

# Question Paper Preview

<b>Question Paper Name :</b>	Electronics and Instrumentation Engineering 14th Sep 2020 S2
<b>Subject Name :</b>	Electronics and Instrumentation Engineering
<b>Duration :</b>	180
<b>Total Marks :</b>	200
<b>Display Marks:</b>	No
<b>Share Answer Key With Delivery Engine :</b>	Yes
<b>Actual Answer Key :</b>	Yes
<b>Is this Group for Examiner? :</b>	No

## Mathematics

<b>Section Number :</b>	1
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	50
<b>Number of Questions to be attempted :</b>	50
<b>Section Marks :</b>	50
<b>Display Number Panel :</b>	Yes
<b>Group All Questions :</b>	Yes
<b>Mark As Answered Required? :</b>	Yes

**Question Number : 1 Question Id : 61097514229 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

If  $A = \begin{bmatrix} 3 & 1 \\ 1 & 4 \end{bmatrix}$  and  $A^2 - kA - 4I_2 = 0$  then  $k =$

**Options :**

1. 1

2. 2

3. -2

4. -1

Ans : no correct option

**Question Number : 2 Question Id : 61097514230 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

If  $A = \begin{bmatrix} 0 & 2 & 1 \\ -2 & 0 & -2 \\ -1 & x & 0 \end{bmatrix}$  is a skew-symmetric matrix, then  $x$  is

**Options :**

1. 0

2. 1

3. 2

4. -2

Question Number : 3 Question Id : 61097514231 Question Type : MCQ Display Question  
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical

If  $a+b+c=0$ , one root of  $\begin{vmatrix} a-x & c & b \\ c & b-x & a \\ b & a & c-x \end{vmatrix} = 0$  is

Options :

1.  $x=0$
2.  $x=1$
3.  $x=2$
4.  $x=a^2+b^2+c^2$

Question Number : 4 Question Id : 61097514232 Question Type : MCQ Display Question  
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical

The co-factors of the elements 2,-5 in the matrix  $\begin{pmatrix} -1 & 0 & 5 \\ 1 & 2 & -2 \\ -4 & -5 & 3 \end{pmatrix}$  is

Options :

1. 16, 3
2. 17, -3
3. 17, 3

4.  $-17, -3$

**Question Number : 5 Question Id : 61097514233 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The solution of a system of linear equations  $2x-y+3z=9$  ,  $x+y+z=6$  ,  $x-y-z=2$  is

**Options :**

1.  $x = -1, y = -2, z = -3$

2.  $x = -1, y = -2, z = 3$

3.  $x = -1, y = 2, z = -3$

4.  $x = 1, y = 2, z = 3$

**Question Number : 6 Question Id : 61097514234 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If  $\frac{2x+4}{(x-1)^3} = \frac{S_1}{(x-1)} + \frac{S_2}{(x-1)^2} + \frac{S_3}{(x-1)^3}$  Then  $\sum_{j=1}^3 S_j$  is equal to

**Options :**

1.  $S_2$

2.  $2S_2$



3.  $4S_2$

4.  $4S_1$

Question Number : 7 Question Id : 61097514235 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If  $\frac{3x^3 - 2x^2 - 1}{x^4 + x^2 + 1} = \frac{Ax + B}{x^2 + x + 1} + \frac{Cx + D}{x^2 + kx + 1}$  then k =

Options :

1. 0

2. 1

3. -1

4. 2

Question Number : 8 Question Id : 61097514236 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If  $\sin 780^\circ \sin 480^\circ - \cos 120^\circ \sin 330^\circ = k$  then k is

Options :

1. 0

2.  $1$

3.  $1/2$

4.  $-1/2$

**Question Number : 9 Question Id : 61097514237 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If A,B,C,D are the angles of cyclic quadrilateral taken in order. then

$$\cos A + \cos B + \cos C + \cos D =$$

**Options :**

1.  $0$

2.  $2$

3.  $-1$

4.  $-2$

**Question Number : 10 Question Id : 61097514238 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

$$\text{If } \tan \theta = \frac{4}{3} \text{ then } \sqrt{\frac{1 - \sin \theta}{1 + \sin \theta}} =$$

**Options :**

1.

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

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

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

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

**Question Number : 11 Question Id : 61097514239 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The period of the function  $f(x)=|\sin x|$  is

**Options :**

1.  $2\pi$

2.  $\pi$

3.  $3\pi$

4.  $4\pi$

**Question Number : 12 Question Id : 61097514240 Question Type : MCQ Display Question**

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The value of  $\tan 1^\circ \tan 2^\circ \tan 3^\circ \dots \tan 89^\circ$  is

Options :

1.  $1$

2.  $0$

3.  $-1$

4.  $\infty$

Question Number : 13 Question Id : 61097514241 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If  $f(x) = \cos^2 x + \sec^2 x$  then its value always is

Options :

1.  $f(x) < 1$

2.  $f(x) = 1$

3.  $2 > f(x) < 1$

4.  $f(x) \geq 2$



Question Number : 14 Question Id : 61097514242 Question Type : MCQ Display Question  
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical

If n is odd, then  $\left(\frac{\cos x + \cos y}{\sin x - \sin y}\right)^n + \left(\frac{\sin x + \sin y}{\cos x - \cos y}\right)^n =$

Options :

1. -1

2. 1

3. 0

4. 2

Question Number : 15 Question Id : 61097514243 Question Type : MCQ Display Question  
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical

The value of  $\tan^{-1}(2) + \tan^{-1}(3)$  is

Options :

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

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

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

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

**Question Number : 16 Question Id : 61097514244 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The trigonometric equation  $\sin^{-1}x=2\sin^{-1} a$  . has a solution for

**Options :**

1.  $|a| < \frac{1}{2}$

2.  $|a| \geq \frac{1}{\sqrt{2}}$

3.  $\frac{1}{2} < |a| < \frac{1}{\sqrt{2}}$

4.  $|a| \leq \frac{1}{\sqrt{2}}$

**Question Number : 17 Question Id : 61097514245 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The solution set of the system of equations  $x + y = \frac{2\pi}{3}$  and  $\cos x + \cos y = \frac{3}{2}$  is

**Options :**

1.

$\phi$

2.  $\left\{ n\pi + \frac{2\pi}{3}, n = 1, 2, 3, \dots \right\}$

3.  $\left\{ n\pi - \frac{2\pi}{3}, n = 1, 2, 3, \dots \right\}$

4.  $0$

Question Number : 18 Question Id : 61097514246 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

if  $z = \frac{7-i}{3-4i}$  then  $z^{14}$  is

Options :

1.  $2^7$

2.  $2^7 i$

3.  $-2^7 i$

4.  $-2^7$

Question Number : 19 Question Id : 61097514247 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

$i^2+i^4+i^6+\dots+(2n+1)$  terms is

Options :

1.  $0$

2.  $-1$

3.  $-i$

4.  $i$

Question Number : 20 Question Id : 61097514248 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The equation of the polar of  $(-2,3)$  with respect to  $x^2+y^2-4x-6y+5=0$  is

Options :

1.  $x=y$

2.  $x+y=0$

3.  $x=0$

4.  $y=0$



Question Number : 21 Question Id : 61097514249 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

A parabolic arc has a height of 12m and a span of 20m. The height of the arc, 5m away

on either side of the centre is

Options :

1.  $2\text{m}$

2.  $3\text{m}$

3.  $6\text{m}$

4.  $9\text{m}$

Question Number : 22 Question Id : 61097514250 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The eccentricity of the ellipse whose latus-rectum is one third of its minor axis is

Options :

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

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

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

4.  $2\sqrt{\frac{2}{3}}$

**Question Number : 23 Question Id : 61097514251 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A conic with eccentricity  $\frac{3}{2}$  is

**Options :**

1. Parabola
2. Ellipse
3. hyperbola
4. Circle

**Question Number : 24 Question Id : 61097514252 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The focus of the parabola  $(y-1)^2=8(x-3)$  is

**Options :**

1. (4,2)
2. (3,5)

3. (5,1)

4. (2,1)

**Question Number : 25 Question Id : 61097514253 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The tangents drawn from the point P(-2,19) to the parabola  $y^2=8x$  are perpendicular to each other. Then the point P lies on the parabola at

**Options :**

1. Tangent at the vertex

2. directrix

3. latus-rectum

4. diameter through the focus

**Question Number : 26 Question Id : 61097514254 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

$$\lim_{n \rightarrow \infty} \left( \frac{n}{n+1} \right)^{2n} \text{ is}$$

**Options :**

1. 0

2.  $e$

3.  $e^2$

4.  $1 e^2$

**Question Number : 27 Question Id : 61097514255 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If  $x=y\log xy$  then  $\frac{dy}{dx} =$

**Options :**

1.  $\frac{x-y}{1+\log xy}$

2.  $\frac{x-y}{x(1+\log xy)}$

3.  $\frac{x+y}{x(1+\log xy)}$

4.  $\frac{x+y}{x \log y}$

**Question Number : 28 Question Id : 61097514256 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**



If  $f(x) = \frac{x}{1+|x|}$ ,  $x \in R$  then  $f'(0) =$

**Options :**

1. 0

2. 1

3. 2

4. 4

**Question Number : 29 Question Id : 61097514257 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

If  $y = (x^x)^x$  then  $\frac{dy}{dx} =$

**Options :**

1.  $x \cdot x^x (1 + 2 \log x)$

2.  $(1 + 2 \log x) x^{(x^2+1)}$

3.  $(1 + 2 \log x) x^{x^2}$

4.  $x \cdot x^x (1 - 2 \log x)$

**Question Number : 30 Question Id : 61097514258 Question Type : MCQ Display Question**

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

If  $x=e^{3t}\cos 3t$  then  $\frac{d^2x}{dt^2}$  at  $t = \frac{\pi}{2}$  is

Options :

1.  $6e^\pi$

2.  $12e^\pi$

3.  $-12e^\pi$

4.  $-6e^\pi$

Question Number : 31 Question Id : 61097514259 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The maximum area of a rectangle with perimeter 176cm is

Options :

1.  $1936\text{cm}^2$

2.  $1854\text{cm}^2$

3.  $2110\text{cm}^2$

4.  $1735\text{cm}^2$

**Question Number : 32 Question Id : 61097514260 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Two positive numbers whose sum is 64 and sum of whose cubes is minimum are given by

**Options :**

1. 32.32

2. 48.16

3. 40.24

4. 32.24

**Question Number : 33 Question Id : 61097514261 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If  $u$  be a homogeneous function of degree  $n$ , then  $x \frac{\partial^2 u}{\partial x^2} + y \frac{\partial^2 u}{\partial y^2} =$

**Options :**

1.  $nu$

2.  $n \frac{\partial u}{\partial x}$

3.  $(n-1) \frac{\partial u}{\partial x}$

$$4. \quad n(n-1) \frac{\partial u}{\partial x}$$

Ans : no correct option

**Question Number : 34 Question Id : 61097514262 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If  $u=f(x-y, y-z, z-x)$  then  $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z}$  is

**Options :**

1.  $3$

2.  $-3$

3.  $u$

4.  $0$

**Question Number : 35 Question Id : 61097514263 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A stone is dropped into a quite lake and waves move in a circle at a speed of 6cm sec. At the instant when the radius of the circular wave is 16cm , the enclosed area increases at the rate

**Options :**

1.  $100 \pi \text{ cm}^2 \cdot \text{sec}$



2.  $32 \pi \text{ cm}^2 \cdot \text{sec}$

3.  $192 \pi \text{ cm} \cdot \text{sec}$

4.  $192 \pi \text{ cm}^2 \cdot \text{sec}$

**Question Number : 36 Question Id : 61097514264 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

$$\int \frac{dx}{1 + \sin x + \cos x} =$$

**Options :**

1.  $\log \left( \tan \left( \frac{x}{2} \right) \right) + c$

2.  $\log \left( 1 + \tan \left( \frac{x}{2} \right) \right) + c$

3.  $\frac{1}{2} \log \left( 1 + \tan \left( \frac{x}{2} \right) \right) + c$

4.  $\log \left( 1 + \sec \left( \frac{x}{2} \right) \right) + c$

**Question Number : 37 Question Id : 61097514265 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

$$\int_0^1 \frac{\log(1+x)}{x} dx \text{ is}$$

**Options :**

1. 0

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

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

4.  $\frac{\pi^2}{12}$

**Question Number : 38 Question Id : 61097514266 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

$$\int \frac{e^x - 1}{e^x + 1} dx =$$

**Options :**

1.  $2\log(e^x+1)+c$

2.  $\log(e^{2x}-1)+c$

3.  $2\log(e^x+1)-x+c$

4.  $\log(e^{2x}+1)+c$

Question Number : 39 Question Id : 61097514267 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The mean value of the ordinate of a semi circle of radius  $a$  taken along the diameter is

Options :

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

2.  $2a\pi$

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

4.  $24a\pi$

Question Number : 40 Question Id : 61097514268 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The area enclosed by the curve  $|x| + |y| = 1$  is

Options :

1.  $2$

2.  $\pi$

3.  $\pi^2$

4. <sup>1</sup>

**Question Number : 41 Question Id : 61097514269 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

$$\int_a^b f(x) dx \text{ represents}$$

**Options :**

1. The area bounded by the curve and the x-axis
2. The area bounded by the curve and the ordinates  $x=a, x=b$
3. The area bounded by the curve, the x-axis and the ordinates  $x=a, x=b$
4. The area not bounded by the curve

**Question Number : 42 Question Id : 61097514270 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

$$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sin|x| dx \text{ is}$$

**Options :**

1. <sup>0</sup>



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

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

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

Question Number : 43 Question Id : 61097514271 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

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

Options :

1. 0

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

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

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

Question Number : 44 Question Id : 61097514272 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The order and degree of the differential equation  $y = x \frac{dy}{dx} + \frac{3}{\frac{dy}{dx}}$  is

**Options :**

1. 1.2

2. 2.1

3. 1.1

4. 2.2

**Question Number : 45 Question Id : 61097514273 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The differential equation  $y \frac{dy}{dx} + x = a$  represents

**Options :**

1. a set of circles whose centers are on the x-axis

2. a set of circles whose centers are on the y-axis

3. a set of parabolas

4. a set of ellipses

Question Number : 46 Question Id : 61097514274 Question Type : MCQ Display Question  
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical

Solution of  $\frac{dy}{dx} + \sqrt{\frac{1-y^2}{1-x^2}} = 0$  is

Options :

1.  $\sin^{-1}x + \sin^{-1}y = c$

2.  $\sin^{-1}x - \sin^{-1}y = c$

3.  $\sinh^{-1}x + \sinh^{-1}y = c$

4.  $\tan^{-1}x + \sin^{-1}y = c$

Question Number : 47 Question Id : 61097514275 Question Type : MCQ Display Question  
Number : Yes Is Question Mandatory : No Single Line Question Option : No Option  
Orientation : Vertical

Particular solution of  $(D^2 - D - 2)y = \sin 2x$  is

Options :

1.  $\frac{\cos 2x - 3 \sin 2x}{20}$

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

3.

$$\frac{\sin x}{2}$$

4.  $\frac{x \sin 2x}{8}$

**Question Number : 48 Question Id : 61097514276 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The integrating factor of  $y(xy+2x^2y^2)dx+x(xy-x^2y^2) =0$  is

**Options :**

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

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

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

4.  $\frac{3}{x^3y^3}$

**Question Number : 49 Question Id : 61097514277 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If  $y=Ae^x+Be^{2x}$ , where A and B are arbitrary constants, then the differential equation is



**Options :**

1.  $x_2 + 3x_1 + 2y = 0$

2.  $x_2 - 3x_1 - 2y = 0$

3.  $x_2 + 3x_1 - 2y = 0$

4.  $x_2 - 3x_1 + 2y = 0$

**Question Number : 50 Question Id : 61097514278 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The length of the sub normal at any point on  $y^2=4ax$  is

**Options :**

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

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

3.  $a$

4.  $2a$

**Physics**

<b>Section Number :</b>	2
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	25
<b>Number of Questions to be attempted :</b>	25
<b>Section Marks :</b>	25
<b>Display Number Panel :</b>	Yes
<b>Group All Questions :</b>	Yes
<b>Mark As Answered Required? :</b>	Yes

**Question Number : 51 Question Id : 61097514279 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The dimensional formula for magnetic flux is

**Options :**

1.  $[ML^2T^{-2}A^{-1}]$

2.  $[ML^3T^{-2}A^{-2}]$

3.  $[M^0L^{-2}T^{-2}A^{-2}]$

4.  $[ML^2T^{-1}A^2]$

**Question Number : 52 Question Id : 61097514280 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The unit for angular frequency is

**Options :**

1. Hertz

2. Newton
3. Degrees (or) radians per second
4. Steradian

**Question Number : 53 Question Id : 61097514281 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The sum of two vectors A and B is at right angles to their difference. Then

**Options :**

1.  $A = B$
2.  $A = 2B$
3.  $B = 2A$
4. A and B have the same direction

**Question Number : 54 Question Id : 61097514282 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The resultant of two forces, one double the other in magnitude, is perpendicular to the smaller of the two forces. The angle between the two forces is

**Options :**

1.  $120^\circ$
2.  $60^\circ$

3.  $90^\circ$

4.  $150^\circ$

**Question Number : 55 Question Id : 61097514283 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

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

**Options :**

1.  $y = 4x$

2.  $y = x$

3.  $y = 3x$

4.  $y = 2x$

**Question Number : 56 Question Id : 61097514284 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Two bodies are projected from the ground with the same speed. If the angles of their projection from the ground are  $45^\circ$  and  $15^\circ$  respectively, the ratio of their ranges is

**Options :**

1.  $1 : 2$



2.  $2 : 1$

3.  $\sqrt{3} : 2$

4.  $1 : \sqrt{2}$

**Question Number : 57 Question Id : 61097514285 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Two bodies of different masses are dropped from heights of 2 m and 8 m respectively.

then the ratio of the time taken by them is \_\_\_\_\_.

**Options :**

1.  $1 : 4$

2.  $1 : 1$

3.  $1 : 2$

4.  $1 : 3$

**Question Number : 58 Question Id : 61097514286 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The angle of projection of a projectile for which the horizontal range and maximum

height are equal is

**Options :**

1.  $\sin^{-1}(4)$

2.  $\tan^{-1}(4)$

3.  $\cos^{-1}(4)$

4.  $\tan^{-1}(8)$

**Question Number : 59 Question Id : 61097514287 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If  $\mu_k$  is the coefficient of kinetic friction,  $\mu_r$  is the coefficient of rolling friction and  $\mu_s$  is the coefficient of static friction, then

**Options :**

1.  $\mu_s > \mu_k > \mu_r$

2.  $\mu_s < \mu_k < \mu_r$

3.  $\mu_s < \mu_r < \mu_k$

4.  $\mu_s > \mu_r > \mu_k$

**Question Number : 60 Question Id : 61097514288 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A boy of mass 40 kg is climbing a vertical pole at a constant speed. If the coefficient of friction between his palms and the pole is 0.8 and  $g = 10 \text{ m s}^{-2}$ , the horizontal force that he is applying on the pole is

**Options :**

1. 300 N
2. 400 N
3. 500 N
4. 600 N

**Question Number : 61 Question Id : 61097514289 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

How many 2.5 kg bricks can a man carry up a 3.6 meter staircase in one hour if he works at an average rate of 9.8 watt?

**Options :**

1. 800
2. 200
3. 600
4. 400

**Question Number : 62 Question Id : 61097514290 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A spring of force constant  $800 \text{ N m}^{-1}$  has an extension of 5 cm. The work done in extending it from 5 cm to 15 cm is

**Options :**

1. 16 J
2. 8 J
3. 32 J
4. 24 J

**Question Number : 63 Question Id : 61097514291 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Among the following sources of energy, for which source, sun is not a chief source of energy

**Options :**

1. Hydroelectric power plant
2. Ocean thermal energy
3. Tidal energy
4. Biomass



**Question Number : 64 Question Id : 61097514292 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A particle executes simple harmonic motion along a straight line so that its period is 12 seconds .

The time it takes in traversing a distance equal to half of its amplitude from its equilibrium position is

**Options :**

1. 6 seconds
2. 4 seconds
3. 2 seconds
4. 1 second

**Question Number : 65 Question Id : 61097514293 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A particle executes simple harmonic motion with a frequency  $f$ . The frequency with

which the potential energy oscillates is

**Options :**

1.  $f$
2.  $f^2$
3.  $2f$
4. zero

**Question Number : 66 Question Id : 61097514294 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A tuning fork A of frequency 512 Hz produces 4 beats per second when sounded with a tuning fork B. Due to filing of the prongs of the tuning fork B, the number of the beats per second becomes 6. The actual frequency of B is

**Options :**

1. 516 Hz
2. 508 Hz
3. 512 Hz
4. 500 Hz

**Question Number : 67 Question Id : 61097514295 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A car sounding a horn of frequency 1000 Hz passes an observer. The ratio of frequencies of the horn noted by the observer before and after passing of car is 11: 9. If the speed of sound is  $v$ , then the speed of the car is

**Options :**

1.  $v/10$
2.  $v/20$
3.  $v/2$

4.  $v^5$

**Question Number : 68 Question Id : 61097514296 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The reverberation time is

**Options :**

1. Directly proportional to sound absorption
2. Inversely proportional to volume
3. Inversely proportional to sound absorption
4. Directly proportional to pressure

**Question Number : 69 Question Id : 61097514297 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The pressure  $P_1$  and density  $d_1$  of a diatomic gas ( $\gamma = 7/5$ ) change to  $P_2$  and  $d_2$  during an

adiabatic operation. If  $\frac{d_2}{d_1} = 32$ , then  $\frac{P_2}{P_1}$  is

**Options :**

1. 125
2. 128
3. 32



4. 256

**Question Number : 70 Question Id : 61097514298 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The first law of thermodynamics is concerned with conservation of

**Options :**

1. No. of molecules
2. No. of moles
3. Energy
4. Temperature

**Question Number : 71 Question Id : 61097514299 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

When ice cube melts into water.

**Options :**

1. Entropy decreases and internal energy decreases
2. Entropy decreases and internal energy increases
3. Entropy increases and internal energy increases
4. Entropy increases and internal energy decreases



**Question Number : 72 Question Id : 61097514300 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

For nitrogen,  $C_p - C_v = x$  and for argon,  $C_p - C_v = y$ . The relation between  $x$  and  $y$  is

**Options :**

1.  $x = y$
2.  $x = 7y$
3.  $y = 7x$
4.  $x = y^2$

**Question Number : 73 Question Id : 61097514301 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A Carnot's engine extracts  $1.5 \times 10^3$  kilocalories of heat from a reservoir at  $627^\circ\text{C}$  and exhausts it to a sink maintained at  $27^\circ\text{C}$ . The work performed by the engine is

**Options :**

1. 4.2 J
2.  $4.2 \times 10^2$  J
3.  $4.2 \times 10^{-6}$  J
4.  $4.2 \times 10^6$  J

**Question Number : 74 Question Id : 61097514302 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

At critical angle, the angle of refraction is

**Options :**

1.  $45^{\circ}$

2.  $90^{\circ}$

3.  $180^{\circ}$

4.  $60^{\circ}$

**Question Number : 75 Question Id : 61097514303 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Superconductivity is due to the formation of

**Options :**

1. Domain walls

2. Electron-hole pairs

3. Hysteresis

4. Cooper pairs

## Chemistry

Section Number :	3
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 :	Yes
Mark As Answered Required? :	Yes

Question Number : 76 Question Id : 61097514304 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

The atomic weight and atomic number of an element are A and Z respectively.

The number of neutrons in the atom of that element is.

Options :

1. A

2. Z

3.  $Z - A$

4.  $A - Z$

Question Number : 77 Question Id : 61097514305 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical



The two electrons present in an orbital are distinguished by :

**Options :**

1. Principal Quantum number
2. Spin Quantum number
3. Magnetic Quantum number
4. Azimutal Quantum number

**Question Number : 78 Question Id : 61097514306 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The order of increasing energies of the orbitals follows:

**Options :**

1. 3s, 3p, 3d, 4s, 4p
2. 3s, 3p, 4s, 4p, 3d
3. 3s, 3p, 4s, 3d, 4p
4. 3s, 3p, 3d, 4p, 4s

**Question Number : 79 Question Id : 61097514307 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Ionic bond is formed by

**Options :**



1. Sharing of electrons
2. Donating of electron
3. Transfer of Electrons
4. Donating of electron pair

**Question Number : 80 Question Id : 61097514308 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The total number of electrons that take part in forming bonds in  $N_2$  is

**Options :**

1. 2
2. 4
3. 10
4. 6

**Question Number : 81 Question Id : 61097514309 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Sum of mole fractions of the two components of a solution is always

**Options :**

1. more than one

2. less than one
3. exactly one
4. not fixed

**Question Number : 82 Question Id : 61097514310 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A 10N Solution stands for

**Options :**

1. Normal solution
2. Decanormal solution
3. Decinormal solution
4. Seminormal solution

**Question Number : 83 Question Id : 61097514311 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The molarity of pure water is

**Options :**

1. 55.6
2. 50

3. 100

4. 18

**Question Number : 84 Question Id : 61097514312 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

According to Bronsted –Lowry theory which one of the following is considered as an acid?

**Options :**

1.  $\text{OH}^-$

2.  $\text{HSO}_4^-$

3.  $\text{H}_3\text{O}^+$

4.  $\text{Cl}^-$

**Question Number : 85 Question Id : 61097514313 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The pH of a solution containing  $10^{-6}$  HCl is

**Options :**

1. 4

2. 6

3. 8

4. 10

**Question Number : 86 Question Id : 61097514314 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

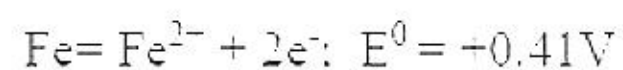
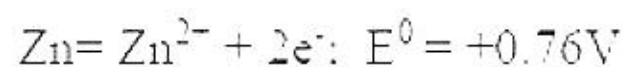
Calculate the quantity of electricity that will be required for liberating 710g of chlorine gas by the electrolysis of a concentrated solution of NaCl.

**Options :**

1. 10 faradays
2. 20 faradays
3. 5 faradays
4. 18 faradays

**Question Number : 87 Question Id : 61097514315 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The standard reduction potentials ( $E^0$ ) for the half reactions are as given below



The EMF for the cell reaction  $\text{Fe}^{2+} + \text{Zn} \rightarrow \text{Zn}^{2+} + \text{Fe}$  is

**Options :**

1. -0.35 V



2. +0.35 V

3. +1.17 V

4. -1.17 V

**Question Number : 88 Question Id : 61097514316 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The best electronic conductor is

**Options :**

1. Copper

2. Aluminium

3. Zinc

4. Silver

**Question Number : 89 Question Id : 61097514317 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The electric charge for electrode deposition of one gram equivalent of a

substance is

**Options :**

1. Charge on one mole of electrons

2. One ampere per second

3. 96500 coulombs per second

4. One ampere for one hour

**Question Number : 90 Question Id : 61097514318 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Hardness of water is expressed in terms of ----- equivalents

**Options :**

1.  $\text{MgCO}_3$

2.  $\text{CaCO}_3$

3.  $\text{Na}_2\text{CO}_3$

4.  $\text{K}_2\text{CO}_3$

**Question Number : 91 Question Id : 61097514319 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Which of the following is a powerful disinfectant?

**Options :**

1.  $\text{O}_2$

2.  $\text{Cl}_2$

3.  $\text{CaOCl}_2$

4.  $N_2$

**Question Number : 92 Question Id : 61097514320 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The process of killing pathogenic bacteria in water is called

**Options :**

1. Softening
2. Osmosis
3. Sterilization
4. Reverse osmosis

**Question Number : 93 Question Id : 61097514321 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The metal oxide film that can easily undergo corrosion is

**Options :**

1. Stable
2. Porous
3. Volatile
4. Unstable

**Question Number : 94 Question Id : 61097514322 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

In galvanised articles, which metal protects the base metal?

**Options :**

1. Fe

2. Cu

3. Zn

4. Pb

**Question Number : 95 Question Id : 61097514323 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Which of the following is thermosetting plastic?

**Options :**

1. PVC

2. Bakelite

3. Polystyrene

4. Teflon



**Question Number : 96 Question Id : 61097514324 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Natural rubber is a polymer of:

**Options :**

1. Isoprene
2. Ethylene
3. Vinyl chloride
4. Styrene

**Question Number : 97 Question Id : 61097514325 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Ebonite is a :

**Options :**

1. PVC
2. Synthetic rubber
3. Highly vulcanised rubber
4. Polystyrene

**Question Number : 98 Question Id : 61097514326 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The coal having the highest ranking is

**Options :**

1. Anthracite
2. Peat
3. Lignite
4. Bituminous

**Question Number : 99 Question Id : 61097514327 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Which of the following causes Minamata disease

**Options :**

1. Argan
2. Sulphur
3. Mercury
4. Nitrogen

**Question Number : 100 Question Id : 61097514328 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Which of the following is not a green house gas?

**Options :**

1. Carbon dioxide
2. Methane gas
3. Water vapour
4. Nitrogen gas

## Electronics and Instrumentation Engineering

<b>Section Number :</b>	4
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	100
<b>Number of Questions to be attempted :</b>	100
<b>Section Marks :</b>	100
<b>Display Number Panel :</b>	Yes
<b>Group All Questions :</b>	Yes
<b>Mark As Answered Required? :</b>	Yes

**Question Number : 101 Question Id : 61097514329 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Which of the following is not equivalent to watts?

**Options :**

1. amperes x volts
2. (amperes)<sup>2</sup> x ohm



3. amperes volt
4. joules per second

**Question Number : 102 Question Id : 61097514330 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The condition for the validity of Ohm's law is that the \_\_\_\_\_

**Options :**

1. temperature should remain constant
2. current should be proportional to voltage
3. resistance must be wire wound type
4. current should be constant

**Question Number : 103 Question Id : 61097514331 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

While determining  $R_{TH}$  of a circuit \_\_\_\_\_

**Options :**

1. voltage and current sources should be left as they are
2. all sources should be replaced by their source resistances



3. all independent current and voltage sources are short circuited
4. all independent current and voltage sources are open circuited

**Question Number : 104 Question Id : 61097514332 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The armature of a dc machine is laminated \_\_\_\_\_

**Options :**

1. to reduce the hysteresis loss
2. to reduce eddy current loss
3. to reduce the mass
4. to reduce the inductance

**Question Number : 105 Question Id : 61097514333 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A 250 V dc generator is run at rated speed with no excitation. The open circuit voltage will be \_\_\_\_\_

**Options :**

1. zero
2. very small, about 2 or 3 V

3. about 100 V

4. 250 V

**Question Number : 106 Question Id : 61097514334 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

If the applied voltage to a dc machine is 230 V, then the back emf for maximum power developed is \_\_\_\_\_

**Options :**

1. 115 V

2. 200 V

3. 230 V

4. 460 V

**Question Number : 107 Question Id : 61097514335 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A photodiode works on the principle of \_\_\_\_\_

**Options :**

1. Photovoltaic effect

2. Photoconductive effect

3. Photoelectric effect

4. Photothermal effect

**Question Number : 108 Question Id : 61097514336 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following devices utilizes photoconductive effect?

**Options :**

1. Solar Cell

2. LED

3. LCD

4. Wind farm

**Question Number : 109 Question Id : 61097514337 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In a photo multiplier \_\_\_\_\_

**Options :**

1. Gain is independent of stray magnetic fields

2. high frequency response is improved by increasing the no. of dynodes



3. Secondary emission is used for amplification of low level photo current

4. The electrons are directed to the anode by applying a strong magnetic field

**Question Number : 110 Question Id : 61097514338 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

In induction heating, which of the following is of high value?

**Options :**

1. Frequency

2. Current

3. Voltage

4. Power factor

**Question Number : 111 Question Id : 61097514339 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The main drawback of \_\_\_\_\_ welding is high initial as well as maintenance cost

**Options :**

1. resistance

2. spot



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

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

**Question Number : 112 Question Id : 61097514340 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The dominant poles of a servo system are located at  $s = (-2 \pm j2)$ . The damping ratio of the system is \_\_\_\_\_

**Options :**

1. 1

2. 0.8

3. 0.707

4. 0.6

**Question Number : 113 Question Id : 61097514341 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Mason's rule is applied to \_\_\_\_\_

**Options :**

1. Translational system

2. rotational system

3. hydraulic system

4. signal flow graph

**Question Number : 114 Question Id : 61097514342 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A system has the transfer function:  $G(s) = \frac{100(s+5)(s+50)}{s^4(s+10)(s^2+3s+10)}$ . The type and order

of the system respectively \_\_\_\_\_

**Options :**

1. 4 and 9

2. 4 and 7

3. 5 and 7

4. 7 and 5

**Question Number : 115 Question Id : 61097514343 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The loop transfer function of a system is given by,  $G(s)H(s) = \frac{K(s+10)^2(s+100)}{s(s+25)}$ , the

number of loci terminating at infinity is \_\_\_\_\_

**Options :**

1. 0
2. 1
3. 2
4. 3

**Question Number : 116 Question Id : 61097514344 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which one of the following has the ability to act as an open circuit for dc and a short circuit for ac of high frequency?

**Options :**

1. An inductor
2. A capacitor
3. A resistor
4. A transistor

**Question Number : 117 Question Id : 61097514345 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

With an increase in temperature, the Fermi level in an intrinsic semiconductor

**Options :**

1. Moves closer to the conduction band edge
2. Moves closer to the valence band edge
3. Moves into the conduction band
4. Remains at the center of the forbidden gap

**Question Number : 118 Question Id : 61097514346 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Avalanche breakdown is primarily dependent on the phenomenon of \_\_\_\_\_

**Options :**

1. Collision
2. Doping
3. Ionization
4. Recombination

**Question Number : 119 Question Id : 61097514347 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**



Zener diode is used as the main component in dc power supply for

**Options :**

1. Rectification
2. Voltage regulation
3. Filter action
4. Voltage regulation and rectification

**Question Number : 120 Question Id : 61097514348 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The primary function of a filter is to

**Options :**

1. Minimize ac input variations
2. Suppress odd harmonics in the rectifier output
3. Stabilize dc level of the output voltage
4. Remove ripples from the rectified output

**Question Number : 121 Question Id : 61097514349 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

In saturation region of an N-P-N transistor \_\_\_\_\_

**Options :**

1.  $V_{CB}$  is negative and  $V_{BE}$  is positive
2.  $V_{CB}$  is positive and  $V_{BE}$  is negative
3.  $V_{CB}$  is positive and  $V_{BE}$  is positive
4.  $V_{CB}$  is negative and  $V_{BE}$  is negative

**Question Number : 122 Question Id : 61097514350 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

In a JFET, drain current is primarily controlled by

**Options :**

1. Size of depletion region
2. Channel resistance
3. Gate reverse bias
4. Voltage drop across channel

**Question Number : 123 Question Id : 61097514351 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

MOSFET can be used as a \_\_\_\_\_

**Options :**

1. Current controlled capacitor
2. Voltage controlled capacitor
3. Current controlled inductor
4. Voltage controlled inductor

**Question Number : 124 Question Id : 61097514352 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

In a single stage R-C coupled amplifier, what are the phase shifts introduced at lower and upper 3 dB frequencies, respectively?

**Options :**

1.  $45^\circ, 225^\circ$
2.  $45^\circ, 135^\circ$
3.  $90^\circ, 180^\circ$
4.  $45^\circ, 180^\circ$

**Question Number : 125 Question Id : 61097514353 Question Type : MCQ Display Question**

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

Cascaded amplifiers are used as \_\_\_\_\_

Options :

1. video amplifiers
2. voltage amplifiers
3. power amplifiers
4. tuned amplifier design

Question Number : 126 Question Id : 61097514354 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

In a Wien bridge oscillator, the positive feedback attenuation is \_\_\_\_\_

Options :

1.  $\frac{1}{3}$
2.  $\frac{1}{29}$
3.  $-\frac{1}{29}$
4.  $\frac{3}{1}$

Question Number : 127 Question Id : 61097514355 Question Type : MCQ Display Question



**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The multivibrator circuit which possesses one stable state and one quasi-stable state is

**Options :**

1. Astable
2. Monostable
3. Bistable
4. Schmitt trigger circuit

**Question Number : 128 Question Id : 61097514356 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The octal equivalent of decimal 98 is \_\_\_\_\_

**Options :**

1. 89
2. 98
3. 142
4. 241

**Question Number : 129 Question Id : 61097514357 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A logic gate is an electronic circuit which \_\_\_\_\_

**Options :**

1. Operates on binary algebra
2. Performs arithmetic and logic functions
3. Allows flow of electrons only in one direction
4. Alternates between 0 and 1 values

**Question Number : 130 Question Id : 61097514358 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The output of a 2-input OR gate is zero only when its \_\_\_\_\_

**Options :**

1. Either input is 0
2. Either input is 1
3. Both inputs are 1
4. Both inputs are 0

**Question Number : 131 Question Id : 61097514359 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Which of the following circuits come under the class of combinational logic circuits?

a) full adder b) full subtractor c) half adder d) register e) counter

**Options :**

1. a only
2. c and e
3. d and e
4. a, b and c

**Question Number : 132 Question Id : 61097514360 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

What are the output bits S (sum) and C (carry) of a half adder having input A=1 and B=1?

**Options :**

1. S=1, C=1
2. S=1, C=0
3. S=0, C=1
4. S=0, C=0

**Question Number : 133 Question Id : 61097514361 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A J-K flip flop can be made from an S-R flip flop by using two additional \_\_\_\_\_

**Options :**

1. NAND gates
2. OR gates
3. NOT gates
4. NOR gates

**Question Number : 134 Question Id : 61097514362 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A ring counter consisting of five flip-flops will have \_\_\_\_\_

**Options :**

1. 5 states
2. 10 states
3. 32 states
4. Infinite states



**Question Number : 135 Question Id : 61097514363 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Among the following four, the slowest analog-to-digital converter is \_\_\_\_\_

**Options :**

1. Parallel comparator (i.e. flash) type
2. Successive approximation type
3. Integrating type
4. Counting type

**Question Number : 136 Question Id : 61097514364 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The resolution of Digital-to-Analog converter is governed by which one of the following (where  $n$  is the number of digital inputs)?

**Options :**

1.  $2^n$
2.  $2^{-n}$
3.  $(2)^n$
4.  $\sqrt{2^n}$

**Question Number : 137 Question Id : 61097514365 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which one of the following statements about RAM is not correct?

**Options :**

1. RAM stands for Random Access Memory
2. It is also called read write memory
3. When power supply is switched off, the information in RAM is usually lost

The binary contents are entered or stored in the RAM chip during the

4. manufacturing

**Question Number : 138 Question Id : 61097514366 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The response of a galvanometer is independent of its \_\_\_\_\_

**Options :**

1. Controlling torque
2. Number of turns
3. Circuit resistance
4. Capacitance

**Question Number : 139 Question Id : 61097514367 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The voltmeter of choice for measuring the emf of a 100 V dc source would be

**Options :**

1. 100 V, 1 mA
2. 100 V, 2 mA
3. 100 V, 10 k $\Omega$  V
4. 100 V, 100  $\Omega$  V

**Question Number : 140 Question Id : 61097514368 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Moving iron and PMMC instruments can be distinguished from each other by looking

at \_\_\_\_\_

**Options :**

1. Pointer
2. Terminal size
3. Scale



4. Scale range

**Question Number : 141 Question Id : 61097514369 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

To increase current measurement range of an ammeter, it is \_\_\_\_\_

**Options :**

1. Shunted by a high resistance
2. Put in series with a high resistance
3. Put in series with a low resistance
4. Shunted by a low resistance

**Question Number : 142 Question Id : 61097514370 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

What is the approximate input impedance of a CRO?

**Options :**

1. Zero
2.  $1\text{ M}\Omega$
3.  $10\ \Omega$



100  $\mu\Omega$

4.

**Question Number : 143 Question Id : 61097514371 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In a CRT, the highest positive potential is given to \_\_\_\_\_

**Options :**

1. Focusing electrodes
2. Cathode
3. Vertical deflection plates
4. Post deflection acceleration anode

**Question Number : 144 Question Id : 61097514372 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The Q-meter works on the principle of \_\_\_\_\_

**Options :**

1. mutual inductance
2. self-inductance
3. series resonance

4. parallel resonance

**Question Number : 145 Question Id : 61097514373 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

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

**Options :**

1. A circle
2. An ellipse
3. A straight line with  $45^\circ$  slope
4. Sinusoidal

**Question Number : 146 Question Id : 61097514374 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which one of the following is a derived unit (not a fundamental unit) in SI system?

**Options :**

1. Candela
2. Coulomb

3. Kelvin

4. mol.

**Question Number : 147 Question Id : 61097514375 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Linear variable differential transformer has \_\_\_\_\_

**Options :**

1. Two primary coils connected in phase and a secondary coil
2. Two primary coils connected in opposition and a secondary coil
3. One primary coil and two secondary coils connected in phase
4. One primary coil and two secondary coils connected in opposition

**Question Number : 148 Question Id : 61097514376 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A linear variable differential transformer (LVDT) is \_\_\_\_\_

**Options :**

1. A displacement transducer
2. An impedance matching transformer



3. A differential temperature sensor
4. An auto transformer

**Question Number : 149 Question Id : 61097514377 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A strain gauge has gauge factor  $G = -100$ . The type of the strain gauge is \_\_\_\_\_

**Options :**

1. Unbounded metal type
2. Bounded metal foil type
3. p-type semi-conductor
4. n-type semi-conductor

**Question Number : 150 Question Id : 61097514378 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

For signal conditioning of a piezoelectric type transducer, we require \_\_\_\_\_

**Options :**

1. A charge amplifier
2. A differential amplifier



3. An instrumentation amplifier
4. A trans-conductance amplifier

**Question Number : 151 Question Id : 61097514379 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The operation of a Pirani gauge is based on \_\_\_\_\_

**Options :**

1. Ionization of gas at low pressure
2. Variation of volume with pressure
3. Variation of viscosity with pressure
4. Variation of thermal conductivity of gas with pressure

**Question Number : 152 Question Id : 61097514380 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

An example of variable area device for measuring flow is \_\_\_\_\_

**Options :**

1. Flow nozzle
2. Orifice meter

3. Venturimeter

4. Rotameter

**Question Number : 153 Question Id : 61097514381 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following meters has the lowest pressure drop for a given range of flow?

**Options :**

1. Orifice meter

2. Venturi meter

3. Flow nozzle

4. Rotameter

**Question Number : 154 Question Id : 61097514382 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Liquid flow rate is measured using \_\_\_\_\_

**Options :**

1. A Pirani gauge

2. A pyrometer

3. An orifice plate
4. A Bourdon tube

**Question Number : 155 Question Id : 61097514383 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In the measurement of pH, a reference electrode made of ..... is used.

**Options :**

1. steel and consists of an inner assembly containing a solution of calomel and mercury
2. glass and consists of an inner assembly containing a solution of calomel and mercury
3. glass and consists of an inner assembly containing a solution of mercury
4. glass and consists of an inner assembly containing a solution of HCl

**Question Number : 156 Question Id : 61097514384 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Measurement of viscosity involves measuring \_\_\_\_\_

**Options :**

1. Frictional force



2. Corioli's force
3. Centrifugal force
4. Buoyant force

**Question Number : 157 Question Id : 61097514385 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The method that can be employed for measuring only fluid level is \_\_\_\_\_

**Options :**

1. Radioactive method
2. Bellows
3. Strain gauge
4. Bourdon tube

**Question Number : 158 Question Id : 61097514386 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The function of the reference electrode in a pH meter is to provide \_\_\_\_\_

**Options :**

1. A constant current



2. A constant voltage
3. Temperature compensation
4. A constant voltage and temperature compensation

**Question Number : 159 Question Id : 61097514387 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The method used for analysis of gases and their mixtures is \_\_\_\_\_

**Options :**

1. Thermal conductivity
2. Electrical conductivity
3. Relative humidity
4. Specific gravity

**Question Number : 160 Question Id : 61097514388 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Cascade control means \_\_\_\_\_

**Options :**

1. Feed forward control

2. More than one feedback loop
3. on-off control
4. one feedback loop

**Question Number : 161 Question Id : 61097514389 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Process degree of freedom indicates \_\_\_\_\_ number of controllers to be used

**Options :**

1. The maximum
2. The minimum
3. Both maximum and minimum
4. zero

**Question Number : 162 Question Id : 61097514390 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Reset rate is the another term used for \_\_\_\_\_ time

**Options :**

1. dead

2. Integral

3. Derivative

4. lag

**Question Number : 163 Question Id : 61097514391 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

On-off controllers are normally used for \_\_\_\_\_

**Options :**

1. low loads
2. temperature changes
3. flow rate changes
4. pressure changes

**Question Number : 164 Question Id : 61097514392 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The offset introduced by proportional controller with gain  $K_C$  in response of first order system can be reduced by \_\_\_\_\_

**Options :**



1. reducing value of  $K_c$
2. introducing integral control
3. introducing derivative control
4. increasing value of  $K_c$

**Question Number : 165 Question Id : 61097514393 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following system provides excellent transient and steady state response?

**Options :**

1. Proportional action
2. Proportional + Integral action
3. Proportional + Derivative action
4. Proportional + Integral + Derivative action

**Question Number : 166 Question Id : 61097514394 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No 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 : 167 Question Id : 61097514395 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The primary controller in a cascade control system must always be tuned \_\_\_\_\_

**Options :**

1. faster than the secondary
2. with the same parameters as the master
3. with greater filtering than the secondary
4. after the secondary is tuned

**Question Number : 168 Question Id : 61097514396 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The Ratio control is where \_\_\_\_\_

**Options :**

1. one variable is controlled in proportion to another
2. a wild flow variable sets the gain of the controller
3. process data is communicated in a digital format
4. the rate of one variable must remain fixed over time

**Question Number : 169 Question Id : 61097514397 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Adaptive gain is used for controlling \_\_\_\_\_ processes

**Options :**

1. non-linear
2. time invariant
3. dead time
4. integrating

**Question Number : 170 Question Id : 61097514398 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Identify the following line types from left to right.



**Options :**

1. pneumatic, electric, capillary, hydraulic
2. electric, pneumatic, digital network, filled system
3. pneumatic, electric, hydraulic, mechanical link
4. pneumatic, mechanical link, hydraulic, capillary

**Question Number : 171 Question Id : 61097514399 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

In CNC systems multiple microprocessors and programmable logic controllers work

\_\_\_\_\_

**Options :**

1. in parallel
2. in series
3. one after other
4. for 80% of the total machining time

**Question Number : 172 Question Id : 61097514400 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

What is the name for information sent from robot sensors to robot controllers?

**Options :**

1. temperature
2. pressure
3. feedback
4. signal

**Question Number : 173 Question Id : 61097514401 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The number of moveable joints in the base, the arm, and the end effectors of the robot

determines \_\_\_\_\_

**Options :**

1. degrees of freedom
2. payload capacity
3. operational limits
4. flexibility



**Question Number : 174 Question Id : 61097514402 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A band limited signal with highest frequency constant of 1000 Hz is undergoing sampling at uniform intervals. For recovery of the original signal in an unambiguous way, the sampling frequency should be necessarily greater than \_\_\_\_\_

**Options :**

1. 500 Hz
2. 100 Hz
3. 1500 Hz
4. 2000 Hz

**Question Number : 175 Question Id : 61097514403 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

A phase locked loop can be employed for demodulation of \_\_\_\_\_

**Options :**

1. Pulse amplitude modulation signal
2. Pulse code modulation signal
3. Frequency modulation signal
4. Signal side band amplitude modulation signals

Question Number : 176 Question Id : 61097514404 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

A sinusoidal signal of frequency 1 kHz is used to produce an FM signal with a modulation index  $\beta = 5$ . The bandwidth (where 98% of power is contained) of the FM signal is \_\_\_\_\_

Options :

1. 2 kHz
2. 3 kHz
3. 6 kHz
4. 12 kHz

Question Number : 177 Question Id : 61097514405 Question Type : MCQ Display Question

Number : Yes Is Question Mandatory : No Single Line Question Option : No Option

Orientation : Vertical

An op-amp has a common mode gain of 0.01 and a differential mode gain of  $10^5$ . Its CMRR would be \_\_\_\_\_

Options :

1.  $10^{-7}$
2.  $10^{-3}$
3.  $10^3$

4.  $10^7$

**Question Number : 178 Question Id : 61097514406 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

An ideal op-amp has the characteristics of an ideal \_\_\_\_\_

**Options :**

1. voltage controlled voltage source
2. voltage controlled current source
3. current controlled voltage source
4. current controlled current source

**Question Number : 179 Question Id : 61097514407 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

The zero level detector is one application of a \_\_\_\_\_

**Options :**

1. Differentiator
2. Integrator
3. Summing amplifier



4. Comparator

**Question Number : 180 Question Id : 61097514408 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A sinusoidal waveform can be converted to a square waveform by using a \_\_\_\_

**Options :**

1. two stage transistorized overdriven amplifier
2. two stage diode detector circuit
3. voltage comparator based op-amp
4. regenerative voltage comparator circuit

**Question Number : 181 Question Id : 61097514409 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Typically an instrumentation amplifier has an external resistor used for \_\_\_\_

**Options :**

1. establishing the input impedance
2. setting the voltage gain
3. setting the current gain



- interfacing with an instrument

**Question Number : 182 Question Id : 61097514410 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

IR spectroscopy \_\_\_\_\_

**Options :**

- Has a useful range of radiation from 2.5 to 15 microns
- Is unsuitable for analysis of mixture of metals
- Is unsuitable for analysis of organic gases
- Uses bolometer as one of the detectors

**Question Number : 183 Question Id : 61097514411 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In a spectrophotometer, the monochromator must be able to resolve two wavelengths

599.9 nm and 600.01 nm. The required resolution is \_\_\_\_\_

**Options :**

- 100
- 1000

3000  
3.

5000  
4.

**Question Number : 184 Question Id : 61097514412 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Beer Lambert's law gives the relation between which of the following?

**Options :**

1. Reflected radiation and concentration
2. Scattered radiation and concentration
3. Energy absorption and concentration
4. Energy absorption and reflected radiation

**Question Number : 185 Question Id : 61097514413 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In photometers, the readings of the specimen are initially obtained in the form of which of the following parameters?

**Options :**

1. Transmittance
- 2.

Absorption

3. Wavelengths
4. Volume

**Question Number : 186 Question Id : 61097514414 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following is the disadvantage of hydrogen, which can be used as carrier gas in gas chromatography?

**Options :**

1. dangerous to use
2. expensive
3. reduced sensitivity
4. high density

**Question Number : 187 Question Id : 61097514415 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following will improve the efficiency of the separation process in liquid chromatography?

**Options :**



1. Increase in sample size, increase in column diameter
2. Reduction in sample size, increase in column diameter
3. Increase in sample size, reduction in column diameter
4. Reduction in sample size, reduction in column diameter

**Question Number : 188 Question Id : 61097514416 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Process of changing resting potential to action potential is known as \_\_\_\_\_

**Options :**

1. Polarization
2. Re polarization
3. Depolarization
4. Uni polarization

**Question Number : 189 Question Id : 61097514417 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

Which of the following is useful for the measurement of action potentials of muscles?

**Options :**

1. ECG



2. EEG

3. EMG

4. ETS

**Question Number : 190 Question Id : 61097514418 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Korotkoff sounds are used \_\_\_\_\_

**Options :**

1. As a reference for sound level measurement
2. For studying heart muscle functioning
3. For blood pressure measurement
4. For study of heart valve functioning

**Question Number : 191 Question Id : 61097514419 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In an electromagnetic blood flow meter, the induced voltage is directly proportional to the \_\_\_\_\_

**Options :**

1. Blood flow rate

2. Square root of the blood flow rate
3. Square of the blood flow rate
4. Logarithm of the blood flow rate

**Question Number : 192 Question Id : 61097514420 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following is a preferred electrode for measuring EMG?

**Options :**

1. surface electrodes
2. needle electrodes
3. pre-gelled electrodes
4. scalp electrodes

**Question Number : 193 Question Id : 61097514421 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In PLC, which of the following bus is a bidirectional bus?

**Options :**

1. System bus

2. Control bus
3. Data bus
4. Address bus

**Question Number : 194 Question Id : 61097514422 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following instruction set is used to change the state of a function?

**Options :**

1. normally open
2. normally closed
3. latch unlatch
4. differentiation up

**Question Number : 195 Question Id : 61097514423 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The total response time of a PLC is \_\_\_\_\_

**Options :**

1. Sum of Input response time and Program execution time



2. Sum of Input response time and output response time
3. Sum of Program execution time and output response time
4. Sum of Input response time, Program execution time and output response time

**Question Number : 196 Question Id : 61097514424 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

When the 8051 micro controller executes some arithmetic operations, then the flag bits of which register are affected?

**Options :**

1. PSW
2. SP
3. DPTR
4. PC

**Question Number : 197 Question Id : 61097514425 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

What is the function of the TMOD register?

**Options :**

1. TMOD register is used to set different timers or counters to their appropriate modes



2. TMOD register is used to load the count of the timer.

3. Is the destination or the final register where the result is obtained after the operation of the timer

4. Is used to interrupt the timer

**Question Number : 198 Question Id : 61097514426 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A micro controller at-least should consist of \_\_\_\_\_

**Options :**

1. RAM, ROM, I O devices, serial and parallel ports and timers

2. CPU, RAM, I O devices, serial and parallel ports and timers

3. CPU, RAM, ROM, I O devices, serial and parallel ports and timers

4. CPU, ROM, I O devices and timers

**Question Number : 199 Question Id : 61097514427 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

How many pins of the 8255 can be used as the I O ports?

**Options :**

1. 8

2. 16

3. 24

4. 32

**Question Number : 200 Question Id : 61097514428 Question Type : MCQ Display Question**

**Number : Yes Is Question Mandatory : No Single Line Question Option : No Option**

**Orientation : Vertical**

When 8051 wakes up then 0x00 is loaded to which register?

**Options :**

1. DPTR

2. SP

3. PC

4. PSW