Question Paper Name:	Electronics and Instrumentation Engineering 30th April 2019 Shift1
Subject Name:	Electronics and Instrumentation Engineering
Share Answer Key With Delivery Engine:	Yes
Actual Answer Key:	Yes

Mathematics

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

Question Number : 1 Question Id : 67809439057 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

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

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

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

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

Question Number : 2 Question Id : 67809439058 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If A is a square matrix of order 3 then (adj A).A=

1. [illegible]

2. $A\times(\text{adj } A)$

3. $A-(\text{adj } A)$

4. $A+(\text{adj } A)$

Question Number : 3 Question Id : 67809439059 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The inverse of $A=\begin{pmatrix}2 & 3\\ 2 & 5\end{pmatrix}$ is

Options :

1. $\begin{pmatrix}5/4 & -3/4\\ 1/2 & 1/2\end{pmatrix}$

2. $\begin{pmatrix}5/4 & 3/4\\ -1/2 & 1/2\end{pmatrix}$

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

4. $\begin{pmatrix}5/4 & -3/4\\ -1/2 & 1/2\end{pmatrix}$

Question Number : 4 Question Id : 67809439060 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $11/12$

2. $-11/12$

3. $5/4$

4.

Question Number : 5 Question Id : 67809439061 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $A=\begin{pmatrix} 3 & 1 \\ -1 & 2 \end{pmatrix}$ then $A^2 - 5A + 7I$ is

Options :

1. $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$

2. $\begin{pmatrix} 0 & 3 \\ 2 & 0 \end{pmatrix}$

3. $\begin{pmatrix} 0 & 0 \\ 0 & 0 \end{pmatrix}$

4. $\begin{pmatrix} 2 & 3 \\ 2 & 5 \end{pmatrix}$

Question Number : 6 Question Id : 67809439062 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Resolve $\frac{3x+7}{(x-1)(x-2)}$ into partial fractions

Options :

1. $\frac{12}{(x-2)} - \frac{10}{(x-1)}$

2. $\frac{13}{(x-2)} - \frac{10}{(x-1)}$

3. $\frac{13}{(x-5)} - \frac{10}{(x-1)}$

4. $\frac{13}{(x-2)} - \frac{10}{(x-7)}$

Resolve $\frac{5x^2+1}{x^3-1}$ into partial fractions

Options :

1. $\frac{12}{(x-2)} - \frac{10}{(x-1)}$

2. $\frac{13}{(x-2)} - \frac{10}{(x-1)}$

3. $\frac{13}{(x-5)} - \frac{10}{(x-1)}$

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

Question Number : 8 Question Id : 67809439064 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $tan^2\theta + sec\theta = 5$ then the value of $\cos\theta$ is

Options :

1. $-1/3$ or $1/2$

2. $-11/12$ or $1/2$

3. $13/12$ or $-1/3$

4. $5/4$ or $1/2$

Question Number : 9 Question Id : 67809439065 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $16sin^3\theta + 8cos^3\theta$ is

Options :

1. 3

There is no correct option. All students will be given marks.

2. 1

4. 0

Question Number : 10 Question Id : 67809439066 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. ${}^{110}/_{105}$

2. $-{}^{121}/_{152}$

3. ${}^{220}/_{221}$

4. ${}^{5}/_{4}$

Question Number : 11 Question Id : 67809439067 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $cos20^0 cos40^0 cos60^0 cos80^0$ is

Options :

1. ${}^{11}/_{12}$

2. ${}^{1}/_{16}$

3. ${}^{13}/_{12}$

4. ${}^{5}/_{4}$

Question Number : 12 Question Id : 67809439068 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\frac{\cos 17^0 + \sin 17^0}{\cos 17^0 - \sin 17^0}$ is

2. $\tan 65^0$

3. $\tan 60^0$

4. $\tan 62^0$

Question Number : 13 Question Id : 67809439069 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\sin\frac{\pi}{5}\sin\frac{2\pi}{5}\sin\frac{3\pi}{5}\sin\frac{4\pi}{5} =$

Options :

1. $\frac{4}{15}$

2. $\frac{5}{16}$

3. $\frac{-5}{16}$

4. $\frac{7}{15}$

Question Number : 14 Question Id : 67809439070 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. -1

2. 3

3. 5

4. 1

Question Number : 15 Question Id : 67809439071 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The general solution of $4\cos^2 x - 3 = 0$ is

2. $2n\pi \pm \frac{7\pi}{6}$

3. $3n\pi \pm \frac{5\pi}{6}$

4. $2n\pi \pm \frac{11\pi}{6}$

Question Number : 16 Question Id : 67809439072 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The modulus of a complex number $\sqrt{3}+i$ is

Options :

1. -2

2. 3

3. 2

4. 5

Question Number : 17 Question Id : 67809439073 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $(a-b)^2 cos^2\left(\frac{C}{2}\right)+(a+b)^2 sin^2\left(\frac{C}{2}\right)$ is

Options :

1. C^3

2. C

3. C^5

4. C^2

Question Number : 18 Question Id : 67809439074 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

2. $-2\cos n\theta$

3. $3\cos\theta$

4. $2\sin n\theta$

Question Number : 19 Question Id : 67809439075 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $2tan^{-1}\left(\frac{1}{3}\right)+tan^{-1}\left(\frac{1}{7}\right)$ is

Options :

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

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

3. $\frac{\pi}{6}$

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

Question Number : 20 Question Id : 67809439076 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of the major axis of the ellipse: $4x^2+3y^2=48$ is

Options :

1. 10

2. 11

There is no correct option. All students will be given marks.

3. 12

4. 13

Question Number : 21 Question Id : 67809439077 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Centre of the ellipse: $9x^2+25y^2-18x+100y-116=0$ is

Options :

2. $(-1,-2)$

3. $(1,-2)$

4. $(1,2)$

Question Number : 22 Question Id : 67809439078 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation of the parabola with vertex $(2,-1)$ and focus $(2,-3)$ is

Options :

1. $x^2-4x+8y+12=0$

2. $x^2-4x-8y-12=0$

3. $x^2+4x-8y-12=0$

4. $x^2+5x-8y-11=0$

Question Number : 23 Question Id : 67809439079 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of the latus rectum of the hyperbola: $\frac{x^2}{9}-\frac{y^2}{16}=1$ is

Options :

1. 9 units

2. 5 units

There is no correct option. All students will be given marks.

3. 6 units

4. 13 units

Question Number : 24 Question Id : 67809439080 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the length of latus rectum is $\frac{9}{2}$ and the distance between its foci is 10 then the equation of hyperbola is

Options :

1.

2. $\frac{x^2}{18} - \frac{y^2}{9} = 1$

3. $\frac{x^2}{16} - \frac{y^2}{6} = 1$

4. $\frac{x^2}{16} - \frac{y^2}{9} = 1$

Question Number : 25 Question Id : 67809439081 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation of the parabola with focus at (-3.2) and vertex (-2.2) is

Options :

1. $x^2 - 4x + 8y + 12 = 0$

2. $x^2 + 5x - 8y - 11 = 0$

3. $y^2 + 4x - 4y + 12 = 0$

4. $x^2 - 4x - 8y - 12 = 0$

Question Number : 26 Question Id : 67809439082 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $y = \frac{a+bx}{b-ax}$ then the derivative of y with respect to x is

Options :

1. $\frac{a^2+b^2}{(b-ax)^2}$

2. $\frac{a^2+b^2}{(b+ax)^2}$

3. $\frac{a^2-b^2}{(b-ax)^2}$

4. $\frac{a+b}{(b-ax)^2}$

If $y = \frac{2+3\sinh x}{3+2\sinh x}$ then the derivative of y with respect to x is

Options :

1. $\frac{5\cosh x}{(3+2\sinh x)^2}$

2. $\frac{5\sinh x}{(3+2\sinh x)^2}$

3. $\frac{5\sin x}{(3-2\cosh x)^2}$

4. $\frac{sinh^2 x}{(2-3\sinh x)^2}$

Question Number : 28 Question Id : 67809439084 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The range of x for which the function $x^3 - 3x^2 - 45x + 2$ is increasing with x is

Options :

1. $(3,-5)$

2. $(-3,-5)$

There is no correct option. All students will be given marks.

3. $(3,5)$

4. $(-3,5)$

Question Number : 29 Question Id : 67809439085 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If u is a homogeneous function of x and y with degree n then $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y} =$

Options :

1. $-nu$

2. n^2u

3. nu

Question Number : 30 Question Id : 67809439086 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The angle between the curves $y = x^2 + 3x - 7$ and $y^2 = 2x + 5$ at $(2,3)$ is

Options :

1. $\tan\theta = 2$

2. $\sec\theta = 2$

3. $\cos\theta = 1$

4. $\sin\theta = 3$

Question Number : 31 Question Id : 67809439087 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum value of the function $2x^3 - 12x^2 + 18x + 5$ is

Options :

1. 13

2. 12

3. 10

4. 15

Question Number : 32 Question Id : 67809439088 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The three sides of a trapezium are equal each being 6" long then the area of the trapezium when it is maximum is

Options :

1. 27 square units

2. 33 square units

3. $27\sqrt{3}$ square units

4. $29\sqrt{3}$ square units

Orientation : Vertical

The interval in which the function $f(x) = x^2 log x$ is an increasing function is

Options :

1. $(1 , e^{-1/2})$

2. $(2 , e^{-1/2})$

3. $(0 , e^{1/2})$

4. $(0 , e^{-1/2})$

Question Number : 34 Question Id : 67809439090 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The stationary points and the corresponding values of the function $f(x) = x^3 - 9x^2 + 15x - 1$ is

Options :

1. 6.-26

2. 3.-26

3. 6.26

4. -6.-26

Question Number : 35 Question Id : 67809439091 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. 2

2. 4

3. 5

4. 1

Orientation : Vertical

The value of $\int \log x \, dx$ is

Options :

1. $x \log x + x + c$

2. $x^2 \log x - x + c$

3. $x \log x - x + c$

4. $x \log x - \frac{x^2}{2} + c$

Question Number : 37 Question Id : 67809439093 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\lim_{n\to\infty} \left[\frac{1}{n+1} + \frac{1}{n+2} + \cdots .. + \frac{1}{n+n}\right]$ is

Options :

1. $\log 2$

2. $\log 3$

3. $-\log 2$

4. $\log n$

Question Number : 38 Question Id : 67809439094 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int \frac{\cos\sqrt{x}}{\sqrt{x}} dx$ is

Options :

1. $2 \sin \sqrt{x} + c$

2. $3 \sin \sqrt{x} + c$

3. $2 \sin x + c$

Question Number : 39 Question Id : 67809439095 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The area enclosed between the curve $y^2 = 4ax$ and the line $x = 2y$ is

Options :

1. $\frac{64}{5}$ sq. units

2. $\frac{64}{3}$ sq. units

3. $\frac{65}{4}$ sq. units

4. $\frac{63}{4}$ sq. units

Question Number : 40 Question Id : 67809439096 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int_1^{\frac{\pi}{2}} sin^2x\,dx$ is

Options :

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

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

3. $\frac{\pi}{6}$

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

Question Number : 41 Question Id : 67809439097 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int_1^4 \left(\sqrt{x} + \frac{1}{\sqrt{x}}\right) dx$ is

Options :

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

2.

3. $\frac{10}{3}$

4. $\frac{15}{3}$

Question Number : 42 Question Id : 67809439098 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. -1

2. -3

3. 3

4. 1

Question Number : 43 Question Id : 67809439099 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. $\pi/4$

2. $-\pi/4$

3. $\pi/3$

4. $\pi/2$

Question Number : 44 Question Id : 67809439100 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The particular integral of $(D^2+5D+6)y = e^x$ is

1. $\frac{}{12}$

2. $\frac{e^{2x}}{12}$

3. $\frac{e^{x}}{12}$

4. $\frac{e^{x}}{6}$

Question Number : 45 Question Id : 67809439101 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Form the differential equation by eliminating the arbitrary constant a from $ay^2 = x^3$

Options :

1. $\frac{dy}{dx} = \frac{3y}{2x}$

2. $\frac{dy}{dx} = \frac{2x}{3y}$

3. $\frac{dy}{dx} = \frac{x}{y}$

4. $\frac{dy}{dx} = \frac{2y}{x}$

Question Number : 46 Question Id : 67809439102 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of $\frac{dy}{dx} + y = e^{-x}$ is

Options :

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

2. $(x - c)e^{x}$

3. $(x + c)e^{x}$

4. $(x + c)e^{-2x}$

Orientation : Vertical

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

Options :

1. $c_1e^{-x} + c_2e^{-2x}$

2. $c_1e^{x} + c_2e^{2x}$

3. $c_1e^{-x} + c_2e^{2x}$

4. $c_1e^{2x} + c_2e^{3x}$

Question Number : 48 Question Id : 67809439104 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of exact differential equation $2xy\,dx + x^2dy = 0$ is

Options :

1. $x^2y^2 = c$

2. $x^2y = c$

3. $x^3y = c$

4. $x^2y^3 = c$

Question Number : 49 Question Id : 67809439105 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Form the differential equation representing the family of curves $x^2 = 4ay$. where a is any arbitrary constant

Options :

1. $x\frac{dy}{dx} - 2y = 0$

2. $x\frac{dy}{dx} + 2y = 0$

3. $x\frac{dy}{dx} - 6y = 0$

4. $x\frac{dy}{dx} - y = 0$

Orientation : Vertical

The solution of $\frac{dy}{dx} + y \cot x = \cos x$ is

Options :

1. $y \sin x = \frac{-\cos 2x}{4} + C$

2. $y \sin x = \frac{\cos 2x}{4} + C$

3. $y \sin x = \frac{-\cos 5x}{4} + C$

4. $y \cos x = \frac{-\cos 2x}{4} + C$

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

Question Number : 51 Question Id : 67809439107 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the equation $\frac{\alpha}{t^2} = Fv + \frac{\beta}{x^2}$ the dimensional formula for [α], [β] is (here t = time, F= force, v = velocity, x = distance)

Options :

1. MLT^{-1}, MLT^{-3}

2. ML^2T, ML^4T^2

3. ML^2T^{-1}, ML^4T^{-3}

4. ML^3T^{-1}, MLT^{-3}

Question Number : 52 Question Id : 67809439108 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

2. Surface tension=N/m

3. Pressure = N/m^2

4. Energy=kg m/s

Question Number : 53 Question Id : 67809439109 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Three vectors A, B and C satisfy the relation A.B=0 and A.C=0. The vector A is parallel to

Options :

1. B

2. C

3. B.C

4. BxC

Question Number : 54 Question Id : 67809439110 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If three vectors A, B and C are 12, 5 and 13 in magnitude such that C=A+B, then the angle between A and B is

Options :

1. 60^0

2. 90^0

3. 120^0

4. 30^0

Question Number : 55 Question Id : 67809439111 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

after 3 seconds of its fall and then allowed to fall again. The time taken by the stone to reach the ground for the remaining distance is

Options :

1. 2 s

2. 6 s

3. 4 s

4. 1 s

Question Number : 56 Question Id : 67809439112 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The range of projectile fired at an angle of 15^0 is 50m. If it is fired with the same speed at an angle of 45^0, its range will be

Options :

1. 25 m

2. 37 m

3. 50 m

4. 100 m

Question Number : 57 Question Id : 67809439113 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A freely falling body acquires a velocity 'v' m/s in falling through a distance of 80m. How much further distance should it fall, so as to acquire a velocity of '2v' m/s?(Take g=10 m/s^2)

Options :

1. 240 m

2. 200 m

3. 400 m

4. 280 m

A block is projected along a rough horizontal road with a speed of 10 m/s. If the coefficient of kinetic friction is 0.10, how far will it travel before coming to rest ?

Options :

1. 50 m

2. 60 m

3. 40 m

4. 10 m

Question Number : 59 Question Id : 67809439115 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What force is required to push a 200 N body up a 30^0 smooth incline with an acceleration of 2 m/s^2? The force is to be applied along the plane is (Take g=10 m/s^2)

Options :

1. 40 N

2. 60 N

3. 80 N

4. 140 N

Question Number : 60 Question Id : 67809439116 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A block of mass 2 kg rests on a rough inclined plane making an angle of 30^0 with the horizontal. The coefficient of static friction between the block and the plane is 0.7. The frictional force on the block is

Options :

1. 9.8N

2. 0.78 x 9.8 N

3. 9.8 x √3 N

4. 0.7 x 9.8√3 N

Orientation : Vertical

A man moves on a straight horizontal road with a block of mass 2 kg in his hand. If he covers a distance of 40 m with an acceleration of 0.5 m/s^2, the work done by the man on the block during the motion is (Take g=10 m/s^2)

Options :

1. 40 J

2. 1 J

3. 80 J

4. 20 J

Question Number : 62 Question Id : 67809439118 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a factory it is desired to lift 2000 kg of metal through a distance of 12 m in 1 minute. The minimum horse power of the engine to be used is

Options :

1. 3.5

2. 5.3

3. 4.3

4. 5.8

Question Number : 63 Question Id : 67809439119 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. Hydel

2. Solar

3. Tidal

4. Geothermal

When a particle executing simple harmonic motion passes through the mean position, it has

Options :

1. minimum K.E and maximum P.E.

2. maximum K.E and maximum P.E.

3. maximum K.E and minimum P.E.

4. mimimum K.E. and mimimum P.E.

Question Number : 65 Question Id : 67809439121 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A particle of mass 200 g executes a simple harmonic motion. The restoring force is provided by a spring of spring constant 80 N/m. The time period is

Options :

1. 0.2 s

2. 0.41 s

3. 0.31 s

4. 0.5 s

Question Number : 66 Question Id : 67809439122 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The temperature at which the speed of sound will be double of its value at 0^0C is

Options :

1. 819^0 C

2. 850^0C

3. 919^0C

4. 900^0C

Question Number : 67 Question Id : 67809439123 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Options :

1. The frequency of the source is increased

2. The velocity of sound in the medium is increased

3. The wavelength of sound in the medium towards the observer is decreased

4. The amplitude of vibration of the particles is increased.

Question Number : 68 Question Id : 67809439124 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cinema hall has a volume of 7500 m^3. The total absorption in the hall if the reverberation time of 1.5 s is to be maintained is

Options :

1. 800 OWU

2. 925 OWU

3. 950 OWU

4. 825 OWU

Question Number : 69 Question Id : 67809439125 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

One mole of oxygen is heated at constant pressure starting at 0^0C. The heat energy that must be supplied to the gas to double its volume is

Options :

1. 2.5 x 273 x R

2. 3.5 x 273 x R

3. 2.5 x 546 x R

4. 3.5 x 546 x R

Question Number : 70 Question Id : 67809439126 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

of the gas is released and the temperature of the remaining gas is raised by 30°C, the new pressure will be

Options :

1. 12.24 atm

2. 11.67 atm

3. 13.79 atm

4. 11 atm

Question Number : 71 Question Id : 67809439127 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The temperature of 5 gm of air is raised from 0^0 C to 1^0 C. The increase in the internal energy of air is (C_v = 0.172 cal/gm/ ^{0}C and J = 4.18 x 10^7 erg/cal)

Options :

1. 3.595 x 10^7 erg

2. 3 x 10^7 erg

3. 4.5 x 10^7 erg

4. 2.595 x 10^7 erg

Question Number : 72 Question Id : 67809439128 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In all reversible processes entropy of the system

Options :

1. decreases

2. increases

3. remains constant

4. remains zero

Question Number : 73 Question Id : 67809439129 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

($\gamma = 7/5$), the value of γ for the mixture is

Options :

1. 1.40

2. 1.50

3. 1.53

4. 3.07

Question Number : 74 Question Id : 67809439130 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Electrons are emitted with zero velocity from a certain metal surface when it is exposed to radiations of wavelength 7000 A^0. The work function of the metal is

Options :

1. 1 eV

2. 1.52 eV

3. 2.52 eV

4. 1.77 eV

Question Number : 75 Question Id : 67809439131 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A superconducting material exhibits

Options :

1. zero conductivity and complete diamagnetism

2. zero resistivity and complete paramagnetism

3. infinite conductivity and complete paramagnetism

4. zero resistivity and complete diamagnetism

Question Number : 76 Question Id : 67809439132 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The splitting of spectral lines in a strong magnetic field is called

Options :

1. Stark effect

2. Pauli Exclusion Principle

3. Zeeman effect

4. Aufbau Principle

Question Number : 77 Question Id : 67809439133 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Bohr's model can explain

Options :

1. The spectrum of hydrogen atom only

2. The spectrum of hydrogen molecule

3. The solar spectrum

4. Spectrum of an atom or ion containing one electron only

Question Number : 78 Question Id : 67809439134 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum number of electrons that a d-orbital can accommodate is

Options :

1. 2

2. 6

3. 10

4. 14

Orientation : Vertical

Magnesium Atomic number is 12. which of the following is the electronic configuration

Options :

1. $1S^2\ 2S^1\ 2P^6\ 3S^2$

2. $1S^2\ 2S^2\ 2P^5\ 3S^2$

3. $1S^2\ 2S^2\ 2P^6\ 3S^2$

4. $1S^2\ 2S^2\ 2P^6\ 3S^1 3d^1$

Question Number : 80 Question Id : 67809439136 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

N_2 molecule contains

Options :

1. Covalent bond

2. Ionic bond

3. Hydrogen bond

4. Metalic bond

Question Number : 81 Question Id : 67809439137 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

One mole of any of the particles contains

Options :

1. $6.023X\ 10^{-23}$

2. $6.022X\ 10^{23}$

3. $60.23X\ 10^{23}$

4. $6.023X\ 10^{25}$

Question Number : 82 Question Id : 67809439138 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The normality of the solution obtained by dissolving 4 gm of NaOH in 1Litre is

2. 0.1N

3. 0.5N

4. 0.02N

Question Number : 83 Question Id : 67809439139 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Molecular weight of H_2SO_4 is

Options :

1. 92

2. 96

3. 98

4. 99

Question Number : 84 Question Id : 67809439140 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A Lewis acid is a substance which

Options :

1. Accept protons

2. Accept a lone pair of electrons

3. Donate protons

4. Donate a lone pair of electrons

Question Number : 85 Question Id : 67809439141 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

P^H of a solution is 9.5, the solution is

Options :

1. Basic

2. Acidic

4. Amphoteric

Question Number : 86 Question Id : 67809439142 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Laws of electrolysis were given by

Options :

1. Ostwald

2. Faraday

3. Arrhenius

4. Volta

Question Number : 87 Question Id : 67809439143 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Common electrolyte used in the salt bridge is

Options :

1. NaOH

2. $NaCO_3$

3. KCl

4. KOH

Question Number : 88 Question Id : 67809439144 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Standard Reduction Potential of an element is equal to

Options :

1. 1 X Its reduction potential

2. -1 X Its standard oxidation potential

3. -1 X Its reduction potential

4. 1 X Its standard oxidation potential

The standard emf for the cell reaction, $Zn+Cu^{+2} \rightarrow Cu + Zn^{2+}$ is 1.10 V at 25°C. The emf of the cell reaction when 0.1 M Cu^{+2} and 0.1 M Zn^{+2} solutions are used at 25°C is

Options :

1. 1.10V
2. 0.11V
3. -1.10V
4. -0.11V

Question Number : 90 Question Id : 67809439146 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which chemical is responsible for permanent hardness of water?

Options :

1. KCl
2. $MgCl_2$
3. NaCl
4. AgCl

Question Number : 91 Question Id : 67809439147 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Permutit is chemically

Options :

1. Sodium Silicate
2. Aluminium Silicate
3. Hydrated Sodium alumino silicate
4. Calicium silicate

Orientation : Vertical

The cation exchange resin possesses

Options :

1. Acidic group

2. Basic group

3. Amphoteric group

4. Benzo group

Question Number : 93 Question Id : 67809439149 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Chemically the rust is

Options :

1. Fe_2O_3

2. Fe_2O_3. FeO

3. $Fe_2O_3.XH_2O$

4. Fe_2O_3 . NH_3

Question Number : 94 Question Id : 67809439150 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Galvanizing is the process of coating iron with

Options :

1. Mg

2. Cu

3. Au

4. Zn

Question Number : 95 Question Id : 67809439151 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Options :

1. Bakelite

2. Polystyrene

3. Polythene

4. Nylon

Question Number : 96 Question Id : 67809439152 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Isoprene is a monomer of

Options :

1. Starch

2. Cellulose

3. Natural rubber

4. Lignin

Question Number : 97 Question Id : 67809439153 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Buna-S is a copolymer of

Options :

1. Butadiene and Styrene

2. Butadiene and Acrylonitrile

3. Butadiene and Isoprene

4. Formaldehyde and Styrene

Question Number : 98 Question Id : 67809439154 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Main constituent of natural gas is

2. Methane

3. Butane

4. Carbon Monoxide

Question Number : 99 Question Id : 67809439155 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Ozone layer is present at

Options :

1. Staratosphere

2. Inosphere

3. Thermosphere

4. Atmosphere

Question Number : 100 Question Id : 67809439156 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The amount of DO required to aerobically decompose biodegradable organic matter of a given volume of water is

Options :

1. Biochemical Oxygen Demand

2. Biological Oxygen Demand

3. Chemical Oxygen demand

4. Biomagnification

Electronics and Instrumentation Engineering

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

Two resistors R_1 and R_2 give combined resistance of 4.5 Ω when in series and 1Ω when in parallel, the resistances are

Options :

1. 2Ω and 2.5Ω

2. 1Ω and 3.5Ω

3. 1.5Ω and 3Ω

4. 4Ω and 0.5Ω

Question Number : 102 Question Id : 67809439158 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Three resistances each of R Ω are connected to form a triangle. The resistance between any two terminals will be _____

Options :

1. R Ω

2. 3R/2 Ω

3. 3R Ω

4. 2R/3 Ω

Question Number : 103 Question Id : 67809439159 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

While Thevenizing a circuit between two terminals, V_{TH} is equal to _____

Options :

1. short circuit terminal voltage

2. open circuit terminal voltage

3. net voltage available in the circuit

4. emf of the battery nearest to the terminals

Question Number : 104 Question Id : 67809439160 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Options :

1. transformer

2. choke

3. generator

4. thermocouple

Question Number : 105 Question Id : 67809439161 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The direction of rotation of a DC motor can be determined by _____

Options :

1. Fleming's right hand rule

2. Fleming's left hand rule

3. Lenz's law

4. Ampere law

Question Number : 106 Question Id : 67809439162 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The basic function of a transformer is to change _____

Options :

1. the level of the voltage

2. the power level

3. the power factor

4. the frequency

Question Number : 107 Question Id : 67809439163 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A Solar cell is actually a device which utilizes _____

Options :

2. Photovoltaic effect

3. Photoemissive effect

4. Photoresistive effect

Question Number : 108 Question Id : 67809439164 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Opto-coupler is used to _____

Options :

1. Reduce SCR turn-off time

2. Protect IGBTs against dv/dt

3. Regulate gate signal

4. Isolate gating circuitry from power lines

Question Number : 109 Question Id : 67809439165 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Induction heating takes place in _____

Options :

1. insulating material

2. conducting and magnetic materials only

3. conducting and non-magnetic materials only

4. conducting materials which may be magnetic or non-magnetic

Question Number : 110 Question Id : 67809439166 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In dielectric heating current flows through _____

Options :

1. air

3. metallic conductor

4. ionic discharge between dielectric medium and metallic conductor

Question Number : 111 Question Id : 67809439167 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The main drawback of resistance welding is _____

Options :

1. high initial as well as maintenance cost

2. difficult shapes and sections cannot be welded

3. only similar metals can be welded

4. parent metal is affected

Question Number : 112 Question Id : 67809439168 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following effects in the system is not caused by negative feedback?

Options :

1. reduction in gain

2. increase in bandwidth

3. increase in distortion

4. reduction in output impedance

Question Number : 113 Question Id : 67809439169 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The type number of the control system with $G(s)H(s)=\frac{K(s+2)}{s(s^2+2s+3)}$ is _____

Options :

1. one

2. two

4. four

Question Number : 114 Question Id : 67809439170 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A second order system is said to be critically damped if the damping factor (ξ) is

Options :

1. >1

2. <1

3. =1

4. =0.707

Question Number : 115 Question Id : 67809439171 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Using Routh's criterion, the number of roots in the right half s-plane for the characteristic equation: $s^4+2s^3+2s^2+3s+6=0$ is _

Options :

1. one

2. two

3. three

4. four

Question Number : 116 Question Id : 67809439172 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A device having characteristics very close to that of an ideal voltage source is __

Options :

1. vacuum diode

2. zener diode

3. transistor

Question Number : 117 Question Id : 67809439173 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The resistivity of a semiconductor is of the order of _____

Options :

1. 10^{-6} Ω-m

2. 10^{-6} to 100 Ω-m

3. 10^{-4} to 10^{4} Ω-m

4. above 10^{4} Ω-m

Question Number : 118 Question Id : 67809439174 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a P-N junction, the barrier potential offers opposition to only_____

Options :

1. holes in P-region

2. free electrons in N-region

3. majority carriers in both regions

4. minority carriers in both regions

Question Number : 119 Question Id : 67809439175 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For constructing a full wave rectifier _____ diodes are needed

Options :

1. at least two

2. more than two

3. at least four

4. more than four

For an NPN bipolar transistor, what is the main stream of current in the base region?

Options :

1. Drift of holes

2. Diffusion of holes

3. Drift of electrons

4. Diffusion of electrons

Question Number : 121 Question Id : 67809439177 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The drain-source voltage at which drain current becomes nearly constant is called _____

Options :

1. barrier voltage

2. breakdown voltage

3. pick-off voltage

4. pinch-off voltage

Question Number : 122 Question Id : 67809439178 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The effective channel length of a MOSFET in saturation decreases with increase in

Options :

1. gate voltage

2. drain voltage

3. source voltage

4. body voltage

Question Number : 123 Question Id : 67809439179 Display Question Number : Yes Single Line Question Option : No Option

Options :

1. remains always constant over a range of frequency

2. always increases with frequency

3. always decreases with frequency

4. always decreases with change in time

Question Number : 124 Question Id : 67809439180 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The circuit efficiency of a class A amplifier can be increased with _____

Options :

1. direct-coupled load

2. low DC power input

3. transformer coupled load

4. low rating resistor

Question Number : 125 Question Id : 67809439181 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Darlington pair is mainly used for _____

Options :

1. impedance matching

2. wideband voltage amplification

3. power amplification

4. reducing distortion

Question Number : 126 Question Id : 67809439182 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In an R-C phase shift oscillator, the minimum number of R-C networks to be connected in cascade will be

Options :

2. two

3. three

4. four

Question Number : 127 Question Id : 67809439183 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a Wien bridge oscillator. if the resistances in the positive feedback circuit are decreased, then the frequency

Options :

1. decreases

2. increases

3. remains the same

4. fluctuates in an erratic fashion

Question Number : 128 Question Id : 67809439184 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What is the addition of $(-64)_{10}$ and $(80)_{16}$?

Options :

1. $(-64)_{16}$

2. $(16)_{16}$

3. $(110000)_2$

4. $(01000000)_2$

Question Number : 129 Question Id : 67809439185 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The AND function can be realized by using only 'n' number of NOR gates. What is 'n' equal to

Options :

2. 3

3. 4

4. 5

Question Number : 130 Question Id : 67809439186 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A full adder can be made of _____

Options :

1. two half adders

2. two half adders and a NOR gate

3. two half adders and a OR gate

4. two half adders and a AND gate

Question Number : 131 Question Id : 67809439187 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following flip-flop is used as a latch?

Options :

1. J-K flip flop

2. RS flip flop

3. T flip flop

4. D flip flop

Question Number : 132 Question Id : 67809439188 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

D flip flop can be made from a J-K flip flop by making _____

Options :

1. J=K

3. J=0,K=1

4. J= $\overline{K}$

Question Number : 133 Question Id : 67809439189 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Among the following, the slowest ADC is _____

Options :

1. flash type

2. successive approximation type

3. integrating type

4. counting type

Question Number : 134 Question Id : 67809439190 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The measurement of very low and very high frequency is invariably done using a frequency counter/timer in the _____

Options :

1. frequency measurement mode only

2. period measurement mode only

3. frequency and period measurements modes respectively

4. period and frequency measurements modes respectively

Question Number : 135 Question Id : 67809439191 Display Question Number : Yes 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. 2n

3. 2^n

4. $\sqrt{2^n}$

Question Number : 136 Question Id : 67809439192 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a sequential circuit, the output state depends upon _____

Options :

1. past output states and present input states

2. input states only

3. input and output states

4. past input states

Question Number : 137 Question Id : 67809439193 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

AND operation of $(79)_{10}$ and $(-56)_{10}$ results in _____

Options :

1. 50 H

2. 48 H

3. 42 H

4. 08 H

Question Number : 138 Question Id : 67809439194 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 0-100 V voltmeter has an accuracy of 1 percent at full scale reading. What will be the error if it reads 50V?

Options :

1. 1%

2. 2%

4. 4%

Question Number : 139 Question Id : 67809439195 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An ammeter has a current range 0-5 A, and its internal resistance is 0.2 Ω. In order to change the range to 0-25 A, we need to add a resistance of

Options :

1. 0.8Ω in series with the meter

2. 1Ω in series with the meter

3. 0.04Ω in parallel with the meter

4. 0.05Ω in parallel with the meter

Question Number : 140 Question Id : 67809439196 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In measurements made using a Q-meter, high impedance elements should preferably be connected in

Options :

1. star

2. delta

3. series

4. parallel

Question Number : 141 Question Id : 67809439197 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What is the approximate input impedance of a CRO?

Options :

1. zero

2. 1MΩ

3. 10Ω

4. 10μΩ

Orientation : Vertical

The purpose of providing acquadag in CRT is to _____

Options :

1. increase fluorescence

2. increase phosphorescence

3. protect burning of screen

4. remove electro static charge accumulation

Question Number : 143 Question Id : 67809439199 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Spectrum analyzer is a combination of _____

Options :

1. narrow band super heterodyne receiver and CRO

2. signal generator and CRO

3. oscillator and wave analyzer

4. VTVM and CRO

Question Number : 144 Question Id : 67809439200 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The conversion of a voltage value to a time interval is carried out by comparing the unknown voltage with a voltage ramp in a

Options :

1. ramp type DVM

2. integrating type DVM

3. continuous type DVM

4. successive approximation type DVM

Question Number : 145 Question Id : 67809439201 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

resulting Lissajous pattern will be

Options :

1. a straight line

2. a circle

3. an ellipse

4. a figure of eight

Question Number : 146 Question Id : 67809439202 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following is a passive transducer?

Options :

1. Piezoelectric

2. thermocouple

3. photovoltaic cell

4. LVDT

Question Number : 147 Question Id : 67809439203 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The transducer that converts the input signal into the output signal, which is a continuous function of time, is known as _____ transducer

Options :

1. active

2. passive

3. analog

4. digital

Question Number : 148 Question Id : 67809439204 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A strain gauge is a passive transducer and is employed for converting _____

1. [illegible]

2. pressure into change of resistance

3. force into displacement

4. current into pressure

Question Number : 149 Question Id : 67809439205 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

RTDs have_____

Options :

1. positive temperature coefficient

2. negative temperature coefficient

3. either type of temperature coefficient

4. high tolerance

Question Number : 150 Question Id : 67809439206 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A fixed resistor of suitable value is usually connected across a thermistor to ___

Options :

1. decrease its resistance

2. increase its sensitivity

3. compensate its self heating effect

4. improve linearity

Question Number : 151 Question Id : 67809439207 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following thermocouples has the highest temperature measuring range?

Options :

1. Copper-Constantan

3. Alumel-Chromel

4. Platinum Rhodium - Platinum

Question Number : 152 Question Id : 67809439208 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What is a differential transformer?

Options :

1. constant pressure transducer

2. variable pressure transducer

3. constant displacement transducer

4. variable inductance transducer

Question Number : 153 Question Id : 67809439209 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The dynamic characteristics of capacitive transducers are similar to those of ___

Options :

1. low pass filter

2. high pass filter

3. notch filter

4. band stop filter

Question Number : 154 Question Id : 67809439210 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Piezoelectric crystals produce an emf_____

Options :

1. when external mechanical force is applied to it

2. when external magnetic field is applied

4. when the junction of two such crystals is heated

Question Number : 155 Question Id : 67809439211 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following is used to measure temperature inside a boiler furnace?

Options :

1. Resistance thermometer

2. Bimetallic thermometer

3. Optical pyrometer

4. Thermistor

Question Number : 156 Question Id : 67809439212 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A flow meter that is independent of liquid density is _____

Options :

1. rotameter

2. Electromagnetic flow meter

3. venturimeter

4. orifice meter

Question Number : 157 Question Id : 67809439213 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In radioactive method, the receiver measures fluid level by recording the ___

Options :

1. direction of rays

2. number of radioactive particles received

3. time taken by the rays in reaching the receiver

Question Number : 158 Question Id : 67809439214 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In hygrometers the principle of measurement is _____

Options :

1. change in resistance of salts with humidity

2. change in microwave power using klystron

3. change in thermal conductivity using thermistor

4. change in voltage with level variations

Question Number : 159 Question Id : 67809439215 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Measurements of flow, thermal conductivity and liquid level using thermistors make use of _____

Options :

1. resistance decrease with temperature

2. resistance increase with temperature

3. self heating phenomenon

4. change of resistivity

Question Number : 160 Question Id : 67809439216 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cascade controller is used when the process _____

Options :

1. gain is too small

2. gain is too large

3. has widely different time constants

4. oscillation at the output is not permitted

Control valve is a device that adjusts the value of the _____

Options :

1. controlled variable

2. manipulated variable

3. input variable

4. output variable

Question Number : 162 Question Id : 67809439218 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A temperature control system is usually very sluggish to improve its dynamics. Which of the following controller mode is useful?

Options :

1. a PI controller

2. an I controller

3. a PID controller

4. a PD controller

Question Number : 163 Question Id : 67809439219 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A first order system with a proportional controller exhibits an offset to step input. The offset can be reduced by

Options :

1. increasing the gain

2. adding integral mode

3. adding derivative mode

4. decreasing the gain

Question Number : 164 Question Id : 67809439220 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

introduced in the loop then _____

Options :

1. gain margin increases

2. phase margin remains the same

3. gain margin decreases

4. phase margin decreases

Question Number : 165 Question Id : 67809439221 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The transfer function of a basic PD controller is _____

Options :

1. $K_p+K_I/s+K_ds$

2. K_p+K_ds

3. $K_I/s+K_ds$

4. K_p+K_I/s

Question Number : 166 Question Id : 67809439222 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The proportional gain of a PID controller can be expressed in terms of its proportional band (PB) as

Options :

1. $K_p=PB$

2. $K_p=100/PB$

3. $K_p=PB/100$

4. $K_p=100xPB$

Question Number : 167 Question Id : 67809439223 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Options :

1. sensed signal

2. error signal

3. desired variable value

4. signal of fixed amplitude not dependent on desired variable value

Question Number : 168 Question Id : 67809439224 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An integral control is used to _____

Options :

1. improve the transient response

2. reduce the offset

3. improve rise time

4. reduce the settling time

Question Number : 169 Question Id : 67809439225 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When a process is controlled by a PID controller, the sensor has high measurement noise. How can this effect be reduced?

Options :

1. by use of band width limited derivative term

2. by use of high proportional band

3. by use of proportional and derivative terms in the forward path

4. by use of low integral gain

Question Number : 170 Question Id : 67809439226 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Ratio control system is a special type of _____ control system

Options :

2. ratio

3. feedback

4. feed forward

Question Number : 171 Question Id : 67809439227 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The PID controller is also called _____

Options :

1. on/off controller

2. reset controller

3. composite controller

4. anticipatory controller

Question Number : 172 Question Id : 67809439228 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In cascade control, if the manipulated variable affects both variables directly, the structure is called

Options :

1. series cascade control

2. parallel cascade control

3. hybrid cascade control

4. compound cascade control

Question Number : 173 Question Id : 67809439229 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following actuator is used for high speed and large power applications?

Options :

1. passive

3. hydraulic

4. pneumatic

Question Number : 174 Question Id : 67809439230 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Modulation is primarily accomplished to _____

Options :

1. produce side bands

2. mix two waves of different frequencies

3. transmit audio frequency signals over long distances

4. improves transmission efficiency

Question Number : 175 Question Id : 67809439231 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What is the power contained in SSB transmission when the carrier power is 1kW and the modulation index is 0.3?

Options :

1. 22.5 W

2. 90 W

3. 300 W

4. 1 kW

Question Number : 176 Question Id : 67809439232 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The most useful modulation technique for high fidelity audio broadcasting on radio in current practices is

Options :

1. amplitude modulation

2. frequency modulation

3. pulse amplitude modulation

Question Number : 177 Question Id : 67809439233 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In an optical fiber, the light beam propagates due to which one of the following?

Options :

1. simple reflection of light at a boundary between two media

2. Refraction of light in the medium

3. Total internal reflection at the boundary of the fiber

4. scattering of light in the medium

Question Number : 178 Question Id : 67809439234 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In an ideal op-amp, the voltage gain for the common mode signal is _____

Options :

1. 0

2. 0.5

3. 2.0

4. Infinity

Question Number : 179 Question Id : 67809439235 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The voltage gain of an ideal voltage follower is _____

Options :

1. 1

2. <1

3. 0

4. Infinity

Question Number : 180 Question Id : 67809439236 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Options :

1. high noise environment

2. medical equipment

3. test instruments

4. filter circuits

Question Number : 181 Question Id : 67809439237 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a step input, the output of an integrator is _____

Options :

1. a pulse

2. a triangular wave form

3. a spike

4. a ramp

Question Number : 182 Question Id : 67809439238 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

IR spectroscopy _____

Options :

1. has a useful range of radiation from 2.5 to 15 microns

2. is unsuitable for analysis of mixture of metals

3. is unsuitable for analysis of organic gases

4. uses bolometer as one of the detectors

Question Number : 183 Question Id : 67809439239 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a spectrophotometer, the monochromator must be able to resolve two wavelengths 599.9 nm and 600.1 nm. The required resolution is

2. 1000

3. 3000

4. 5000

Question Number : 184 Question Id : 67809439240 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a gas chromatograph, the gas which cannot be used as a carrier gas is _____

Options :

1. Helium

2. Nitrogen

3. Ammonia

4. both helium and nitrogen

Question Number : 185 Question Id : 67809439241 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A gas chromatograph is used for _____

Options :

1. measuring flow rate of a gas

2. measuring the temperature of a gas

3. measuring the pressure of a gas

4. analyzing the composition of a gas

Question Number : 186 Question Id : 67809439242 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The wavelength range for IR spectroscopy is _____

Options :

1. 200nm-400nm

3. 700nm-1000nm

4. 0nm-100nm

Question Number : 187 Question Id : 67809439243 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is used as detector in spectrophotometry?

Options :

1. photocell

2. RTD

3. LVDT

4. pyrometer

Question Number : 188 Question Id : 67809439244 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following instrument uses an ultrasonic transducer?

Options :

1. Echo-cardiograph

2. Electro-cardiograph

3. Electro encephalograph

4. Electromyogram

Question Number : 189 Question Id : 67809439245 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Among the electrodes which are used to record ECG signals, the one used for ground referencing is placed at

Options :

1. left arm

2. right leg

4. right arm

Question Number : 190 Question Id : 67809439246 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is useful for the recording of brain activities _____

Options :

1. ECG

2. EEG

3. EMG

4. pace maker

Question Number : 191 Question Id : 67809439247 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

To reduce the effect of electrode resistance changes. the input impedance of the EEG amplifier should be

Options :

1. equal to zero

2. equal to 1MΩ

3. less than 10MΩ

4. greater than 10MΩ

Question Number : 192 Question Id : 67809439248 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Electromyogram is used for the measurement of the _____

Options :

1. Blood flow

2. Action potential of muscles

3. activity of brain

Question Number : 193 Question Id : 67809439249 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Number of I/O ports in the 8051 microcontroller are _____

Options :

1. 3

2. 4

3. 5

4. 6

Question Number : 194 Question Id : 67809439250 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The 8051 can handle _____interrupt sources

Options :

1. 3

2. 4

3. 5

4. 6

Question Number : 195 Question Id : 67809439251 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The total external data memory that can be interfaced to the 8051 is _____

Options :

1. 32K

2. 64K

3. 128K

4. 256K

Orientation : Vertical

In 8051, bit addressable memory locations are _____

Options :

1. 10H through 1FH

2. 20H through 2FH

3. 30H through 3FH

4. 40H through 4FH

Question Number : 197 Question Id : 67809439253 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following commands will move the number 27H into the accumulator?

Options :

1. MOV A,P27

2. MOV A,#27H

3. MOV A,27H

4. MOV A,@27

Question Number : 198 Question Id : 67809439254 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

PLC is an acronym of _____ Logic Controller

Options :

1. Programmable

2. Peripheral

3. Periodic

4. Pneumatic

Question Number : 199 Question Id : 67809439255 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Options :

1. timer and counter are indexed by

2. one rung of ladder logic takes to get complete

3. the entire program takes to execute

4. the technician enters the program

Question Number : 200 Question Id : 67809439256 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An OR function implemented in Ladder logic uses _____

Options :

1. normally closed contacts in series

2. normally open contacts in series

3. normally closed contacts in parallel

4. normally open contacts in parallel