Telangana State Council 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 Instrumentation Engineering 11th May 2019 Shift1
Subject Name:	Electronics and Instrumentation Engineering
Creation Date:	2019-05-11 13:35:19
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Actual Answer Key:	Yes
Calculator:	None
Magnifying Glass Required?:	No
Ruler Required?:	No
Eraser Required?:	No
Scratch Pad Required?:	No
Rough Sketch/Notepad Required?:	No
Protractor Required?:	No
Show Watermark on Console?:	Yes
Highlighter:	No
Auto Save on Console?:	No

Electronics and Instrumentation Engineering

Group Number :	1
Group Id :	89465815
Group Maximum Duration :	0
Group Minimum Duration :	180
Revisit allowed for view? :	No
Revisit allowed for edit? :	No
Break time:	0
Group Marks:	200

Mathematics

Section Id :	89465856
Section Number :	1
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	50
Number of Questions to be attempted:	50
Section Marks:	50
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	89465861
Question Shuffling Allowed :	Yes

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

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

Correct Marks : 1 Wrong Marks : 0

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

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

Correct Marks : 1 Wrong Marks : 0

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

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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. ✖ $y = c_1 \sin x + c_2 \cos x + c_3 e^{-3x} + c_4 e^{-2x}$

4. ✖ $y = c_1 \sin x + c_2 \cos x + c_3 e^{3x} + c_4 e^{2x}$

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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. ✔ $y=\frac{1}{ce^{-x}-\sin x}$

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

Correct Marks : 1 Wrong Marks : 0

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

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

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

4. ✖ $\frac{e^{-\pi s}}{(1+s^{2})}$ 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

Correct Marks : 1 Wrong Marks : 0

The inverse Laplace transform of $\frac{5}{s}-\frac{3e^{-3s}}{s}-\frac{2e^{-7s}}{s}$ 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

Correct Marks : 1 Wrong Marks : 0

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

_____.

Options :

1. ✔ 0

2. ✖ 3

3. ✖ ∞

4. ✖ $\dfrac{1}{2}$

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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. ✖ $b_n \ne 0$, 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

Correct Marks : 1 Wrong Marks : 0

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

Section Id :	89465857
Section Number :	2
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	25
Number of Questions to be attempted:	25
Section Marks:	25
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	89465862
Question Shuffling Allowed :	Yes

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Note: For this question, ambiguity is found in question/answer. Candidate will get full marks for this question if any of the correct options are chosen.

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

The value of g is maximum at_____.

Options :

1. ✖ equator

2. ✔ Pole

3. ✖ higher altitudes

4. ✖ at the centre of the earth

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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_____ .

Note: For this question, discrepancy is found in question/answer. Full Marks is being awarded to all candidates.

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

Propagation of light through fiber core is due to_____

Options :

1. ✖ diffraction

2. ✖ interference

3. ✔ total internal reflection

4. ✖ reflection

	Chemistry
Section Id :	89465858
Section Number :	3
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	25
Number of Questions to be attempted:	25

Section Marks: 25
Display Number Panel: Yes
Group All Questions: No

Sub-Section Number: 1
Sub-Section Id: 89465863
Question Shuffling Allowed : Yes

Question Number : 76 Question Id : 8946582880 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

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
Correct Marks : 1 Wrong Marks : 0

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
Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

The unit of resistivity is _____.

Options :

1. ✖ Ω

2. ✔ Ω m

3. ✖ Ω /m

4. ✖ $\Omega\, m^2$

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

Minamata disease is caused due to the presence of _____.

Options :

1. ✖ Cd

2. ✖ Pb

3. ✖ As

4. ✔ Hg

Electronics and Instrumentation Engineering

Section Id :	89465859
Section Number :	4
Section type :	Online
Mandatory or Optional:	Mandatory
Number of Questions:	100
Number of Questions to be attempted:	100
Section Marks:	100
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	89465864
Question Shuffling Allowed :	Yes

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

Correct Marks : 1 Wrong Marks : 0

$R_1 = 36\ \Omega$ and $R_2 = 75\ \Omega$, each having tolerance of ±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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Options :

1. ✖ 90

2. ✖ 180

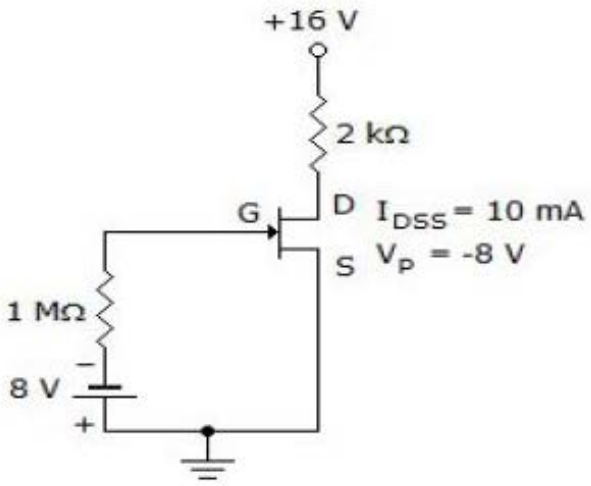
3. ✖ 270

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Options :

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

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

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

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

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

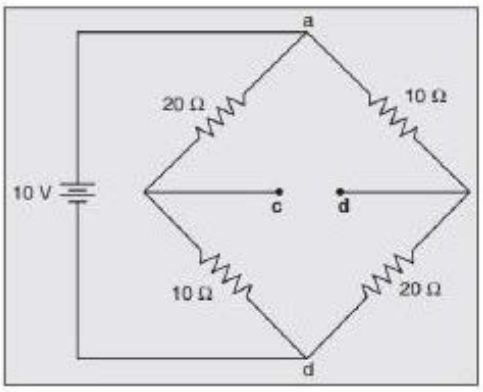


Fig.1

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

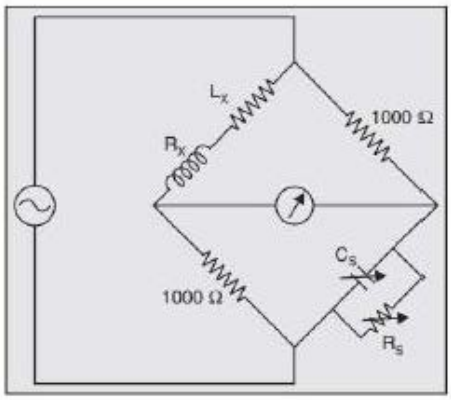
4. ✖ Inter-component capacitances

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

A signal x(t) =10cos(400πt) 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

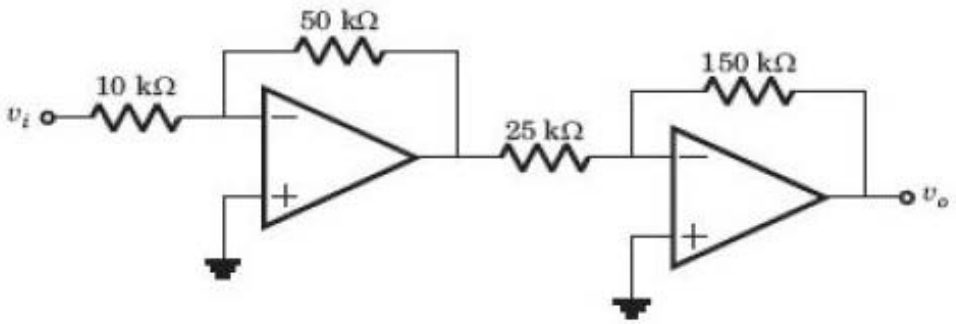
3. ✖ 1500 Hz

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

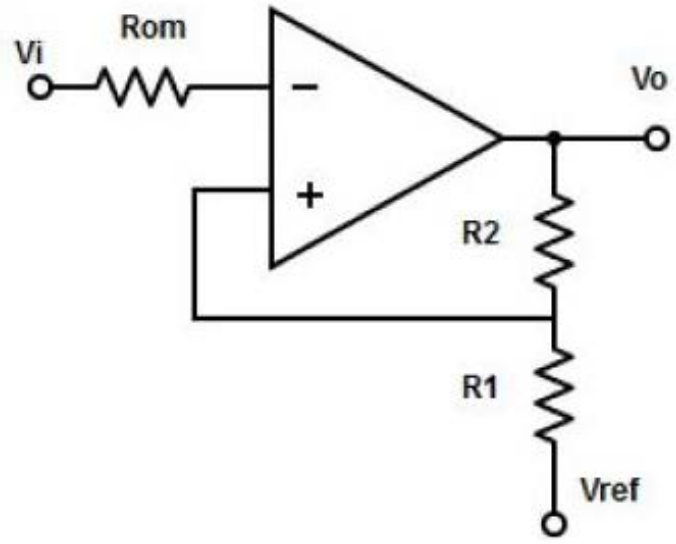
4. ✖ AC collector current and source resistance

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

Correct Marks : 1 Wrong Marks : 0

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

$R_2 = 56\ K\Omega$, $R_1 = 100\ \Omega$, $V_{ref} = 0\ V$ & $V_{sat} = \pm 14\ V$.



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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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

Correct Marks : 1 Wrong Marks : 0

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