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 19th Sep 2021 Shift2
Duration :	180
Total Marks :	200
Display Marks:	No
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? (SA type of questions will be always auto saved) :	Yes
Is this Group for Examiner? :	No

Mathematics

Section Id :	477203405
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

Question Number : 1 Question Id : 47720320633 Display Question Number : Yes Is Question Mandatory : No

If $k \neq -5$ is a real number, then, the number of solutions to the following system of equations

$$3x - y + 4z = 3$$
$$x + 2y - 3z = -2$$
$$6x + 5y + kz = -3$$ is

Options :

1. ✖ 0

2. ✔ 1

3. ✖ 2

4. ✖ *infinitely many*

Question Number : 2 Question Id : 47720320634 Display Question Number : Yes Is Question Mandatory : No

$$\begin{vmatrix} 1 & 1+p & 1+p+q \\ 2 & 3+2p & 4+3p+2q \\ 3 & 6+3p & 10+6p+3q \end{vmatrix} =$$

Options :

1. ✖ 0

2. ✔ 1

3. ✖ 2

4. ✖ 3

Question Number : 3 Question Id : 47720320635 Display Question Number : Yes Is Question Mandatory : No

Let $|A|$ denote the determinant of the matrix A. If A is a square matrix of order 3, and $|4A| = r|A|$, then the value of r is

Options :

1. ✖ 0

2. ✖ 4

3. ✖ 16

4. ✔ 64

Question Number : 4 Question Id : 47720320636 Display Question Number : Yes Is Question Mandatory : No

If $\begin{vmatrix} y & y \\ 1 & y \end{vmatrix} = \begin{vmatrix} 3 & 4 \\ 1 & 2 \end{vmatrix}$, then the value of y is

Options :

1. ✖ 0

2. ✖ 1

3. ✔ 2

4. ✖ 3

Question Number : 5 Question Id : 47720320637 Display Question Number : Yes Is Question Mandatory : No

Let $\begin{vmatrix} 2 & 3+i & -1 \\ 3-i & 0 & -1+i \\ -1 & -1-i & 1 \end{vmatrix} = a + ib$, where a and b are real numbers. Then the value of b is

Options :

1. ✔ 0

2. ✖ 1

3. ✖ 3

4. ✖ 4

Question Number : 6 Question Id : 47720320638 Display Question Number : Yes Is Question Mandatory : No

If $\frac{y^2-5y+1}{(y+1)(y+2)(y+3)} = \frac{a}{y+1} + \frac{b}{(y+1)(y+2)} + \frac{c}{(y+1)(y+2)(y+3)}$, *then*,

Options :

1. ✖ $a = 1, b = 10, c = 25$

2. ✔ $a = 1, b = -10, c = 25$

3. ✖ $a = 5, b = 10, c = 25$

4. ✖ $a = 5, b = -10, c = 25$

Question Number : 7 Question Id : 47720320639 Display Question Number : Yes Is Question Mandatory : No

$\frac{2x+3}{(x^2+1)(x+4)} =$

Options :

1. ✖ $\frac{5}{17(x+4)} + \frac{5x+14}{17(x^2+1)}$

2. ✖ $\frac{-5}{17(x+4)} - \frac{5x+14}{17(x^2+1)}$

3. ✔ $\frac{-5}{17(x+4)} + \frac{5x+14}{17(x^2+1)}$

4. ✖ $\frac{-5}{17(x+4)}+\frac{5x-14}{17(x^2+1)}$

Question Number : 8 Question Id : 47720320640 Display Question Number : Yes Is Question Mandatory : No

If x and y are two distinct real numbers, then, the number of values of θ in $[0,2\pi]$ for which $\operatorname{cosec}\theta=\frac{x^2-y^2}{x^2+y^2}$ is

Options :

1. ✔ 0

2. ✖ 1

3. ✖ 2

4. ✖ 3

Question Number : 9 Question Id : 47720320641 Display Question Number : Yes Is Question Mandatory : No

If $\cos(\alpha-\beta)+\cos(\beta-\gamma)+\cos(\gamma-\alpha)=-\frac{3}{2}$, then $\cos\alpha+\cos\beta+\cos\gamma=$

Options :

1. ✖ $-\frac{3}{2}$

2. ✖ -1

3. ✔ 0

4. ✖ 1

Question Number : 10 Question Id : 47720320642 Display Question Number : Yes Is Question Mandatory : No

For all real numbers θ, the value of $\sin^2\theta + \cos^4\theta$ is greater than or equal to

Options :

1. ✔ $\frac{3}{4}$

2. ✖ 1

3. ✖ $\frac{5}{4}$

4. ✖ 2

Question Number : 11 Question Id : 47720320643 Display Question Number : Yes Is Question Mandatory : No

Let x be a real number such that $\tan\left(\frac{\pi}{4}+x\right)+\tan\left(\frac{\pi}{4}-x\right)=2$. Then x is of the form $x=n\pi+a$, where $n\in\mathbb{Z}$, and $a=$

Options :

1. ✔ 0

2. ✖ $\frac{\pi}{3}$

3. ✖ $\frac{\pi}{4}$

4. ✖ $\frac{\pi}{6}$

Question Number : 12 Question Id : 47720320644 Display Question Number : Yes Is Question Mandatory : No

If $(sin^{-1}x) > (cos^{-1}x)$, then x belongs to the interval

Options :

1. ✖ $[0,\frac{1}{\sqrt{2}})$

2. ✔ $(\frac{1}{\sqrt{2}},1]$

3. ✖ $\left[\frac{1}{\sqrt{2}},1\right]$

4. ✖ $\left[0,\frac{1}{\sqrt{2}}\right]$

Question Number : 13 Question Id : 47720320645 Display Question Number : Yes Is Question Mandatory : No

Consider a triangle ΔABC, with sides of length a,b and c, and angles A,B and C. If a,b,c and the area of the triangle ΔABC are all rational, then

Options :

1. ✖ $tan\frac{B}{2}$ *is rational and* $tan\frac{C}{2}$ *is irrational.*

2. ✖

$\tan\frac{B}{2}$ is irrational and $\tan\frac{C}{2}$ is rational.

3. ✔ $\tan\frac{B}{2}$ and $\tan\frac{C}{2}$ are both rational.

4. ✖ $\tan\frac{B}{2}$ and $\tan\frac{C}{2}$ are both irrational.

Question Number : 14 Question Id : 47720320646 Display Question Number : Yes Is Question Mandatory : No

Consider a triangle ΔABC, with sides of length a,b and c, and angles A,B and C. If $3a=b+c$, then the value of $\cot\frac{B}{2}.\cot\frac{C}{2}$ is

Options :

1. ✖ 0

2. ✖ $\frac{1}{2}$

3. ✖ $\sqrt{3}$

4. ✔ 2

Question Number : 15 Question Id : 47720320647 Display Question Number : Yes Is Question Mandatory : No

$2\tan^{-1}\left(\frac{3}{4}\right)-\tan^{-1}\left(\frac{17}{31}\right)=$

Options :

1. ✖ 0

2. ✔ $\frac{\pi}{4}$

3. ✖ $\frac{\pi}{2}$

4. ✖ π

Question Number : 16 Question Id : 47720320648 Display Question Number : Yes Is Question Mandatory : No

Consider a triangle ΔABC with angles A,B and C. If $\cos A + \cos B + \cos C = \frac{3}{2}$, then the triangle ΔABC is

Options :

1. ✔ equilateral.

2. ✖ isosceles, and right-angled.

3. ✖ isosceles, with one of the angles equal to $\frac{\pi}{6}$.

4. ✖ scalene

Question Number : 17 Question Id : 47720320649 Display Question Number : Yes Is Question Mandatory : No

The value of $\cos^2 x + \cos^2\left(x + \frac{\pi}{3}\right) + \cos^2\left(x - \frac{\pi}{3}\right)$ is

Options :

1. ✖ 1

2. ✔ $\frac{3}{2}$

3. ✖ 2

4. ✖ $\frac{5}{2}$

Question Number : 18 Question Id : 47720320650 Display Question Number : Yes Is Question Mandatory : No

The value of $\left(\frac{\sqrt{3}+i}{\sqrt{3}-i}\right)^3$ is

Options :

1. ✖ $-2\sqrt{2}$

2. ✔ -1

3. ✖ 0

4. ✖ $2\sqrt{2}$

Question Number : 19 Question Id : 47720320651 Display Question Number : Yes Is Question Mandatory : No

If $x+iy=\frac{a+ib}{a-ib}$, then $x^2+y^2=$

Options :

1. ✖ 0

2. ✔ 1

3. ✖ 2

4. ✖ 4

Question Number : 20 Question Id : 47720320652 Display Question Number : Yes Is Question Mandatory : No

If a circle of radius 5 touches the circle $x^2 + y^2 - 2x - 4y = 20$ at the point *(5,5), then, its center is*

Options :

1. ✖ (8,8)

2. ✖ (8,9)

3. ✔ (9,8)

4. ✖ (9,9)

Question Number : 21 Question Id : 47720320653 Display Question Number : Yes Is Question Mandatory : No

The equation $9x^2 - 24xy + 16\,y^2 - 20x - 15y = 60$ represents

Options :

1. ✔ a parabola

2. ✖ an ellipse

3. ✖ a hyperbola

4. ✖ a circle

Question Number : 22 Question Id : 47720320654 Display Question Number : Yes Is Question Mandatory : No

Let (x_j,y_j), $j=1,2,3,4$, be points of intersection of the parabola $y^2 = 4ax$ and the circle $x^2 + y^2 + 2gx + 2fy + c = 0$.

Then $y_1 + y_2 + y_3 + y_4 =$

Options :

1. ✖ -2

2. ✖ $-\frac{1}{2}$

3. ✔ 0

4. ✖ $\frac{1}{2}$

Question Number : 23 Question Id : 47720320655 Display Question Number : Yes Is Question Mandatory : No

The length of the major axis of the ellipse $9x^2 + 5y^2 - 30y = 0$ is

Options :

1. ✖ $\sqrt{5}$

2. ✖ 3

3. ✖ $2\sqrt{5}$

4. ✔ 6

Question Number : 24 Question Id : 47720320656 Display Question Number : Yes Is Question Mandatory : No

If S *(-1, 1) is one of the foci of a hyperbola,* $x - y + 3 = 0$ is its directrix corresponding to S and 3 is its eccentricity, then, the equation of the hyperbola is

Options :

1. ✖ $7x^2 + 18xy + 7y^2 + 50x + 50y + 77 = 0$

2. ✖ $7x^2 + 18xy + 7y^2 + 50x - 50y + 77 = 0$

3. ✔ $7x^2 - 18xy + 7y^2 + 50x - 50y + 77 = 0$

4. ✖ $7x^2 - 18xy - 7y^2 - 50x + 50y + 77 = 0$

Question Number : 25 Question Id : 47720320657 Display Question Number : Yes Is Question Mandatory : No

The equation $4(x-2y+1)^2+9(2x+y+2)^2=25$ represents

Options :

1. ✖ a parabola

2. ✔ an ellipse

3. ✖ a hyperbola

4. ✖ a circle

Question Number : 26 Question Id : 47720320658 Display Question Number : Yes Is Question Mandatory : No

Let f be a twice differentiable function such that $f''(x)+f(x)=0$, and $f'(x)=g(x)$. If $h(x)=[f(x)]^2+[g(x)]^2$, and $h(10)=20$, then $h(40)$ =

Options :

1. ✔ 20

2. ✖ 40

3. ✖ 80

4. ✖ 160

Question Number : 27 Question Id : 47720320659 Display Question Number : Yes Is Question Mandatory : No

$\lim_{x \to \frac{\pi}{2}} \left(\frac{\cot x - \cos x}{\cos^2 x}\right) =$

Options :

1. ✖ -1

2. ✔ 0

3. ✖ $\sqrt{3}$

4. ✖ $\frac{\pi}{2}$

Question Number : 28 Question Id : 47720320660 Display Question Number : Yes Is Question Mandatory : No

Let $\mathbb{R}$ be the set of all real numbers. Let $f : \mathbb{R} \to \mathbb{R}$ satisfy the condition:

$|f(x) - f(y)| \leq |x-y|^{2021}$, for all $x, y \in \mathbb{R}$. Then the value of $f'(2022)$ is

Options :

1. ✔ 0

2. ✖ 1

3. ✖ 2021

4. ✖ 2022

Question Number : 29 Question Id : 47720320661 Display Question Number : Yes Is Question

Mandatory : No

The number of real roots of the equation $x + e^x = 0$ is

Options :

1. ✖ 0

2. ✔ 1

3. ✖ 2

4. ✖ Infinitely many

Question Number : 30 Question Id : 47720320662 Display Question Number : Yes Is Question Mandatory : No

If $y = \text{Tan}^{-1}\left(\frac{\sqrt{1+\sin x}+\sqrt{1-\sin x}}{\sqrt{1+\sin x}-\sqrt{1-\sin x}}\right)$, then $\frac{dy}{dx} =$

Options :

1. ✖ $\cot^2 x$

2. ✖ $\sec^2 x$

3. ✔ $-\frac{1}{2}$

4. ✖ $\frac{1}{2}$

Question Number : 31 Question Id : 47720320663 Display Question Number : Yes Is Question Mandatory : No

The equation of the tangent to the curve $x = \sin 3t$, $y = \cos 2t$, at $t = \frac{\pi}{4}$ is given by

Options :

1. ✖ $\sqrt{2}\,x - 3y - 2 = 0$

2. ✖ $\sqrt{2}\,x + 3y - 2 = 0$

3. ✔ $2\sqrt{2}\,x - 3y - 2 = 0$

4. ✖ $2\sqrt{2}\,x - 3y + 2 = 0$

Question Number : 32 Question Id : 47720320664 Display Question Number : Yes Is Question Mandatory : No

An open tank with a square base (with side x) and vertical sides (with height y) is to be constructed from a metal sheet so as to hold a given quantity of water. The cost of the material will be the least if

Options :

1. ✖ $x=y$

2. ✔ $x=2y$

3. ✖ $2x=y$

4. ✖

$4x=y$

Question Number : 33 Question Id : 47720320665 Display Question Number : Yes Is Question Mandatory : No

The function $f(x) = x^3 - 12x^2 + 36x + 48$, is decreasing in the interval

Options :

1. ✖ $(-\infty, 2)$

2. ✖ $(-\infty, 6)$

3. ✔ $(2,6)$

4. ✖ $(6, \infty)$

Question Number : 34 Question Id : 47720320666 Display Question Number : Yes Is Question Mandatory : No

A shopkeeper can buy x items for *Rs.* $\left(\frac{x}{5} + 500\right)$. He can sell the x items at the rate *Rs.* $\left(5 - \frac{x}{100}\right)$ per item. Then the number of items he should sell to make maximum profit is

Options :

1. ✔ 240

2. ✖ 360

3. ✖ 400

4. ✖ 500

Question Number : 35 Question Id : 47720320667 Display Question Number : Yes Is Question Mandatory : No

If $z = ax^2 + 2hxy + by^2$, then $x\frac{\partial z}{\partial x} + y\frac{\partial z}{\partial y} =$

Options :

1. ✖ z

2. ✖ z^2

3. ✖ $\frac{1}{2}z$

4. ✔ $2z$

Question Number : 36 Question Id : 47720320668 Display Question Number : Yes Is Question Mandatory : No

$\int_{-1}^{1} \frac{x \sin^{-1} x}{\sqrt{1-x^2}}\, dx =$

Options :

1. ✖ 0

2. ✖ 1

3. ✖ $\frac{3}{2}$

4. ✔ 2

Question Number : 37 Question Id : 47720320669 Display Question Number : Yes Is Question Mandatory : No

The area of the region bounded by the curve $y = x^2 + 4$, the x-axis and the ordinates at $x=1$ and $x=5$ is

Options :

1. ✖ $\frac{147}{3}$

2. ✔ $\frac{172}{3}$

3. ✖ $\frac{187}{3}$

4. ✖ $\frac{227}{3}$

Question Number : 38 Question Id : 47720320670 Display Question Number : Yes Is Question Mandatory : No

$\lim_{n\to\infty} \sum_{k=0}^{n-1} \frac{1}{\sqrt{n^2-k^2}} =$

Options :

1. ✖ 0

2. ✔

$\frac{\pi}{2}$

3. ✖ π

4. ✖ 2π

Question Number : 39 Question Id : 47720320671 Display Question Number : Yes Is Question Mandatory : No

$\int_0^1 \frac{2x}{1+x^2}\, dx =$

Options :

1. ✖ 1

2. ✖ 2

3. ✔ $log\ 2$

4. ✖ $3\ log\ 2$

Question Number : 40 Question Id : 47720320672 Display Question Number : Yes Is Question Mandatory : No

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

(In the following, c is a constant.)

Options :

1. ✔ $\frac{1}{a}\log|e^{ax}+e^{-ax}|+c$

2. ✖ $\frac{1}{a}\log|e^{ax}-e^{-ax}|+c$

3. ✖ $\frac{1}{2a}\log|e^{ax}+e^{-ax}|+c$

4. ✖ $\frac{1}{2a}\log|e^{ax}-e^{-ax}|+c$

Question Number : 41 Question Id : 47720320673 Display Question Number : Yes Is Question Mandatory : No

$$\int_0^{\pi}\frac{e^{\cos x}}{e^{\cos x}+e^{-\cos x}}\,dx=$$

Options :

1. ✖ $-\pi$

2. ✖ 0

3. ✔ $\frac{\pi}{2}$

4. ✖ π

Question Number : 42 Question Id : 47720320674 Display Question Number : Yes Is Question Mandatory : No

$\int_{-\pi}^{\pi} \sin^5 x \, dx =$

Options :

1. ✔ 0

2. ✖ $\frac{\pi}{2}$

3. ✖ π

4. ✖ 2π

Question Number : 43 Question Id : 47720320675 Display Question Number : Yes Is Question Mandatory : No

The area of the region bounded by $y=|x+3|$, the x-axis and the lines $x = -6$ and $x = 0$ is

Options :

1. ✖ *3 square units*

2. ✔ *9 square units*

3. ✖ *12 square units*

4. ✖ *18 square units*

Question Number : 44 Question Id : 47720320676 Display Question Number : Yes Is Question

Mandatory : No

The degree of the differential equation $7x\left(\frac{dy}{dx}\right)^2 - \frac{d^2y}{dx^2} + 10y = \log x$ is

Options :

1. ✔ 1

2. ✖ 2

3. ✖ 3

4. ✖ 4

Question Number : 45 Question Id : 47720320677 Display Question Number : Yes Is Question Mandatory : No

The solution of the differential equation $\frac{dy}{dx} = y\tan x$, given that $y=1$ when $x=0$, is given by

Options :

1. ✖ $y = \cos x$

2. ✖ $y = \cos 2x$

3. ✔ $y = \sec x$

4. ✖ $y = \sec 2x$

Question Number : 46 Question Id : 47720320678 Display Question Number : Yes Is Question Mandatory : No

The solution to the differential equation $(3x^2 + y)\frac{dx}{dy} = x,\ (x > 0)$, such that $y=1$ if $x=1$ is

Options :

1. ✖ $y = 2x^2 - x$

2. ✔ $y = 3x^2 - 2x$

3. ✖ $y = 4x^2 - 3x$

4. ✖ $y = 5x^2 - 4x$

Question Number : 47 Question Id : 47720320679 Display Question Number : Yes Is Question Mandatory : No

The differential equation of the family of parabolas having vertex at the origin and axis along the positive y-axis is

Options :

1. ✖ $xy' = 2$

2. ✔ $xy' = 2y$

3. ✖ $xy' = -2y$

4. ✖ $xy' = 2y^2$

Question Number : 48 Question Id : 47720320680 Display Question Number : Yes Is Question

Mandatory : No

The solution of the differential equation $\frac{dy}{dx} + y\cot x = 4x\,\text{cosec}\,x,\ (x \neq 0)$, given that $y=0$ when $x = \frac{\pi}{2}$ is

Options :

1. ✖ $y\,\text{cosec}\,x = x^2 - \frac{\pi^2}{4}$

2. ✖ $y\,\text{cosec}\,x = 2x^2 - \frac{\pi^2}{2}$

3. ✖ $y\sin x = x^2 - \frac{\pi^2}{4}$

4. ✔ $y\sin x = 2x^2 - \frac{\pi^2}{2}$

Question Number : 49 Question Id : 47720320681 Display Question Number : Yes Is Question Mandatory : No

The general solution of the differential equation $log_e\left(\frac{dy}{dx}\right) = ax + by$ is given by

Options :

1. ✖ $ae^{ax} + be^{-by} + C = 0$

2. ✖ $ae^{ax} - be^{-by} + C = 0$

3. ✔ $\frac{1}{a}e^{ax} + \frac{1}{b}e^{-by} + C = 0$

4. ✖ $\frac{1}{a}e^{ax} - \frac{1}{b}e^{-by} + C = 0$

Question Number : 50 Question Id : 47720320682 Display Question Number : Yes Is Question Mandatory : No

The particular integral of the differential equation $(D^2 + D - 2)y = \sin x$ is given by

Options :

1. ✖ $-\frac{1}{10}(cos\ x + \sin x)$

2. ✔ $-\frac{1}{10}(cos\ x + 3\sin x)$

3. ✖ $-\frac{1}{10}(cos\ 3x + \sin 3x)$

4. ✖ $-\frac{1}{10}(3\ cos\ x + \sin x)$

Physics

Section Id :	477203406
Section Number :	2
Mandatory or Optional :	Mandatory
Number of Questions :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and	Yes

Clear Response :

Question Number : 51 Question Id : 47720320683 Display Question Number : Yes Is Question Mandatory : No

The dimensional formula for gravitational constant, G is

Options :

1. ✖ $M^1L^3T^{-2}$

2. ✔ $M^{-1}L^3T^{-2}$

3. ✖ $M^0L^3T^{-2}$

4. ✖ $M^2L^3T^{-2}$

Question Number : 52 Question Id : 47720320684 Display Question Number : Yes Is Question Mandatory : No

Which of the following quantities have not been expressed in proper units?

Options :

1. ✖ electric field = Newton/Coulomb

2. ✖ surface tension = Newton/meter

3. ✔ energy = kg m/s

4. ✖ pressure = Newton/m^2

Question Number : 53 Question Id : 47720320685 Display Question Number : Yes Is Question Mandatory : No

A vector A is along positive x-axis. If B is another vector such that AxB is zero, then B could be

Options :

1. ✖ $4\hat{j}$

2. ✔ $-4\hat{i}$

3. ✖ $-(\hat{i}+\hat{j})$

4. ✖ $(\hat{j}+\hat{k})$

Question Number : 54 Question Id : 47720320686 Display Question Number : Yes Is Question Mandatory : No

The scalar product of two vectors is $2\sqrt{3}$ and the magnitude of their vector product is 2. The angle between them is

Options :

1. ✔ 30^0

2. ✖ 45^0

3. ✖ 60^0

4. ✖ 90^0

Question Number : 55 Question Id : 47720320687 Display Question Number : Yes Is Question

Mandatory : No

The work done by a force is defined as W=**F.S**. In a certain situation **F** and **S** are not zero but the work done is zero when

Options :

1. ✖ **F** and **S** are in the same direction

2. ✖ **F** and **S** are in opposite direction

3. ✔ **F** and **S** are at right angles

4. ✖ **F** and **S** are at 45^0

Question Number : 56 Question Id : 47720320688 Display Question Number : Yes Is Question Mandatory : No

A body starts from rest and travels a distance x in first two seconds and a distance y in next two seconds. The relation between x and y is

Options :

1. ✖ $y = 4x$

2. ✖ $y = x$

3. ✔ $y = 3x$

4. ✖ $y = 2x$

Question Number : 57 Question Id : 47720320689 Display Question Number : Yes Is Question

Mandatory : No

A projectile is projected with initial velocity $(6\hat{i} + 8\hat{j})$ m/s. If g = 10 m/s^2 then horizontal range is

Options :

1. ✖ 4.8 m

2. ✔ 9.6 m

3. ✖ 19.2 m

4. ✖ 14.0 m

Question Number : 58 Question Id : 47720320690 Display Question Number : Yes Is Question Mandatory : No

The maximum range of a projectile fired with some initial velocity is found to be 1000 m/s, in the absence of wind and air resistance. The maximum height reached by this projectile is

Options :

1. ✔ 250 m

2. ✖ 500 m

3. ✖ 1000 m

4. ✖ 2000 m

Question Number : 59 Question Id : 47720320691 Display Question Number : Yes Is Question

Mandatory : No

The force of friction between two bodies is

Options :

1. ✔ parallel to the contact surface

2. ✖ perpendicular to the contact surface

3. ✖ inclined at 30^0 to the contact surface

4. ✖ inclined at 60^0 to the contact surface

Question Number : 60 Question Id : 47720320692 Display Question Number : Yes Is Question Mandatory : No

A body is sliding down an inclined plane under its own weight at constant speed. If the inclination of the plane to the horizontal is 30^0, the angle of friction is

Options :

1. ✔ 30^0

2. ✖ 60^0

3. ✖ 45^0

4. ✖ 90^0

Question Number : 61 Question Id : 47720320693 Display Question Number : Yes Is Question Mandatory : No

A block of mass 5 kg is resting on a smooth surface. At what angle, a force of 20 N be acted on the body so that it will acquire a kinetic energy of 40 J after moving 4m

Options :

1. ✖ 30^0

2. ✖ 45^0

3. ✔ 60^0

4. ✖ 120^0

Question Number : 62 Question Id : 47720320694 Display Question Number : Yes Is Question Mandatory : No

Two men with the weights in the ratio 4:3 run up a staircase in time, in the ratio 12:11. The ratio of power of the first to that of second is

Options :

1. ✖ $\frac{4}{3}$

2. ✖ $\frac{12}{11}$

3. ✖ $\frac{48}{33}$

4. ✔ $\frac{11}{9}$

Question Number : 63 Question Id : 47720320695 Display Question Number : Yes Is Question Mandatory : No

Energy harnessed from flowing water is called----------energy

Options :

1. ✖ Solar

2. ✔ Hydel

3. ✖ Tidal

4. ✖ Geothermal

Question Number : 64 Question Id : 47720320696 Display Question Number : Yes Is Question Mandatory : No

The total mechanical energy of a spring-mass system in simple harmonic motion is $E = 0.5\ m\omega^2A^2$. If the oscillating particle is replaced by another particle of double the mass while the amplitude A remains the same. The new mechanical energy is

Options :

1. ✖ 2E

2. ✖ 0.5 E

3. ✖ $\sqrt{2}$ E

4. ✔ E

Question Number : 65 Question Id : 47720320697 Display Question Number : Yes Is Question Mandatory : No

Sound of frequency 1000 Hz from a stationary source is reflected from an object approaching the source at 30 m/s back to a stationary observer located at the source. The speed of sound in air is 330 m/s. The frequency of the sound heard by the observer is

Options :

1. ✔ 1200 Hz

2. ✖ 1000 Hz

3. ✖ 1090 Hz

4. ✖ 1100 Hz

Question Number : 66 Question Id : 47720320698 Display Question Number : Yes Is Question Mandatory : No

The frequency of a pendulum if it is taken from the earth's surface to deep into a mine

Options :

1. ✖ increases

2. ✔ decreases

3. ✖ first increases then decreases

4. ✖ remains unchanged

Question Number : 67 Question Id : 47720320699 Display Question Number : Yes Is Question Mandatory : No

Two waves of lengths 50 cm and 51 cm produced 12 beats per second. The velocity of sound is

Options :

1. ✖ 340 m/s

2. ✖ 2. 331 m/s

3. ✔ 306 m/s

4. ✖ 360 m/s

Question Number : 68 Question Id : 47720320700 Display Question Number : Yes Is Question Mandatory : No

According to reverberation time the final intensity is around

Options :

1. ✖ one-hundredth of the initial intensity

2. ✖ one-tenth of the initial intensity

3. ✖ one-thousandth of the initial intensity

4. ✔ one-millionth of the initial intensity

Question Number : 69 Question Id : 47720320701 Display Question Number : Yes Is Question Mandatory : No

An ideal gas has volume V at pressure P and temperature T. Mass of each molecule is m. The density of the gas is

Options :

1. ✖ mKT

2. ✖ $\frac{P}{KT}$

3. ✖ $\frac{P}{KTV}$

4. ✔ $\frac{Pm}{KT}$

Question Number : 70 Question Id : 47720320702 Display Question Number : Yes Is Question Mandatory : No

Work done by 0.1 mole of a gas at 27^0C to double its volume at constant pressure is (R=2 cal/mol/K)

Options :

1. ✖ 54 cal

2. ✖ 600 cal

3. ✔ 60 cal

4. ✖

546 cal

Question Number : 71 Question Id : 47720320703 Display Question Number : Yes Is Question Mandatory : No

If the pressure of a gas contained in a closed vessel is increased by 0.4%, when heated by 1^0C, its initial temperature is

Options :

1. ✔ 250 K

2. ✖ 150 K

3. ✖ 100 K

4. ✖ 50 K

Question Number : 72 Question Id : 47720320704 Display Question Number : Yes Is Question Mandatory : No

A monoatomic ideal gas, initially at temperature T_1 is enclosed in a cylinder fitted with a frictionless piston. The gas is allowed to expand adiabatically to a temperature T_2 by releasing the piston suddenly. If L_1 and L_2 are the lengths of the gas column, before and after expansion respectively, T_1/T_2 is given by

Options :

1. ✖ $\left(\frac{L_1}{L_2}\right)^{2/3}$

2. ✔ $\left(\frac{L_2}{L_1}\right)^{2/3}$

3. ✖ $\frac{L_1}{L_2}$

4. ✖ $\frac{L_2}{L_1}$

Question Number : 73 Question Id : 47720320705 Display Question Number : Yes Is Question Mandatory : No

A Carnot's engine operates with source at 127^0C and sink at 27^0 C. If the source supplies 40 kJ of heat energy, the work done by the engine is

Options :

1. ✖ 30 kJ

2. ✔ 10 kJ

3. ✖ 4 kJ

4. ✖ 1 kJ

Question Number : 74 Question Id : 47720320706 Display Question Number : Yes Is Question Mandatory : No

The optical fibre consisting of a central core is cladded by material of

Options :

1. ✔ slightly lower refractive index

2. ✖

slightly higher refractive index

3. ✖ equal refractive index

4. ✖ very high refractive index

Question Number : 75 Question Id : 47720320707 Display Question Number : Yes Is Question Mandatory : No

The susceptibility of the superconductor is

Options :

1. ✖ positive and small

2. ✖ negative and small

3. ✖ positive and unity

4. ✔ negative and unity

Chemistry

Section Id :	477203407
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

Question Number : 76 Question Id : 47720320708 Display Question Number : Yes Is Question Mandatory : No

The nucleus of tritium consists of ---------

Options :

1. ✖ 1 proton + 1 neutron

2. ✖ 1 proton + 3 neutrons

3. ✖ 1 proton + zero neutron

4. ✔ 1 proton + 2 neutrons

Question Number : 77 Question Id : 47720320709 Display Question Number : Yes Is Question Mandatory : No

Which of the following electronic configuration is not possible?

Options :

1. ✖ $1s^2 2s^2 2p^6$

2. ✔ $1s^2 2s^2 2p^7$

3. ✖ $1s^2 2s^2$

4. ✖ $1s^2 2s^2 2p^5$

Question Number : 78 Question Id : 47720320710 Display Question Number : Yes Is Question Mandatory : No

Radius of 3rd Bohr orbit of hydrogen atom is ------

Options :

1. ✖ $6.529A^0$

2. ✔ $4.761A^0$

3. ✖ $2.116A^0$

4. ✖ $8.464A^0$

Question Number : 79 Question Id : 47720320711 Display Question Number : Yes Is Question Mandatory : No

Covalent compounds are generally soluble in --------

Options :

1. ✔ Non-polar solvents

2. ✖ Polar solvents

3. ✖ Concentrated acids

4. ✖ All solvents

Question Number : 80 Question Id : 47720320712 Display Question Number : Yes Is Question Mandatory : No

Six electrons are mutually shared in ---------

Options :

1. ✖ F_2

2. ✖ Cl_2

3. ✖ O_2

4. ✔ N_2

Question Number : 81 Question Id : 47720320713 Display Question Number : Yes Is Question Mandatory : No

To half the molarity of a solution, the following should be adopted.

Options :

1. ✖ Weight of the solute to be doubled

2. ✖ Weight of the solvent to be doubled

3. ✖ Volume of the solvent to be doubled

4. ✔ Volume of the solution to be doubled

Question Number : 82 Question Id : 47720320714 Display Question Number : Yes Is Question Mandatory : No

The molecular weight of $KMnO_4$ is "M". In a reaction $KMnO_4$ is reduced to K_2MnO_4. The equivalent weight of $KMnO_4$ is

Options :

1. ✔ M

2. ✖ M/2

3. ✖ M/3

4. ✖ M/4

Question Number : 83 Question Id : 47720320715 Display Question Number : Yes Is Question Mandatory : No

Calculate the weight of NaOH present in 500 ml of 0.5 N Solution

Options :

1. ✖ 5 g

2. ✔ 10 g

3. ✖ 12 g

4. ✖ 15 g

Question Number : 84 Question Id : 47720320716 Display Question Number : Yes Is Question Mandatory : No

On addition of NaOH to water

Options :

1. ✖ Ionic product will increase

2. ✖ Ionic product will decrease

3. ✔ No change in ionic product of water

4. ✖ H_3O^+ concentration increases

Question Number : 85 Question Id : 47720320717 Display Question Number : Yes Is Question Mandatory : No

Which of the following is not a buffer solution?

Options :

1. ✖ (CH_3COOH/CH_3COONa)

2. ✔ (HCl/NaCl)

3. ✖ (HCOOH/HCOONa)

4. ✖ (NH_4OH/NH_4Cl)

Question Number : 86 Question Id : 47720320718 Display Question Number : Yes Is Question Mandatory : No

Which of the following is a good conductor of electricity?

Options :

1. ✖ Diamond

2. ✔ Graphite

3. ✖ Solid NaCl

4. ✖ Wood

Question Number : 87 Question Id : 47720320719 Display Question Number : Yes Is Question Mandatory : No

Which of the following (1M) conducts more electricity?

Options :

1. ✖ Acetic acid

2. ✖ Boric acid

3. ✖ Phosphorous acid

4. ✔ Sulphuric acid

Question Number : 88 Question Id : 47720320720 Display Question Number : Yes Is Question Mandatory : No

In electrolysis of dilute H_2SO_4, which of the following is liberated at anode in presence of inert electrode?

Options :

1. ✖ H_2

2. ✖ SO_2

3. ✔ O_2

4. ✖ SO_3

Question Number : 89 Question Id : 47720320721 Display Question Number : Yes Is Question Mandatory : No

The EMF of the cell Ni/Ni^{2+} (0.01M)/ Cl^-(0.01M)/Cl_2, Pt is ---V if the SRP of nickel and chlorine electrodes are -0.25V and +1.36V respectively

Options :

1. ✖ + 1.61

2. ✖ - 1.61

3. ✔ + 1.79

4. ✖ - 1.79

Question Number : 90 Question Id : 47720320722 Display Question Number : Yes Is Question Mandatory : No

Which of the following is correct relation used to measures the hardness of water?

Options :

1. ✔ $1\ mg/L = 1\ ppm = 0.07^0Cl = 0.1^0Fr$

2. ✖ $1\ mg/L = 0.1\ ppm = 0.7^0Cl = 0.1^0Fr$

3. ✖ $1\ mg/L = 1\ ppm = 0.7^0Cl = 0.01^0Fr$

4. ✖ $1\ mg/L = 1\ ppm = 0.7^0Cl = 1^0Fr$

Question Number : 91 Question Id : 47720320723 Display Question Number : Yes Is Question Mandatory : No

Which of the following is used as effective coagulant in the municipal water treatment to remove fine suspended and colloidal impurities?

Options :

1. ✖ $Fe_2SO_4(NH_4)_2SO_4.7H_20$

2. ✔ $K_2SO_4 . Al_2(SO_4)_3 . 24H_2O$

3. ✖ $CuSO_4.5H_2O$

4. ✖ $Na_2SO_4.6H_2O$

Question Number : 92 Question Id : 47720320724 Display Question Number : Yes Is Question Mandatory : No

The general chemical formula of zeolite is

Options :

1. ✔ $Na_2O .Al_2O_3 .x\ SiO_2 .y\ H_2O$

2. ✖ $Al_2O_3.H_2O$

3. ✖ $CaSO_4.2H_2O$

4. ✖ $MgSO_4.5H_2O$

Question Number : 93 Question Id : 47720320725 Display Question Number : Yes Is Question Mandatory : No

----- is resulted when electrochemical corrosion happened in acidic environment.

Options :

1. ✖ Evolution of oxygen

2. ✖ Absorption of oxygen

3. ✔ Evolution of hydrogen

4. ✖ Absorption of hydrogen

Question Number : 94 Question Id : 47720320726 Display Question Number : Yes Is Question Mandatory : No

Impure metal corrodes faster than pure metal due to

Options :

1. ✔ Heterogeneity

2. ✖ Homogeneity

3. ✖ Non-galvanic cell

4. ✖ localize corrosion

Question Number : 95 Question Id : 47720320727 Display Question Number : Yes Is Question Mandatory : No

The number of repeating units in a polymer is called

Options :

1. ✖ Functionality

2. ✖ Tacticity

3. ✔ degree of polymerization

4. ✖ Specificity

Question Number : 96 Question Id : 47720320728 Display Question Number : Yes Is Question Mandatory : No

The process of vulcanisation makes rubber --------

Options :

1. ✖ Soft

2. ✔ Hard

3. ✖ Elastic

4. ✖ Swells oils

Question Number : 97 Question Id : 47720320729 Display Question Number : Yes Is Question Mandatory : No

Which of the following is thermosetting plastic

Options :

1. ✖ PVC

2. ✖ Polystyrene

3. ✖ Teflon

4. ✔ Bakelite

Question Number : 98 Question Id : 47720320730 Display Question Number : Yes Is Question Mandatory : No

The boiling range of petrol fraction is found to be

Options :

1. ✖ 120^0C-180^0C

2. ✖ 250^0C-320^0C

3. ✔ 40^0C-120^0C

4. ✖ 180^0C-250^0C

Question Number : 99 Question Id : 47720320731 Display Question Number : Yes Is Question Mandatory : No

Which of the following is not a common component of photochemical smog?

Options :

1. ✖ Ozone

2. ✖ Acrolein

3. ✖ Peroxyacetyl nitrate

4. ✔ Chlorofluorocarbons

Question Number : 100 Question Id : 47720320732 Display Question Number : Yes Is Question Mandatory : No

White lung cancer is caused by

Options :

1. ✖ Asbestos

2. ✔ Textiles

3. ✖ Paper

4. ✖ Silica

Electronics and Communication Engineering

Section Id :	477203408
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

Question Number : 101 Question Id : 47720320733 Display Question Number : Yes Is Question Mandatory : No

The clipping level in op-amp is determined by

Options :

1. ✖ AC supply voltage

2. ✖ Control voltage

3. ✔ Reference voltage

4. ✖ Input voltage

Question Number : 102 Question Id : 47720320734 Display Question Number : Yes Is Question Mandatory : No

Why a voltage follower stage is connected at the output of the negative small signal half wave rectifier?

Options :

1. ✖ Due to Non-uniform input resistance

2. ✔ Due to Non-uniform output resistance

3. ✖ Due to Uniform output voltage

4. ✖ Due to Non-uniform output voltage

Question Number : 103 Question Id : 47720320735 Display Question Number : Yes Is Question Mandatory : No

In a rectifier, larger the value of the shunt capacitor filter

Options :

1. ✖ Larger the peak-to-peak value of ripple voltage

2. ✔ Larger the peak current in the rectifying diode

3. ✖ Longer the time that current pulse flows through the diode

4. ✖ Smaller the dc voltage across the load

Question Number : 104 Question Id : 47720320736 Display Question Number : Yes Is Question

Mandatory : No

In which configuration a dead band condition occurs in Schmitt trigger ?

Options :

1. ✖ Differential amplifier with positive feedback

2. ✖ Voltage follower with positive feedback

3. ✔ Comparator with positive feedback

4. ✖ Operational amplifier with positive feedback

Question Number : 105 Question Id : 47720320737 Display Question Number : Yes Is Question Mandatory : No

The series capacitance in the equivalent circuit of crystal oscillator represents

Options :

1. ✖ Inter electrode capacitance

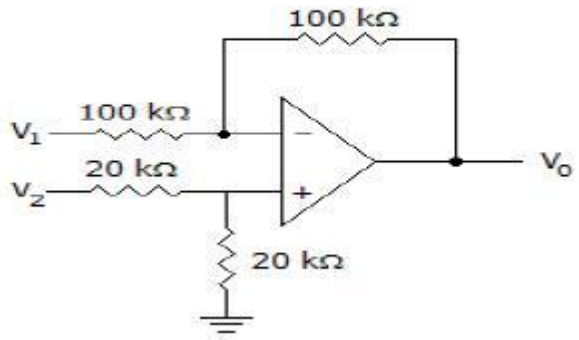
2. ✔ Compliance

3. ✖ Viscous factor

4. ✖ Mass

Question Number : 106 Question Id : 47720320738 Display Question Number : Yes Is Question Mandatory : No

Determine the output voltage when $V_1 = -V_2 = 1$ V



Options :

1. ✖ 0 V

2. ✔ −2 V

3. ✖ 1 V

4. ✖ 2 V

Question Number : 107 Question Id : 47720320739 Display Question Number : Yes Is Question Mandatory : No

The AC current gain in a common base configuration is_____

Options :

1. ✔ $\Delta I_C/\Delta I_E$

2. ✖ $\Delta I_C/\Delta I_B$

3. ✖ $\Delta I_E/\Delta I_C$

4. ✖ $\Delta I_B/\Delta I_C$

Question Number : 108 Question Id : 47720320740 Display Question Number : Yes Is Question Mandatory : No

Transistor in power amplifier is

Options :

1. ✔ An active device

2. ✖ A passive device

3. ✖ A op-amp

4. ✖ A voltage generating device.

Question Number : 109 Question Id : 47720320741 Display Question Number : Yes Is Question Mandatory : No

If output is measured between two collectors of transistors, then the Differential amplifier with two input signal is said to be configured as

Options :

1. ✔ Dual Input Balanced Output

2. ✖ Dual Input Unbalanced Output

3. ✖ Single Input Balanced Output

4. ✖ Single Input Unbalanced Output

Question Number : 110 Question Id : 47720320742 Display Question Number : Yes Is Question Mandatory : No

The UJT may be used as

Options :

1. ✖ An amplifier

2. ✔ A saw tooth generator

3. ✖ A rectifier

4. ✖ filter

Question Number : 111 Question Id : 47720320743 Display Question Number : Yes Is Question Mandatory : No

What is line regulation?

Options :

1. ✖ The process of keeping Zener diode voltage constant in spite of changes in AC supply

2. ✔ The process of keeping load voltage constant irrespective of the fluctuation in AC supply or the line voltage

3. ✖ The process of keeping load voltage constant irrespective of fluctuation in load current

4. ✖ The process of keeping Zener current constant irrespective of fluctuation in AC supply

Question Number : 112 Question Id : 47720320744 Display Question Number : Yes Is Question Mandatory : No

How to overcome mistriggering on the positive pulse edges in the monostable circuit?

Options :

1. ✖ Connect a RC network at the input

2. ✖ Connect an integrator at the input

3. ✔ Connect a differentiator at the input

4. ✖ Connect a diode at the input

Question Number : 113 Question Id : 47720320745 Display Question Number : Yes Is Question Mandatory : No

What is the purpose of RC or transformer coupling?

Options :

1. ✖ To block a.c.

2. ✔ To separate bias of one stage from another

3. ✖ Increase thermal stability

4. ✖ Increase Efficiency

Question Number : 114 Question Id : 47720320746 Display Question Number : Yes Is Question Mandatory : No

The width of depletion region of a varactor diode _____with increase in reverse bias voltage.

Options :

1. ✔ Increases

2. ✖ Decreases

3. ✖ Remains constant

4. ✖ Increases and then decrease after a certain threshold

Question Number : 115 Question Id : 47720320747 Display Question Number : Yes Is Question Mandatory : No

In case of an L filter connected with a rectifier in series with the load, it offers _____ impedance to ac whereas _____ resistance to dc respectively.

Options :

1. ✖ high, high

2. ✔ high, low

3. ✖ low, high

4. ✖ low, low

Question Number : 116 Question Id : 47720320748 Display Question Number : Yes Is Question

Mandatory : No

Bluetooth uses _____

Options :

1. ✔ frequency hopping spread spectrum

2. ✖ orthogonal frequency division multiplexing

3. ✖ time division multiplexing

4. ✖ channel division multiplexing

Question Number : 117 Question Id : 47720320749 Display Question Number : Yes Is Question Mandatory : No

What is the access point (AP) in a wireless LAN?

Options :

1. ✔ device that allows wireless devices to connect to a wired network

2. ✖ wireless devices itself

3. ✖ both device that allows wireless devices to connect to a wired network and wireless devices itself

4. ✖ all the nodes in the network

Question Number : 118 Question Id : 47720320750 Display Question Number : Yes Is Question Mandatory : No

The data transfer mode of FTP, in which all the fragmenting has to be done by TCP is _____

Options :

1. ✔ Stream mode

2. ✖ Block mode

3. ✖ Compressed mode

4. ✖ Message mode

Question Number : 119 Question Id : 47720320751 Display Question Number : Yes Is Question Mandatory : No

Which type of topology is best suited for large businesses which must carefully control and coordinate the operation of distributed branch outlets?

Options :

1. ✖ Ring

2. ✖ Local area

3. ✖ Hierarchical

4. ✔ Star

Question Number : 120 Question Id : 47720320752 Display Question Number : Yes Is Question Mandatory : No

CDMA uses

Options :

1. ✖ Hard hand off

2. ✔ Soft hand off

3. ✖ Hard & Soft hand off

4. ✖ No hand off is used

Question Number : 121 Question Id : 47720320753 Display Question Number : Yes Is Question Mandatory : No

Which parameter is called as Shannon limit?

Options :

1. ✖ P_b/N_0

2. ✔ E_b/N_0

3. ✖ E_bN_0

4. ✖ P_bN_0

Question Number : 122 Question Id : 47720320754 Display Question Number : Yes Is Question Mandatory : No

Which layer is used to link the network support layers and user support layers?

Options :

1. ✖ session layer

2. ✖ data link layer

3. ✔ transport layer

4. ✖ network layer

Question Number : 123 Question Id : 47720320755 Display Question Number : Yes Is Question Mandatory : No

If there are 5 branches and 4 nodes in graph, then the number of mesh equations that can be formed is

Options :

1. ✔ 2

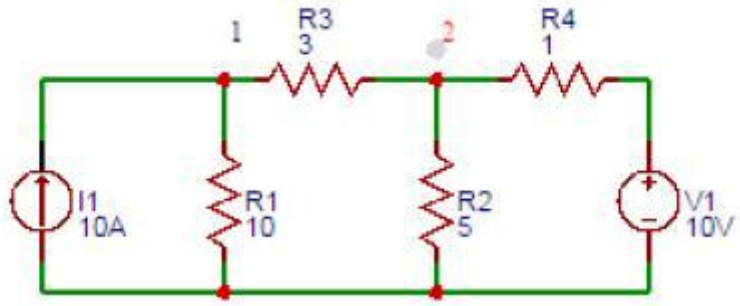
2. ✖ 4

3. ✖ 6

4. ✖ 8

Question Number : 124 Question Id : 47720320756 Display Question Number : Yes Is Question Mandatory : No

Find the voltage at node 1 of the circuit shown below



Options :

1. ✖ 32.7

2. ✔ 33.7

3. ✖ 34.7

4. ✖ 35.7

Question Number : 125 Question Id : 47720320757 Display Question Number : Yes Is Question Mandatory : No

At resonance condition, the voltage across the capacitor and inductor is _____ the source voltage.

Options :

1. ✔ Greater than

2. ✖ Less than

3. ✖ Equal to

4. ✖ Much less than

Question Number : 126 Question Id : 47720320758 Display Question Number : Yes Is Question Mandatory : No

The propagation constant of a transmission line with impedance and admittance of 9 and 16 respectively is

Options :

1. ✖ 25

2. ✖ 144

3. ✔ 12

4. ✖ 7

Question Number : 127 Question Id : 47720320759 Display Question Number : Yes Is Question Mandatory : No

The expression of resonant frequency for parallel resonant circuit is

Options :

1. ✔ $1/2\pi\sqrt{LC}$

2. ✖ $1/\pi\sqrt{LC}$

3. ✖ $1/2\sqrt{LC}$

4. ✖ $1/\sqrt{LC}$

Question Number : 128 Question Id : 47720320760 Display Question Number : Yes Is Question Mandatory : No

If the source impedance is complex, then the condition for maximum power transfer is?

Options :

1. ✖ $Z_L = Z_S$

2. ✔ $Z_L = Z_S^*$

3. ✖ $Z_L = -Z_S$

4. ✖ $Z_L = -Z_S^*$

Question Number : 129 Question Id : 47720320761 Display Question Number : Yes Is Question Mandatory : No

Which of the following is not true regarding standing wave?

Options :

1. ✖ In a standing wave the energy moves towards the power source

2. ✖ In a standing wave power loss occurs

3. ✔ Standing waves do not affect signal strength

4. ✖ Standing waves are not desirable

Question Number : 130 Question Id : 47720320762 Display Question Number : Yes Is Question

Mandatory : No

The reflection coefficient of a wave with transmission coefficient 0.35 is

Options :

1. ✖ 1.65

2. ✔ 0.65

3. ✖ 0.35

4. ✖ 0.7

Question Number : 131 Question Id : 47720320763 Display Question Number : Yes Is Question Mandatory : No

For 100% modulation, power in each sideband is _____ of that of carrier.

Options :

1. ✖ 50%

2. ✖ 70%

3. ✖ 60%

4. ✔ 25%

Question Number : 132 Question Id : 47720320764 Display Question Number : Yes Is Question Mandatory : No

Noise performance of a square law demodulator of AM signal is?

Options :

1. ✔ Better than that of synchronous detector

2. ✖ Weaker than that of synchronous detector

3. ✖ Better than that of envelope detector

4. ✖ Weaker than that of envelope detector

Question Number : 133 Question Id : 47720320765 Display Question Number : Yes Is Question Mandatory : No

What is the main function of a balanced modulator?

Options :

1. ✖ to limit the noise picked by a receiver

2. ✖ to produce balanced modulation of a carrier wave

3. ✖ to suppress carrier signal

4. ✔ to produce 100% modulation

Question Number : 134 Question Id : 47720320766 Display Question Number : Yes Is Question Mandatory : No

Mixing is used in communication to _____

Options :

1. ✖

raise the carrier frequency

2. ✖ lower the carrier frequency

3. ✖ to alter the deviation

4. ✔ to change the carrier frequency to any required value

Question Number : 135 Question Id : 47720320767 Display Question Number : Yes Is Question Mandatory : No

Pre-emphasis circuit is used _____

Options :

1. ✖ before detection

2. ✖ after detection

3. ✔ before encoding

4. ✖ after encoding

Question Number : 136 Question Id : 47720320768 Display Question Number : Yes Is Question Mandatory : No

Envelope Detector is a/an _____

Options :

1. ✖ Coherent detector

2. ✔ Asynchronous Detector

3. ✖ Synchronous Detector

4. ✖ Product Demodulator

Question Number : 137 Question Id : 47720320769 Display Question Number : Yes Is Question Mandatory : No

Which FSK has no phase discontinuity?

Options :

1. ✔ Continuous FSK

2. ✖ Discrete FSK

3. ✖ Uniform FSK

4. ✖ Non-Uniform FSK

Question Number : 138 Question Id : 47720320770 Display Question Number : Yes Is Question Mandatory : No

QAM uses _____ as the dimensions.

Options :

1. ✖ In phase only

2. ✖ Quadrature only

3. ✔ In phase & Quadrature

4. ✖ Out of Phase

Question Number : 139 Question Id : 47720320771 Display Question Number : Yes Is Question Mandatory : No

Which has same probability of error?

Options :

1. ✖ BPSK and QPSK

2. ✖ BPSK and ASK

3. ✔ BPSK and PAM

4. ✖ BPSK and QAM

Question Number : 140 Question Id : 47720320772 Display Question Number : Yes Is Question Mandatory : No

Which has continuous transmission?

Options :

1. ✖ Asynchronous

2. ✔ Synchronous

3. ✖ Asynchronous & Synchronous

4. ✖ Neither Asynchronous nor Synchronous

Question Number : 141 Question Id : 47720320773 Display Question Number : Yes Is Question Mandatory : No

How error detection and correction is done?

Options :

1. ✖ By passing it through equalizer

2. ✖ By passing it through filter

3. ✖ By amplifying it

4. ✔ By adding redundancy bits

Question Number : 142 Question Id : 47720320774 Display Question Number : Yes Is Question Mandatory : No

CRC uses

Options :

1. ✖ Multiplication

2. ✖ Subtraction

3. ✔ Binary division

4. ✖ Addition

Question Number : 143 Question Id : 47720320775 Display Question Number : Yes Is Question Mandatory : No

To achieve high signal to noise ratio, delta modulation must use

Options :

1. ✖ Under sampling

2. ✔ Over sampling

3. ✖ Aliasing

4. ✖ Normal Sampling

Question Number : 144 Question Id : 47720320776 Display Question Number : Yes Is Question Mandatory : No

Which of the following is false with respect to pulse modulation?

Options :

1. ✖ Less power consumption

2. ✖ Low noise

3. ✖ Degraded signal can be regenerated

4. ✔ Can transmit analog as well as digital waves

Question Number : 145 Question Id : 47720320777 Display Question Number : Yes Is Question Mandatory : No

Frequency division duplexing provides _____ distinct bands of frequencies for _____ user.

Options :

1. ✖ Two, two

2. ✖ One, two

3. ✔ Two, one

4. ✖ Two, many

Question Number : 146 Question Id : 47720320778 Display Question Number : Yes Is Question Mandatory : No

The ratio of maximum power density in the desired direction to the average power radiated from the antenna is called as _____

Options :

1. ✔ directivity

2. ✖ directive gain

3. ✖ power gain

4. ✖ partial directivity

Question Number : 147 Question Id : 47720320779 Display Question Number : Yes Is Question Mandatory : No

Which of the following polarization is used in monopole antenna?

Options :

1. ✖ Right-hand Circular

2. ✔ Linear

3. ✖ Depends on the feed

4. ✖ Left-hand Circular

Question Number : 148 Question Id : 47720320780 Display Question Number : Yes Is Question Mandatory : No

What is the reason for carrying multiple transponders in a satellite?

Options :

1. ✔ More number of operating channel

2. ✖ Better reception

3. ✖ More gain

4. ✖ Redundancy

Question Number : 149 Question Id : 47720320781 Display Question Number : Yes Is Question Mandatory : No

What type of handovers is supported by LTE?

Options :

1. ✔ Hard handover only

2. ✖ Soft handover only

3. ✖ Hard and soft handover

4. ✖ Hard, soft and softest handover

Question Number : 150 Question Id : 47720320782 Display Question Number : Yes Is Question Mandatory : No

The klystron tube used in a klystron amplifier is a _____ type beam amplifier.

Options :

1. ✔ Linear beam

2. ✖ Crossed field

3. ✖ Parallel field

4. ✖ Parallel and Crossed field

Question Number : 151 Question Id : 47720320783 Display Question Number : Yes Is Question Mandatory : No

_____ is a microwave device in which the frequency of operation is determined by the biasing field strength.

Options :

1. ✖ VTM

2. ✔ Gyratron

3. ✖ Helix BWO

4. ✖ klystron

Question Number : 152 Question Id : 47720320784 Display Question Number : Yes Is Question Mandatory : No

The radar in which both transmission and reception is done using the same antenna are called:

Options :

1. ✔ Monostatic radar

2. ✖ Bistatic radar

3. ✖ Monopole radar

4. ✖ Dipole radar

Question Number : 153 Question Id : 47720320785 Display Question Number : Yes Is Question Mandatory : No

What is the main requirement with the fibers that are intended for splicing?

Options :

1. ✖ Smooth and oval end faces

2. ✔ Smooth and square end faces

3. ✖ Rough edge faces

4. ✖ Large core diameter

Question Number : 154 Question Id : 47720320786 Display Question Number : Yes Is Question Mandatory : No

Which is a device that distributes light from a main fiber into one or more branch fibers ?

Options :

1. ✔ Optical fiber coupler

2. ✖ Optical fiber splice

3. ✖ Optical fiber connector

4. ✖ Optical isolator

Question Number : 155 Question Id : 47720320787 Display Question Number : Yes Is Question Mandatory : No

What is the approximate distance between directors for a Yagi-Uda antenna operating at frequency 150MHz?

Options :

1. ✔ 0.4m

2. ✖ 1.6m

3. ✖ 2m

4. ✖ 4.8m

Question Number : 156 Question Id : 47720320788 Display Question Number : Yes Is Question Mandatory : No

The logic circuits whose outputs at any instant of time depends only on the present input but also on the past outputs are called_____

Options :

1. ✖ Combinational circuits

2. ✖ Latches

3. ✔ Sequential circuits

4. ✖ Flip-flops

Question Number : 157 Question Id : 47720320789 Display Question Number : Yes Is Question Mandatory : No

What is the maximum possible range of bit-count specifically in n-bit binary counter consisting of 'n' number of flip-flops?

Options :

1. ✖ 0 to 2^n

2. ✖ 0 to 2^{n+1}

3. ✔ 0 to 2^{n-1}

4. ✖ 0 to $2^{n+1/2}$

Question Number : 158 Question Id : 47720320790 Display Question Number : Yes Is Question Mandatory : No

Ripple counters are also known as_____

Options :

1. ✖ SSI counters

2. ✖ VLSI counters

3. ✖ Synchronous counters

4. ✔ Asynchronous counters

Question Number : 159 Question Id : 47720320791 Display Question Number : Yes Is Question Mandatory : No

What is the difference between static RAM and dynamic RAM?

Options :

1. ✖ Static RAM must be refreshed, dynamic RAM does not

2. ✔ Dynamic RAM must be refreshed, static RAM does not

3. ✖ There is no difference

4. ✖ Static RAM is slower than Dynamic RAM

Question Number : 160 Question Id : 47720320792 Display Question Number : Yes Is Question Mandatory : No

How many NOT gates are required for the construction of a 4-to-1 multiplexer?

Options :

1. ✖ 3

2. ✖ 4

3. ✔ 2

4. ✖ 5

Question Number : 161 Question Id : 47720320793 Display Question Number : Yes Is Question Mandatory : No

The output of a full subtractor is same as_____

Options :

1. ✖ Half adder

2. ✔ Full adder

3. ✖ Half subtractor

4. ✖ Decoder

Question Number : 162 Question Id : 47720320794 Display Question Number : Yes Is Question Mandatory : No

The representation of decimal number $(396)_{10}$ in octal is_____

Options :

1. ✖ 18C

2. ✖ 156

3. ✖ 878

4. ✔ 614

Question Number : 163 Question Id : 47720320795 Display Question Number : Yes Is Question Mandatory : No

If you add $(23)_8$ and $(67)_8$, the result is

Options :

1. ✖ $(97)_8$

2. ✖ $(77)_8$

3. ✔ $(112)_8$

4. ✖ $(102)_8$

Question Number : 164 Question Id : 47720320796 Display Question Number : Yes Is Question Mandatory : No

The main disadvantage of a Dual Slope A/D converter is its

Options :

1. ✔ Slow Conversion Time

2. ✖ Low Sensitivity

3. ✖ High Cost

4. ✖ Temperature immunity

Question Number : 165 Question Id : 47720320797 Display Question Number : Yes Is Question Mandatory : No

Add the two BCD numbers: 1001 + 0100 = ?

Options :

1. ✖ 10101111

2. ✖ 01010001

3. ✔ 00010011

4. ✖ 00101011

Question Number : 166 Question Id : 47720320798 Display Question Number : Yes Is Question Mandatory : No

What is the mode of the instruction MOV AX, [BX+SI+06]?

Options :

1. ✖ Index addressing

2. ✖ Base addressing

3. ✖ Base indexed addressing

4. ✔ Base index displacement addressing

Question Number : 167 Question Id : 47720320799 Display Question Number : Yes Is Question

Mandatory : No

What will be the contents of register AL after the following has been executed

```
MOV BL, 8C
MOV AL, 7E
ADD AL, BL
```

Options :

1. ✔ 0A and carry flag is set

2. ✖ 0A and carry flag is reset

3. ✖ 6A and carry flag is set

4. ✖ 6A and carry flag is reset

Question Number : 168 Question Id : 47720320800 Display Question Number : Yes Is Question Mandatory : No

The BIU pre-fetches the instruction from memory and store them in __

Options :

1. ✔ Queue

2. ✖ Register

3. ✖ Memory

4. ✖ Stack

Question Number : 169 Question Id : 47720320801 Display Question Number : Yes Is Question Mandatory : No

If MN/MX is low the 8086 operates in _____ mode.

Options :

1. ✖ Minimum

2. ✔ Maximum

3. ✖ Null

4. ✖ Medium

Question Number : 170 Question Id : 47720320802 Display Question Number : Yes Is Question Mandatory : No

The registers that cannot be used as operands for arithmetic and logical instructions are

Options :

1. ✖ General purpose registers

2. ✖ Pointers

3. ✖ Index registers

4. ✔ Segment registers

Question Number : 171 Question Id : 47720320803 Display Question Number : Yes Is Question

Mandatory : No

PUSH and POP operations are performed by

Options :

1. ✔ Stack Pointer register

2. ✖ Program counter register

3. ✖ General purpose register

4. ✖ Link register

Question Number : 172 Question Id : 47720320804 Display Question Number : Yes Is Question Mandatory : No

The Programmable interrupt controller is required to

Options :

1. ✖ Handle one interrupt request

2. ✔ Handle one or more interrupt requests at a time

3. ✖ Handle one or more interrupt requests with a delay

4. ✖ Handle no interrupt request

Question Number : 173 Question Id : 47720320805 Display Question Number : Yes Is Question Mandatory : No

The books arranged one on the other on a table is an example of

Options :

1. ✖ Queue

2. ✖ Queue and first-in-first out

3. ✖ Stack and first-in-first out

4. ✔ Stack and last-in-first-out

Question Number : 174 Question Id : 47720320806 Display Question Number : Yes Is Question Mandatory : No

The operands, source and destination in an instruction cannot be

Options :

1. ✖ Register, Register

2. ✔ Memory location, Memory location

3. ✖ Memory location, Register

4. ✖ Immediate data, Register

Question Number : 175 Question Id : 47720320807 Display Question Number : Yes Is Question Mandatory : No

Which of the following is not a machine-controlled instruction?

Options :

1. ✖ HLT

2. ✔ CLC

3. ✖ LOCK

4. ✖ ESC

Question Number : 176 Question Id : 47720320808 Display Question Number : Yes Is Question Mandatory : No

In TV transmission, _____ and _____ modulation techniques are used for transmission of Picture and Sound signals respectively.

Options :

1. ✖ Phase, Pulse

2. ✖ Frequency, Amplitude

3. ✔ Amplitude, Frequency

4. ✖ Amplitude, Phase

Question Number : 177 Question Id : 47720320809 Display Question Number : Yes Is Question Mandatory : No

The video voltage applied to the picture tube of a television receiver is fed in

Options :

1. ✖ between grid and ground

2. ✖ to the yoke

3. ✖ to the anode

4. ✔ between grid and cathode

Question Number : 178 Question Id : 47720320810 Display Question Number : Yes Is Question Mandatory : No

The signals sent by the TV transmitter to ensure correct scanning in the receiver are called

Options :

1. ✔ Sync

2. ✖ Chroma

3. ✖ Luminance

4. ✖ Video

Question Number : 179 Question Id : 47720320811 Display Question Number : Yes Is Question Mandatory : No

The shadow mask in a color picture tube is used to

Options :

1. ✖ reduce x-ray emission

2. ✔ ensure that each beam hits only its own dots

3. ✖ increase screen brightness

4. ✖ provide degaussing for the screen

Question Number : 180 Question Id : 47720320812 Display Question Number : Yes Is Question Mandatory : No

The working principle of Image Orthicon is

Options :

1. ✖ Photo conduction

2. ✖ Photo emulsion

3. ✔ Photo emission

4. ✖ Photo absorption

Question Number : 181 Question Id : 47720320813 Display Question Number : Yes Is Question Mandatory : No

The instrument required to measure voltage is _____

Options :

1. ✖ Ohmmeter

2. ✖ Ammeter

3. ✔ Voltmeter

4. ✖ Wattmeter

Question Number : 182 Question Id : 47720320814 Display Question Number : Yes Is Question Mandatory : No

_____voltmeter is used to indicate the difference between known and unknown voltages.

Options :

1. ✔ Differential

2. ✖ Solid State

3. ✖ Chopper

4. ✖ FET

Question Number : 183 Question Id : 47720320815 Display Question Number : Yes Is Question Mandatory : No

The internal resistance of an ohmmeter can be estimated from_____

Options :

1. ✖ Zero deflection

2. ✖ Full scale deflection

3. ✔ Half scale deflection

4. ✖ Quarter deflection

Question Number : 184 Question Id : 47720320816 Display Question Number : Yes Is Question Mandatory : No

Dual slope integration type instruments operates on the principle of _____

Options :

1. ✖ Voltage to frequency conversion

2. ✔ Voltage to time conversion

3. ✖ Frequency to voltage conversion

4. ✖ Voltage to current conversion

Question Number : 185 Question Id : 47720320817 Display Question Number : Yes Is Question Mandatory : No

What is the use of Schmitt trigger in digital frequency meter?

Options :

1. ✖ To amplify the signal

2. ✖ To start and stop the signal

3. ✖ To convert the applied signal into sine wave

4. ✔ To convert the applied signal into train of pulses

Question Number : 186 Question Id : 47720320818 Display Question Number : Yes Is Question Mandatory : No

Trigger pulses in the CRO are used to _____

Options :

1. ✖ Generate high voltage required for the CRT

2. ✔ Synchronise the input with the time base generator

3. ✖ Synchronise the input and the vertical amplifier

4. ✖ Generate low voltages required for the CRT

Question Number : 187 Question Id : 47720320819 Display Question Number : Yes Is Question Mandatory : No

The Sine wave output of a function generator is fed to both the horizontal (X) and vertical (Y) inputs of a CRO. What will be the pattern on the cathode ray screen?

Options :

1. ✔ A straight line with 45^0 slope

2. ✖ A circle

3. ✖ An ellipse

4. ✖ A sinusoidal signal

Question Number : 188 Question Id : 47720320820 Display Question Number : Yes Is Question Mandatory : No

An LCR meter is used to measure_____

Options :

1. ✖ Current

2. ✖ Power

3. ✔ Inductance

4. ✖ Voltage

Question Number : 189 Question Id : 47720320821 Display Question Number : Yes Is Question Mandatory : No

The Q-meter works on the principle of _____

Options :

1. ✖ Parallel resonance

2. ✖ Self inductance

3. ✖ Mutual inductance

4. ✔ Series resonance

Question Number : 190 Question Id : 47720320822 Display Question Number : Yes Is Question Mandatory : No

In a distortion factor meter, the filter at the front end is used to suppress____

Options :

1. ✔ Fundamental component

2. ✖ DC component

3. ✖ Odd harmonics

4. ✖ Even harmonics

Question Number : 191 Question Id : 47720320823 Display Question Number : Yes Is Question Mandatory : No

The main advantage of IGBT over SCR in power electronics is _____

Options :

1. ✖ Reduced weight

2. ✖ Self-communicating capability

3. ✔ Very high reliability

4. ✖ Self-cooling property

Question Number : 192 Question Id : 47720320824 Display Question Number : Yes Is Question Mandatory : No

A thyristor equivalent of a thyratron tube is_____

Options :

1. ✔ SCR

2. ✖ UJT

3. ✖ DIAC

4. ✖ TRIAC

Question Number : 193 Question Id : 47720320825 Display Question Number : Yes Is Question Mandatory : No

An advantage of a cycloconverter is _____

Options :

1. ✖ Very good power factor

2. ✖ Requires few number of thyristors

3. ✖ Communication failure does not short circuit the source

4. ✔ Load communication is possible

Question Number : 194 Question Id : 47720320826 Display Question Number : Yes Is Question Mandatory : No

The most suitable device for high frequency inversion in SMPS is_____

Options :

1. ✖ BJT

2. ✖ IGBT

3. ✔ MOSFET

4. ✖ GTO

Question Number : 195 Question Id : 47720320827 Display Question Number : Yes Is Question Mandatory : No

In a UPS, the solid state switch normally transfer supply within_____

Options :

1. ✔ 4 ms

2. ✖ 30 ms

3. ✖ 48 ms

4. ✖ 30 s

Question Number : 196 Question Id : 47720320828 Display Question Number : Yes Is Question Mandatory : No

The PV cell converts the radiant energy of the sun into_____

Options :

1. ✖ Temperature

2. ✖ Current

3. ✖ Humidity

4. ✔ Electric Power

Question Number : 197 Question Id : 47720320829 Display Question Number : Yes Is Question Mandatory : No

A thermocouple is _____

Options :

1. ✖ Two similar metals connected together

2. ✔ Two dissimilar metals connected together

3. ✖ Two wire wound resistors connected together

4. ✖ Two inductive coils connected together

Question Number : 198 Question Id : 47720320830 Display Question Number : Yes Is Question Mandatory : No

LVDT is a _____

Options :

1. ✖ Capacitive transducer

2. ✔ Inductive transducer

3. ✖ Resistive transducer

4. ✖ Inverse transducer

Question Number : 199 Question Id : 47720320831 Display Question Number : Yes Is Question Mandatory : No

A strain gauge is a passive transducer and is employed for converting____

Options :

1. ✔ Mechanical displacement into a change of resistance

2. ✖ Pressure into a change of resistance

3. ✖ Force into displacement

4. ✖ Pressure into displacement

Question Number : 200 Question Id : 47720320832 Display Question Number : Yes Is Question

Mandatory : No

Thermistors have _____ temperature coefficient

Options :

1. ✖ Zero

2. ✖ Positive

3. ✖ Positive for low operating ranges

4. ✔ Negative