Question Paper Preview

Question Paper Name:	Electronics and Instrumentation Engineering 11th May 2019 Shift1
Subject Name:	Electronics and Instrumentation Engineering
Duration:	180
Total Marks:	200
Display Marks:	No
Share Answer Key With Delivery Engine:	Yes
Actual Answer Key:	Yes

Mathematics

Number of Questions:	50
Display Number Panel:	Yes
Group All Questions:	No

Question Number : 1 Question Id : 8946582805 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Let $M=(a_{ij})$ be a 10×10 matrix such that $a_{ij}=\begin{cases}1, & \text{if } i+j=11\\ 0, & \text{otherwise}\end{cases}$. Then, the determinant of M is _____.

Options :

1. 0

2. 1

3. -1

4. 11

Question Number : 2 Question Id : 8946582806 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Let A and B be two square matrices of order n. If $AB=A, BA=B$ then $A^2+B^2=$ ___.

Options :

1. AB

2. $A-B$

3. 0

4. $A+B$

Question Number : 3 Question Id : 8946582807 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Consider the system of linear equations $x+y+z=3, x-y-z=4, x-5y+\alpha z=6$. Then, the value of α for which this system has an infinite number of solutions is _____.

Options :

1. -5

2. 5

3. 3

4. 1

Question Number : 4 Question Id : 8946582808 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $A(\alpha,\beta)=\begin{pmatrix}\cos\alpha & \sin\alpha & 0\\ -\sin\alpha & \cos\alpha & 0\\ 0 & 0 & e^{\beta}\end{pmatrix}$, then the inverse of the matrix $A(\alpha,\beta)$ is _____.

Options :

1. $A(\alpha,\beta)$

2. $A(\alpha,-\beta)$

3. $A(-\alpha,-\beta)$

4. $A(-\alpha,\beta)$

Question Number : 5 Question Id : 8946582809 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The rational fraction $\frac{x^2+1}{(x^2+4)(x-2)}$ is equal to _____

Options :

1. $\frac{3x+6}{8(x^2+4)}+\frac{5}{4(x-2)}$

2. $\frac{3x+6}{4(x^2+4)}+\frac{5}{8(x-2)}$

3. $\frac{3x+6}{8(x^2+4)}+\frac{5}{8(x-2)}$

4. $\frac{3x+6}{(x^2+4)}+\frac{5}{(x-2)}$

Question Number : 6 Question Id : 8946582810 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\log_2 3=a, \log_3 5=b, \log_7 2=c$, then $\log_{140} 63=$ _____.

Options :

1. $\frac{1-2ac}{2c+abc+1}$

2. $\frac{1-2ac}{2c-abc-1}$

3. $\frac{1+2ac}{2c-abc-1}$

4. $\frac{1+2ac}{2c+abc+1}$

Question Number : 7 Question Id : 8946582811 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$\cos\frac{2\pi}{7}+\cos\frac{4\pi}{7}+\cos\frac{6\pi}{7}=$ _____.

Options :

1. 1

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

3. $\frac{-1}{2}$

4. 0

Question Number : 8 Question Id : 8946582812 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the angles A, B and C of a triangle are in an arithmetic progression and if a, b and c denote the lengths of the sides opposite to A, B and C respectively, then the value of the expression $\frac{a}{c}\sin 2C+\frac{c}{a}\sin 2A$ is __.

Options :

1. $\sqrt{3}$

2. $\frac{\sqrt{3}}{2}$

3. 1

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

Question Number : 9 Question Id : 8946582813 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\sin x+\sin y=\frac{1}{4}$ and $\cos x+\cos y=\frac{1}{3}$, then $\cot(x+y)=$ _____.

Options :

1. $\frac{7}{24}$

2. $\frac{24}{7}$

3. $\frac{3}{4}$

4. 1

Question Number : 10 Question Id : 8946582814 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\sin(x^\circ+28^\circ)=\cos(3x^\circ-78^\circ)$ and $0^\circ<x^\circ<90^\circ$, then, which of the following is the value of x°?

Options :

1. 50°

2. 30°

3. 16°

4. 8°

Question Number : 11 Question Id : 8946582815 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $x = \tan\left(\text{Cosec}^{-1}\frac{65}{63}\right)$ and $y = \sec^2\left(Cot^{-1}\frac{1}{2}\right) + \cos ec^2\left(Tan^{-1}\frac{1}{3}\right)$, then $(x, y) =$ _____.

Options :

1. $\left(\frac{63}{16}, 15\right)$

2. $\left(\frac{16}{63}, 15\right)$

3. $\left(\frac{63}{16}, 5\right)$

4. $\left(\frac{16}{63}, 5\right)$

Question Number : 12 Question Id : 8946582816 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation $\text{Tan}^{-1}\left(\frac{x+1}{x-1}\right) + T\,\text{an}^{-1}\left(\frac{x-1}{x}\right) = T\,\text{an}^{-1}(-7)$ has _____.

Options :

1. unique solution $x = 2$

2. two solutions $x = 1, 2$

3. no solution

4. infinite number of solutions

Question Number : 13 Question Id : 8946582817 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a triangle ABC, let a, b and c denote the lengths of the sides opposite to A, B and C respectively. If $\frac{1}{a+c}+\frac{1}{b+c}=\frac{3}{a+b+c}$, then the angle C is ____.

Options :

1. 30°

2. 90°

3. 60°

4. 45°

Question Number : 14 Question Id : 8946582818 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\sin hx = 3$ then $x =$ _____.

Options :

1. $\log(3+\sqrt{10})$

2. $\log(3-\sqrt{10})$

3. $\log(6+\sqrt{10}$

4. 1

Question Number : 15 Question Id : 8946582819 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is NOT true for the complex numbers z_1 and z_2 ?

Options :

1. $\frac{z_1}{z_2}=\frac{z_1\overline{z}_2}{|z_2|^2}$

2. $|z_1+z_2|\le|z_1|+|z_2|$

3. $|z_1+z_2|\le\big||z_1|-|z_2|\big|$

4. $|z_1+z_2|^2+|z_1-z_2|^2=2|z_1|^2+2|z_2|^2$

Question Number : 16 Question Id : 8946582820 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If a complex number $z=\frac{\sqrt{3}}{2}+i\frac{1}{2}$, then z^4 is _____.

Options :

1. $2\sqrt{2}+2i$

2. $\frac{-1}{2}+i\frac{\sqrt{3}}{2}$

3. $\frac{\sqrt{3}}{2}-i\frac{1}{2}$

4. $\frac{\sqrt{3}}{8}-i\frac{1}{8}$

Question Number : 17 Question Id : 8946582821 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation of the straight line which makes intercepts r and s on the coordinate axes such that $r+s=5$ and $rs=6$ is $ax+by+c=0$, then $a+b+c=$ ____ .

Options :

1. 11

2. 5

3. -7

4. -1

Question Number : 18 Question Id : 8946582822 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If a straight line $ax+by+\sqrt{5}=0$ touches the circle $x^2+y^2=5$, then which of the following is TRUE?

Options :

1. $5(a^2+b^2)=1$

2. $a^2+b^2=\sqrt{5}$

3. $a^2+b^2=1$

4. $\sqrt{a^2+b^2}=5$

Question Number : 19 Question Id : 8946582823 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If a chord of length 12 cm is at a distance of $4\sqrt{10}$ cm from the centre of the circle, then the radius of the circle is _____.

Options :

1. 14 cm

2. $\sqrt{304}$ cm

3. 4 cm

4. $\sqrt{124}$ cm

Question Number : 20 Question Id : 8946582824 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The 2019^{th} derivative of the function $(x-1)e^{-x}$ is _____

Options :

1. $\frac{x-2019}{e^x}$

2. $\frac{2019-x}{e^x}$

3. $\frac{x-2020}{e^x}$

4. $\frac{2020-x}{e^x}$

Question Number : 21 Question Id : 8946582825 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $z = f(x+ct)+\varphi(x-ct)$, then $\frac{\partial^2 z}{\partial t^2} =$ _____.

Options :

1. $c^2\frac{\partial^2 z}{\partial x^2}$

2. $-c^2\frac{\partial^2 z}{\partial x^2}$

3. $\frac{1}{c^2}\frac{\partial^2 z}{\partial x^2}$

4. $-\frac{1}{c^2}\frac{\partial^2 z}{\partial x^2}$

Question Number : 22 Question Id : 8946582826 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $x = r\cos\theta,\ y = r\sin\theta$ and $U = \frac{f(\theta)}{r}$ then $x\frac{\partial U}{\partial x} + y\frac{\partial U}{\partial y} =$ _____.

Options :

1. 0

2. U

3. $-U$

4. $2U$

Question Number : 23 Question Id : 8946582827 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Let $f(x+y) = f(x)f(y),\ \forall x, y$ and $f'(0) = 5,\ f(2019) = 15$. Then the value of $f'(2019)$ is _____.

Options :

1. 3

2. 75

3. $\frac{1}{3}$

4. $\frac{1}{75}$

Question Number : 24 Question Id : 8946582828 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The set of values of x for which the function $f(x) = 2x^3 - 9x^2 + 12x + 4$ is increasing is _____.

Options :

1. $1 < x < 2$

2. all $x \in \mathbb{R}$

3. $\mathbb{R} - [1, 2]$

4. $x \geq 2$

Question Number : 25 Question Id : 8946582829 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$\lim_{x \to \infty} x\left(\log\left(1+\frac{x}{2}\right)-\log\left(\frac{x}{2}\right)\right) =$ _____.

Options :

1. e^2

2. ∞

3. 1

4. 2

Question Number : 26 Question Id : 8946582830 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $f(x, y, z) = x^3 + xz^2 + y^3 + xyz,\ x = e^t,\ y = \cos t,\ z = t^3$ then $\frac{df}{dt}$ at $t = 0$ is _____.

Options :

1. 2

2. 4

3. e

4. 3

Question Number : 27 Question Id : 8946582831 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is the value of $5050 \times \frac{\int_0^1 (1-(1-x)^{50})^{100} x^{49} dx}{\int_0^1 (1-x^{50})^{101} x^{49} dx}$?

Options :

1. 5100

2. 1

3. 5050

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

Question Number : 28 Question Id : 8946582832 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$\int_0^1 \max\left\{x, \frac{1}{2} - x\right\} dx = \_\_\_\_\_.$

Options :

1. 0

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

3. $\frac{9}{16}$

4. $\frac{9}{8}$

Question Number : 29 Question Id : 8946582833 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$\lim_{n \to \infty} \frac{1}{n^6} \sum_{k=1}^{n} k^5 = \_\_\_\_\_.$

Options :

1. $\frac{1}{6}$

2. $\frac{1}{5}$

3. 1

4. 6

Question Number : 30 Question Id : 8946582834 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$$\int_{-1}^{1} \frac{x^{15}(1-x^2)^{12}}{(1+x^2)^8}\,dx = \_\_\_\_\_.$$

Options :

1. 0

2. $\frac{22}{7}-\pi$

3. $\frac{2}{105}$

4. $\frac{71}{15}-\frac{3\pi}{4}$

Question Number : 31 Question Id : 8946582835 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The area of the region bounded by the curves $y=2-x^2$ and $y=-x$ is _____.

Options :

1. 1

2. $\frac{8}{19}$

3. $\frac{35}{4}$

4. $\frac{27}{6}$

Question Number : 32 Question Id : 8946582836 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The volume of the solid obtained by revolving the region bounded by the curves $y = x^3$, $y = 8$ and $x = 0$ about the y-axis is _____

Options :

1. $\frac{96}{5}$

2. $\frac{96\pi}{5}$

3. $\frac{32\pi}{5}$

4. $\frac{32}{5}$

Question Number : 33 Question Id : 8946582837 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int_0^{\pi} \theta \sin^2\theta \cos^4\theta \, d\theta$ is _____.

Options :

1. $\frac{\pi^2}{32}$

2. $\frac{\pi}{32}$

3. $\frac{\pi^2}{16}$

4. $\frac{\pi}{16}$

Question Number : 34 Question Id : 8946582838 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The average value of the function $f(x)=4-x^2$ over the interval $[-1, 3]$ is _____.

Options :

1. 5

2. $\frac{20}{3}$

3. $\frac{5}{3}$

4. 1

Question Number : 35 Question Id : 8946582839 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The differential equation $x\frac{dy}{dx}=y+x^2,\ x>0$ satisfying $y(0)=0$ has _____.

Options :

1. infinitely many solutions

2. no solution

3. a unique solution

4. exactly two solutions

Question Number : 36 Question Id : 8946582840 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The differential equation $(a\,xy^3+y\cos x)dx+(x^2y^2+b\sin x)dy=0$ is an exact differential equation for _____.

Options :

1. $a=1, b=\frac{3}{2}$

2. $a=\frac{3}{2}, b=1$

3. $a=\frac{2}{3}, b=1$

4. $a=1, b=\frac{2}{3}$

Question Number : 37 Question Id : 8946582841 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\sin x$ is a solution of the differential equation $\frac{d^4y}{dx^4}+2\frac{d^3y}{dx^3}+6\frac{d^2y}{dx^2}+2\frac{dy}{dx}+5y=0$,

then the general solution is _____.

Options :

1. $y=c_1\sin x+c_2\cos x+e^{-x}(c_3\sin 2x+c_4\cos 2x)$

2. $y=c_1\sin x+c_2\cos x+c_3\sin 2x+c_4\cos 2x$

3. $y=c_1\sin x+c_2\cos x+c_3e^{-3x}+c_4e^{-2x}$

4. $y=c_1\sin x+c_2\cos x+c_3e^{3x}+c_4e^{2x}$

Question Number : 38 Question Id : 8946582842 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $D\equiv\frac{d}{dx}$, then $\frac{1}{D^2-4D+13}(6e^{2x}\sin 3x)$ is _____.

Options :

1. $-xe^{2x}\cos 3x$

2. $xe^{2x}\cos 3x$

3. $-xe^{2x}\sin 3x$

4. $xe^{2x}\sin 3x$

Question Number : 39 Question Id : 8946582843 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The general solution of $\left(\frac{e^{-2\sqrt{x}}}{\sqrt{x}}-\frac{y}{\sqrt{x}}\right)\frac{dx}{dy}=1$ is _____.

Options :

1. $y=e^{2\sqrt{x}}\ (2\sqrt{x}+c)$

2. $y=2\sqrt{x}\ e^{2\sqrt{x}}+c$

3. $y=2\sqrt{x}\ e^{-2\sqrt{x}}+c$

4. $y=e^{-2\sqrt{x}}\ (2\sqrt{x}+c)$

Question Number : 40 Question Id : 8946582844 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Let y be the solution of the differential equation $\frac{dy}{dx}+y=x,\ x\in\mathbb{R}$ and $y(-1)=0$.

Then, y(1) is equal to _____.

Options :

1. $\frac{2}{e}-\frac{2}{e^2}$

2. $2e^{-2}$

3. $2-\frac{2}{e}$

4. $2-2e$

Question Number : 41 Question Id : 8946582845 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the substitution $x=X+h,\ y=Y+k$ transforms the differential equation $(y-x+1)dy-(y+x+2)dx=0$ into a homogeneous equation, then the value of (h,k) is _____.

Options :

1. $\left(\frac{1}{2},\frac{3}{2}\right)$

2. $\left(\frac{-1}{2},\frac{-3}{2}\right)$

3. $\left(\frac{3}{2},\frac{1}{2}\right)$

4. $\left(\frac{-3}{2},\frac{-1}{2}\right)$

Question Number : 42 Question Id : 8946582846 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The general solution of $\frac{dy}{dx}-y=y^2(\sin x+\cos x)$ is _____.

Options :

1. $y=\frac{1}{ce^x-\sin x}$

2. $y=ce^{-x}-e^x\sin x$

3. $y = ce^{-x} - \sin x$

4. $y = \dfrac{1}{ce^{-x} - \sin x}$

Question Number : 43 Question Id : 8946582847 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Laplace transform of the function $f(t) = \begin{cases} \sin t, & \text{for } 0 \le t \le \pi \\ 0, & \text{for } t > \pi \end{cases}$

is _____.

Options :

1. $\dfrac{1}{(1+s^2)}$ for all $s > 0$

2. $\dfrac{1}{(1+s^2)}$ for all $s < \pi$

3. $\dfrac{(1+e^{-\pi s})}{(1+s^2)}$ for all $s > 0$

4. $\dfrac{e^{-\pi s}}{(1+s^2)}$ for all $s > 0$

Question Number : 44 Question Id : 8946582848 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The inverse Laplace transform of $\dfrac{5}{s} - \dfrac{3e^{-3s}}{s} - \dfrac{2e^{-7s}}{s}$ is _____.

Options :

1. $f(x) = \begin{cases} 5, & 0 < x < 3 \\ 0, & 3 < x < 7 \\ 2, & x > 7 \end{cases}$

2. $f(x)=\begin{cases}5, & 0<x<7\\ 2, & x>7\end{cases}$

3. $f(x)=\begin{cases}5, & 0<x<3\\ 2, & 3<x<7\\ 0, & x>7\end{cases}$

4. $f(x)=\begin{cases}5, & 0<x<7\\ 0, & x>7\end{cases}$

Question Number : 45 Question Id : 8946582849 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Laplace transform of a function $f(x)$ is $F(s)=\frac{1}{s^3+2s^2+2s}$ Then, $\lim_{x\to 0} f(x)=$

_____.

Options :

1. 0

2. 3

3. ∞

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

Question Number : 46 Question Id : 8946582850 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Laplace transform of the solution of the differential equation $\frac{dy}{dx}-2y=e^{5x}$ with the initial condition $y(0)=3$ is _____.

Options :

1. $\frac{1}{3(s-2)}+\frac{1}{3(s-5)}$

2. $\frac{8}{3(s-2)}+\frac{1}{s-5}$

3. $\frac{8}{3(s-2)}+\frac{1}{3(s-5)}$

4. $\frac{8}{s-2}+\frac{1}{3(s-5)}$

Question Number : 47 Question Id : 8946582851 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $L(y(x))=Y(s)$ and $y(x)=x^3+\int_0^x \sin(x-t)\,y(t)dt$ then $\frac{1}{6}Y(s)=$ _____.

Options :

1. $\left(\frac{1}{s^4}+\frac{1}{s^6}\right)$

2. $\left(\frac{1}{s^3}+\frac{1}{s^5}\right)$

3. $\left(\frac{1}{s^3}+\frac{1}{s^7}\right)$

4. $\left(\frac{1}{s}+\frac{1}{s^3}\right)$

Question Number : 48 Question Id : 8946582852 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For $x>0$, $\int_0^\infty \frac{\sin xt}{t}dt$ is _____.

Options :

1. 0

2. $\frac{\pi}{2x}$

3. $\frac{1}{x}$

4. $\frac{\pi}{2}$

Question Number : 49 Question Id : 8946582853 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $f(x)=\frac{1}{2}a_0+\sum_{n=1}^{\infty}(a_n\cos nx+b_n\sin nx)$ is the Fourier series of the function

$f(x)=\begin{cases}0, & -\pi\le x<0\\ \pi, & 0\le x\le\pi\end{cases}$ then, which of the following is TURE?

Options :

1. $a_n=0$, for all $n\ge 0$

2. $a_0=\frac{\pi}{2}$ and $a_n=0$, for all $n\ge 1$

3. $b_n\neq 0$, for all $n\ge 1$

4. $a_0=\pi$ and $a_n=0$, for all $n\ge 1$

Question Number : 50 Question Id : 8946582854 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A function $f(x)$ is such that $f(x+2\pi)=f(x)$ and $f(x)=x, -\pi\le x\le\pi$. The Fourier series of $f(x)$ is _____.

Options :

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

2. $2(\sin x + \frac{1}{2}\sin 2x + \frac{1}{3}\sin 3x + ...)$

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

4. $2(\cos x + \frac{1}{2}\cos 2x + \frac{1}{3}\cos 3x + ...)$

Physics

Number of Questions:	25
Display Number Panel:	Yes
Group All Questions:	No

Question Number : 51 Question Id : 8946582855 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The dimensional formula for gravitational constant is_____.

Options :

1. $L^3T^{-2}M^{-1}$

2. $L^3T^2M^{-1}$

3. $L^2T^3M^{-2}$

4. $L^3T^1M^{-3}$

Question Number : 52 Question Id : 8946582856 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The dimensions of the quantities in one of the following pairs are same. Identify the pairs.

Options :

1. torque and work

2. angular momentum and work

3. energy and Young's modules

4. light year and wavelength

Question Number : 53 Question Id : 8946582857 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not correct?

Options :

1. $j \times i = - k$

2. $k \times j = - i$

3. $i \times k = - j$

4. $k \times i = - j$

Question Number : 54 Question Id : 8946582858 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $0.5\ i + 0.8\ j + c\ k$ is a unit vector then c is_____.

Options :

1. $\sqrt{0.89}$

2. 0.2

3. 0.3

4. $\sqrt{0.11}$

Question Number : 55 Question Id : 8946582859 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is correct?

Options :

1. $A.B \neq B.A$

2. $A.(B+C) = A.B + C.A$

3. $A.B = A.B - A.C$

4. $A.B = -B.A$

Question Number : 56 Question Id : 8946582860 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The acceleration due to gravity on the surface of the earth is given by_____

Options :

1. G

2. GM/R^2

3. GM/R

4. GM

Question Number : 57 Question Id : 8946582861 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of g is maximum at_____.

Options :

1. equator

2. Pole

3. higher altitudes

at the centre of the earth

4.

Question Number : 58 Question Id : 8946582862 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When the speed of rotation of earth increases your weight_____

Options :

1. increases

2. decreases

3. remains constant

4. becomes zero

Question Number : 59 Question Id : 8946582863 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of G is zero at_____

Options :

1. nowhere

2. the centre of the earth

3. surface of the earth

4. pole

Question Number : 60 Question Id : 8946582864 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the linear momentum is increased by 50%, the kinetic energy will be increased by_____

Options :

1. 50%

2. 100%

3. 125%

4. 25%

Question Number : 61 Question Id : 8946582865 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A metallic block slides down a smooth inclined plane when released from the top, while the other falls freely from the same point, then_____

Options :

1. both will reach the ground with the same velocity

2. both will reach the ground together

3. both will reach the ground travelling with same acceleration

4. the block sliding down the plane will strike earlier

Question Number : 62 Question Id : 8946582866 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A long spring is stretched by 2 cm and its potential energy is u. If the spring is stretched by 10 cm, then the potential energy stored in it will be_____.

Options :

1. u/24

2. u/5

3. 5u

4. 25u

Question Number : 63 Question Id : 8946582867 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two masses of 1 gm and 4 gm are moving with equal kinetic energies. The ratio of the magnitudes of their linear momentum is _____

Options :

1. 4:1

2. $\sqrt{2}$:1

3. 1:2

4. 1:16

Question Number : 64 Question Id : 8946582868 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A body is dropped from rest at height 0.5 m. What will be its velocity when it just strikes the ground?

Options :

1. 7 m/s

2. 9.8 m/s

3. 4.9 m/s

4. $\sqrt{9.8}$ m/s

Question Number : 65 Question Id : 8946582869 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A particle moves such that its acceleration a is given by $a = -bx$ where x is the displacement from equilibrium and b is a constant. The period of Oscillation is_____ .

Options :

1. $2\Pi b$

2. $2\Pi\sqrt{b}$

3. $2\Pi/b$

4. $2\sqrt{\Pi}/b$

Question Number : 66 Question Id : 8946582870 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A particle is vibrating in simple harmonic motion with amplitude of 4 cm. At what displacement from the equilibrium position is its energy half potential and half kinetic?

Options :

1. 1 cm

2. $\sqrt{2}$ cm

3. 2 cm

4. $2\sqrt{2}$ cm

Question Number : 67 Question Id : 8946582871 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When a star approaches the earth, the waves are shifted towards _____

Options :

1. green colour

2. yellow colour

3. blue end

4. red end

Question Number : 68 Question Id : 8946582872 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If a tuning fork of frequency 90 is sounded and moved towards an observer with a velocity equal to one tenth the velocity of sound, then the note heard by the observer will have frequency_____.

Options :

1. 100

2. 90

3. 80

4. 900

Question Number : 69 Question Id : 8946582873 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What is the most important factor which helps to recognise a person by his/her voice alone_____

Options :

1. quality

2. pitch

3. intensity

4. quality, pitch and intensity

Question Number : 70 Question Id : 8946582874 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The quality of tone_____

Options :

1. decreases with loudness

2. varies inversely as amplitude

3. varies directly as pitch

4. depends on the overtones present

Question Number : 71 Question Id : 8946582875 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The conduction of heat from hot body to cold body is an example of_____.

Options :

1. reversible process

2. irreversible process

3. isothermal process

4. isobaric process

Question Number : 72 Question Id : 8946582876 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

From the isothermal drawn from Andrews experiment, it can be inferred that_____

Options :

1. CO_2 is a perfect gas

2. there is continuity of state

3. there is discontinuity of state

4. gases like CO_2 and H_2 cannot be liquefied

Question Number : 73 Question Id : 8946582877 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A diesel cycle works at_____

Options :

1. constant volume

2. constant pressure

3. constant temperature

4. both constant volume and constant temperature

Question Number : 74 Question Id : 8946582878 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The transition temperature of most low temperature superconducting elements is in the

range of _____

Options :

1. zero to 10 k

2. 10 k to 20 k

3. 20 k to 50 k

4. 50 k alone

Question Number : 75 Question Id : 8946582879 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Propagation of light through fiber core is due to_____

Options :

1. diffraction

2. interference

3. total internal reflection

4. reflection

Number of Questions:	25
Display Number Panel:	Yes
Group All Questions:	No

Question Number : 76 Question Id : 8946582880 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following energy orders is correct?

Options :

1. 6s<4f<5d<6p

2. 4f<5d<6s<6p

3. 4f<6s<6p<5d

4. 6s<6p<5d<4f

Question Number : 77 Question Id : 8946582881 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An element A of atomic number 11 combines with an element B of atomic number 17. The compound formed is _____.

Options :

1. Covalent AB

2. Ionic AB

3. Covalent AB_2

4. Ionic AB_2

Question Number : 78 Question Id : 8946582882 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The oxidation number of 'S' in S_8, S_2F_2, H_2S respectively are _____.

Options :

1. 0, +1 and -2

2. +2, +1 and-2

3. 0, +1 and +2

4. -2, +1 and -2

Question Number : 79 Question Id : 8946582883 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The elements A, B, C and D have the following electronic configurations:

A: $1S^2, 2S^2, 2P^1$

B: $1S^2, 2S^2, 2P^6, 3S^2, 3P^1$

C: $1S^2, 2S^2, 2P^6, 3S^2, 3P^3$

D: $1S^2, 2S^2, 2P^6, 3S^2, 3P^5$

The elements that belong to same group are _____.

Options :

1. A and C

2. C and D

3. A and D

4. A and B

Question Number : 80 Question Id : 8946582884 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

4.9 gm of H_2SO_4 is present in 2 lit of its solution. The molarity of the solution is

_____.

Options :

1. 0.1 M

2. 0.025 M

3. 0.25 M

4. 0.01 M

Question Number : 81 Question Id : 8946582885 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The molecular weight of H_3PO_4 is 98. The equivalent weight is _____ gram / equivalents.

Options :

1. 98

2. 49

3. 32.66

4. 24.5

Question Number : 82 Question Id : 8946582886 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is the Bronsted acid?

Options :

1. Cl^-

2. NH_2^-

3. CH_3COO^-

4. NH_4^+

Question Number : 83 Question Id : 8946582887 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The pH of 1 M KOH is ____.

Options :

1. 12

2. 11

3. 14

4. 13

Question Number : 84 Question Id : 8946582888 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Froth floatation process is used for the _____.

Options :

1. Oxide ores

2. Sulphide ores

3. Chloride ores

4. Oxide ores and Chloride ores

Question Number : 85 Question Id : 8946582889 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The composition of brass is _____.

Options :

1. Cu and Zn

2. Cu and Ni

3. Cu and Mn

4. Cu and Fe

Question Number : 86 Question Id : 8946582890 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following statements is correct?

Options :

1. Cathode is positive terminal in an electrolytic cell

2. Cathode is negative terminal in a galvanic cell

3. Reduction occurs at cathode in either of cells

4. Oxidation occurs at cathode in either of cells

Question Number : 87 Question Id : 8946582891 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the electrolysis of $CuCl_2$ solution using copper electrode, if 2.5 gm of Cu is deposited at cathode, then at anode _____.

Options :

1. 890 mL of Cl_2 at STP is liberated

2. 445 mL of O_2 at STP is liberated

3. 2.5 gm of copper is deposited

4. a decrease of 2.5 gm of mass takes place

Question Number : 88 Question Id : 8946582892 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The unit of resistivity is _____.

Options :

1. Ω

2. Ω m

3. Ω /m

4. Ω m^2

Question Number : 89 Question Id : 8946582893 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following metals provide cathodic protection to iron?

Options :

1. Cu and Ni

2. Al and Zn

3. Al and Cu

4. Co and Ni

Question Number : 90 Question Id : 8946582894 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The chemical composition of rust is _____.

Options :

1. Fe_3O_4

2. Fe_3O_3

3. $Fe_2O_3.\ nH_2O$

4. $Fe_3O_3.\ xH_2O$

Question Number : 91 Question Id : 8946582895 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

1 ppm of hardness of water is equal to _____.

Options :

1. 1 part of $CaCO_3$ hardness in 10^6 parts of water

2. 1 part of $CaCO_3$ hardness in 10^8 parts of water

3. 1 part of $CaCO_3$ hardness in 10^7 parts of water

4. 1 part of $CaCO_3$ hardness in 10^5 parts of water

Question Number : 92 Question Id : 8946582896 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The temporary hardness of water is due to the presence of _____.

Options :

1. $MgCl_2$ and $CaCl_2$

2. $Ca(NO_3)_2$ and $Mg(NO_3)_2$

3. $CaSO_4$ and $MgSO_4$

4. $Ca(HCO_3)_2$ and $Mg(HCO_3)_2$

Question Number : 93 Question Id : 8946582897 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The basic buffer solution is a mixture of _____.

Options :

1. $NH_3 + NH_4Cl$

2. $HCl + NH_4Cl$

3. $NaCl + NH_4Cl$

4. $KOH + NH_4Cl$

Question Number : 94 Question Id : 8946582898 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following polymers has amide linkage?

Options :

1. Terylene

2. Bakelite

3. Nylon

4. PVC

Question Number : 95 Question Id : 8946582899 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The monomer of natural rubber is _____.

Options :

1. Butadiene

2. Chloroprene

3. 2-methyl 1,2 butadiene

4. 2-methyl 1,3 butadiene

Question Number : 96 Question Id : 8946582900 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is a thermo setting?

Options :

1. Bakelite

2. Polyethylene

3. Nylon-6

4. Natural rubber

Question Number : 97 Question Id : 8946582901 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The composition of water gas is _____.

Options :

1. CO and H_2 are combustible gases and CO_2 and N_2 are non-combustible gases

2. CO + CO_2 are combustible gases and H_2O and N_2 non-combustible gases

3. CO + N_2 are combustible gases and H_2O and H_2 are non-combustible gases

4. N_2+H_2 are combustible gases and CO + H_2O are non-combustible gases

Question Number : 98 Question Id : 8946582902 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Earth is protected from UV radiation by _____.

Options :

1. Nitrogen layer

2. Ozone layer

3. Carbon dioxide layer

4. Oxygen layer

Question Number : 99 Question Id : 8946582903 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of following statements is not correct?

Options :

1. CO is the main air pollutant

2. All pollutants are not wastes

3. Water is polluted by dissolved Oxygen

4. Lichens are pollution indicators

Question Number : 100 Question Id : 8946582904 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Minamata disease is caused due to the presence of _____.

Options :

1. Cd

2. Pb

3. As

4. Hg

Electronics and Instrumentation Engineering

Number of Questions:	100
Display Number Panel:	Yes
Group All Questions:	No

Question Number : 101 Question Id : 8946582905 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$R_1 = 36\ \Omega$ and $R_2 = 75\ \Omega$, each having tolerance of $\pm 5\%$ are connected in series.

The value of resultant resistance is

Options :

1. $111 \pm 0\ \Omega$.

2. $111 \pm 2.77\ \Omega$.

3. $111 \pm 5.55\ \Omega$.

4. $111 \pm 7.23\ \Omega$.

Question Number : 102 Question Id : 8946582906 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Pick the incorrect statement among the following

Options :

1. inductor is a passive element

2. current source is an active element

3. resistor is a passive element

4. voltage source is a passive element

Question Number : 103 Question Id : 8946582907 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Thevenin impedance Z_{Th} is found

Options :

1. by short-circuiting the given two terminals

2. between any two open terminals

3. by removing voltage sources along with the internal resistances

4. between same open terminals as for V_{Th}

Question Number : 104 Question Id : 8946582908 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which among the following is also regarded as 'Dual of Thevenin's Theorem'?

Options :

1. Norton's Theorem

2. Superposition Theorem

3. Millman's Theorem

4. Maximum Power Transfer Theorem

Question Number : 105 Question Id : 8946582909 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In A.C generator increasing number of turns in coil

Options :

1. Decreases the EMF

2. Increases the EMF

3. EMF remains same

4. EMF becomes zero

Question Number : 106 Question Id : 8946582910 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Most seven-segment displays are driven with an encoder that converts a binary encoded nibble into a _____ .

Options :

1. binary number

2. numeric number

3. octal number

4. hexadecimal number

Question Number : 107 Question Id : 8946582911 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Phototransistor produces more current than a photodiode because

Options :

1. the phototransistor can be more heavily doped than the photodiode

2. the photo transistor accepts a wider spectrum of light than the photodiode

3. the current produced by photons is amplified by the h_{fe} of the transistor

4. the photodiode is normally used in low light conditions

Question Number : 108 Question Id : 8946582912 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For which of the following, the parameters spatial-peak, temporal-average and pulse-average must be considered when expressing values for ultrasound?

Options :

1. intensity

2. absorption

3. velocity

4. pulse rate

Question Number : 109 Question Id : 8946582913 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The current density of a photo voltaic cell ranges from

Options :

1. $10 - 20\ mA/cm^2$

2. $40 - 50\ mA/cm^2$

3. $20 - 40\ mA/cm^2$

4. $60 - 100\ mA/cm^2$

Question Number : 110 Question Id : 8946582914 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a second order system, the time constant t of exponential envelopes depends

Options :

1. only on damping factor

2. only on natural frequency

3. both on damping factor and natural frequency

4. neither on damping factor nor on natural frequency

Question Number : 111 Question Id : 8946582915 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If poles are added to the system, where will the system tend to shift the root locus?

Options :

1. to the left of an imaginary axis

2. to the right of an imaginary axis

3. at the center

4. no shifting takes place

Question Number : 112 Question Id : 8946582916 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the unity feedback system is given by the open loop transfer function

$G(s) = ks^2 / [(1 + 0.3s) (1+ 0.05s)]$, what would be the initial slope of magnitude plot?

Options :

1. 20 dB/decade

2. 40 dB/decade

3. 60 dB/decade

4. unpredictable

Question Number : 113 Question Id : 8946582917 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A system has the characteristic equation $s^3+4Ks^2+ (5+K)s+10=0$ The range of K for a stable system is:

Options :

1. $0<K<0.46$

2. $K<0$

3. $K>0.46$

4. unstable for all K

Question Number : 114 Question Id : 8946582918 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Utilizing the Routh-Hurwitz criterion, determine whether the following poly-nomials are stable or unstable: $p1(S)=s^2+10s+5=0$, $p2(s)=s^4+s^3+5s^2+20s+10=0$

Options :

1. p1(s) is unstable, p2(s) is stable

2. p1(s) is stable, p2(s) is unstable

3. p1(s) is unstable, p2(s) is unstable

4. p1(s) is stable, p2(s) is stable

Question Number : 115 Question Id : 8946582919 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The following statements are made

A. Use no derivative action if the process signal is "noisy"

B. Use proportional action sparingly if the process signal is "noisy"

Options :

1. A is true B is False

2. A is false and B is true

3. A is true and B is true

4. A is False and B also False

Question Number : 116 Question Id : 8946582920 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The step error coefficient of a system $G(s) = 1/(S+6)\ (S+1)$ with unity feedback is

Options :

1. 1/6

2. ∞

3. 0

4. 1

Question Number : 117 Question Id : 8946582921 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A diode is operating in forward region and the forward voltage and current are $v = 3 + 0.3 \sin wt$ volts and $i = 5 + 0.2 \sin wt$ mA. The average power dissipated is

Options :

1. 20 mW

2. about 15 mW

3. about 1.5 mW

4. 150 mW

Question Number : 118 Question Id : 8946582922 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A bimetallic thermometer essentially consists of a bimetallic strip made up of two strips of _____welded together

Options :

1. different metals

2. same metals

3. one metal and one insulator

4. one semiconductor and one metal

Question Number : 119 Question Id : 8946582923 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Derivative control action is effective

Options :

1. only during steady state periods

2. only during transient state periods

3. during both steady state and transient state periods

4. either during steady state or transient state periods

Question Number : 120 Question Id : 8946582924 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a bipolar transistor _____.

Options :

1. $\beta_{dc} = \alpha_{dc} / 1 - \alpha_{dc}$

2. $\beta_{dc} = \alpha_{dc} / 1 + \alpha_{dc}$

3. $\beta_{dc} = 1 - \alpha_{dc} / \alpha_{dc}$

4. $\beta_{dc} = 1 + \alpha_{dc} / \alpha_{dc}$

Question Number : 121 Question Id : 8946582925 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A transistor has a current gain (β) of 150. Find the emitter current if base current (I_B) is 10μA.

Options :

1. 1.50 mA

2. 1.1 mA

3. 1.0 mA

4. 1.51mA

Question Number : 122 Question Id : 8946582926 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What is the total phase shift requirement, around the feedback loop, for a phase-shift oscillator?

Options :

1. 90

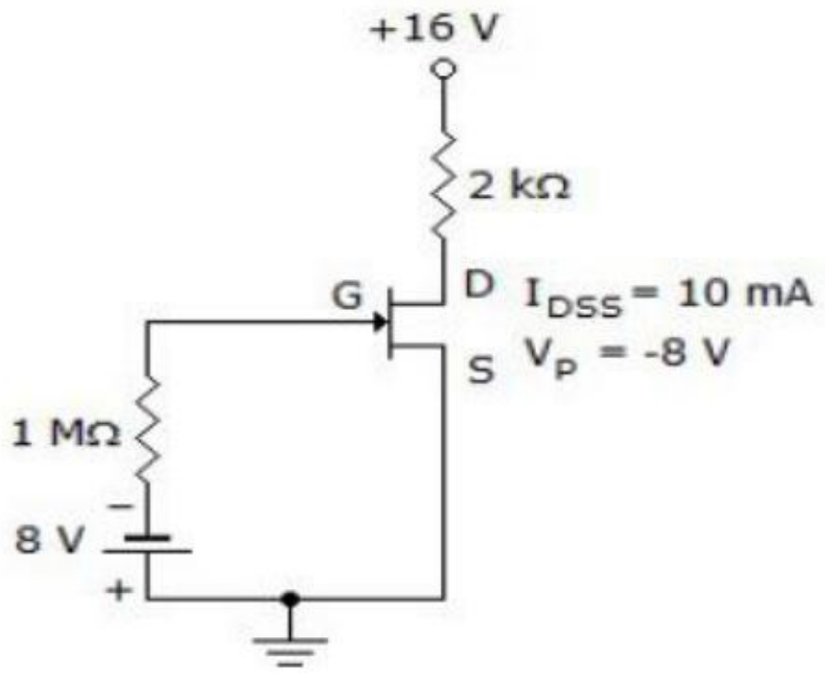
2. 180

3. 270

4. 360

Question Number : 123 Question Id : 8946582927 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Calculate the value of the V_{DS} in the circuit shown below



Options :

1. 10 V

2. 8 V

3. 4.75 V

4. 16 V

Question Number : 124 Question Id : 8946582928 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The gain of an amplifier without feedback is 100 dB. If a negative feedback of 3 dB is applied, the gain of the amplifier will become

Options :

1. 5dB

2. 300dB

3. 103dB

4. 97dB

Question Number : 125 Question Id : 8946582929 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Calculate the efficiency of a class B amplifier for a supply voltage of 20 V and peak voltage of 10V.

Options :

1. 50%

2. 39.27 %

3. 29.37%

4. 61.73%

Question Number : 126 Question Id : 8946582930 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the analysis of a common emitter amplifier, which of the following may be neglected?

Options :

1. h_{re}

2. h_{ve}

3. h_{fe}

4. h_{ie}

Question Number : 127 Question Id : 8946582931 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Express the 72.45 decimal number in octal number?

Options :

1. 109.24

2. 110.34

3. 111.54

4. 112.43

Question Number : 128 Question Id : 8946582932 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Add +64 and -29 numbers using 2's complement method

Options :

1. 0010 0011

2. 0110 1100

3. 1101 1001

4. 1001 0110

Question Number : 129 Question Id : 8946582933 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Simplify the expression $ABC + \bar{A}BC + A\bar{B}C + AB\bar{C} + A\bar{B}\bar{C} + \bar{A}B\bar{C} + \bar{A}\bar{B}\bar{C}$

Options :

1. $A + \overline{BC}$

2. $\bar{A} + \bar{B} + \bar{C}$

3. $\bar{A}B + C$

4. $A + B + \bar{C}$

Question Number : 130 Question Id : 8946582934 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Obtain the canonical sum of products of $f = x_1x_2x_3 + x_1x_3x_4 + x_1x_2x_4$

Options :

1. $f = x_1\bar{x}_2x_3x_4 + x_1x_2x_3\bar{x}_4 + x_1x_2\bar{x}_3x_4 + x_1\bar{x}_2x_3x_4$

2. $f = x_1x_2x_3x_4 + x_1x_2x_3\bar{x}_4 + x_1x_2\bar{x}_3x_4 + x_1\bar{x}_2x_3x_4$

3. $f = x_1\bar{x}_2x_3x_4 + x_1\bar{x}_2x_3\bar{x}_4 + x_1x_2\bar{x}_3x_4 + x_1\bar{x}_2x_3x_4$

4. $f = \bar{x}_1x_2x_3x_4 + x_1x_2x_3\bar{x}_4 + x_1x_2\bar{x}_3x_4 + x_1\bar{x}_2x_3\bar{x}_4$

Question Number : 131 Question Id : 8946582935 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Apply De Morgan's theorem to $\overline{\overline{(\bar{A} + B + C + D)}} + \overline{A\bar{B}\bar{C}D}$

Options :

1. $\bar{A}\bar{B}\bar{C}\bar{D}$

2. $\bar{A}BC\bar{D}$

3. $A\bar{B}\bar{C}D$

4. $ABCD$

Question Number : 132 Question Id : 8946582936 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Using K-map, obtain the minimum product of sum for

$f(w,x,y,z) = \sum(1,3,4,5,6,7,9,12,13)$

Options :

1. $f = (\bar{w} + \bar{y})(x + z)$

2. $f = (\bar{x} + \bar{z})(x + z)$

3. $f = (x + \bar{y})(x + z)$

4. $f = (\bar{x} + z)(x + z)$

Question Number : 133 Question Id : 8946582937 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When the output of an AND gate is HIGH with three inputs, A, B, and C.

Options :

1. A = 1, B = 1, C = 0

2. A = 0, B = 0, C = 0

3. A = 1, B = 1, C = 1

4. A = 1, B = 0, C = 1

Question Number : 134 Question Id : 8946582938 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 2-input NOR gate is equivalent to a _____

Options :

1. negative-OR gate

2. negative-AND gate

3. negative-NAND gate

4. negative-NOR gate

Question Number : 135 Question Id : 8946582939 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The output of an exclusive-OR gate is LOW if _____

Options :

1. the inputs are equal

2. one input is HIGH and the other input is LOW

3. it is independent of inputs

4. one input is LOW and the other output is HIGH

Question Number : 136 Question Id : 8946582940 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For the minterm designation Y= $\sum m$ (1, 3, 5, 7) the complete expression is _____

Options :

1. $Y= \bar{A}\,\bar{B}\,C + A\,\bar{B}\,C$

2. $Y= \bar{A}\,\bar{B}\,C + A\,\bar{B}\,C + A\,B\,C + \bar{A}\,B\,C$

3. $Y= \bar{A}\,\bar{B}\,C + A\,\bar{B}\,C + \bar{A}\,B\,C + A\,\bar{B}\,C$

4. $Y= \bar{A}\,\bar{B}\,\bar{C} + A\,B\,C + \bar{A}\,\bar{B}\,C + A\,\bar{B}\,C$

Question Number : 137 Question Id : 8946582941 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a clocked NAND latch, race around condition occurs when _____

Options :

1. R and S are high and CLK is low

2. R and CLK are high and S is low

3. R, CLK, S are high

4. R, CLK, S are low

Question Number : 138 Question Id : 8946582942 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Latches constructed with NOR and NAND gates tend to remain in the latched condition due to which configuration feature?

Options :

1. low input voltages

2. synchronous operation

3. gate impedance

4. cross coupling

Question Number : 139 Question Id : 8946582943 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Characteristic equation of the S-R latch is_____

Options :

1. $Q_{n+1} = (S + R)Q_n$

2. $Q_{n+1} = (S + Q_n\bar{R})$

3. $Q_{n+1} = (\bar{S} + R)Q_n$

4. $Q_{n+1} = Q_n$

Question Number : 140 Question Id : 8946582944 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the output of two-bit asynchronous binary up counter using T flip flops is '00' at reset condition, then what output will be generated after the fourth negative clock edge?

Options :

1. 00

2. 01

3. 10

4. 11

Question Number : 141 Question Id : 8946582945 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What is toggle condition in J-K flip flop ?

Options :

1. J=0, K=0

2. J=0, K=1

3. J=1, K=0

4. J=1, K=1

Question Number : 142 Question Id : 8946582946 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is correct for a gated D-type flip-flop?

Options :

1. the Q output is either SET or RESET as soon as the D input goes HIGH or LOW

2. the output complement follows the input when enabled

3. only one of the inputs can be HIGH at a time

4. the output toggles if one of the inputs is held HIGH

Question Number : 143 Question Id : 8946582947 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

How many IC74154 (4 to 16 decoder) IC's are necessary to decode a six digit binary number?

Options :

1. 4

2. 3

3. 2

4. 1

Question Number : 144 Question Id : 8946582948 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The expression Y(A,B,C) = $\sum m$ (1,3,5,6) is to be realized using a multiplexer. Then

Options :

1. Use 8 : 1 multiplexer and ground input lines 1, 3, 5, 6

2. Use 8 : 1 multiplexer and ground input lines 0, 2, 4, 7

3. Use 8 : 1 multiplexer and ground input lines 0, 1, 2, 3

4. Use 8 : 1 multiplexer and ground input lines 4, 5, 6, 7

Question Number : 145 Question Id : 8946582949 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Determine the limiting error (in percent) in case of an instrument reading of 83 V with a 0-150 V voltmeter having a guaranteed accuracy of 1% full scale reading.

Options :

1. 1.81 %

2. 18.1 %

3. 0.18 %

4. 11.1 %

Question Number : 146 Question Id : 8946582950 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Calculate the maximum percentage error in the sum and difference of two voltage measurements when V_1=100V±1% and V_2=80V±5%.

Options :

1. 180V±2.2%, 20V±22%

2. 180V±2.4%, 20V±23%

3. 180V±2.6%, 20V±24%

4. 180V±2.8%, 20V±25%

Question Number : 147 Question Id : 8946582951 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If carrier power is 'P' and amplitude modulation index is 'm', then the total power after modulation is_____

Options :

1. P

2. mP

3. P(1+m)

4. $P(1+ m^2/ 2)$

Question Number : 148 Question Id : 8946582952 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 0-1 mA meter has a sensitivity of_____

Options :

1. 1 Kw/V

2. 1 mA

3. 1 Kw

4. 1000 A

Question Number : 149 Question Id : 8946582953 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Moving iron instruments can be used as_____

Options :

1. Standard instruments for calibration of other instruments.

2. Transfer type instruments.

3. Indicator type instruments as on panels

4. PID

Question Number : 150 Question Id : 8946582954 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In D'Arsonval galvanometer, an iron core is usually used between the permanent magnet pole faces. This is used so that_____

Options :

1. flux density in the air gap becomes high thereby a large deflecting torque is produced

2. the effect of stray magnetic Felds is reduced.

3. moment of inertia of moving parts becomes smaller.

4. the effect of stray magnetic Felds is increased

Question Number : 151 Question Id : 8946582955 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of resistance as measured by a Wheatstone bridge is 10.0 k Ω by using a voltage source of 10.0 V. The value of resistance measured by the same bridge by using 15.0 V is _____.

Options :

1. 15.0 k Ω

2. 10.0 k Ω

3. 16.0 k Ω

4. 15.5 k Ω

Question Number : 152 Question Id : 8946582956 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The reading of high impedance voltmeter V in the bridge circuit shown in given Fig.1 is_____

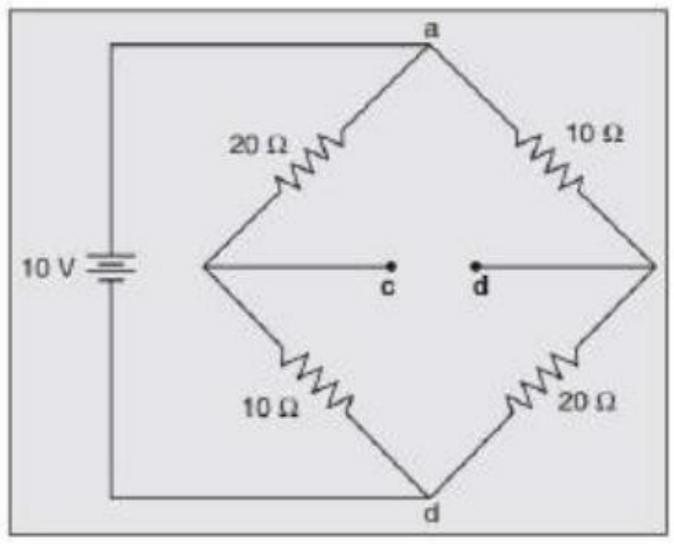


Fig.1

Options :

1. 0 V

2. 3.33 V

3. 4.20 V

4. 6.66 V

Question Number : 153 Question Id : 8946582957 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The current through a pure capacitor is_____

Options :

1. displacement current

2. conduction current

3. partly displacement current and Partly conduction current

4. either conduction current or displacement current

Question Number : 154 Question Id : 8946582958 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Maxwell inductance capacitance bridge is used for measurement of inductance of_____

Options :

1. low Q coils

2. medium Q coils

3. high Q coils

4. low and medium Q coils

Question Number : 155 Question Id : 8946582959 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Frequency can be measured by using_____

Options :

1. Maxwell bridge

2. Schering bridge

3. Heaviside Campbell bridge

4. Wien bridge

Question Number : 156 Question Id : 8946582960 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Wagner earth in AC bridge circuits is used to eliminate the effect of_____

Options :

1. Stray electrostatic fields

2. Stray electromagnetic fields

3. Parasitic capacitance to earth

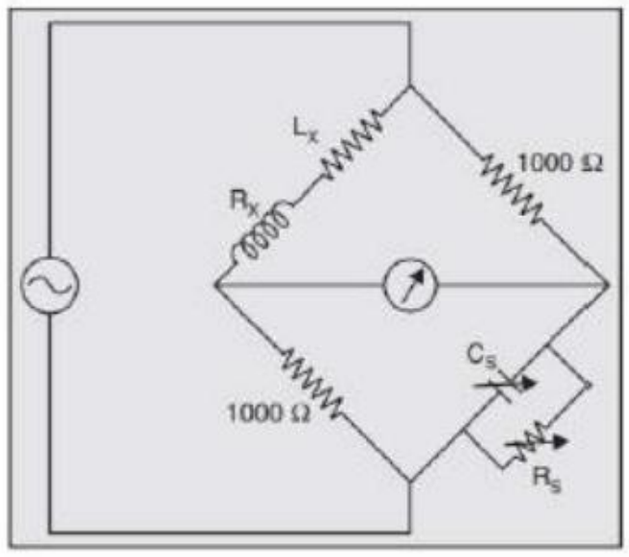
4. Inter-component capacitances

Question Number : 157 Question Id : 8946582961 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the bridge circuit shown in the following Fig., at balance condition, the value of $C_s = 0.5\ \mu F$

and $R_s = 1000\Omega$,

The values of inductance L_X and resistance R_X are _____.



Options :

1. L_X=0.5H, R_X=1000Ω

2. L_X=0.25H, R_X=2000 Ω

3. L_X=0.5H, R_X=3000 Ω

4. L_X=0.25H, R_X=500 Ω

Question Number : 158 Question Id : 8946582962 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The source of emission of electrons in a CRT is_____

Options :

1. PN junction diode

2. A barium and strontium oxide coated cathode

3. Accelerating anodes

4. Post-accelerating anodes

Question Number : 159 Question Id : 8946582963 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following is the correct statement? Active probe used in a CRO_____

Options :

1. is bulk than passive ones

2. cannot measure small signals

3. cannot couple high frequency signals

4. can attenuate more

Question Number : 160 Question Id : 8946582964 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The X and Y inputs to a CRO are respectively 10 cos (100t + θ) and 10 sin (wt + θ) the resulting Lissajous pattern is

Options :

1. a straight line inclined at an angle θ

2. a horizontal line

3. an ellipse with axis making an angle θ

4. a circle

Question Number : 161 Question Id : 8946582965 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following transducers requires power supply for its operation_____

Options :

1. Thermocouple

2. Photovoltaic Cell

3. Piezoelectric Crystal

4. Thermistor

Question Number : 162 Question Id : 8946582966 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An LVDT produces an rms output voltage of 2.6 V for displacement of 0.4 μm. Calculate the sensitivity of LVDT

Options :

1. 6.5 V/μm

2. 7.5 V/μm

3. 8.5 V/μm

4. 9.5 V/μm

Question Number : 163 Question Id : 8946582967 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Radiation of pyrometer is used to measure temperature in the range of _____

Options :

1. -200° C to 500° C

2. -100° C to -150° C

3. 501° C to 1150° C

4. 1200° C to 2500° C

Question Number : 164 Question Id : 8946582968 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Hydrometer is employed for determination of_____

Options :

1. relative humidity

2. specific gravity of liquids

3. fluid level

4. sensitivity

Question Number : 165 Question Id : 8946582969 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In optical pyrometer temperature is measured by_____

Options :

1. thermocouple effect

2. photocell principle

3. comparison of brightness of the source with that of a standard source

4. change in resistance

Question Number : 166 Question Id : 8946582970 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a piezoelectric transducer, the output voltage is given by_____

Options :

1. $V = 4\ gtp$

2. $V = 2\ gtp$

3. $V = gtp$

4. $V = 2\ gp$

Question Number : 167 Question Id : 8946582971 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The main objective of a process control is _____

Options :

1. to control physical parameters

2. to control mechanical parameters

3. to control optical parameters

4. to control electrical parameters

Question Number : 168 Question Id : 8946582972 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

As per BIS, the number of accuracy classes of instruments is _____.

Options :

1. 5

2. 6

3. 7

4. 8

Question Number : 169 Question Id : 8946582973 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The integral controller _____

Options :

1. increases the steady state error

2. decreases the steady state error

3. increases the noise and stability

4. decreases the damping coefficient

Question Number : 170 Question Id : 8946582974 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The number of operational amplifiers required for designing the electronic PID controller is _____

Options :

1. 1

2. 2

3. 3

4. 4

Question Number : 171 Question Id : 8946582975 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a PID controller, the offset has been increased. The integral time constant has to be _____ so as to reduce offset.

Options :

1. reduced

2. increased

3. exactly zero

4. no change

Question Number : 172 Question Id : 8946582976 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which controller has the potential to eliminate/overcome the drawback of offset in proportional controllers?

Options :

1. P-I controller

2. P-D controller

3. I-D controller

4. PID controller

Question Number : 173 Question Id : 8946582977 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which time is responsible for introducing an error in the temperature regulation of applications associated with ON-OFF controllers?

Options :

1. rise time

2. dead time

3. switching time

4. decay time

Question Number : 174 Question Id : 8946582978 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The basic function of the spring in a control valve is to_____

Options :

1. characterize flow

2. oppose the diaphragm so as to position the valve according to signal pressure

3. close the valve if air failure occurs

4. open the valve if air failure occurs

Question Number : 175 Question Id : 8946582979 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A single seated globe valve containing a plug $1\frac{1}{2}$ inches in diameter is used in a line pressurized to 500 psi. What actuator force is required for tight Shutoff?

Options :

1. 884 pounds

2. 2,000 pounds

3. depends upon direction of flow through the valve

4. independent of direction of flow through the valve

Question Number : 176 Question Id : 8946582980 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following gauges can measure the lowest vaccum pressure?

Options :

1. Mc Lead gauge

2. Pirani gauge

3. Ionization gauge

4. Strain gauge

Question Number : 177 Question Id : 8946582981 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The light emitting region is available in lengths from _____

Options :

1. 1.5 mm to 2.5 mm

2. 2.5 mm to 25 mm

3. 0.1 mm to 1.5 mm

4. 25 mm to 50 mm

Question Number : 178 Question Id : 8946582982 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following should be incorporated in RTD to make a temperature sensing bridge most sensitive to temperature?

Options :

1. Platinum

2. Nickel

3. Thermistor

4. Copper

Question Number : 179 Question Id : 8946582983 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Non-contact type temperature sensor is_____

Options :

1. Thermocouple

2. Radiation pyrometer

3. Thermistor

4. SCR

Question Number : 180 Question Id : 8946582984 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A message signal $m(t)=1/3\cos(w_1t)-1/2\cos(w_2t)$ is amplitude modulated with a carrier of frequency w_c to generate $s(t)=[1+m(t)]\cos(w_ct)$. The power efficiency achieved by this AM scheme is_____

Options :

1. 8%

2. 12%

3. 16%

4. 25%

Question Number : 181 Question Id : 8946582985 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The angle modulated signal is given by $s(t)=10\cos(2\pi 2x10^8t+1000\cos(2000\pi t))$. The average power of $s(t)$ is_____

Options :

1. 100 W

2. 1000 W

3. 50 W

4. 500 W

Question Number : 182 Question Id : 8946582986 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A signal $x(t)=10\cos(400\pi t)$ is ideally sampled with a sampling period of 40 μs and passed through ideal low pass filter with a cut off frequency 1KHz. Which of the following frequencies is present at the output of the filter?

Options :

1. 2000 Hz

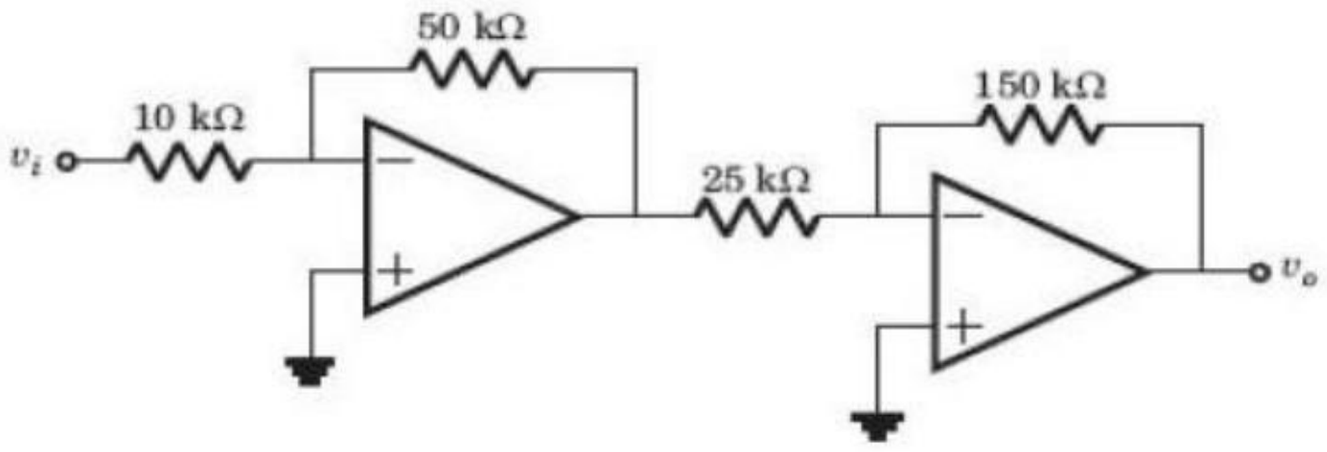
2. 1000 Hz

3. 1500 Hz

4. 500 Hz

Question Number : 183 Question Id : 8946582987 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the circuit shown in figure the input voltage V_i=0.2V. The output voltage V_o=?



Options :

1. 6V

2. -6V

3. 8V

4. -8V

Question Number : 184 Question Id : 8946582988 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a CE amplifier, the output voltage is equal to the product of _____.

(Where AC is alternating current)

Options :

1. AC collector current and AC collector resistance

2. AC base current and AC collector resistance

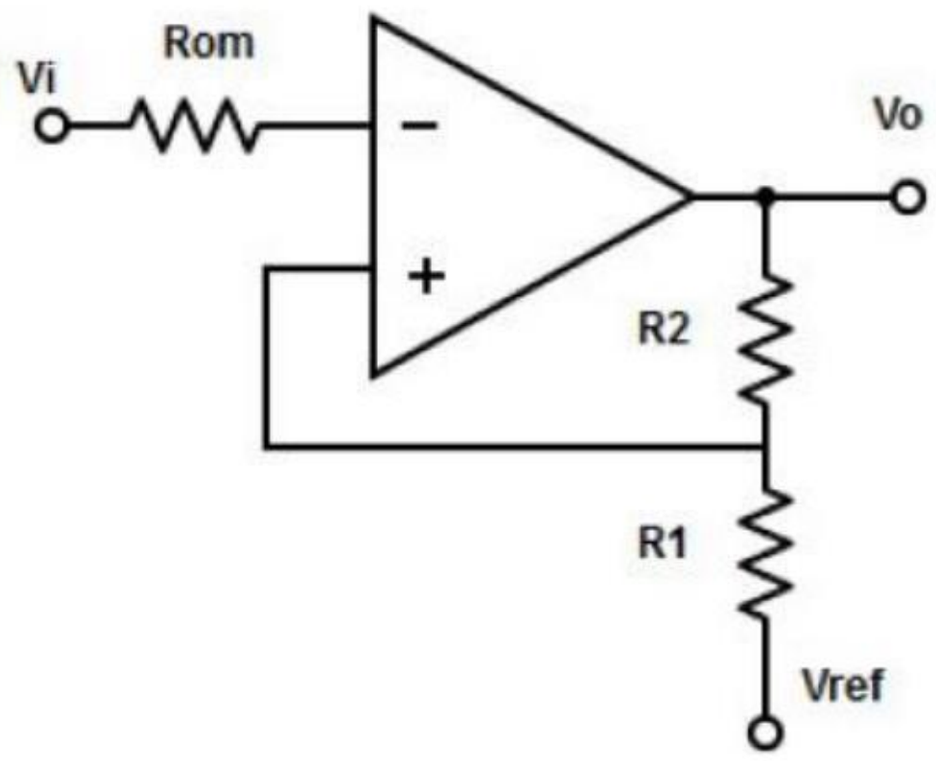
3. AC emitter current and AC emitter resistance

4. AC collector current and source resistance

Question Number : 185 Question Id : 8946582989 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Calculate the hysteresis voltage for the Schmitt trigger from the given specification:

R_2 =56 KΩ , R_1 = 100 Ω , V_{ref} = 0 V & V_{sat} = ±14 V.



Options :

1. 0 mV

2. 25 mV

3. 50 mV

4. -25 mV

Question Number : 186 Question Id : 8946582990 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Alpha rays have a/an _____velocity and a/an _____ range for each radioactive nuclide.

Options :

1. definite, definite

2. different, different,

3. increasing, increasing

4. decreasing, decreasing

Question Number : 187 Question Id : 8946582991 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Winemakers test grape juice before, during and after fermentation with which of the following instruments?

Options :

1. a refractometer

2. a speedometer

3. a hydrometer

4. a gyrometer

Question Number : 188 Question Id : 8946582992 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Energy passing through unit area is_____

Options :

1. intensity of x-ray

2. frequency of x-ray

3. wavelength of x-ray

4. amplitude of x-ray

Question Number : 189 Question Id : 8946582993 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Normal EEG frequency range is _____.

Options :

1. 50-500 Hz

2. 0.5-50 HZ

3. 0.05-5 Hz

4. 0.01 – 0.05 Hz

Question Number : 190 Question Id : 8946582994 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In new spectrometers, each ion hits a/an _____.

Options :

1. detector

2. ionizer

3. collector

4. graph

Question Number : 191 Question Id : 8946582995 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The direction of induced emf is given by _____.

Options :

1. Fleming's right hand rule

2. Cork screw rule

3. Kirchoff's current law

4. Kirchoff's voltage law

Question Number : 192 Question Id : 8946582996 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Due to which phenomena, sound is heard at longer distances in nights than in day?

Options :

1. reflection

2. refraction

3. interference of sound

4. diffraction of sound

Question Number : 193 Question Id : 8946582997 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is the chopping frequency used for industrial analyzers in the simple infrared analyzer for gas analysis?

Options :

1. 2-10 Hz

2. 11-20 Hz

3. 21-30 Hz

4. 31-40 Hz

Question Number : 194 Question Id : 8946582998 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The movement of diaphragm in simple infrared analyzer for gas analysis results in which of the following?

Options :

1. variable resistance

2. variable inductance

3. variable capacitance

4. variable conductance

Question Number : 195 Question Id : 8946582999 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Nitrogen oxide cannot be directly analyzed using UV and Visible analyzers due to which of the following reasons?

Options :

1. less accuracy

2. very low range

3. it leads to contamination of the sample

4. it is transparent in UV visible regions

Question Number : 196 Question Id : 8946583000 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

8051 microcontroller is called 8 bit since _____ .

Options :

1. it has 8 address lines

2. it has 8 data lines

3. it has 8 bit registers

4. it has 8 bit ALU

Question Number : 197 Question Id : 8946583001 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

How many 16 bit registers are there in 8051 series ?

Options :

1. 2

2. 3

3. 1

4. 0

Question Number : 198 Question Id : 8946583002 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

How is the status of the carry, auxiliary carry and parity flag affected if the instruction is written as

MOV A, #9C

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 : 199 Question Id : 8946583003 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In 8255, if A_1=0, A_0=1 then the input read cycle is performed from_____.

Options :

1. port A to data bus

2. port B to data bus

3. port C to data bus

4. CWR to data bus

Question Number : 200 Question Id : 8946583004 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

How many inputs and outputs are there in a Medium PLC?

Options :

1. 100 and 200

2. 1000 and 4000

3. 2000 and 4000

4. 4000 and 8000