the maximum height it can reach is (Take $g=10ms^{-2}$)

Options :

1. ✔ 5 m

2. ✖ 10 m

3. ✖ 2.5 m

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4. ✖ 75 m

Question Number : 58 Question Id : 7225445059 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A bullet fired from a gun falls at a distance half of its maximum range. The angle of projection of the bullet is

Options :

1. ✖ 45^0

2. ✖ 60^0

3. ✖ 30^0

4. ✔ 15^0

Question Number : 59 Question Id : 7225445060 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 vertically upwards with a velocity. Select the incorrect statements from the following

I. Both velocity and acceleration are zero at its highest point.

II. Velocity is maximum and acceleration is zero at the highest point

III. Velocity is maximum and acceleration is 'g' downwards at its highest point

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Options :

1. ✓ I,II and III

2. ✗ II and III

3. ✗ I and II

4. ✗ I and III

Question Number : 60 Question Id : 7225445061 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A person standing on a tower of height 60 m throws an object upwards with velocity of 40 m/s at an angle 30^0 to the horizontal. Find the total time taken by the object to gain maximum height and fall on the ground (take g= 10 m/s^2).

Options :

1. ✗ 3 s

2. ✗ 20 s

3. ✓ 6 s

4. ✗ 16 s

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Question Number : 61 Question Id : 7225445062 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A bucket full of water is drawn up by a person. In this case the work done by the gravitational force is

Options :

1. ✓ Negative because the force and displacement are in opposite directions

2. ✗ Positive because the force and displacement are in the same direction

3. ✗ Negative because the force and displacement are the same direction

4. ✗ Positive because the force and displacement are in opposite direction

Question Number : 62 Question Id : 7225445063 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a long spring is stretched by x cm, its potential energy is U. If the spring is stretched by Nx cm, the potential energy stored in it will be

Options :

1. ✗ U/N

2. ✗ NU

3. ✓ N^2U

4. ✗ U/N^2

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Question Number : 63 Question Id : 7225445064 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-renewable source of energy?

Options :

1. ✔ Coal

2. ✖ Solar

3. ✖ Geothermal

4. ✖ Tidal

Question Number : 64 Question Id : 7225445065 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If a class room has dimensions 20x15x5 m^3 and reverberation time 1.5 sec, the total absorption of all surfaces and the average absorption coefficient will be

Options :

1. ✖ 0.7 and 69

2. ✔ 69 and 0.07

3. ✖ 6.9 and 0.7

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4. ✖ 0.69 and 0.7

Question Number : 65 Question Id : 7225445066 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A source of sound of frequency 450 cycles/sec is stationary but an observer is moving towards the source with 34 m/sec speed. If the speed of sound is 340 m/sec, the apparent frequency will be

Options :

1. ✖ 410 cycles/sec

2. ✖ 500 cycles/sec

3. ✖ 550 cycles/sec

4. ✔ 495 cycles/sec

Question Number : 66 Question Id : 7225445067 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A simple pendulum has a time period T in vacuum. Its time period when it is completely immersed in a liquid of density one-eighth of the density of material of the bob is

Options :

1. ✖ $\sqrt{\frac{7}{8}}T$

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2. ✖ $\sqrt{\frac{5}{8}}T$

3. ✖ $\sqrt{\frac{3}{8}}T$

4. ✔ $\sqrt{\frac{8}{7}}T$

Question Number : 67 Question Id : 7225445068 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 simple harmonic motion represented by displacement function as $x(t) = A \sin(\omega t + \phi)$. If the position and velocity of the particle at $t = 0$ s are 2 cm and 2ω cm s^{-1} respectively, then its amplitude is $x\sqrt{2}$ cm where the value of x is

Options :

1. ✔ 2

2. ✖ $2\sqrt{2}$

3. ✖ 4

4. ✖ 1

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Question Number : 68 Question Id : 7225445069 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An observer standing between two parallel cliffs emits an intense sound note. If two successive echoes are heard after 5 s and 7 s, then distance between the cliffs is (velocity of sound is 340 m/s)

Options :

1. ✗ 850 m

2. ✗ 1190 m

3. ✓ 2040 m

4. ✗ 340 m

Question Number : 69 Question Id : 7225445070 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

M grams of steam at 100°C is mixed with 200 g of ice at its melting point in a thermally insulated container. If it produced liquid water at 40°C [heat of vaporization of water is 540 cal/g and heat of fusion of ice is 80 cal/g] the value of M is

Options :

1. ✗ 20

2. ✗ 80

3. ✓ 40

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4. ✖ 10

Question Number : 70 Question Id : 7225445071 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 ideal gas will have the largest value for $C_p - C_v$?

Options :

1. ✖ Polyatomic

2. ✖ Diatomic

3. ✖ Monoatomic

4. ✔ The value will be the same for all

Question Number : 71 Question Id : 7225445072 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In thermodynamics, heat and work are

Options :

1. ✔ Path functions

2. ✖ Intensive thermodynamic state variables

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3. ✖ Extensive thermodynamic state variables

4. ✖ Point functions

Question Number : 72 Question Id : 7225445073 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 expansion of an ideal gas, the fractional change in its pressure is equal to (where γ is the ratio of specific heats):

Options :

1. ✖ $-\gamma\frac{V}{dV}$

2. ✔ $-\gamma\frac{dV}{V}$

3. ✖ $-\frac{1}{\gamma}\frac{V}{dV}$

4. ✖ $-\frac{1}{\gamma}\frac{dV}{V}$

Question Number : 73 Question Id : 7225445074 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 processes must violate the first law of thermodynamics?

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Options :

1. ✓ $W > 0, Q > 0,$ and$\Delta E_{int} < 0$

2. ✗ $W > 0, Q < 0,$ and $\Delta E_{int} > 0$

3. ✗ $W < 0, Q > 0,$ and $\Delta E_{int} < 0$

4. ✗ $W > 0, Q < 0,$ and $\Delta E_{int} = 0$

Question Number : 74 Question Id : 7225445075 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The critical angle for total internal reflection is maximum for

Options :

1. ✗ Red light

2. ✗ Blue light

3. ✗ Ultraviolet rays

4. ✓ Infrared rays

Question Number : 75 Question Id : 7225445076 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Photon of frequency (f) has a momentum (p) associated with it. If c is the velocity of light, the momentum is

Options :

1. ✓ hf/c

2. ✗ f/c

3. ✗ hfc

4. ✗ hf/c^2

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Chemistry

Section Id :	722544102
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

Question Number : 76 Question Id : 7225445077 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Bohr's theory can be applied to which of the following ions?

Options :

1. ✗ Na^+

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2. ✖ Be^{2+}

3. ✖ Li^{+}

4. ✔ Li^{2+}

Question Number : 77 Question Id : 7225445078 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 correct orbital designation of an electron with the quantum number , n=4, l=3, m=2, s=1/2?

Options :

1. ✖ 3d

2. ✔ 4f

3. ✖ 5p

4. ✖ 6s

Question Number : 78 Question Id : 7225445079 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The Two electrons present in an orbital are distinguished by

Options :

1. ✖ Principal Quantum number

2. ✖ Azimuthal Quantum number

3. ✖ Magnetic Quantum number

4. ✔ Spin Quantum number

Question Number : 79 Question Id : 7225445080 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Favorable conditions for the formation of an ionic bond are

Options :

1. ✖ Small cation, large anion, high charge on both the ions.

2. ✔ Large cation, small anion, low charge on both the ions

3. ✖ Large cation, large anion, high charge on both the ions.

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Small cation, small anion, high charge on both the ions

4. ✖

Question Number : 80 Question Id : 7225445081 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The maximum covalent character is observed in

Options :

1. ✖ LiCl

2. ✖ $BeCl_2$

3. ✖ LiF

4. ✔ $BeBr_2$

Question Number : 81 Question Id : 7225445082 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a reaction of H_2SO_4 with NaOH, $NaHSO_4$ is formed. Equivalent weight of H_2SO_4 is

Options :

1. ✖ 49 grams

2. ✔ 98 grams

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3. ✖ 98 amu

4. ✖ 49 amu

Question Number : 82 Question Id : 7225445083 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If 5.85 grams of NaCl are dissolved in water and the solution is made up to 0.5 litre, the molarity of solution will be:

Options :

1. ✔ 0.2

2. ✖ 0.4

3. ✖ 1.0

4. ✖ 0.1

Question Number : 83 Question Id : 7225445084 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 Mercury with other metals is called

Options :

1. ✖ Saturated solutions

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2. ✖ Unsaturated solutions

3. ✔ Amalgam

4. ✖ Supersaturated solutions.

Question Number : 84 Question Id : 7225445085 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A strong acid has a

Options :

1. ✖ Weak conjugate acid

2. ✔ Weak conjugate base

3. ✖ Strong conjugate base

4. ✖ Strong conjugate acid

Question Number : 85 Question Id : 7225445086 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Electron pair donor is

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Options :

1. ✗ Lowry- Bronsted base

2. ✗ Lowry- Bronsted acid

3. ✗ Lewis acid

4. ✓ Lewis base

Question Number : 86 Question Id : 7225445087 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The poor conductor of the electricity among the following is:

Options :

1. ✗ Copper

2. ✗ Aluminium

3. ✗ Silver

4. ✓ Pure water

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Question Number : 87 Question Id : 7225445088 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The amount of electricity that can deposit 108 g of silver from $AgNO_3$ solution is

Options :

1. ✖ 1 ampere

2. ✖ 1 coulomb

3. ✔ 1 faraday

4. ✖ 1 siemen

Question Number : 88 Question Id : 7225445089 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 false regarding galvanic cells?

Options :

1. ✖ It converts chemical energy into electrical energy

2. ✖ The electrolytes taken in the two beakers are different

3. ✔ The reactions taking place are non-spontaneous

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4. ✖ To set up this cell, a salt bridge is required

Question Number : 89 Question Id : 7225445090 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 standard reduction potential of cathode of a galvanic cell if the standard EMF of the cell and standard reduction potential of the anode are 2.71 volts and -2.37 volts respectively?

Options :

1. ✖ 0.68 volts

2. ✖ -0.68 volts

3. ✖ -0.34 volts

4. ✔ 0.34 volts.

Question Number : 90 Question Id : 7225445091 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hardness of water is conventionally expressed in terms of equivalent amount of

Options :

1. ✖ $MgCO_3$

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2. ✓ $CaCO_3$

3. ✗ Na_2CO_3

4. ✗ K_2CO_3

Question Number : 91 Question Id : 7225445092 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Zero hardness of water is achieved by

Options :

1. ✗ Using Lime soda process

2. ✗ Excess lime treatment

3. ✗ Using excess alum dosage

4. ✓ Ion-Exchange method

Question Number : 92 Question Id : 7225445093 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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What is the hardness of water in terms of $CaCO_3$ equivalent if water contains 27.6 mg/L of $MgSO_4$

Options :

1. ✔ 23 mg/L

2. ✖ 2.3 mg/L

3. ✖ 28 mg/L

4. ✖ 12 mg/L

Question Number : 93 Question Id : 7225445094 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Electrochemical corrosion in acidic environment is carried with

Options :

1. ✖ Evolution of oxygen

2. ✖ Absorption of oxygen

3. ✔ Evolution of hydrogen

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4. ✖ Absorption of hydrogen

Question Number : 94 Question Id : 7225445095 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 metal oxide film is protective from corrosion?

Options :

1. ✖ Porous

2. ✔ Non- porous

3. ✖ Volatile

4. ✖ Unstable

Question Number : 95 Question Id : 7225445096 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 thermosetting plastic?

Options :

1. ✖ PVC

2. ✖ Teflon

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3. ✖ Polystyrene

4. ✔ Bakelite

Question Number : 96 Question Id : 7225445097 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Ebonite is

Options :

1. ✔ highly vulcanized rubber

2. ✖ PVC

3. ✖ Synthetic rubber

4. ✖ polystyrene

Question Number : 97 Question Id : 7225445098 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Buna-S rubber is made up of the monomers of

Options :

1. ✖ 1,3 butadiene and acrylonitrile

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2. ✔ 1,3 butadiene and styrene

3. ✖ 1,3 butadiene and formaldehyde

4. ✖ 1,3 butadiene and phenol

Question Number : 98 Question Id : 7225445099 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Composition of water gas is

Options :

1. ✖ $CO + N_2$

2. ✖ $CO + CH_4$

3. ✔ $CO + H_2$

4. ✖ $CH_4 + N_2$

Question Number : 99 Question Id : 7225445100 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 green house gas

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Options :

1. ✓ Hydrogen

2. ✗ Carbon monoxide

3. ✗ Methane

4. ✗ Nitrous oxide

Question Number : 100 Question Id : 7225445101 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Photochemical smog is due to the presence of

Options :

1. ✗ Oxide of carbon

2. ✗ Lead

3. ✗ Oxide of sulphur

4. ✓ Oxide of nitrogen

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Electrical and Electronics Engineering

Section Id :	722544103
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

Question Number : 101 Question Id : 7225445102 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two copper conductors have equal length. The cross sectional area of one conductor is four times that of the other. If the conductor having smaller cross sectional area has a resistance of 40 ohms, the resistance of other conductor will be _____

Options :

1. ✖ 80 ohm

2. ✖ 40 ohm

3. ✖ 20 ohm

4. ✔ 10 ohm

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Question Number : 102 Question Id : 7225445103 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 direction of the drift velocity of electrons change in semiconductors with respect to the electric field?

Options :

1. ✗ Same as that of electric field

2. ✓ opposite to that of electric field

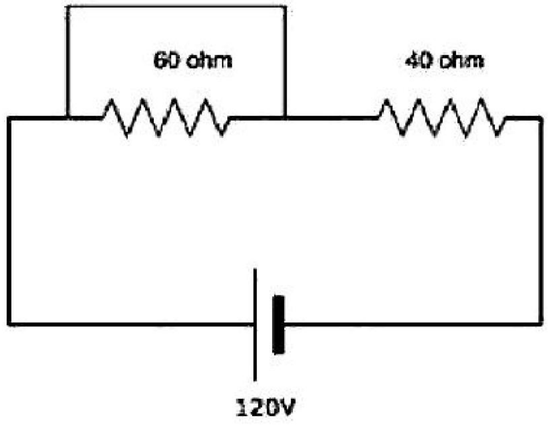
3. ✗ perpendicular to that of the electric field in a positive direction

4. ✗ perpendicular to that of the electric field in a negative direction

Question Number : 103 Question Id : 7225445104 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Voltage across 60 ohm resistor is _____



Options :

1. ✖ 120V

2. ✖ 60V

3. ✖ 40V

4. ✔ 0 V

Question Number : 104 Question Id : 7225445105 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An EMF produced in a moving conductor coil is in accordance with the following law

Options :

1. ✔ Faraday's law

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2. ✖ Ampere's law

3. ✖ Lenz's law

4. ✖ Coulomb's law

Question Number : 105 Question Id : 7225445106 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 is TRUE for series and parallel operation of DC circuit?

Options :

1. ✔ Powers are additive

2. ✖ Voltages are additive

3. ✖ Currents are additive

4. ✖ Elements have individual currents.

Question Number : 106 Question Id : 7225445107 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Inside of a conducting sphere, which of the following is constant?

Options :

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1. ✗ Electric flux

2. ✗ Charge

3. ✗ Electric intensity.

4. ✓ Potential

Question Number : 107 Question Id : 7225445108 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In semiconductors, the conduction of electricity is due to the movement of which of the following?

Options :

1. ✗ positive ions only

2. ✗ negative ions only

3. ✗ positive and negative ions

4. ✓ electrons and holes

Question Number : 108 Question Id : 7225445109 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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If the number of turns and length of a solenoid are doubled, its axial magnetizing field will be _____.

Options :

1. ✖ Doubled

2. ✔ Unaffected

3. ✖ halved

4. ✖ quadrupled

Question Number : 109 Question Id : 7225445110 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A Commutator in DC generator can,

1. Provide half-wave rectification
2. Provides full-wave rectification
3. converts ac to dc
4. Converts dc to ac
5. provide controlled full-wave rectification.

Options :

1. ✖ 2

2. ✔ 2,3

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3. ✖ 2,3,5

4. ✖ 2,3,4,5

Question Number : 110 Question Id : 7225445111 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If suppose OCC is conducted at speed N_1 speed, where $N_1<N_{rated}$, OCC will lie

_____

Options :

1. ✖ Above OCC at N_{rated}

2. ✖ On OCC at N_{rated}

3. ✔ Below OCC at N_{rated}

4. ✖ Independent of the speed

Question Number : 111 Question Id : 7225445112 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In dc machines, the field flux and armature-mmf axis are respectively along the _____.

Options :

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1. ✖ Direct axis and indirect axis

2. ✔ Direct axis and interpolar axis

3. ✖ Quadrature axis and direct axis

4. ✖ Quadrature axis and interpolar axis.

Question Number : 112 Question Id : 7225445113 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Ina D.C. machine, iron losses are independent of variations in

Options :

1. ✖ Speed

2. ✔ Load

3. ✖ Voltage

4. ✖ Speed and voltage

Question Number : 113 Question Id : 7225445114 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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If a DC shunt motor is working at full load and if shunt field circuit suddenly opens

_____

Options :

1. ✔ Will make armature to take heavy current, possibly burning it

2. ✘ Will result in excessive speed, possibly destroying armature due to excessive centrifugal stresses

3. ✘ Nothing will happen to motor

4. ✘ Motor will act as d.c series motor

Question Number : 114 Question Id : 7225445115 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In D.C. generators on no-load, the air gap flux distribution in space is

Options :

1. ✘ Sinusoidal

2. ✘ Triangular

3. ✘ Pulsating

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4. ✓ Flat topped

Question Number : 115 Question Id : 7225445116 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

No load speed of the DC shunt motor is 1322 rpm while full load speed is 1182 rpm.
What will be the speed regulation?

Options :

1. ✗ 12.82 %

2. ✓ 11.8 %

3. ✗ 16.6 %

4. ✗ 14.2 %

Question Number : 116 Question Id : 7225445117 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 the method of electrical braking?

Options :

1. ✗ Plugging or counter-current

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2. ✗ Dynamic or rheostatic

3. ✗ Regenerative

4. ✓ Eddy current

Question Number : 117 Question Id : 7225445118 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A moving-coil permanent-magnet instrument can be used as _____ by using a low resistance shunt.

Options :

1. ✓ Ammeter

2. ✗ Voltmeter

3. ✗ Flux-meter

4. ✗ Ballistic galvanometer

Question Number : 118 Question Id : 7225445119 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Induction type instruments are used for

Options :

1. ✖ Resistance measurement

2. ✖ Voltage measurement

3. ✔ AC measurement

4. ✖ DC measurement

Question Number : 119 Question Id : 7225445120 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If at one end, the two wires made of different metals are joined together then a voltage will get produced between the two wires due to difference of temp between the two ends of wires. This effect is observed in _____

Options :

1. ✔ Thermocouples

2. ✖ Thermistors

3. ✖ RTD

4. ✖ Ultrasonics

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Question Number : 120 Question Id : 7225445121 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The errors in current transformers can be reduced by designing them with:

Options :

1. ✓ high permeability and low loss core materials, avoiding any joints in the core and also keeping the flux density to a low value

2. ✗ using primary and secondary windings as close to each other as possible

3. ✗ using large cross-sections for both primary and secondary winding conductors

4. ✗ Low resistance coils at primary and secondary

Question Number : 121 Question Id : 7225445122 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 magnitude of the voltage developed across the capacitor in a series RLC circuit at resonance?

Options :

1. ✗ Zero

2. ✗ Less than the input voltage.

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3. ✓ Can be greater than the input voltage, with 90° out of phase with the input voltage.

4. ✗ Can be greater than the input voltage, and is in phase with the input voltage

Question Number : 122 Question Id : 7225445123 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A capacitor has capacitance C and reactance X, if capacitance and frequency become double, then reactance will be

Options :

1. ✗ 4X

2. ✗ X

3. ✓ X/4

4. ✗ 2X

Question Number : 123 Question Id : 7225445124 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a L-C series circuit, if $X_L > X_C$. Then the current is

Options :

1. ✓ lags behind the voltage by $\pi/2$ in phase

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2. ✖ leads the voltage by $\pi/2$ in phase

3. ✖ leads the voltage by π in phase

4. ✖ lags behind the voltage by π in phase

Question Number : 124 Question Id : 7225445125 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a two wattmeter method of measuring the power in a 3-phase balanced system. what is the power factor of the load when one wattmeter reads twice the other.

Options :

1. ✖ 0.0

2. ✖ 0.500

3. ✔ 0.866

4. ✖ 1.00

Question Number : 125 Question Id : 7225445126 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Current of $50/\pi$ Hz frequency is passing through an A.C. circuit having series combination of resistance R = 100Ω and L = 1 H, then phase difference between voltage and current is _____ .

Options :

1. ✖ 60°

2. ✔ 45°

3. ✖ 30°

4. ✖ 90°

Question Number : 126 Question Id : 7225445127 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 magnitude of mutually induced emf, E_2 in a transformer?

Options :

1. ✔ Directly proportional to rate of change of flux and number of secondary turns

2. ✖ Inversely proportional to rate of change of flux and number of secondary turns

3. ✖ Proportional to rate of change of flux and inversely proportional to number of secondary turns

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Inversely proportional to the rate of change of flux and proportional to number of secondary turn

4. ✗

Question Number : 127 Question Id : 7225445128 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 current is drawn by the primary circuit of an ideal transformer when the secondary is open?

Options :

1. ✗ Secondary current

2. ✗ Leakage current

3. ✓ Magnetizing current

4. ✗ Working on current.

Question Number : 128 Question Id : 7225445129 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The no-load power factor of a practical transformer is around

Options :

1. ✗ Unity

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2. ✓ 0.2 lagging

3. ✗ 0.2 leading

4. ✗ Zero

Question Number : 129 Question Id : 7225445130 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If number of turns in primary and secondary coils of a transformer increased to two times each, the mutual inductance _____

Options :

1. ✓ Becomes four times

2. ✗ Becomes two times

3. ✗ Becomes ten times

4. ✗ Remains unchange

Question Number : 130 Question Id : 7225445131 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a transformer, zero voltage regulation at full load is

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Options :

1. ✗ Not possible

2. ✗ Possible at unity power factor load

3. ✓ Possible at leading power factor load

4. ✗ Possible at lagging power factor load

Question Number : 131 Question Id : 7225445132 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 400/200V transformer has total resistance of 0.02 pu on its LV side. This resistance when referred to HV side would be

Options :

1. ✓ 0.02

2. ✗ 0.04

3. ✗ 0.01

4. ✗ 0.004

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Question Number : 132 Question Id : 7225445133 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 functionality of a breather in a transformer?

Options :

1. ✓ It absorbs the moisture of air during breathing

2. ✗ Passes cold air to the transformer

3. ✗ It is the transformer oil filter

4. ✗ To improve cooling

Question Number : 133 Question Id : 7225445134 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a synchronous alternator, which of the following coils will have emf closer to sine wave form?

Options :

1. ✗ Concentrated winding in full pitch coils.

2. ✗ Concentrated winding in short pitch coils.

3. ✗ Distributed winding in full pitch coils.

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Distributed winding in short pitch coils

4. ✔

Question Number : 134 Question Id : 7225445135 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When an altemator designed for operation at 60 Hz is operated at 50 Hz

Options :

kVA rating will increase in the ratio of 1.2.

1. ✖

Operating voltage will reduce in the ratio of 5/6.

2. ✔

Operating voltage will increase in the ratio of 1.2

3. ✖

Operating voltage will reduce in the ratio of $(5/6)^2$.

4. ✖

Question Number : 135 Question Id : 7225445136 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two alternators are operating in parallel. For taking one of the alternators out from the system

Options :

Load shared by this alternator is transferred to the other by adjusting the power fed to the prime mover before opening OCB.

1. ✔

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2. ✖ Power fed to the prime-mover is stopped.

3. ✖ OCB is switched off.

4. ✖ Load connected to the bus-bar is reduced.

Question Number : 136 Question Id : 7225445137 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A synchronous motor has no starting torque because of _____

Options :

1. ✖ Rotor is made up of salient poles.

2. ✔ Relative velocity between the stator and the rotor mmfs is zero.

3. ✖ Relative velocity between the stator and rotor mmfs is not zero.

4. ✖ Rotor winding is highly reactive.

Question Number : 137 Question Id : 7225445138 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A synchronous motor can be used as a synchronous capacitor when it is

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Options :

1. ✗ Under-loaded

2. ✗ over-loaded

3. ✗ under-excited

4. ✓ over-excited

Question Number : 138 Question Id : 7225445139 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 10 pole, 25 Hz alternator is directly coupled to and is driven by 60 Hz synchronous motor. What is the number of poles for the synchronous motor?

Options :

1. ✗ 48

2. ✗ 12

3. ✓ 24

4. ✗ 16

Question Number : 139 Question Id : 7225445140 Display Question Number : Yes Is Question Mandatory : No Calculator : None

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Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 3-phase squirrel cage induction motor designed to operate with stator in star, needs W kg of copper for its stator winding. Now if this motor is to be designed to operate with stator in delta, then weight of copper required for stator would be

Options :

1. ✗ $\sqrt{3}$ W kg

2. ✓ W/$\sqrt{3}$ kg

3. ✗ 3W kg

4. ✗ W/3 kg

Question Number : 140 Question Id : 7225445141 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 leakage flux in case of 3-phase induction motor is _____

Options :

1. ✓ Reduce the torque produced.

2. ✗ Increase the torque produced.

3. ✗ Increase the operating power factor.

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4. ✖ Reduce the power factor.

Question Number : 141 Question Id : 7225445142 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Air gap of a poly-phase induction motor is kept small to _____

Options :

1. ✖ Reduce the possibility of crawling.

2. ✖ Reduce the noise.

3. ✔ Reduce magnetizing current.

4. ✖ Obtain high starting torque.

Question Number : 142 Question Id : 7225445143 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 operating power factor of a 3-phase induction motor is high when _____

Options :

1. ✖ Closed slots are used both on stator and rotor.

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2. ✓ Semi-closed slots are used both on stator and rotor.

3. ✗ Open slots are used both on stator and rotor.

4. ✗ Open and closed slots are used on stator and rotor respectively.

Question Number : 143 Question Id : 7225445144 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Pick the correct statements regarding 1-phase induction motors?

Options :

1. ✗ It needs only one winding

2. ✗ It rotates in one direction only

3. ✗ It can self-start

4. ✓ It cannot self-start

Question Number : 144 Question Id : 7225445145 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The type of single-phase induction motor having the highest power factor at full-load is

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Options :

1. ✖ Shaded pole type

2. ✖ Split-phase type

3. ✖ Capacitor-start type

4. ✔ Capacitor-run type

Question Number : 145 Question Id : 7225445146 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The most economical power factor for a consumer is _____

Options :

1. ✖ 0.8 lagging

2. ✖ 0.9 lagging

3. ✔ 0.95 lagging

4. ✖ 0.95 leading

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Question Number : 146 Question Id : 7225445147 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is the essential requirement of peak load plant?

Options :

1. ✗ It should run at high speed

2. ✗ It should produce high voltage

3. ✗ It should be small in size

4. ✓ It should be capable of starting quickly

Question Number : 147 Question Id : 7225445148 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The area under the load curve gives

Options :

1. ✓ Energy consumed

2. ✗ Average demand

3. ✗ Maximum demand

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4. ✖ Installed load

Question Number : 148 Question Id : 7225445149 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 thermal power plant improves with

Options :

1. ✖ Increased quantity of coal burnt

2. ✖ Larger quantity of water used

3. ✖ Lower load in the plant

4. ✔ Use of high steam pressures.

Question Number : 149 Question Id : 7225445150 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 place is not associated with the nuclear power plants in India

Options :

1. ✖ Narora

2. ✔ Talcher

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3. ✗ Kota

4. ✗ Tarapur

Question Number : 150 Question Id : 7225445151 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Skin effect is proportional to _____

Options :

1. ✗ Diameter of conductor

2. ✗ (Diameter of conductor)$^{1/2}$

3. ✓ (Diameter of conductor)^{2}

4. ✗ (Diameter of conductor)^{3}.

Question Number : 151 Question Id : 7225445152 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In overhead transmission lines the effect of capacitance can be neglected when the length of line is less than _____

Options :

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1. ✖ 200 km

2. ✖ 160 km

3. ✖ 100 km

4. ✔ 80 km.

Question Number : 152 Question Id : 7225445153 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Corona usually occurs when the electrostatic stress in the air around the conductor succeeds _____

Options :

1. ✔ 30 kV (maximum value)/cm

2. ✖ 22 kV (maximum value)/cm

3. ✖ 11 kV (rms value)/cm

4. ✖ 6.6 kv (rms value)/cm.

Question Number : 153 Question Id : 7225445154 Display Question Number : Yes Is Question Mandatory : No Calculator : None

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Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The characteristic impedance of a transmission line depends upon _____

Options :

1. ✗ Shape of the conductor

2. ✗ Surface treatment of the conductors

3. ✗ Conductivity of the material

4. ✓ Geometrical configuration of the conductors

Question Number : 154 Question Id : 7225445155 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 an electric arc can be increased by _____

Options :

1. ✗ Increasing the concentration of ionised particles

2. ✗ Reducing the arc length

3. ✓ Splitting the arc.

4. ✗ Increasing the arc cross section.

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Question Number : 155 Question Id : 7225445156 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Pin insulators are normally used up to voltage of about _____

Options :

1. ✖ 100kV

2. ✖ 66 kV

3. ✔ 33 kV

4. ✖ 132 kV.

Question Number : 156 Question Id : 7225445157 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Circuit breakers usually operate under _____

Options :

1. ✔ Transient state of short-circuit current

2. ✖ Sub-transient state of short-circuit current

3. ✖ Steady state of short-circuit current

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4. ✖ After D.C. component has ceased

Question Number : 157 Question Id : 7225445158 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A differential relay measures the vector difference between _____

Options :

1. ✖ Two currents

2. ✖ Two voltages

3. ✔ Two or more similar electrical quantities

4. ✖ One current and one voltage

Question Number : 158 Question Id : 7225445159 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 single phase two wire line is given by (D is the distance between conductors and '2r' is the diameter of conductor)

Options :

1. ✔ $0.4 \log_e (D/r)$ mH/km

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2. ✖ $0.55 \log_e (D/r)$ mH/km

3. ✖ $0.4 \log_e (r/D)$ mH/km

4. ✖ $0.55 \log_e (r/D)$ mH/km.

Question Number : 159 Question Id : 7225445160 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The maximum demand of a consumer is 2kW and his daily energy consumption is 20 units. His load factor is _____

Options :

1. ✖ 10%

2. ✔ 41.6%

3. ✖ 50%

4. ✖ 45%

Question Number : 160 Question Id : 7225445161 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The most economical load on an overhead line is _____

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Options :

1. ✔ Greater than the natural load

2. ✖ Less than the natural load

3. ✖ Equal to the natural load

4. ✖ Either greater or less than the natural load

Question Number : 161 Question Id : 7225445162 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In case the height of transmission tower is increased _____

Options :

1. ✖ the line capacitance and inductance will not change

2. ✖ the line capacitance will decrease but line inductance will decrease

3. ✖ the line capacitance will decrease and line inductance will increase

4. ✔ the line capacitance will decrease but line inductance will remain unaltered

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Question Number : 162 Question Id : 7225445163 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 70/6 ACSR conductor is an aluminium conductor steel reinforced, having

Options :

1. ✗ Cross sectional area of aluminium as 70 mm^2 and the cross-sectional area of steel as 6 mm^2

2. ✗ Cross-sectional area of steel as 70 mm^2 and the cross-sections area of aluminium as 6 mm^2

3. ✓ 70 aluminium conductors and 6 steel conductors

4. ✗ 80 steel conductors and 6 aluminium conductors

Question Number : 163 Question Id : 7225445164 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Out of the following systems of distribution, which system offers the best economy?

Options :

1. ✓ Direct current system

2. ✗ AC single phase system

3. ✗ AC 3 phase 3 wire system

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4. ✖ AC 3 phase 4 wire system.

Question Number : 164 Question Id : 7225445165 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In terms of constants A, B, C and D for short transmission lines, which of the following relation is valid?

Options :

1. ✖ $A = B = 1$

2. ✖ $B = D = 0$

3. ✖ $A = C = 1$

4. ✔ C=0.

Question Number : 165 Question Id : 7225445166 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Long distance railways use _____ supply

Options :

1. ✖ 200 V DC

2. ✔ 25 kV Single phase AC

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3. ✖ 25 kV Two phase AC

4. ✖ 25 kV Three phase AC

Question Number : 166 Question Id : 7225445167 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 services uses the quadrilateral type of speed-time operations?

Options :

1. ✖ Main line service

2. ✖ Urban service

3. ✖ Sub-urban service

4. ✔ Urban and sub-urban service

Question Number : 167 Question Id : 7225445168 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The air resistance to the movement of the train is proportional to _____.

Options :

1. ✖ Speed

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2. ✔ $Speed^2$

3. ✖ 1/speed

4. ✖ $1/speed^2$

Question Number : 168 Question Id : 7225445169 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 highest when _____

Options :

1. ✔ The rails are dry

2. ✖ The rails are oiled

3. ✖ The rails ark wet with dew

4. ✖ The rails are dusty.

Question Number : 169 Question Id : 7225445170 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Single-phase to three-phase system in electric traction is also called as

Options :

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1. ✓ Kando System

2. ✗ Synchronous System

3. ✗ Diesel System

4. ✗ Steam System

Question Number : 170 Question Id : 7225445171 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A train has a schedule speed of 36 km per hour on a level track. If the distance between the stations is 2 km and the stoppage is 30 seconds the actual time of run will be

Options :

1. ✗ 260 seconds

2. ✗ 230 seconds

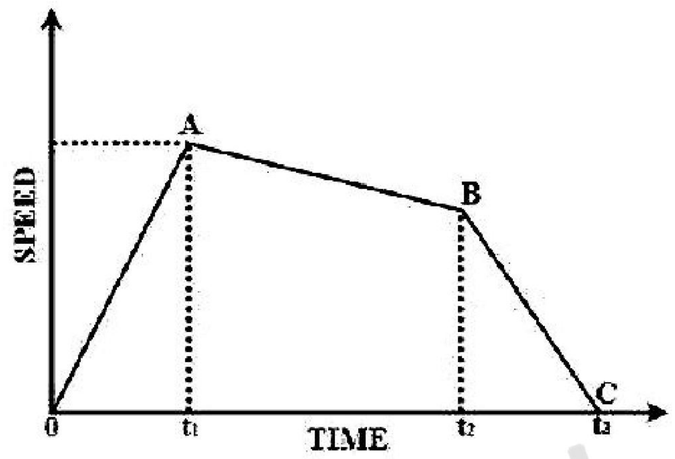
3. ✗ 200 seconds

4. ✓ 170 seconds.

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Question Number : 171 Question Id : 7225445172 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 a local train is shown in Figure. In this AB represents_____



Options :

1. ✓ Coasting

2. ✗ Acceleration

3. ✗ Braking

4. ✗ Regeneration.

Question Number : 172 Question Id : 7225445173 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In electric traction system, quadrilateral speed-time curve is the closer approximation for

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Options :

1. ✗ Main line service only

2. ✗ Suburban service only

3. ✗ Urban service only

4. ✓ Urban and suburban service only

Question Number : 173 Question Id : 7225445174 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Under the influence of fluorescent lamps sometimes the wheels of rotating machinery appear to be stationary. This is due to the

Options :

1. ✗ Fluctuations

2. ✗ Luminescence effect

3. ✓ Stroboscopic effect

4. ✗ Low power factor

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Question Number : 174 Question Id : 7225445175 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The size of the earth or ground wire is based on _____

Options :

1. ✖ Maximum fault current carrying through the ground wire only

2. ✖ Rated current carrying capacity of the service line only

3. ✖ Depends on soil resistance only

4. ✔ Maximum fault current carrying through the ground wire and soil resistance only

Question Number : 175 Question Id : 7225445176 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What should be the value of earthing resistance for large power stations?

Options :

1. ✖ 1 Ω

2. ✔ 0.5 Ω

3. ✖ 2 Ω

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4. ✗ 5 Ω

Question Number : 176 Question Id : 7225445177 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 formula used to calculate the number of poles required in LT line distribution?

Options :

1. ✓ Length/span+1

2. ✗ Length/span+10

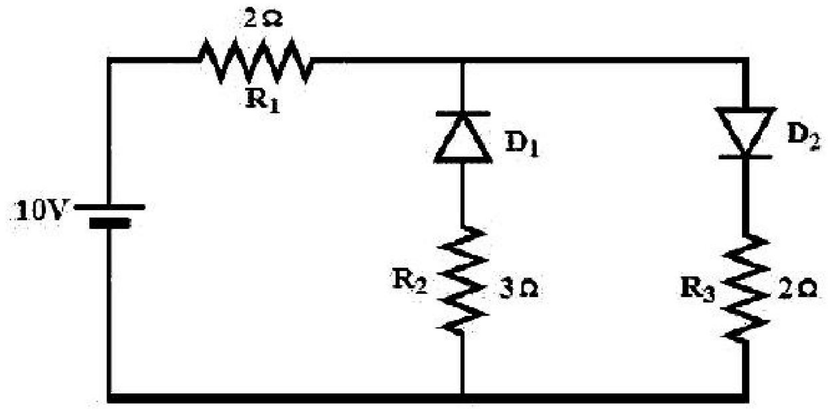
3. ✗ Span/Length+1

4. ✗ Span/Length+10

Question Number : 177 Question Id : 7225445178 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The current passing through the resistance R1 in the following circuit is _____ when the diodes are ideal devices



Options :

1. ✖ 10 A

2. ✔ 2.5 A

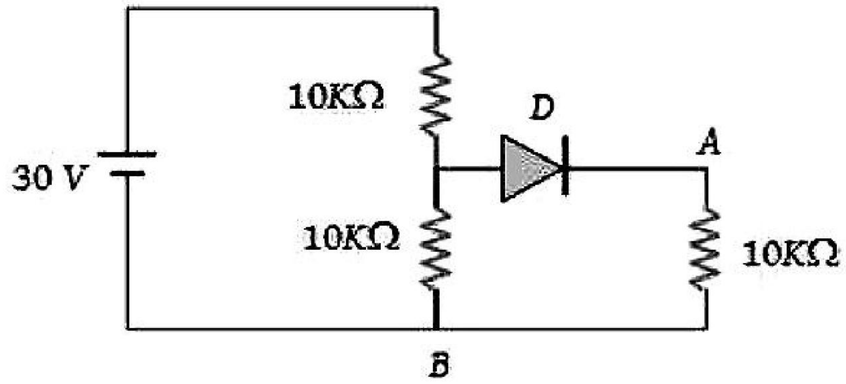
3. ✖ 5A

4. ✖ 3.5 A

Question Number : 178 Question Id : 7225445179 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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What is the potential difference between A and B terminals of the given circuit



Options :

1. ✗ 0V

2. ✗ 20V

3. ✓ 10V

4. ✗ 15 V

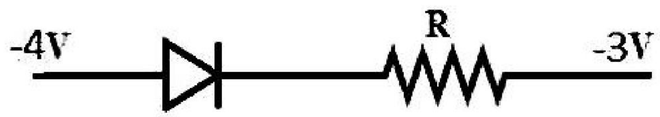
Question Number : 179 Question Id : 7225445180 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following represents forward biased circuit?

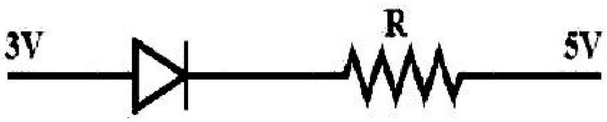
Options :

1. ✓ 

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2. ✖ 

3. ✖ 

4. ✖ 

Question Number : 180 Question Id : 7225445181 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 prevent distortion in the output signal after amplification, the input signal must be

Options :

1. ✖ Higher than the positive saturation level of the amplifier

2. ✖ Lower than the negative saturation level of the amplifier

3. ✔ Must lie with the negative and the positive saturation level of the amplifier

4. ✖ Both higher than the positive saturation level of the amplifier and lower than the negative saturation level of the amplifier

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Question Number : 181 Question Id : 7225445182 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

One of the condition for oscillation is

Options :

1. ✓ A phase shift around the feedback loop of 0^o

2. ✗ A phase shift around the feedback loop of 180^o

3. ✗ A gain around the feedback loop of one-third

4. ✗ A gain around the feedback loop of less than 1

Question Number : 182 Question Id : 7225445183 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 start up, a feedback oscillator requires

Options :

1. ✗ negative feedback less than 1.

2. ✓ positive feedback greater than 1.

3. ✗ unity feedback equal to 1.

4. ✗ no feedback.

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Question Number : 183 Question Id : 7225445184 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

One condition for positive feedback is that the phase shift around the feedback loop must be _____ °.

Options :

1. ✓ 0

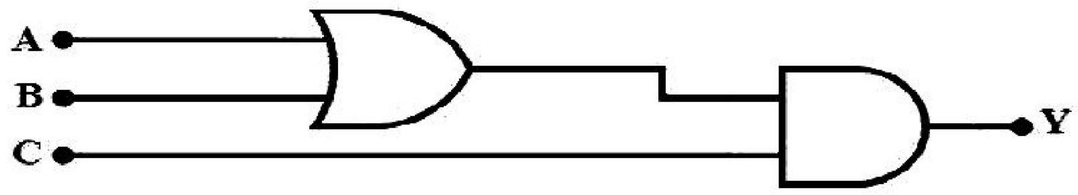
2. ✗ 90

3. ✗ 180

4. ✗ 45

Question Number : 184 Question Id : 7225445185 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

To get the output 1 for the following circuit, the correct choice of the inputs are :



Options :

1. ✗ A = 1, B=0, C=0

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2. ✖ A = 1, B= 1, C=0

3. ✔ A = 1, B=0, C= 1

4. ✖ A = 0, B= 1, C=0

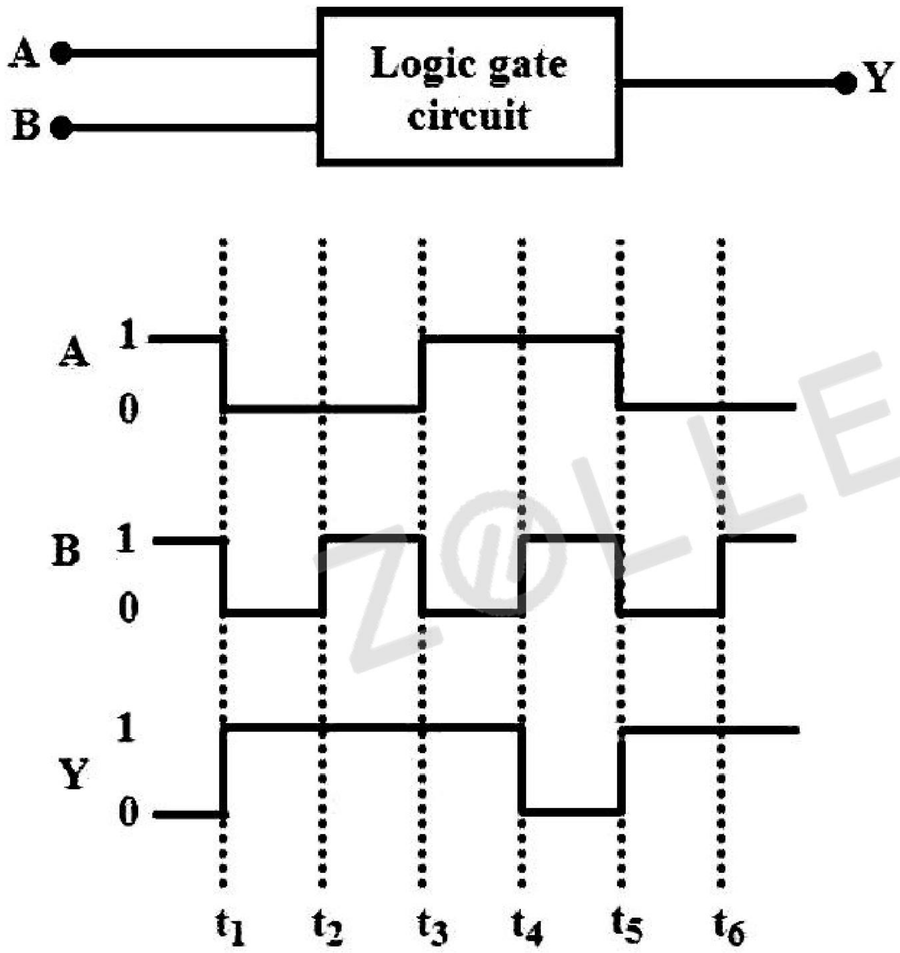
Question Number : 185 Question Id : 7225445186 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The following figure shows a logic gate circuit with the two inputs A and B and the output Y. The voltage waveforms of A,B and Y are as given below, the logic gate is

_____



Options :

1. ✱ OR gate

2. ✱ NOR gate

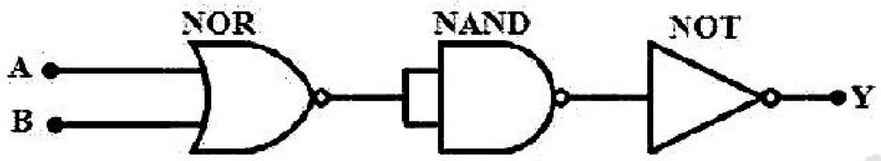
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3. ✗ AND gate

4. ✓ NAND gate

Question Number : 186 Question Id : 7225445187 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The following circuit is equivalent to _____



Options :

1. ✗ OR gate

2. ✗ AND gate

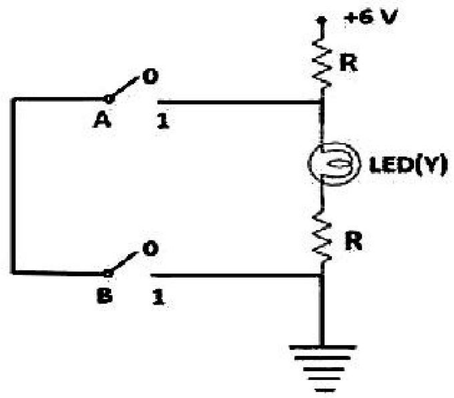
3. ✓ NOR gate

4. ✗ NAND gate

Question Number : 187 Question Id : 7225445188 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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The correct Boolean operation represented by the circuit diagram drawn is _____



Options :

1. ✖ NOR gate

2. ✔ NAND gate

3. ✖ AND gate

4. ✖ OR gate

Question Number : 188 Question Id : 7225445189 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

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1. ✖ 8 bytes

2. ✔ 16 bytes

3. ✖ 32 bytes

4. ✖ 128 bytes

Question Number : 189 Question Id : 7225445190 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which out of the four ports of 8051 needs a pull-up resistor for using it is as an input or an output port?

Options :

1. ✔ PORT 0

2. ✖ PORT 1

3. ✖ PORT 2

4. ✖ PORT 3

Question Number : 190 Question Id : 7225445191 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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Which addressing mode is used in pushing or popping any element on or from the stack?

Options :

1. ✗ Immediate

2. ✓ Direct

3. ✗ Indirect

4. ✗ Register

Question Number : 191 Question Id : 7225445192 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Function of EA pin in 8051 is

Options :

1. ✓ Used to enable/disable external memory interfacing

2. ✗ Used for latching address and data bus

3. ✗ Used for Power Supply

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4. ✗ Used for ground

Question Number : 192 Question Id : 7225445193 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the turn on time of an SCR is 15microseconds, then what is the width of the gate pulse which is required to trigger the SCR reliably?

Options :

1. ✗ 15 microseconds

2. ✓ More than 15 microseconds

3. ✗ Less than 15 micro seconds

4. ✗ either less than or more than 15 micro seconds

Question Number : 193 Question Id : 7225445194 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 latching current of a SCR?

Options :

1. ✓ The minimum anode current required to maintain the ON condition even after removal of the gate current

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2. ✗ The maximum anode current required to maintain the ON condition even after removal of the gate current

3. ✗ The minimum anode current below which the SCR will go to forward blocking state

4. ✗ The maximum anode current above which the SCR will go to forward blocking state

Question Number : 194 Question Id : 7225445195 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 device is latching device?

Options :

1. ✗ Power MOSFET

2. ✗ Power BJT

3. ✗ IGBT

4. ✓ SCR

Question Number : 195 Question Id : 7225445196 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 device does not have gate terminal?

Options :

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1. ✖ IGBT

2. ✖ TRIAC

3. ✔ DIAC

4. ✖ JFET

Question Number : 196 Question Id : 7225445197 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In single phase fully controlled rectifier, if the firing angle is 90 degrees for RL load under continuous conduction, then the average voltage of the load is _____

Options :

1. ✖ Increases

2. ✖ Decreases

3. ✔ Zero

4. ✖ Constant

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Question Number : 197 Question Id : 7225445198 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 fully controlled converter, if delay angle is 30 degrees and power factor angle between its input voltage and current is 45 degrees, then the converter operates in _____ mode

Options :

1. ✗ Discontinuous conduction mode

2. ✓ continuous conduction mode

3. ✗ both continuous and discontinuous conduction modes

4. ✗ neither continuous nor discontinuous conduction mode

Question Number : 198 Question Id : 7225445199 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In dc choppers, if the input voltage is 100V and output voltage is 50 V, for the switching frequency of 1.0 kHz, what is the ON period of the Thyristor switch?

Options :

1. ✗ 1.0 ms

2. ✓ 0.5 ms

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3. ✖ 0.25ms

4. ✖ 0.1ms

Question Number : 199 Question Id : 7225445200 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 device is the most suitable for high-frequency conversion in SMPS?

Options :

1. ✖ BJT

2. ✖ Thyristor

3. ✔ MOSFET

4. ✖ GTO

Question Number : 200 Question Id : 7225445201 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For single-phase step-up cyclo-converter _____ type of commutation is required for thyristor switches

Options :

1. ✖ Natural commutation

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2. ✖ Load commutation

3. ✖ Line commutation

4. ✔ Forced commutation

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