Andhra Pradesh State Council of Higher Education

Notations :

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

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

Question Paper Name :	Electronics and Communication Engineering 08th May 2024 Shift 2
Duration :	180
Total Marks :	200
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No

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

Mathematics

Section Id :	210688170
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 : 2106888607 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\begin{vmatrix} 15-x & 11 & 10 \\ 11-3x & 17 & 16 \\ 7-x & 14 & 13 \end{vmatrix}=0$ then the value of x is

Options :

1. ✔ 6

2. ✖ 5

3. ✖ 7

4. ✖ -6

Question Number : 2 Question Id : 2106888608 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The adjoint of $A = \begin{pmatrix} 1 & 4 & -2 \\ -2 & -5 & 4 \\ 1 & -2 & 1 \end{pmatrix}$ is

Options :

1. ✖ $\begin{pmatrix} 1 & 4 & -2 \\ -2 & -5 & 4 \\ 1 & -2 & 1 \end{pmatrix}$

2. ✖ $\begin{pmatrix} 1 & 4 & -2 \\ -2 & -5 & -4 \\ 1 & -2 & 1 \end{pmatrix}$

3. ✔ $\begin{pmatrix} 3 & 0 & 6 \\ 6 & 3 & 0 \\ 9 & 6 & 3 \end{pmatrix}$

4. ✖ $\begin{pmatrix} 3 & 2 & 1 \\ 4 & 1 & -1 \\ 0 & 3 & 4 \end{pmatrix}$

Question Number : 3 Question Id : 2106888609 Display Question Number : Yes Is Question

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

If $A = \begin{pmatrix} 3 & 2 & x \\ 4 & 1 & -1 \\ 0 & 3 & 4 \end{pmatrix}$ is a singular matrix then the value of x is

Options :

1. ✔ $11/12$

2. ✖ $-11/12$

3. ✖ $13/12$

4. ✖ $5/4$

Question Number : 4 Question Id : 2106888610 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The solution of the following simultaneous linear equations by using Cramer's rule 3x+4y+5z=18; 2x-y+8z=13; 5x-2y+7z=20 is

Options :

1. ✖ -3, -1,1

2. ✔ 3,1,1

3. ✖ 3,0,1

4. ✖ 3,1,-1

Question Number : 5 Question Id : 2106888611 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 $\begin{vmatrix} 441 & 442 & 443 \\ 445 & 446 & 447 \\ 449 & 450 & 451 \end{vmatrix}$ is

Options :

1. ✔ 0

2. ✖ 1

3. ✖ 4

4. ✖ 6

Question Number : 6 Question Id : 2106888612 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\frac{3x-1}{(x-1)(x-2)(x-3)} =$$

Options :

1. ✖ $\frac{2}{x-1}+\frac{5}{x-2}-\frac{4}{x-3}$

2. ✖ $\frac{-1}{x-1}+\frac{5}{x-2}-\frac{4}{x-3}$

3. ✖ $\frac{1}{x-1}+\frac{5}{x-2}+\frac{4}{x-3}$

4. ✔ $\frac{1}{x-1}-\frac{5}{x-2}+\frac{4}{x-3}$

Question Number : 7 Question Id : 2106888613 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\frac{5x+1}{(x+2)(x-1)} =$

Options :

1. ✔ $\frac{3}{x+2}+\frac{2}{x-1}$

2. ✖ $\frac{3}{x+2}-\frac{2}{x-1}$

3. ✖ $\frac{-3}{x+2}+\frac{2}{x-1}$

4. ✖ $\frac{3}{x-2}+\frac{2}{x+1}$

Question Number : 8 Question Id : 2106888614 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$cos100^0 cos40^0 + sin100^0 sin40^0 \ =$

Options :

1. ✔ $\frac{1}{2}$

2. ✖ $-\frac{1}{2}$

3. ✖ $\frac{1}{4}$

4. ✖ $\frac{1}{8}$

Question Number : 9 Question Id : 2106888615 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. ✖ $\frac{13}{12}$

Question Number : 10 Question Id : 2106888616 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $tan^{-1}x + tan^{-1}y + tan^{-1}z = \frac{\pi}{2}$ then $xy + yz + zx \ =$

Options :

1. ✖ -1

2. ✖ 3

3. ✖ 5

4. ✔ 1

Question Number : 11 Question Id : 2106888617 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $A = \frac{\pi}{6}$ and $B = \frac{\pi}{3}$ then $16\sin^3 A + 8\cos^3 B =$

Options :

1. ✔ 3

2. ✖ 1

3. ✖ -3

4. ✖ 0

Question Number : 12 Question Id : 2106888618 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✔ $2\cos n\theta$

2. ✖ $-2\cos n\theta$

3. ✖ $3\cos\theta$

4. ✖ $2\sin n\theta$

Question Number : 13 Question Id : 2106888619 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\cos\left[\sin^{-1}\left(\frac{1}{2}\right)+\cos^{-1}\left(-\frac{\sqrt{3}}{2}\right)\right] =$$

Options :

1. ✖ 0

2. ✖ 1

3. ✖ 3

4. ✔ -1

Question Number : 14 Question Id : 2106888620 Display Question Number : Yes Is Question

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

If $sin\alpha = {}^{15}/_{17}$, $cos\beta = {}^{12}/_{13}$ then $sin(\alpha + \beta)$ =

Options :

1. ✖ ${}^{110}/_{105}$

2. ✖ $-{}^{121}/_{152}$

3. ✔ ${}^{220}/_{221}$

4. ✖ ${}^{5}/_{4}$

Question Number : 15 Question Id : 2106888621 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If x is an acute angle and $sin(x + 10^0) = cos(3x - 68^0)$ then x =

Options :

1. ✖ 48^0

2. ✔ 37^0

3. ✖ 38^0

4. ✖ 10^0

Question Number : 16 Question Id : 2106888622 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\tan^{-1}(2sin150^0) =$

Options :

1. ✖ π

2. ✖ 3π

3. ✖ $\frac{\pi}{2}$

4. ✔ $\frac{\pi}{4}$

Question Number : 17 Question Id : 2106888623 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 $4cos^2x - 3 = 0$ is

Options :

1. ✔ $2n\pi \pm \frac{\pi}{6}$

2. ✖ $2n\pi \pm \frac{7\pi}{6}$

3. ✖ $3n\pi \pm \frac{5\pi}{6}$

4. ✖ $2n\pi \pm \frac{11\pi}{6}$

Question Number : 18 Question Id : 2106888624 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\left(\frac{\sqrt{3}}{2} + \frac{i}{2}\right)^5 - \left(\frac{\sqrt{3}}{2} - \frac{i}{2}\right)^5 =$

Options :

1. ✔ i

2. ✖ $-i$

3. ✖ $2i$

4. ✖ $-3i$

Question Number : 19 Question Id : 2106888625 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 the complex number $\left(-1-\sqrt{3}i\right)$ is

Options :

1. ✖ 1

2. ✖ 6

3. ✔ 2

4. ✖ 4

Question Number : 20 Question Id : 2106888626 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 $2y = 5x + k$ is a tangent to the parabola $y^2 = 6x$ then $k =$

Options :

1. ✖ $\frac{2}{5}$

2. ✖ $\frac{3}{5}$

3. ✔ $\frac{6}{5}$

4. ✖ $\frac{7}{5}$

Question Number : 21 Question Id : 2106888627 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 major axis of the ellipse: $4x^2 + 3y^2 = 48$ is

Options :

1. ✖ 10

2. ✖ 11

3. ✔ 8

4. ✖ 12

Question Number : 22 Question Id : 2106888628 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. ✖ $\frac{5}{2}$

Question Number : 23 Question Id : 2106888629 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 $(1,3)$ to the circle $x^2 + y^2 - 2x + 4y - 11 = 0$ is

Options :

1. ✖ 2

2. ✔ 3

3. ✖ 5

4. ✖ 4

Question Number : 24 Question Id : 2106888630 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 : 25 Question Id : 2106888631 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 parabola with focus at (-3,2) and vertex (-2,2) is

Options :

1. ✖ $x^2 - 4x + 8y + 12 = 0$

2. ✖ $x^2 + 5x - 8y - 11 = 0$

3. ✔ $y^2 + 4x - 4y + 12 = 0$

4. ✖ $x^2 - 4x - 8y - 12 = 0$

Question Number : 26 Question Id : 2106888632 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\lim_{x \to 0} \frac{a^x - b^x}{x} =$

Options :

1. ✖ $\log\left(\frac{b}{a}\right)$

2. ✖ $2\log\left(\frac{b}{a}\right)$

3. ✔ $\log\left(\frac{a}{b}\right)$

4. ✖ $2\log\left(\frac{a}{b}\right)$

Question Number : 27 Question Id : 2106888633 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $x = a\left[\cos t + log\left(tan\frac{t}{2}\right)\right]$, $y = a\sin t$ then $\frac{dy}{dx}$ is

Options :

1. ✖ $-\tan t$

2. ✔ $\tan t$

3. ✖ $\tan t + \sin t$

4. ✖ $\sin t$

Question Number : 28 Question Id : 2106888634 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If an error of 3% occurs in measuring the side of a cube then the percentage error in its volume is

Options :

1. ✖ 3

2. ✖ 7

3. ✖ 8

4. ✔ 9

Question Number : 29 Question Id : 2106888635 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 $y = x^2 + 3x - 7$ and $y^2 = 2x + 5$ at $(2,3)$ is

Options :

1. ✔ $\tan\theta = 2$

2. ✖ $\sec\theta = 2$

3. ✖ $\cos\theta = 1$

4. ✖ $\sin\theta = 3$

Question Number : 30 Question Id : 2106888636 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $u = \log\left(\frac{x^2+y^2}{x+y}\right)$ then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} =$

Options :

1. ✖ 2

2. ✖ 4

3. ✖ 5

4. ✔ 1

Question Number : 31 Question Id : 2106888637 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The interval in which the function $f(x) = x^2 logx$ is a decreasing function is

Options :

1. ✖ $(1\ ,\ e^{-1/2}\ )$

2. ✖ $(2\ ,\ e^{-1/2}\ )$

3. ✖ $(-\infty, 0)$

4. ✔ $(0\ ,\quad e^{-1/2})$

Question Number : 32 Question Id : 2106888638 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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 : 33 Question Id : 2106888639 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. ✖ 2 cm/sec

2. ✔ 1/36 cm/sec

3. ✖ 1/ 4 cm/sec

4. ✖ 6 cm/sec

Question Number : 34 Question Id : 2106888640 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The slope of the tangent to the curve $y = 5x^2$ at the point $x = -1$ is

Options :

1. ✖ 10

2. ✖ 7

3. ✔ -10

4. ✖

-9

Question Number : 35 Question Id : 2106888641 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The extreme values of the function $f(x) = x^3 - 9x^2 + 15x - 1$ are

Options :

1. ✔ 6,-26

2. ✖ 3,-26

3. ✖ 6,26

4. ✖ -6,-26

Question Number : 36 Question Id : 2106888642 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\int_0^2 \sqrt{4 - x^2}\, dx =$

Options :

1. ✖ $\frac{\pi}{2}$

2. ✖ $-\frac{\pi}{2}$

3. ✔ π

4. ✖ $-\pi$

Question Number : 37 Question Id : 2106888643 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 $\int x\sqrt{x}\,dx$ on $[0,\infty)$ is

Options :

1. ✔ $\frac{2}{5}x^{5/2}+c$

2. ✖ $-\frac{2}{5}x^{5/2}+c$

3. ✖ $\frac{2}{5}x^{-5/2}+c$

4. ✖ $\frac{2}{3}x^{3/2}+c$

Question Number : 38 Question Id : 2106888644 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 curve $y^2 = 4x$ and the line $x = 2y$ is

Options :

1. ✖ $\frac{64}{5}$ sq. units

2. ✔ $\frac{64}{3}$ sq. units

3. ✖ $\frac{65}{4}$ sq. units

4. ✖ $\frac{63}{4}$ sq. units

Question Number : 39 Question Id : 2106888645 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\int \frac{dx}{\sqrt{4x^2-4x+2}} =$$

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 : 40 Question Id : 2106888646 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\int_0^{\pi/2}\frac{sinx}{1+cos^2x}dx =$

Options :

1. ✔ $\pi/4$

2. ✖ $-\pi/4$

3. ✖ $\pi/3$

4. ✖ $\pi/2$

Question Number : 41 Question Id : 2106888647 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. ✖ $\frac{\pi}{2}$

4. ✔ $\frac{\pi}{16}$

Question Number : 42 Question Id : 2106888648 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\int_0^{\pi/4} \sqrt{1+sin2x}\, dx =$

Options :

1. ✖ -1

2. ✖ -3

3. ✖ 3

4. ✔ 1

Question Number : 43 Question Id : 2106888649 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 by the curves $y = 3x$ and $y = 6x - x^2$ is

Options :

1. ✖ $\frac{7}{2}$ square units

2. ✖ $\frac{5}{2}$ square units

3. ✖ $\frac{3}{2}$ square units

4. ✔ $\frac{9}{2}$ square units

Question Number : 44 Question Id : 2106888650 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 $\int \frac{e^x(1+x)}{(2+x)^2}\,dx$ on $I \in R \setminus\{-2\}$ is

Options :

1. ✔ $\frac{e^x}{2+x}+c$

2. ✖ $-\frac{e^x}{2+x}+c$

3. ✖ $\frac{e^x}{2-x}+c$

4. ✖ $\frac{e^{3x}}{2+x}+c$

Question Number : 45 Question Id : 2106888651 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The solution of the homogeneous differential equation $xy^2\,dy-(x^3+y^3)\,dx=0$ is

Options :

1. ✖ $y^3=-3x^3\log(xc)$

2. ✖ $y^3=3x^3\log(x/c)$

3. ✖

$y^3 = 3x^3\log(x^2c)$

4. $y^3 = 3x^3\log(xc)$ ✔

Question Number : 46 Question Id : 2106888652 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 : 47 Question Id : 2106888653 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The necessary and the sufficient condition for the differential equation $M(x,y)dx + N(x,y)dy = 0$ to be an exact equation is

Options :

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

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

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

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

Question Number : 48 Question Id : 2106888654 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. ✖ $\frac{2}{xy}=x+c$

4. ✖ $\frac{1}{y} = -x + c$

Question Number : 49 Question Id : 2106888655 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 $(D^2 + 10D + 25)y = 0$ is

Options :

1. ✔ $y = e^{-5x}\ (c_1 x + c_2)$

2. ✖ $y = e^{3x}(c_1 \cos 2x + c_2 \sin 2x)$

3. ✖ $y = e^{3x}(c_1 \cos 2x - c_2 \sin 2x)$

4. ✖ $y = e^{3x}(c_1 \cos 3x + c_2 \sin 3x)$

Question Number : 50 Question Id : 2106888656 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The complementary function of $(D^2 + 3D + 2)y = 8sin5x$ is

Options :

1. ✔ $c_1 e^{-x} + c_2 e^{-2x}$

2. $c_1e^x + c_2e^{2x}$ ✖

3. $c_1e^{-x} + c_2e^{2x}$ ✖

4. $c_1e^{2x} + c_2e^{3x}$ ✖

Physics

Section Id :	210688171
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 : 2106888657 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If we choose velocity **V**, acceleration **A** and force **F** as fundamental physical quantities then how would you express angular momentum in terms of **V**, **A** and **F**.

Options :

1.

✖ $F^1 A^{-1} V^1$

2. ✖ $F^1 A^0 V^1$

3. ✖ $F^1 A^{-1} V^2$

4. ✔ $F^1 A^{-2} V^3$

Question Number : 52 Question Id : 2106888658 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the velocity of a body at any time 't' is given by the equation $v = A\,t^2 + B\,t + C$, then the unit of A is

Options :

1. ✖ metre/sec

2. ✖ metre/sec^2

3. ✔ metre/sec^3

4. ✖ metre

Question Number : 53 Question Id : 2106888659 Display Question Number : Yes Is Question

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

If $|\mathbf{A}| + |\mathbf{B}| = |\mathbf{C}|$ and $\mathbf{A} + \mathbf{B} = \mathbf{C}$, then the angle between vectors $\mathbf{A}$ and $\mathbf{B}$ is

Options :

1. ✖ $90°$

2. ✖ $60°$

3. ✔ $0°$

4. ✖ $120°$

Question Number : 54 Question Id : 2106888660 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 triangle with sides as $\mathbf{A} = 2\mathbf{i} + 3\mathbf{j}$ and $\mathbf{B} = \mathbf{i} + 4\mathbf{j}$ is

Options :

1. ✖ 5 units

2. ✖ 10 units

3. ✔ 2.5 units

4. ✖ 20 units

Question Number : 55 Question Id : 2106888661 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the velocity of a body moving with uniform acceleration is doubled in t_1 sec and tripled in t_2 sec then

Options :

1. ✔ $t_2 = 2\ t_1$

2. ✖ $t_1 = 2\ t_2$

3. ✖ $t_1 t_2 = 2$

4. ✖ $t_2 = 3\ t_1$

Question Number : 56 Question Id : 2106888662 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If a body travels half of its total path in the last second of its fall from rest then the height of its fall is (take $g = 10\ ms^{-2}$)

Options :

1. ✔ 57.1m

2. ✖ 28.26m

3. ✖ 64m

4. ✖ 45m

Question Number : 57 Question Id : 2106888663 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In Olympics, a javelin thrown at an angle 45° attains a maximum height of 30m, then the horizontal distance covered by the javelin is

Options :

1. ✖ 60m

2. ✔ 120m

3. ✖ 100m

4. ✖ 90m

Question Number : 58 Question Id : 2106888664 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 friction between the floor and the wooden cube of side length 0.5m is 0.2. The coefficient of friction for a wooden cube of side length 1m is

Options :

1. ✔ 0.2

2. ✖ 0.5

3. ✖ 0.1

4. ✖ 0.4

Question Number : 59 Question Id : 2106888665 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The force required just to move a body up an inclined plane is double the force required just to prevent the body sliding down it. If The coefficient of friction is $1/\sqrt{3}$, then the angle of the plane is

Options :

1. ✖ 45°

2. ✖ 30°

3. ✖ 53°

4. ✔ 60°

Question Number : 60 Question Id : 2106888666 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If an ice block of mass 42Kg moves with initial velocity 4m/s on a rough surface of coefficient of friction 0.1. then the amount of ice melted as a result of friction before the block comes to rest is

Options :

1. ✖ 0.5 gm.

2. ✔ 1 gm.

3. ✖ 8 gm.

4. ✖ 16 gm.

Question Number : 61 Question Id : 2106888667 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A ship of mass 3×10^7 Kg initially at rest is pulled by a force of 5×10^4 N through a distance of 3m. Assuming that the resistance due to water is negligible, the speed of the ship is

Options :

1. ✖ 2 m/s

2. ✔ 0.1 m/s

3. ✖ 0.2 m/s

4. ✖ 10 m/s

Question Number : 62 Question Id : 2106888668 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a force $\mathbf{F} = 2\,\mathbf{i} + 4\,\mathbf{j} + 5\,\mathbf{k}$ newton acts on a body and produces a displacement of $\mathbf{S} = 3\,\mathbf{i} + 2\,\mathbf{j} + \mathbf{k}$ metre., then the work done by this force is

Options :

1. ✖ 13 J

2. ✖ 15 J

3. ✖ 17 J

4. ✔ 19 J

Question Number : 63 Question Id : 2106888669 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An engine expends 45 HP in propelling a car along a level track at 15m/s. The total retarding force acting on the car is

Options :

1. ✔ 2238 N

2. ✖ 3900 N

3. ✖ 3228 N

4. ✖ 4280 N

Question Number : 64 Question Id : 2106888670 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two bodies A and B of equal masses are suspended from two separate massless springs of spring constants K_1 and K_2 respectively. If the two bodies oscillate such that their maximum velocities are equal, the ratio of amplitude of A to that of B is

Options :

1. ✖ $\frac{K_1}{K_2}$

2. ✖ $\frac{K_2}{K_1}$

3. ✔ $\sqrt{\frac{K_2}{K_1}}$

4. ✖

$\sqrt{\frac{K_1}{K_2}}$

Question Number : 65 Question Id : 2106888671 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A block is on a piston which is moving vertically with a SHM of period 1sec. The amplitude of the motion at which block and the piston will separate is (take $g = 10\,ms^{-2}$)

Options :

1. ✔ 0.25m

2. ✖ 0.5m

3. ✖ 0.75m

4. ✖ 1m

Question Number : 66 Question Id : 2106888672 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A seconds pendulum is working in a lift. If the lift begins to fall freely, then what will be the time period of the pendulum in this case

Options :

1. ✖ 2 sec

2. ✖ 1 sec

3. ✖ 0

4. ✔ infinity

Question Number : 67 Question Id : 2106888673 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A tuning fork of frequency 90 hertz is sounded and moving towards an observer with a velocity equal to one-tenth the velocity of sound; the frequency of the note heard by the observer is

Options :

1. ✔ 100 Hz

2. ✖ 90 Hz

3. ✖ 80 Hz

4. ✖ 110 Hz

Question Number : 68 Question Id : 2106888674 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the reverberation time of a class room of dimensions 100 x 30 x 10 m^3 is 1.5 sec. then the total absorption of the class room is

Options :

1. ✖ 2300 metric Sabine

2. ✔ 3400 metric Sabine

3. ✖ 1700 metric Sabine

4. ✖ 850 metric Sabine

Question Number : 69 Question Id : 2106888675 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The standard constant volume gas thermometer cannot use any vapour as working substance because

Options :

1. ✖ Vapours are likely to catch fire

2. ✔ Vapours are not perfect gases

3. ✖ It is difficult to obtain pure vapours

4. ✖ The properties are not constant over a long range of temperature

Question Number : 70 Question Id : 2106888676 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 state corresponding to 14g of nitrogen(N_2) at pressure P and temperature T, when occupying a volume V, will be (R is universal gas constant)

Options :

1. ✖ $PV = 7RT$

2. ✔ $PV = \frac{1}{2} RT$

3. ✖ $PV = \frac{1}{4} RT$

4. ✖ $PV = 2\ RT$

Question Number : 71 Question Id : 2106888677 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A vessel contains certain quantity of gas at a pressure of 80 cm of Hg. If $2/5^{th}$ of the mass of gas leaks out at the same temperature, then the pressure of remaining gas is

Options :

1. ✖ 40 cm of Hg

2.

✖ 32 cm of Hg

3. ✔ 48 cm of Hg

4. ✖ 20 cm of Hg

Question Number : 72 Question Id : 2106888678 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An ideal diatomic gas is heated at constant pressure. The fraction of the heat energy supplied to increase the internal energy of the gas is

Options :

1. ✖ $\frac{2}{5}$

2. ✖ $\frac{3}{5}$

3. ✖ $\frac{3}{7}$

4. ✔ $\frac{5}{7}$

Question Number : 73 Question Id : 2106888679 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

The distance between the atoms of a diatomic gas remains constant. Then its molar specific heat at constant volume is

Options :

1. ✔ $\frac{5}{2}R$

2. ✖ $\frac{3}{2}R$

3. ✖ R

4. ✖ $\frac{1}{2}R$

Question Number : 74 Question Id : 2106888680 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In photo electric effect the energy of the emitted electrons is

Options :

1. ✖ Larger than that of incident photon

2. ✔ Smaller than that of incident photon

3. ✖ Same as that of incident photon

4. ✖ Proportional to the intensity of incident light

Question Number : 75 Question Id : 2106888681 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In water-air system for which colour the critical angle is maximum?

Options :

1. ✔ Red

2. ✖ Violet

3. ✖ Yellow

4. ✖ Same for all colours

Chemistry

Section Id :	210688172
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 : 2106888682 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The total number of 'm' values possible for a sublevel with l=3 is

Options :

1. ✖ 3

2. ✖ 5

3. ✔ 7

4. ✖ 9

Question Number : 77 Question Id : 2106888683 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 Rydberg constant for hydrogen atom (R_H) (in m^{-1}) is

Options :

1. ✖ 1.09×10^{-5}

2. ✖ 1.09×10^{-7}

3. ✖ 1.09×10^{5}

4. ✔ 1.09×10^{7}

Question Number : 78 Question Id : 2106888684 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In which of the following, the orbitals are correctly arranged in the order of increasing energy?

Options :

1. ✖ $3d < 4s < 4d < 5p$

2. ✔ $4s < 3d < 5p < 4d$

3. ✖ $4s < 5p < 3d < 4d$

4. ✖ $3d < 4d < 4s < 5p$

Question Number : 79 Question Id : 2106888685 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Identify the molecule in which central atom has octet of electrons.

Options :

1. ✔ H_2O

2. ✖ $BeCl_2$

3. ✖ BCl_3

4. ✖ PCl_5

Question Number : 80 Question Id : 2106888686 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The incorrect statement about an ionic compound is

Options :

1. ✖ It is readily soluble in water

2. ✔ It is a conductor in solid state

3. ✖ It has non directional ionic bond

4. ✖ It has high melting point

Question Number : 81 Question Id : 2106888687 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The weight of 0.01 moles of $KClO_3$ (in g) is (K = 39u, Cl = 35.5 u, O = 16u)

Options :

1. ✔ 1.225

2. ✖ 2.45

3. ✖ 3.225

4. ✖ 1.205

Question Number : 82 Question Id : 2106888688 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

100 ml of 0.1M HCl is mixed with 100 ml of 0.1M H_2SO_4 and the solution is diluted to 1.0 L. the Molarity of the final solution is

Options :

1. ✖ 0.01 M

2. ✖ 0.02 M

3. ✔ 0.03 M

4. ✖ 0.04 M

Question Number : 83 Question Id : 2106888689 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 5.3% (w/v) solution of Na_2CO_3 is (Na = 23u, C = 12u, O = 16u)

Options :

1. ✖ 0.5 N

2. ✖ 3 N

3. ✖ 2 N

4. ✔ 1 N

Question Number : 84 Question Id : 2106888690 Display Question Number : Yes Is Question

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

Identify the substance which can act only as Lewis acid

Options :

1. ✖ HCl

2. ✔ $AlCl_3$

3. ✖ NH_3

4. ✖ H_2O

Question Number : 85 Question Id : 2106888691 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

At 25^0C, 4.0 g of NaOH is Present in 2.0 L solution. The ionic product of water (in mol^2/L^2) at that temperature is

Options :

1. ✔ 1×10^{-14}

2. ✖ 1×10^{-13}

3. ✖ 1×10^{-12}

4. ✖ 5×10^{-14}

Question Number : 86 Question Id : 2106888692 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 strong electrolyte?

Options :

1. ✖ HCl (aq)

2. ✖ $H_2SO_4(aq)$

3. ✖ $CH_3COONa(aq)$

4. ✔ $NH_4OH(aq)$

Question Number : 87 Question Id : 2106888693 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How many grams of copper is deposited on cathode, when 0.5F current is passed through 100 ml of 0.1 M $CuSO_4$ solution? (Molecular Weight of $CuSO_4$ = 63.5u)

Options :

1. ✖ 63.5

2. ✖ 16.35

3. ✔ 15.875

4. ✖ 31.75

Question Number : 88 Question Id : 2106888694 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The electrolyte commonly used in salt bridge is

Options :

1. ✖ $ZnCl_2$

2. ✔ KCl

3. ✖ $MgCl_2$

4. ✖ $CaSO_4$

Question Number : 89 Question Id : 2106888695 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

At 25^0C, the emf of the cell $Zn|Zn^{2+}(1M)||Cu^{2+}(1M)|Cu$ is __

(Given: $E^0_{Zn^{2+}}|Zn = -0.76$ V & $E^0_{Cu^{2+}}|Cu = +0.34$ V)

Options :

1. ✔ 1.1 V

2. ✖ -0.46 V

3. ✖ -1.1 V

4. ✖ 1.5 V

Question Number : 90 Question Id : 2106888696 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Water gets permanent hardness due to

Options :

1. ✖ NaCl

2. ✖ KCl

3. ✔ $MgCl_2$

4. ✖ $AlCl_3$

Question Number : 91 Question Id : 2106888697 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

2.43 g of $Ca(HCO_3)_2$ (molecular weight is 162u) is present in 20L water sample.

The degree of hardness of water (in mg/l) is__

Options :

1. ✖ 150

2. ✔ 75

3. ✖ 200

4. ✖ 125

Question Number : 92 Question Id : 2106888698 Display Question Number : Yes Is Question

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

In softening of hardwater by ion exchange resin method, the cation exchange resin contains

Options :

1. ✔ -COOH group

2. ✖ -OH group

3. ✖ $-NH_3OH$ group

4. ✖ $-Al_2Si_2O_8$ group

Question Number : 93 Question Id : 2106888699 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Corrosion is

Options :

1. ✖ A chemical process

2. ✖ An electrical process

3. ✔

An electrochemical process

4. ✖ A physical process

Question Number : 94 Question Id : 2106888700 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Galvanization is applying a coating of

Options :

1. ✔ Zn

2. ✖ Pb

3. ✖ Cr

4. ✖ Cu

Question Number : 95 Question Id : 2106888701 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The hetero atom present in neoprene is

Options :

1. ✖ S

2. ✖ O

3. ✔ Cl

4. ✖ F

Question Number : 96 Question Id : 2106888702 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The monomer of Teflon is

Options :

1. ✖ C_2Cl_4

2. ✖ C_2Br_2

3. ✔ C_2F_4

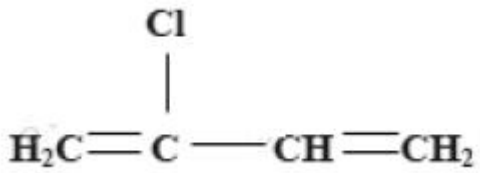
4. ✖ C_2F_6

Question Number : 97 Question Id : 2106888703 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

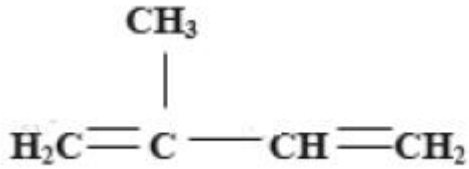
The structure of the monomer of natural rubber is

Options :

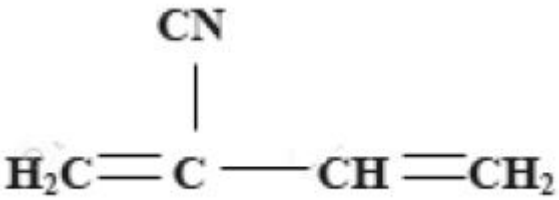
1. ✖



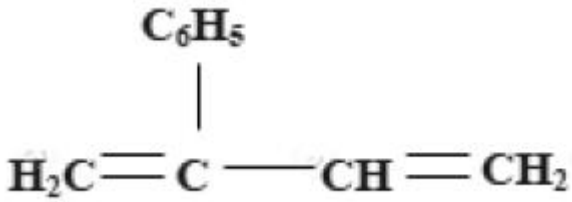
2. ✔



3. ✖



4. ✖



Question Number : 98 Question Id : 2106888704 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The major components of producer gas are

Options :

1. ✖ CO, H_2

2. ✔ CO, N_2

3. ✖ CH_4, CO

4. ✖ CH_4, N_2

Question Number : 99 Question Id : 2106888705 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Depletion of ozone layer causes

Options :

1. ✖ Forest fires

2. ✖ Eutrophication

3. ✖ Bio-Magnification

4. ✔ Skin Cancer

Question Number : 100 Question Id : 2106888706 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 secondary pollutant?

Options :

1. ✖ CO_2

2. ✖ SO_2

3. ✔ Peroxyacetyl nitrate

4. ✖ NO_2

Electronics and Communication Engineering

Section Id :	210688173
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 : 2106888707 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For a transistor if $\alpha = 0.98$ and emitter current I_E is 2 mA then the collector current is

Options :

1. ✖ 0.44 mA

2. ✖ 0.88 mA

3. ✔ 1.96 mA

4. ✖ 3.32 mA

Question Number : 102 Question Id : 2106888708 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A JFET

Options :

1. ✖ is a current controlled device

2.

has low input resistance

✖

has high gate current

3. ✖

is a voltage controlled device

4. ✔

Question Number : 103 Question Id : 2106888709 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A BJT is said to be operating in the saturation region if

Options :

both the junctions are reverse biased

1. ✖

base emitter junction is reverse biased and base collector junction is forward biased

2. ✖

base emitter junction is forward biased and base collector junction is reverse biased

3. ✖

both the junctions are forward biased

4. ✔

Question Number : 104 Question Id : 2106888710 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An ideal diode

Options :

1. ✖ should have zero resistance in the forward bias as well as reverse bias

2. ✔ should have zero resistance in forward bias and an infinitely large resistance in reverse bias

3. ✖ should have an infinitely large resistance in forward bias and zero resistance in reverse bias

4. ✖ should have infinitely large resistance in forward bias as well as reverse bias

Question Number : 105 Question Id : 2106888711 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Most commonly used configuration for impedance matching

Options :

1. ✔ CC

2. ✖ CE

3. ✖ CB and CE

4. ✖ CB

Question Number : 106 Question Id : 2106888712 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In MOSFETs the N channel is more preferred than P channel because

Options :

1. ✖ it has better noise immunity

2. ✖ it has better drive capability

3. ✔ it is faster

4. ✖ it is cheaper

Question Number : 107 Question Id : 2106888713 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For a 50 Hz AC input the ripple frequency in the output that a full wave rectifier produces is equal to

Options :

1. ✖ 25 Hz

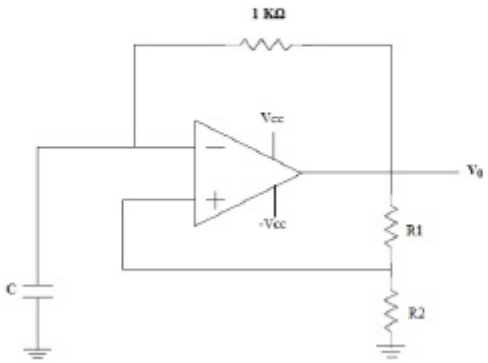
2. ✖ 50 Hz

3. ✔ 100 Hz

4. ✖ 200 Hz

Question Number : 108 Question Id : 2106888714 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 a



Options :

1. ✖ Integrator

2. ✖ Inverting amplifier

3. ✖ Low pass filter

4. ✔ Differentiator

Question Number : 109 Question Id : 2106888715 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Linear amplifier with a gain of 30dB is fed with 1.0μW power. The output power of the amplifier is

Options :

1. ✖ 1.0 W

2. ✔ 0 dBm

3. ✖ 30 dBm

4. ✖ -30 dBm

Question Number : 110 Question Id : 2106888716 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The voltage gain of an amplifier without feedback and with negative feedback respectively are 100 and 20. The percentage of negative feedback (β) would be

Options :

1. ✔ 4%

2. ✖ 5%

3. ✖ 20%

4. ✖ 60%

Question Number : 111 Question Id : 2106888717 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An RC amplifier stage has a bandwidth of 500 KHz. What will be the rise time of this amplifier stage?

Options :

1. ✖ $0.35\ \mu s$

2. ✔ $0.7\ \mu s$

3. ✖ $1.0\ \mu s$

4. ✖ $2.0\ \mu s$

Question Number : 112 Question Id : 2106888718 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following is a wide-band amplifier?

Options :

1. ✖ Power amplifier

2. ✖ IF amplifier

3. ✔ Video amplifier

4. ✖ AF amplifier

Question Number : 113 Question Id : 2106888719 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A junction FET can be used as a voltage variable resistor

Options :

1. ✖ At pinch-off condition

2. ✖ Beyond pinch-off region

3. ✔ Well below pinch-off condition

4. ✖ For any value of V_{DS}

Question Number : 114 Question Id : 2106888720 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Conduction electrons have more mobility than holes because they

Options :

1. ✖ are heavier

2. ✖ experience collisions more frequently

3. ✖ have positive charge

4. ✔ need less energy to move them

Question Number : 115 Question Id : 2106888721 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

3 dBm is equivalent to

Options :

1. ✔ 2 mW

2. ✖ 20 W

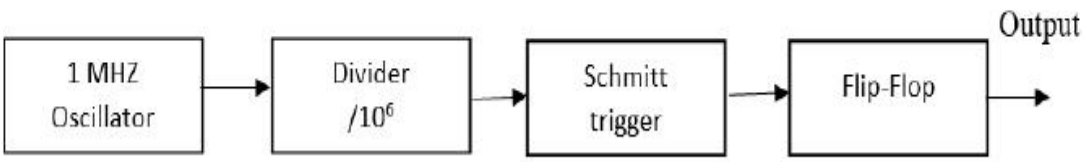
3. ✖ 20 mW

4. ✖ 2 MW

Question Number : 116 Question Id : 2106888722 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 circuit shown below is



Options :

1. ✖ a pulse train of duration 0.5sec

2. ✔ a pulse train of duration 2 sec

3. ✖ a pulse train of duration 1sec

4. ✖ a pulse train of duration 5 sec

Question Number : 117 Question Id : 2106888723 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The time rate of change of a voltage applied across a 1μF capacitor is 2V/s. This means that the current flowing through the capacitor is

Options :

1. ✔ 2×10^{-6} A

2. ✖ $2\ A$

3. ✖ $0.5 \times 10^{-6}\ A$

4. ✖ $0.5\ A$

Question Number : 118 Question Id : 2106888724 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 resonates at 3 MHz and has 3dB bandwidth of 10 KHz. The Q of the circuit at resonance is

Options :

1. ✖ 30

2. ✖ $\frac{300}{\sqrt{2}}$

3. ✔ 300

4. ✖ $300\sqrt{2}$

Question Number : 119 Question Id : 2106888725 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The quality factor of series RLC circuit will increase if

Options :

1. ✔ resistance decreases

2. ✖ resistance increases

3. ✖ voltage increases

4. ✖ voltage decreases

Question Number : 120 Question Id : 2106888726 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The characteristic impedance of a lossless transmission line is given by

Options :

1. ✖ $Z_0 = \sqrt{LC}$

2. ✖ $Z_0 = \sqrt{\frac{C}{L}}$

3. ✖ $Z_0 = LC$

4. ✔

$$Z_0 = \sqrt{\frac{L}{C}}$$

Question Number : 121 Question Id : 2106888727 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When a load resistance R_L is connected to a lossless transmission line of characteristic impedance 75 ohms it results in a VSWR of 2. The load resistance is

Options :

1. ✖ 100 Ω

2. ✖ 75 Ω

3. ✖ 120 Ω

4. ✔ 150 Ω

Question Number : 122 Question Id : 2106888728 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The RMS value of a half wave rectified sinusoidal alternating current with peak value I_m is

Options :

1. ✖ I_m

2. ✖ $I_m/\sqrt{2}$

3. ✔ $I_m/2$

4. ✖ $I_m/\sqrt{3}$

Question Number : 123 Question Id : 2106888729 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A two port network is described by the relations

$V_1 = 2\ V_2 + 0.5\ I_1$

$I_1 = 2\ V_2 + I_2$

What is the value of the h_{22} parameter of the network ?

Options :

1. ✖ 1 mho

2. ✖ 2 ohms

3. ✔ -2 mho

4. ✖ 4 ohms

Question Number : 124 Question Id : 2106888730 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If a square wave is applied as an input to an integrator its output is

Options :

1. ✖ positive spikes

2. ✖ negative spikes

3. ✖ sine wave

4. ✔ triangular wave

Question Number : 125 Question Id : 2106888731 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Random errors in a measurement system are due to

Options :

1. ✖ Environmental changes

2. ✖ Use of uncalibrated instrument

3. ✖

Poor cabling practices

4. ✔ Unpredictable effects

Question Number : 126 Question Id : 2106888732 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A digital voltmeter has a read out range from 0 to 999 counts. If the full scale reading is 10 V, resolution is

Options :

1. ✖ 1V

2. ✖ 0.001 V

3. ✔ 0.01 V

4. ✖ 1μV

Question Number : 127 Question Id : 2106888733 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 signals are generated by Wien-bridge oscillators?

Options :

1. ✔ Sine wave

2. ✖ Square wave

3. ✖ Triangular wave

4. ✖ Pulse wave

Question Number : 128 Question Id : 2106888734 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 10MHz CRO has

Options :

1. ✖ 5MHz sweep

2. ✖ 10MHz vertical oscillator

3. ✔ 10MHz horizontal oscillator

4. ✖ 10MHz supply frequency

Question Number : 129 Question Id : 2106888735 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two voltmeters have the same range 0-400V. The internal impedances are 30,000 Ohms and 20,000 Ohms. If they are connected in series and 600V be applied across them, the readings are

Options :

1. ✔ 360V and 240V

2. ✖ 300V each

3. ✖ 400V and 200V

4. ✖ one of the meters out of the range and other 100V

Question Number : 130 Question Id : 2106888736 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

LVDT works on the principle of

Options :

1. ✖ Linear inductance

2. ✖ Non-linear inductance

3. ✔ Mutual inductance

4. ✖ Linear capacitance

Question Number : 131 Question Id : 2106888737 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 represent active transducer?

Options :

1. ✖ Strain gauge

2. ✖ Thermistor

3. ✖ LVDT

4. ✔ Thermocouple

Question Number : 132 Question Id : 2106888738 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Certain type of materials generate an electrostatic charge or voltage when mechanical force is applied across them. Such materials are called

Options :

1. ✔ Piezo-electric

2. ✖ Photo-electric

3. ✖ Thermo-electric

4. ✖ Photo-resistive

Question Number : 133 Question Id : 2106888739 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the unit step response of a system is a unit impulse function then the transfer function of such a system will be

Options :

1. ✖ 1

2. ✖ $1/s$

3. ✔ s

4. ✖ $1/s^2$

Question Number : 134 Question Id : 2106888740 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The relationship satisfied by two orthogonal signals $s_1(t)$ and $s_2(t)$ is

Options :

1. ✔ $\int_0^T s_1(t)s_2(t)dt = 0$

2. ✖ $\int_0^T s_1(t)s_2(t)dt = 1$

3. ✖ $\int_0^T s_1(t)s_2(t)dt = \infty$

4. ✖ $\int_0^T s_1(t)s_2(t)dt = \pi$

Question Number : 135 Question Id : 2106888741 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Natural frequency of a unity feedback control system of transfer function $G(s) = \frac{10}{s(s+1)}$ is

Options :

1. ✖ 0.5 rad/sec

2. ✔ 3.16 rad/sec

3. ✖ 4.6 rad/sec

4. ✖ 10 rad/sec

Question Number : 136 Question Id : 2106888742 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the emitter bypass capacitor in a common emitter amplifier is removed then

Options :

1. ✖ input resistance will decrease

2. ✖ voltage gain will increase

3. ✔ voltage gain will decrease

4. ✖ voltage gain will remain unaffected

Question Number : 137 Question Id : 2106888743 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An op-amp based inverting amplifier has a gain of -20 and a bandwidth of 50 kHz. If the gain of the amplifier is reduced to -1 its bandwidth will change to

Options :

1. ✖ 10 kHz

2. ✖ 100 kHz

3. ✔ 1MHz

4. ✖ 10 MHz

Question Number : 138 Question Id : 2106888744 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A BJT has $\alpha = 0.99$, $I_B = 25\ \mu A$ and $I_{CBO} = 200$ n A. The collector current is

Options :

1. ✔ $I_C = 2.5$ mA

2. ✖ $I_C = 1.5$ mA

3. ✖ $I_C = 3.5$ mA

4. ✖ $I_C = 4.5$ mA

Question Number : 139 Question Id : 2106888745 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Assertion (A) : A monostable multivibrator can be used to alter the pulse width of a repetitive pulse train.

Reason (R) : Monostable multivibrator has a single stable state.

Options :

1. ✔ both A and R are true and R is the correct explanation of A

2. ✖ both A and R are true and R is not the correct explanation of A

3. ✖ A is true but R is false

4. ✖ A is false but R is true

Question Number : 140 Question Id : 2106888746 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An RC amplifier stage has a bandwidth of 500 KHz. What will be the rise time of this amplifier stage?

Options :

1. ✖ $0.35\ \mu s$

2. ✔ $0.7\ \mu s$

3. ✖ $1.0\ \mu s$

4. ✖ $2.0\ \mu s$

Question Number : 141 Question Id : 2106888747 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a Circuit if the open loop gain is 10^6 and output voltage is 10volts, the differential voltage should be

Options :

1. ✔ $10\mu V$

2. ✖ 0.1 V

3. ✖ $100\ \mu V$

4. ✖ $1\mu V$

Question Number : 142 Question Id : 2106888748 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The depletion region in a semiconductor p-n junction diode has

Options :

1. ✖ Electrons and holes

2. ✔ positive and negative ions on either side

3. ✖ Neither electrons nor ions

4. ✖ No electrons

Question Number : 143 Question Id : 2106888749 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A broadcast radio transmitter radiates 13.6 KW when the modulation percentage is 60.

The carrier power will be

Options :

1. ✖ 1.2 KW

2. ✖ 1.45 KW

3. ✔ 10 KW

4. ✖ 20 KW

Question Number : 144 Question Id : 2106888750 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Satellite earth station has

Options :

1. ✖ only transmitting equipment

2. ✖ only receiving equipment

3. ✔ both transmitting as well as receiving equipment

4. ✖ neither transmitting nor receiving equipment

Question Number : 145 Question Id : 2106888751 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Strapping is used in cavity magnetron to

Options :

1. ✖ prevent bunching

2. ✖ prevent cathode back heating

3. ✖ improve the phase focussing effect

4. ✔ prevent mode jumping

Question Number : 146 Question Id : 2106888752 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The distance of a geostationary satellite from the surface of the earth is nearly

Options :

1. ✖ 360 km

2. ✖ 3600 km

3. ✔ 36,000 km

4. ✖ 3,60,0000 km

Question Number : 147 Question Id : 2106888753 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In end fire array the principle direction of the radiation

Options :

1. ✖ is perpendicular to the array axis

2. ✖ is perpendicular to the array axis and also to the plane containing the array elements

3. ✔ coincides with the direction of the array axis

4. ✖ is 45^0 to the direction of array axis

Question Number : 148 Question Id : 2106888754 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For F_1 layer the maximum density is 2.0×10^6 electron per c.c. The critical frequency for that layer will be

Options :

1. ✖ 1.27 MHz

2. ✔ 12.7 MHz

3. ✖ 127 MHz

4. ✖ 1360 MHz

Question Number : 149 Question Id : 2106888755 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 circuits cannot be used to demodulate SSB ?

Options :

1. ✖ synchronous demodulator

2. ✖ product detector

3. ✔ phase discriminator

4. ✖ balanced modulator

Question Number : 150 Question Id : 2106888756 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An AM wave is given by $C(t) = 10(1 + 0.4 \cos 10^3 t + 0.3 \cos 10^4 t) \cos 10^6 t$.

The modulation index of the envelope is

Options :

1. ✖ 0.4

2. ✖ 0.3

3. ✔ 0.5

4. ✖ 0.9

Question Number : 151 Question Id : 2106888757 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Faraday's law can be expressed in differential form as

Options :

1. ✖ $\nabla . \overline{E} = -\frac{\partial \overline{B}}{\partial t}$

2. ✔ $\nabla x \overline{E} = -\frac{\partial \overline{B}}{\partial t}$

3. ✖ $\nabla x \overline{H} = \overline{J} + \frac{\partial \overline{D}}{\partial t}$

4. ✖ $\overline{B} = \nabla x \overline{A}$

Question Number : 152 Question Id : 2106888758 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Maxwell's Divergence equation for the magnetic field is given by

Options :

1. ✖ $\nabla x B = 0$

2. ✔ $\nabla . B = 0$

3. ✖ $\nabla x B = \rho$

4. ✖ $\nabla . B = \rho$

Question Number : 153 Question Id : 2106888759 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

. For an FM wave the modulating frequency 10 KHz and bandwidth is 2 MHz .
If modulating signal amplitude is doubled then bandwidth will be

Options :

1. ✖ 1.99 MHz

2. ✖ 1 MHz

3. ✖ 2 MHz

4. ✔ 3.98 MHz

Question Number : 154 Question Id : 2106888760 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Dominant mode of electromagnetic transmission in rectangular wave guide uses

Options :

1. ✔ TE_{10} mode

2. ✖ TEM mode

3. ✖ TE_{20} mode

4. ✖ TE_{11} mode

Question Number : 155 Question Id : 2106888761 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 taken as a reference antenna for directive gain ?

Options :

1. ✖ half wave dipole

2. ✖ elementary doublet

3. ✔ isotropic

4. ✖ infinitesimal dipole

Question Number : 156 Question Id : 2106888762 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Light will be produced in LED because of

Options :

1. ✖ stimulated emission

2. ✔ spontaneous emission

3. ✖ photo electric effect

4. ✖ collisions

Question Number : 157 Question Id : 2106888763 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 travelling wave ?

Options :

1. ✖ $e = E_m \sin(\beta x - \omega t)$

2. ✖ $e = E_m \cos(\beta x - \omega t)$

3. ✖ $e = E_m \sin(\omega t - \beta x)$

4. ✔ $e = E_m \sin(\beta x)$

Question Number : 158 Question Id : 2106888764 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The major advantage of a TWT over a Klystron lies in its

Options :

1. ✔ higher bandwidth

2. ✖ higher gain

3. ✖ higher frequency

4. ✖ higher output

Question Number : 159 Question Id : 2106888765 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When r is the radius of a circular orbit of a satellite then orbital period of the satellite is proportional to

Options :

1. ✖ r

2. ✔ $r^{3/2}$

3. ✖ r^{2}

4. ✖ r^{3}

Question Number : 160 Question Id : 2106888766 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Uniform excitation of a linear Array results in

Options :

1. ✖ maximum gain, minimum side lobe

2. ✔ minimum beam width, maximum side lobe

3. ✖ minimum beam width, minimum side lobe

4. ✖ maximum gain, no side lobe

Question Number : 161 Question Id : 2106888767 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In an ideal transmission line with matched load, the VSWR and reflection coefficient are respectively

Options :

1. ✖ 1 and 1

2. ✖ 0 and 1

3. ✖ infinity and 0

4. ✔ 1 and 0

Question Number : 162 Question Id : 2106888768 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The intrinsic impedance of free space is

Options :

1. ✖ 60π

2. ✖ 4π

3. ✔ 120π

4. ✖ infinity

Question Number : 163 Question Id : 2106888769 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

De-emphasis circuit is used

Options :

1. ✔ to attenuate higher frequencies at receiver

2. ✖ to attenuate lower frequencies at receiver

3. ✖ to attenuate lower frequencies at transmitter

4. ✖ to amplify higher frequencies at receiver

Question Number : 164 Question Id : 2106888770 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A super heterodyne radio receiver with an intermediate frequency of 455 KHz is tuned to a station operating at 1200 KHz, the associated image frequency is

Options :

1. ✖ 555 KHz

2. ✖ 1110 KHz

3. ✔ 2110 KHz

4. ✖ 4220 KHz

Question Number : 165 Question Id : 2106888771 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 Radars cannot be used for range measurement?

Options :

1. ✖ Pulsed

2. ✔ CW

3. ✖ MTI

4. ✖ FM CW

Question Number : 166 Question Id : 2106888772 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Type A scope in RADAR systems displays

Options :

1. ✖ target azimuth angle and range

2. ✔ target range alone

3. ✖ target azimuth angle alone

4. ✖ Target elevation alone

Question Number : 167 Question Id : 2106888773 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A geostationary satellite completes one orbit in

Options :

1. ✖ one hour

2. ✖ 28 days

3. ✔ 24 hours

4. ✖ 10 hours

Question Number : 168 Question Id : 2106888774 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The channel capacity C of a band limited Gaussian channel equals

Options :

1. ✔ $B \log_2(1 + S/N)$

2. ✖ $B \log(S/N)$

3. ✖ $\frac{1}{B} \log_2(S/N)$

4. ✖ $\frac{1}{B} \log_2(1+S/N)$

Question Number : 169 Question Id : 2106888775 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following blocks is not common in both AM and FM receivers?

Options :

1. ✖ RF amplifier

2. ✖ Mixer

3. ✖ IF amplifier

4. ✔ Slope detector

Question Number : 170 Question Id : 2106888776 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following antenna structures is best for generating circularly polarized radiation?

Options :

1. ✔ Helical antenna

2. ✖ Log-periodic antenna

3. ✖ Rhombic antenna

4. ✖

Dipole Antenna

Question Number : 171 Question Id : 2106888777 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The physical path over which a message travels is

Options :

1. ✖ Protocol

2. ✔ Medium

3. ✖ Signal

4. ✖ memory

Question Number : 172 Question Id : 2106888778 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An emitter follower amplifier has

Options :

1. ✖ very small input impedance

2. ✖

current gain that is always less than 1

3. ✔ voltage gain that is always less than 1

4. ✖ very large output impedance

Question Number : 173 Question Id : 2106888779 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 circuits works like a flipflop?

Options :

1. ✖ Schmitt Trigger

2. ✖ Monostable multivibrator

3. ✔ Bistable multivibrator

4. ✖ Astable multivibrator

Question Number : 174 Question Id : 2106888780 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 memory units needs periodic refreshing ?

Options :

1. ✖ ROM

2. ✖ EPROM

3. ✖ Static ROM

4. ✔ Dynamic RAM

Question Number : 175 Question Id : 2106888781 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following difference equations will satisfy the JK flip-flop Truth table ?

Options :

1. ✔ $Q_{n+1} = J_n \bar{Q}_n + \bar{K}_n Q_n$

2. ✖ $Q_{n+1} = \bar{J}_n \bar{Q}_n + \bar{K}_n Q_n$

3. ✖ $Q_{n+1} = J_n Q_n + K_n Q_n$

4. ✖ $Q_{n+1} = \bar{J}_n \bar{Q}_n + \bar{K}_n \bar{Q}_n$

Question Number : 176 Question Id : 2106888782 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

One megabyte is equivalent to

Options :

1. ✖ 2^{10} bytes

2. ✔ 2^{20} bytes

3. ✖ 2^{30} bytes

4. ✖ 2^{16} bytes

Question Number : 177 Question Id : 2106888783 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 10-bit ADC has a range of -5V to +5V, the resolution of the ADC is approximately

Options :

1. ✔ 10 mV

2. ✖ 100 mV

3. ✖ 0.5 V

4. ✖ 1V

Question Number : 178 Question Id : 2106888784 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 minimum number of JK flip-flops required to realize a modulo-5 synchronous counter ?

Options :

1. ✖ 5

2. ✖ 2

3. ✖ 4

4. ✔ 3

Question Number : 179 Question Id : 2106888785 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For emitter coupled logic the switching speed is very high because

Options :

1. ✖ negative logic is used

2. ✔ the transistors are not saturated when conducting

3. ✖ emitter coupled transistors are used

4. ✖ multi emitter transistors are used

Question Number : 180 Question Id : 2106888786 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A NAND gate with positive logic will operate as

Options :

1. ✖ NOR with negative logic

2. ✖ AND with negative logic output

3. ✖ AND with negative logic

4. ✔ OR with negative logic input

Question Number : 181 Question Id : 2106888787 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The greatest negative number which can be stored in a computer that has 8-bit word length and uses 2's complement arithmetic is

Options :

1. ✖ -256

2. ✖ -255

3. ✔ -128

4. ✖ -127

Question Number : 182 Question Id : 2106888788 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The figure of merit of a logic family is given by

Options :

1. ✖ gain bandwidth product

2. ✔

(propagation delay time)*(power dissipation)

3. ✖ (fan out)*(propagation delay time)

4. ✖ (noise margin)*(power dissipation)

Question Number : 183 Question Id : 2106888789 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The simplest difference in the realization of a half adder and a half subtractor is

Options :

1. ✖ one AND gate

2. ✔ one NOT gate

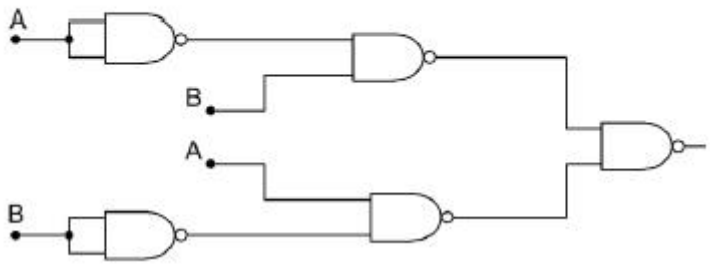
3. ✖ one OR gate

4. ✖ one EX-OR gate

Question Number : 184 Question Id : 2106888790 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 gate is shown in the figure?



Options :

1. EX-OR ✔

2. OR ✖

3. NOR ✖

4. NAND ✖

Question Number : 185 Question Id : 2106888791 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The main advantage of CMOS over TTL circuit is its

Options :

1. extremely low cost ✖

2.

increased speed of operation ✖

3. much reduced power dissipation ✔

4. very small physical size ✖

Question Number : 186 Question Id : 2106888792 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 registers of 8086 is

Options :

1. 8 bits ✖

2. 12 bits ✖

3. 16 bits ✔

4. 20 bits ✖

Question Number : 187 Question Id : 2106888793 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which register is used as a default counter in case of string and loop instructions ?

Options :

1. ✖ AX

2. ✖ BX

3. ✔ CX

4. ✖ DX

Question Number : 188 Question Id : 2106888794 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The number of address and data lines of 8086 are

Options :

1. ✔ 20 and 16

2. ✖ 16 and 16

3. ✖ 8 and 8

4. ✖ 16 and 20

Question Number : 189 Question Id : 2106888795 Display Question Number : Yes Is Question

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

Size of Index register(SI) in 8086 is.

Options :

1. ✔ 16 bits

2. ✖ 8 bits

3. ✖ 32 bits

4. ✖ 20 bits

Question Number : 190 Question Id : 2106888796 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the OSI model, encryption and decryption are functions of the ---layer.

Options :

1. ✖ transport

2. ✖ session

3. ✖ application

4. ✔ presentation

Question Number : 191 Question Id : 2106888797 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If segment address = 1005 H, offset address = 5555 H, then the physical address is

Options :

1. ✖ 655A H

2. ✔ 155A5 H

3. ✖ 4550 H

4. ✖ 56555 H

Question Number : 192 Question Id : 2106888798 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 status of the carry, auxiliary carry and parity flag, if the following instructions are executed?

MOV A#9C; and

ADD A, #64H

Options :

1. ✖

CY=0,AC=0,P=0

2. ✔ CY=1,AC=1,P=0

3. ✖ CY=0, AC=1, P=0

4. ✖ CY=1,AC=1,P=1

Question Number : 193 Question Id : 2106888799 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 are present in 8051 microcontroller ?

Options :

1. ✖ 8 bytes

2. ✖ 32 bytes

3. ✔ 16 bytes

4. ✖ 123 bytes

Question Number : 194 Question Id : 2106888800 Display Question Number : Yes Is Question

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

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

Options :

1. ✖ Immediate

2. ✔ Direct

3. ✖ Indirect

4. ✖ register

Question Number : 195 Question Id : 2106888801 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How many data lines does 8051 has?

Options :

1. ✖ 4

2. ✔ 8

3. ✖ 32

4. ✖ 16

Question Number : 196 Question Id : 2106888802 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which topology requires a central controller or hub?

Options :

1. ✖ Mesh

2. ✔ Star

3. ✖ Bus

4. ✖ Ring

Question Number : 197 Question Id : 2106888803 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The transmission involved in communication between a computer and a keyboard is

Options :

1. ✔ simplex

2. ✖ half-duplex

3. ✖ full-duplex

4. ✖ automatic

Question Number : 198 Question Id : 2106888804 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which protocol suits the current Internet?

Options :

1. ✔ TCP/IP

2. ✖ NCP

3. ✖ UNIX

4. ✖ ACM

Question Number : 199 Question Id : 2106888805 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 data communication system is used within a building, plant, campus, or between nearby buildings?

Options :

1.

MAN

2. BRIDGE

3. WAN

4. LAN

Question Number : 200 Question Id : 2106888806 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Internet model consists of how many layers?

Options :

1. Three

2. Five

3. Seven

4. Eight