Question Paper Name:	Electronics and Instrumentation Engineering
Subject Name:	Electronics and Instrumentation Engineering
	Mathematics
Number of Questions:	50
Display Number Panel:	Yes
Group All Questions:	No

Question Number : 1 Question Id : 6780945404 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the traces of A and B are 20 and -8 then the trace of (A+B) is ____

Options :

1. 12

2. -12

3. 28

4. -28

Question Number : 2 Question Id : 6780945405 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $A = \begin{bmatrix} x & 1 \\ 1 & 0 \end{bmatrix}$ is an involutory matrix then $x=$

Options :

1. 0

2. -2

3. -1

4. 2

Question Number : 3 Question Id : 6780945406 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The determinant of $\begin{bmatrix} \log e & \log e^2 & \log e^3 \\ \log e^2 & \log e^3 & \log e^4 \\ \log e^3 & \log e^4 & \log e^5 \end{bmatrix}$ is ___

Options :

1. 0

2. 1

3. $4\log e$

4. $5\log e$

Question Number : 4 Question Id : 6780945407 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $A = \begin{bmatrix} 1 & 1 & 0 \\ 2 & 1 & 3 \\ 0 & 1 & 2 \end{bmatrix}$ then $\det(adjA) =$ ___

Options :

1. $\det A$

2. $\det A^2$

3. $-\det A$

4. $(\det A)^2$

Question Number : 5 Question Id : 6780945408 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If A, B are two matrices and $AB=B$, $BA=A$ then $A^2 + B^2 =$

Options :

1. $A+B$

2. $A-B$

3. AB

4. 0

Question Number : 6 Question Id : 6780945409 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\dfrac{3x+2}{(x+1)(2x^2+3)} = \dfrac{A}{x+1} + \dfrac{Bx+C}{2x^2+3}$, then $A+C-B = \underline{\hspace{1cm}}$

Options :

1. 0

2. 2

3. 3

4. 5

Question Number : 7 Question Id : 6780945410 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\dfrac{3x}{(x-a)(x-b)} = \dfrac{2}{x-a} + \dfrac{1}{x-b}$ then $a:b = \underline{\hspace{1cm}}$

Options :

1. $-2:1$

2. $2:1$

3. $1:2$

4. $3:1$

Question Number : 8 Question Id : 6780945411 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\tan 855° = \underline{\hspace{1cm}}$

Options :

1. 1

2. $\dfrac{1}{\sqrt{2}}$

3. -1

4. $-\dfrac{1}{\sqrt{2}}$

Question Number : 9 Question Id : 6780945412 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\tan \alpha = \dfrac{m}{m+1}$ and $\tan \beta = \dfrac{1}{2m+1}$ then $\tan(\alpha + \beta) = \underline{\hspace{1cm}}$

Options :

1. -1

2. 0

3. 1

4. 2

Question Number : 10 Question Id : 6780945413 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $6\sin 20° - 8\sin^3 20° =$

Options :

1. 2

2. $\dfrac{1}{\sqrt{2}}$

3. $\sqrt{3}$

4. $\dfrac{1}{\sqrt{3}}$

Question Number : 11 Question Id : 6780945414 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $3\sin\theta + 4\cos\theta = 5$ then the value of $4\sin\theta - 3\cos\theta =$

Options :

1. 0

2. -1

3. 1

4. 2

Question Number : 12 Question Id : 6780945415 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The sine function with period 3 is

Options :

1. $\sin\dfrac{2\pi x}{3}$

2. $\sin\dfrac{\pi x}{3}$

3. $\sin 3\pi x$

4. $\sin \dfrac{3\pi x}{2}$

Question Number : 13 Question Id : 6780945416 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum value of $3\sin^2 x + 5\cos^2 x$ is ____

Options :

1. 8

2. 3

3. 5

4. 34

Question Number : 14 Question Id : 6780945417 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation $\sqrt{3}\sin x + \cos x = 4$ has ____

Options :

1. Only one solution

2. two solutions

3. Infinite solutions

4. no solution

Question Number : 15 Question Id : 6780945418 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of $\cos^{-1}\left(\sqrt{3}x\right) + \cos^{-1} x = \dfrac{\pi}{2}$ is ___

Options :

1. $\dfrac{1}{2}$

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

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

4. $-\dfrac{1}{5}$

Question Number : 16 Question Id : 6780945419 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\sin\theta + \sin(\theta + 120°) - \sin(120° - \theta) = $ _____

Options :

1. 0

2. $\sin\theta$

3. 1

4. $-\sin\theta$

Question Number : 17 Question Id : 6780945420 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The principal solution of $3\,\text{Cosec}\,A = 4\,\text{Sin}\,A$ is _____

Options :

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

2. $\pm\dfrac{\pi}{3}$

3. $\pm\dfrac{\pi}{6}$

4. $\pm 2\pi$

Question Number : 18 Question Id : 6780945421 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\left| z^2 - 1 \right| = |z|^2 + 1$, then z lies in _____

Options :

1. The real axis

2. a circle

3. The imaginary axis

4. a parabola

Question Number : 19 Question Id : 6780945422 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\left(\dfrac{1+i}{1-i}\right)^3 - \left(\dfrac{1-i}{1+i}\right)^3 = a + ib$, then a an b are _____

Options :

1. 1,1

2. 2,-2

3. 0,-2

4. 0,-1

Question Number : 20 Question Id : 6780945423 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the line $y = 2x + c$ is a tangent to $x^2 + y^2 = 5$ then the value of c is _____

Options :

1. 2

2. 3

3. 4

4. 5

Question Number : 21 Question Id : 6780945424 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The vertex of the parabola $x^2 + 8x + 12y + 4 = 0$ is

Options :

1. $(-4, 1)$

2. $(4, -1)$

3. $(-4, -1)$

4. $(4, 1)$

Question Number : 22 Question Id : 6780945425 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The number of tangents to the ellipse $\dfrac{x^2}{4} + \dfrac{y^2}{2} = 1$ through $(2, 1)$ is _____

Options :

1. 0

2. 1

3. 2

4. 3

Question Number : 23 Question Id : 6780945426 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of the latus rectum of the hyperbola $x^2 - 4y^2 = 4$ is _____

Options :

1. 2

2. 1

3. 4

4. 3

Question Number : 24 Question Id : 6780945427 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of the diameter of the circle $x^2 + y^2 - 6x - 8y = 0$ is _____

Options :

1. 10

2. 15

3. 5

4. 20

Question Number : 25 Question Id : 6780945428 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the line $2y = 5x + k$ touches the parabola $y^2 = 6x$ then $k=$ ___

Options :

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

2. $\dfrac{4}{3}$

3. $\dfrac{3}{5}$

4. $\dfrac{6}{5}$

$$\lim_{x \to 2+} \frac{x|x-2|}{x-2} = \underline{\qquad}$$

Options :

1. 1

2. −1

3. 2

4. −2

If $f(x) = (1+x)^{\frac{2}{x}}$ is continuous at $x=0$ then $f(0) = \underline{\quad}$

Options :

1. e

2. e^2

3. e^3

4. e^4

If $x = a \sec\theta, y = b \tan\theta$ then $\dfrac{dy}{dx} = \underline{\quad}$

Options :

1. $\dfrac{b}{a}\sec\theta$

2. $\dfrac{b}{a}\csc\theta$

3. $\dfrac{a}{b}\sec\theta$

4. $\dfrac{a}{b}\csc\theta$

Question Number : 29 Question Id : 6780945432 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $x^y = e^{x-y}$ then $\dfrac{dy}{dx} = $ _____

Options :

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

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

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

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

Question Number : 30 Question Id : 6780945433 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $y = \sin^{-1}\left(\dfrac{x}{\sqrt{1+x^2}}\right)$ then $\dfrac{dy}{dx} = $ _____

Options :

1. $-\dfrac{1}{1+x^2}$

2. $\dfrac{1}{1+x^2}$

3. $\dfrac{2}{1+x^2}$

4. $-\dfrac{2}{1+x^2}$

Question Number : 31 Question Id : 6780945434 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The slope of the normal to the curve $x = a\sec\theta, y = a\tan\theta$ at $\theta = \dfrac{\pi}{6}$ is _____

Options :

1. 2

2. 0

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

4. 1

Question Number : 32 Question Id : 6780945435 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The rate of change of area of a circle with respect to radius when *r*=5cm is

Options :

1. 2π sq.cm/sec

2. 10π sq.cm/sec

3. 100π sq.cm/sec

4. 20π sq.cm/sec

Question Number : 33 Question Id : 6780945436 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following function has maxima or minima?

Options :

1. e^x

2. $\log x$

3. $x^3 + x^2 + x + 1$

4. $\sin x$

Question Number : 34 Question Id : 6780945437 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the increase in the side of a square is 2% then the approximate percentage increase in the area of the square is _____

Options :

1. 2

2. 4

3. 6

4. 8

Question Number : 35 Question Id : 6780945438 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For the function $f(x) = \log(x^2 + y^2)$, which of the following is true?

Options :

1. $f_x + f_y = 0$

2. $f_{xx} + f_{yy} = 0$

3. $f_x - f_y = 0$

4. $f_{xx} - f_{yy} = 0$

Question Number : 36 Question Id : 6780945439 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$\int \csc^5 \theta \cot \theta \, d\theta = \underline{\hspace{1cm}}$

Options :

1. $\dfrac{\cot^2 \theta}{2}$

2. $\dfrac{-\csc^5 \theta}{5}$

3. $\dfrac{\csc^6 \theta}{6}$

4. $\dfrac{-\csc^6 \theta}{6}$

Question Number : 37 Question Id : 6780945440 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$\displaystyle\int_2^3 \dfrac{dx}{x^2 - x} = \underline{\hspace{1cm}}$

Options :

1. $\log \dfrac{2}{3}$

2. $\log \dfrac{4}{3}$

3. $\log \dfrac{8}{3}$

4. $\log \dfrac{1}{4}$

Question Number : 38 Question Id : 6780945441 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $a < 0 < b$ then $\int_{a}^{b} \dfrac{|x|}{x} dx = \underline{\quad\quad}$

Options :

1. $b - a$

2. $a - b$

3. $a + b$

4. 0

Question Number : 39 Question Id : 6780945442 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$\int_{0}^{1} x \tan^{-1} x\, dx = \underline{\quad\quad}$

Options :

1. $\dfrac{\pi}{4} - \dfrac{1}{2}$

2. $\dfrac{\pi}{8} - \dfrac{1}{2}$

3. $\dfrac{\pi}{4} + \dfrac{1}{2}$

4. $\dfrac{\pi}{8} + \dfrac{1}{2}$

Question Number : 40 Question Id : 6780945443 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$\lim_{n \to \infty} \sum_{r=1}^{n} \dfrac{1}{n} e^{\frac{r}{n}} = \underline{\quad\quad}$

Options :

1. e

2. $(1+e)$

3. $(1-e)$

4. $(e-1)$

Question Number : 41 Question Id : 6780945444 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$$\int_0^{\pi/4} \sec^6 x\, dx = \underline{\hspace{2cm}}$$

Options :

1. $\dfrac{8}{3}$

2. $\dfrac{28}{15}$

3. $-\dfrac{28}{15}$

4. $\dfrac{4}{5}$

Question Number : 42 Question Id : 6780945445 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The area bounded by the curve $y = \log x$. x-axis and the straight line $x - e = 0$ is _____ square units

Options :

1. e

2. $(e-1)$

3. 0

4. $(1-e)$

Question Number : 43 Question Id : 6780945446 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The volume of the solid generated by rotating one arch of the curve $y = Sin3x$ about the x-axis is----

Options :

1. π^2

2. $\dfrac{\pi^2}{2}$

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

4. $\dfrac{\pi^2}{6}$

Question Number : 44 Question Id : 6780945447 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$y = cx - c^2$ is the general solution of the differential equation

Options :

1. $\left(\dfrac{dy}{dx}\right)^2 - x\left(\dfrac{dy}{dx}\right) + y = 0$

2. $\dfrac{d^2 y}{dx^2} = 0$

3. $\dfrac{dy}{dx} = c$

4. $\left(\dfrac{dy}{dx}\right)^2 + x\left(\dfrac{dy}{dx}\right) + y = 0$

Question Number : 45 Question Id : 6780945448 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The general solution of the differential equation $\dfrac{dy}{dx} + \dfrac{y}{3} = 1$ is

Options :

1. $y = 3 + ce^{\frac{x}{3}}$

2. $y = 3 + ce^{-\frac{x}{3}}$

3. $3y = c + e^{\frac{x}{3}}$

4. $3y = c + e^{-\frac{x}{3}}$

Question Number : 46 Question Id : 6780945449 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The differential equation corresponding to the family of curves $y = ae^{bx}$, where a and b are arbitrary constants, is ____

Options :

1. $\dfrac{d^2y}{dx^2} = y\dfrac{dy}{dx}$

2. $y\dfrac{d^2y}{dx^2} - \dfrac{dy}{dx} = 0$

3. $y\dfrac{d^2y}{dx^2} = \left(\dfrac{dy}{dx}\right)^2$

4. $\dfrac{dy}{dx} - y^2 = 0$

Question Number : 47 Question Id : 6780945450 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An integrating factor of the differential equation $(x^2y + y + 1)dx + (x + x^3)dy = 0$ is __

Options :

1. e^x

2. x^2

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

4. x

Question Number : 48 Question Id : 6780945451 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The differential equation whose solution is $Ax^2 + By^2$, where A,B are arbitrary constants are of ----

Options :

1. 1st order and 1st degree

2. 2nd order and 1st degree

3. 2nd order and 2nd degree

4. 1st order and 2nd degree

The general solution of the differential equation $\dfrac{d^2x}{dt^2} - 4\dfrac{dx}{dt} + 5x = 0$ is

Options :

1. $x = (c_1 \cos t + c_2 \sin t)e^{2t}$

2. $t = (c_1 \cos x + c_2 \sin x)e^{2x}$

3. $x = (c_1 \cos 2t + c_2 \sin 2t)e^{t}$

4. $t = (c_1 \cos 2x + c_2 \sin 2x)e^{x}$

The particular integral of $(D-2)^2 y = \sin 2x$ is

Options :

1. $\dfrac{\cos 2x}{8}$

2. $\dfrac{\sin 2x}{8}$

3. $\dfrac{-\cos 2x}{2}$

4. $\dfrac{-\sin 2x}{2}$

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

Question Number : 51 Question Id : 6780945454 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The unit of impulse is the same as that of

Options :

1. moment of force

2. linear momentum

3. force

4. pressure

Question Number : 52 Question Id : 6780945455 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the force is given by F = at+bt^2 where t is the time. The dimensions of a and b are

Options :

1. MLT^{-4}, MLT^{-2}

2. MLT^{-3}, MLT^{-4}

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

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

Question Number : 53 Question Id : 6780945456 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Vector parallel to $6\hat{\imath} + 8\hat{\jmath}$ and having a magnitude of 5 is

Options :

1. $4\hat{\imath} + 3\hat{\jmath}$

2. $12\hat{\imath} + 16\hat{\jmath}$

3. $16\hat{\imath} + 8\hat{\jmath}$

4. $3\hat{\imath} + 4\hat{\jmath}$

Question Number : 54 Question Id : 6780945457 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $|\vec{A} \times \vec{B}| = K(AB)$ then angle between $\vec{A}$ and $\vec{B}$ is

Options :

1. $\cos^{-1}K$

2. $\cos^{-1}(1/K)$

3. $\sin^{-1}K$

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

Question Number : 55 Question Id : 6780945458 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cricket ball is thrown at a speed of 28 m/s in a direction 30^0 above the horizontal. The maximum height reached by the ball is

Options :

1. 10 m

2. 20 m

3. 30 m

4. 40 m

Question Number : 56 Question Id : 6780945459 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two bodies are projected at angles of 45^0 and 60^0 with the horizontal with same velocity simultaneously. Ratio of their horizontal ranges is

Options :

1. $\sqrt{3} : 2$

2. $2 : \sqrt{3}$

3. $1 : 2$

4. $2 : 1$

Question Number : 57 Question Id : 6780945460 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A ball thrown by a boy is caught 2 seconds later by another at some distance away on the same level. If the angle of projection is 30^0, the velocity of projection is

Options :

1. 19.6 m/sec

2. 9.8 m/sec

3. 4.9 m/sec

4. 5.2 m/sec

Question Number : 58 Question Id : 6780945461 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 200 m wide river flows with a velocity of 5 m/sec. A man crosses the river in the shortest time of 25 sec. If there is no flow and he swims with the same velocity, the time taken to cross the river is

Options :

1. $\dfrac{200}{5\sqrt{3}}$ sec

2. 20 sec

3. 25 sec

4. $25\sqrt{2}$ sec

Question Number : 59 Question Id : 6780945462 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A body of mass 1 Kg lies on an inclined plane of angle 60^0 to the horizontal. If the coefficient of friction is 0.4, the frictional force along the inclined plane is

Options :

1. 1.96 N

2. 0.98 N

3. 0.49 N

4. 0.245 N

Question Number : 60 Question Id : 6780945463 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A force of 20 Kg weight is required to just slide a wooden box weighing 50 Kg over ice. Then coefficient of static friction between the surfaces in contact is

Options :

1. 0.2

2. 0.4

3. 0.8

4. 0.1

Question Number : 61 Question Id : 6780945464 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cyclist comes to a skidding stop in 10m. During this process, the force on the cycle due to the road is 200N and is directly opposed to the motion. The work done by the road on the cycle is

Options :

1. 1000 J

2. 2000J

3. -1000J

4. -2000J

Question Number : 62 Question Id : 6780945465 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A sphere of mass 4 Kg is dropped from a certain height. After 5s, its kinetic energy is $(g=10 \text{ m/s}^2)$

Options :

1. 5J

2. 50 J

3. 5 KJ

4. 50 KJ

Question Number : 63 Question Id : 6780945466 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An elevator weighing 500 kg is to be lifted up at a constant velocity of 0.20 m/s. What would be the minimum power of the motor to be used?

Options :

1. 100 W

2. 500 W

3. 980 W

4. 900 W

Question Number : 64 Question Id : 6780945467 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

At t=0, the displacement of a particle in SHM is half its amplitude. Its initial phase is   (referring to mean position)

Options :

1. $\dfrac{\pi}{6}$

2. $\dfrac{\pi}{3}$

3. $\dfrac{2\pi}{3}$

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

Question Number : 65 Question Id : 6780945468 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The length of seconds pendulum is 100 cm. To have a period half of this value, the length is to be reduced by

Options :

1. 25 cm

2. 75 cm

3. 50 cm

4. 100 cm

Question Number : 66 Question Id : 6780945469 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Inside a big hall, the reverberation time is

Options :

1. directly proportional to volume

2. inversely proportional to sound absorption

both directly proportional to volume

and

3. inversely proportional to sound absorption

4. depends on temperature

Question Number : 67 Question Id : 6780945470 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The voice of lion is different from that of a mosquito because

Options :

1. the sounds have different pitch

2. they are of different size

3. the two voices travel with different velocities

4. the sounds have different phases

Question Number : 68 Question Id : 6780945471 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A car is travelling at $\frac{v}{10}$ m/s and sounds horn of frequency 990 Hz. The apparent frequency heard by a police chasing the car at $\frac{v}{9}$ m/s (v is the velocity of sound) is

Options :

1. 990 Hz

2. 900 Hz

3. 100 Hz

4. 1000Hz

Question Number : 69 Question Id : 6780945472 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When ice cube melts and becomes water, the ice-water system undergoes a change such that

Options :

1. entropy of the system decreases and internal energy decreases

2. entropy of the system decreases and internal energy increases

entropy of the system increases and internal energy increases

3.

entropy of the system increases and internal energy decreases

4.

Question Number : 70 Question Id : 6780945473 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A mass of 300 gm falls from a height of 3 m($g=9.8$ m/s^2). Assuming that the whole energy is converted into heat, the amount of heat produced is

Options :

1. 2 cal

2. 2.1 cal

3. 4 cal

4. 4.2 cal

Question Number : 71 Question Id : 6780945474 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

During an adiabatic expansion of 2 moles of a gas, the change in internal energy was found to be equal to 100 J. The work done during the process will be equal to

Options :

1. zero

2. -100 J

3. 200 J

4. 100 J

Question Number : 72 Question Id : 6780945475 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The pressure and density of a diatomic gas ($\gamma = \frac{7}{5}$) change adiabatically from

(P,d) to (P^1,d^1). If $\frac{d^1}{d} = 32$, then $\frac{P^1}{P}$ is

Options :

1. 128

2. 32

3. 256

4. 64

Question Number : 73 Question Id : 6780945476 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Boyle's law holds good for an ideal gas during

Options :

1. isobaric changes

2. isothermal changes

3. isochoric changes

4. isotopic changes

Question Number : 74 Question Id : 6780945477 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The threshold frequency of metal is v_0. When a light of frequency $4 v_0$ is incident on metal   then the $K.E_{max}$ of emitted electrons is

Options :

1. $2 v_0 h$

2. $3 v_0 h$

3. $4 v_0 h$

4. $v_0 h$

Question Number : 75 Question Id : 6780945478 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Superconductors are _____ materials

Options :

1. dielectric

2. paramagnetic

3. ferromagnetic

4. diamagnetic

Question Number : 76 Question Id : 6780945479 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Pauli exclusion principle is concerned with

Options :

1. Energy of orbital.

2. Spin of electron.

3. Energy of electron

4. Angular momentum of electron

Question Number : 77 Question Id : 6780945480 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

According to Bohr's model of hydrogen atom, the following is quantized

Options :

1. Linear momentum

2. Linear velocity

3. Angular momentum

4. Angular velocity

Question Number : 78 Question Id : 6780945481 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

How many 'd' – orbitals have two perpendicular nodal planes

Options :

1. Two

2. Three

3. Four

4. Five

Question Number : 79 Question Id : 6780945482 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In sodium chloride crystal, each Na$^+$ ion is surrounded by

Options :

1. Two Cl$^-$ ions

2. Four Cl$^-$ ions

3. Six Cl$^-$ ions

4. Eight Cl$^-$ ions

Question Number : 80 Question Id : 6780945483 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which among the following molecule contains a π – bond

Options :

1. H$_2$

2. O$_2$

3. F$_2$

4. HCl

Question Number : 81 Question Id : 6780945484 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which among the following is insoluble in water?

Options :

1. Alcohol

2. Ammonia

3. Benzene

4. Acetone

Question Number : 82 Question Id : 6780945485 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The normality of 2.3 M H$_2$SO$_4$ solution is

Options :

1. 0.46N

2. 0.23 N

3. 2.3 N

4. 4.6N

8 grams of substance of molecular weight 40 is dissolved in 250 g of water. Then the **molality** of the solution is

Options :

1. 0.4

2. 0.8

3. 0.2

4. 0.6

The pH   value   of $0.05M\ Ba(OH)_2$ solution is

Options :

1. 10

2. 12

3. 13

4. 11

Which of the following molecule is not a Lewis Base?

Options :

1. H_2O

2. BF_3

3. NH_3

4. CO

During the electrolysis of brine, 710 g of Cl_2 was liberated at anode. The weight of NaOH formed

Options :

1. 800 g

2. 400 g

3. 80 g

4. 40 g

Question Number : 87 Question Id : 6780945490 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the Danniel cell, which electrode acts as anode?

Options :

1. Cu

2. Hg

3. Zn

4. Pt

Question Number : 88 Question Id : 6780945491 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The molar conductance of HCl is more than that of NaCl because

Options :

1. NaCl is more polar than KCl

2. NaCl is ionic while HCl is covalent

3. Ionic mobility of H^+ is more than that of Na^+

4. H^+ get hydrated.

Question Number : 89 Question Id : 6780945492 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The units for electrochemical equivalent are

Options :

1. grams

2. grams ampere

3. Coulomb

4. Grams per coulomb

Question Number : 90 Question Id : 6780945493 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Zeolite softening process removes

Options :

1. Only permanent hardness of water

2. Only temporary hardness of water

3. Both temporary and permanent hardness of water

4. The dissolved gases in permanent hard water.

Question Number : 91 Question Id : 6780945494 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The permanent hardness of water is caused by the presence of

Options :

1. Bicarbonates of Ca and Mg

2. Carbonates of Na and K

3. Chlorides and Sulphates of Ca and Mg.

4. Phosphates of Na and K

Question Number : 92 Question Id : 6780945495 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The secondary treatment of water uses _____ to consume wastes in water.

Options :

1. Filtration

2. Sedimentation

3. Chemicals

4. Microorganisms

Question Number : 93 Question Id : 6780945496 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Difficult to monitor and very dangerous form of corrosion is

Options :

1. Galvanic

2. Pitting

3. Crevice

4. Stress

Question Number : 94 Question Id : 6780945497 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When Pt and Co are electrically connected, which one gets corroded?

Options :

1. Co

2. Pt

3. None

4. both

Question Number : 95 Question Id : 6780945498 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

What rubber was invented when Dr. Joseph C. Patrick tried to make antifreeze?

Options :

1. Methyl rubber

2. Chloroprene

3. Bruna N

4. Thiokol

Question Number : 96 Question Id : 6780945499 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The first plastic ever synthesized was called _____.

Options :

1. Bakelite

2. Nylon

3. Dacron

4. Cellulose

Question Number : 97 Question Id : 6780945500 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ is a brand of polyester textile fiber that is wrinkle resistant and strong

Options :

1. Cellulose

2. Dacron

3. Bakelite

4. Nylon

Question Number : 98 Question Id : 6780945501 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Water gas is a mixture of

Options :

1. $H_2 + CO$

2. $N_2 + CO$

3. $H_2 + CO_2$

4. $H_2 + CH_4$

Question Number : 99 Question Id : 6780945502 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a greenhouse gas?

Options :

1. CO

2. CO_2

3. water vapour

4. CH_4

Question Number : 100 Question Id : 6780945503 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Burning of fossil fuels causes

Options :

1. Global warming

2. Ozone depletion

3. Acid rain

4. Eutrophication

Question Number : 101 Question Id : 6780945504 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two resistors R_1 and R_2 give combined resistance of 4.5Ω 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 : 6780945505 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Three resistances each of R Ω are connected to from a triangle. The resistance between any two terminals will be_____

Options :

1. R Ω

2. (3/2)R Ω

3. 3R Ω

4. (2/3)R Ω

Question Number : 103 Question Id : 6780945506 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The terminals across the source are _____ if a current source is to be neglected.

Options :

1. Open circuited

2. Short circuited

3. Replaced by a capacitor

4. Replaced by a inductor

Question Number : 104 Question Id : 6780945507 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The principle of a dynamically induced emf is utilized in _____

Options :

1. Transformer

2. Choke

3. DC generator

4. Thermocouple

Question Number : 105 Question Id : 6780945508 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a part of D.C Machine?

Options :

1. Armature

2. Commutator

3. Field winding

4. Damper winding

Question Number : 106 Question Id : 6780945509 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The armature of a D.C Machine is laminated to reduce the _____ loss

Options :

1. Hysteresis

2. Eddy current

3. Mass

4. Inductance

Question Number : 107 Question Id : 6780945510 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A solar cell is a device which utilizes_____

Options :

1. Photoconductive effect

2. Photovoltaic effect

3. Photo emissive effect

4. Photo resistive effect

Question Number : 108 Question Id : 6780945511 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Dot matrix display is used to display _____

Options :

1. Only numeric characters
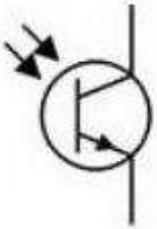
2. Only alphanumeric characters

3. Only special characters

4. Numeric and alphanumeric characters

Question Number : 109 Question Id : 6780945512 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

 represents_____

Options :

1. N-P-N photo transistor

2. P-N-P photo transistor

3. Photo multiplier

4. Photo diode

Question Number : 110 Question Id : 6780945513 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A photo conductive cell is useful for_____

Options :

1. High frequency applications

2. Very high frequency applications

3. Low frequency applications

4. Medium frequency applications

Question Number : 111 Question Id : 6780945514 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Induction heating process is based on which of the following principles?

Options :

1. Thermal ion release principle

2. Nucleate heating principle

3. Resistance heating principle

4. Electromagnetic induction principle

Question Number : 112 Question Id : 6780945515 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The transfer function is defined as the Laplace transform of the response for a ___

Options :

1. Step input

2. Impulse input

3. Ramp input

4. Parabolic input

Question Number : 113 Question Id : 6780945516 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In signal flow graph analysis, a node which has both incoming and outgoing branches is called_____

Options :

1. Input node

2. Output node

3. Mixed node

4. General node

Question Number : 114 Question Id : 6780945517 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a second order un damped system, the poles are _____

Options :

1. Purely imaginary

2. Real and equal

3. Real and unequal

4. Complex conjugate

Question Number : 115 Question Id : 6780945518 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The open loop transfer function of a control system has 5 poles and 3 zeros. The number of asymptotes is equal to _____

Options :

1. 5

2. 3

3. 2

4. 8

Question Number : 116 Question Id : 6780945519 Display Question Number : Yes 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 short circuit for AC of high frequency?

Options :

1. Inductor

2. Capacitor

3. Resistor

4. SCR

Question Number : 117 Question Id : 6780945520 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The colour code of a 1kΩ resistance is _____

Options :

1. Black, Brown, Red

2. Red, Brown, Brown

3. Brown, Black, Red

4. Black, Black, Red

Question Number : 118 Question Id : 6780945521 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Fermi level is the _____

Options :

1. Highest occupied energy level at 0^0 K

2. Highest occupied energy level at 0^0 C

3. Energy level at which electron emission occurs

4. Minimum energy level in the conduction band

Question Number : 119 Question Id : 6780945522 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The width of depletion layer of a P-N junction_____

Options :

1. Decreases with light doping

2. Increases with heavy doping

3. is independent of applied voltage

4. is increased under reverse bias

Question Number : 120 Question Id : 6780945523 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For constructing a full wave rectifier _____ no. of diodes are Needed

Options :

1. At least two

2. More than two

3. At least four

More than four

Question Number : 121 Question Id : 6780945524 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In an N-P-N transistor, the leakage current is due to _____

Options :

1. Flow of minority carriers from collector to emitter

2. Flow of holes from base to emitter

3. Flow of electrons from collector to base

4. Flow of holes from collector to base

Question Number : 122 Question Id : 6780945525 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The unity gain bandwidth f_T of FET is given by _____

Options :

1. $g_m/2pC_{sg}$

2. $C_{sg}/2pfg_m$

3. $g_m/2pfC_{sg}$

4. $C_{sg}/2pg_m$

Question Number : 123 Question Id : 6780945526 Display Question Number : Yes 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 : 6780945527 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In an R-C coupled amplifier, the voltage gain _____

Options :

1. Infinity

2. Always increases with frequency

3. Remains almost constant over a range of frequency

4. Always decreases with frequency

Question Number : 125 Question Id : 6780945528 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 :

1. One

2. Two

3. Four

4. Three

Question Number : 126 Question Id : 6780945529 Display Question Number : Yes 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

Question Number : 127 Question Id : 6780945530 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In an Wien bridge oscillator, the positive feedback attenuation is _____

Options :

1. 1/3

2. 1/29

3. -29

4. 3

The decimal equivalent of hexadecimal number 2AOF is

Options :

1. 17670

2. 17607

3. 17067

4. 10767

When an input electrical signal A=101010 is applied to a NOT gate, the output signal will be _____

Options :

1. 111010

2. 101010

3. 010101

4. 101011

A combinational circuit

Options :

1. Always contains memory elements

2. Never contains memory elements

3. May sometimes contain memory elements

4. Contains only memory elements

The logic circuit given in the following figure represents_____
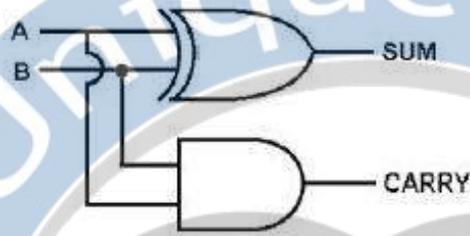
Options :

1. Full adder

2. Half adder

3. Half subtractor

4. Boolean multiplier

Question Number : 132 Question Id : 6780945535 Display Question Number : Yes 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 : 133 Question Id : 6780945536 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

2. J=K=1

3. J=0, K=1

4. J=$\overline{K}$

Question Number : 134 Question Id : 6780945537 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum possible number of states in a ripple counter with 5 flip flops is _

Options :

1. 32

2. 15

3. 10

4. 5

Among the following four, the slowest ADC is _____

Options :

1. Flash type

2. Successive approximation type

3. Integrating type

4. Counting type

A Digital to Analog converter with a full scale output voltage of 3.5 V has a resolution close to 14 mV. Its bit size is_____

Options :

1. 4

2. 8

3. 16

4. 32

Why does an increase of the RAM of a computer typically improve performance?

Options :

1. Virtual memory increase

2. Larger RAMs are faster

3. Fewer page faults occur

4. Fewer segmentation faults occur

Question Number : 138 Question Id : 6780945541 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A very accurate voltmeter gives inaccurate reading when used for measuring voltage across a low resistance because _____

Options :

1. The meter sensitivity is too low

2. The meter sensitivity is too high

3. The voltmeter is taking too low current

4. The higher scale has been selected

Question Number : 139 Question Id : 6780945542 Display Question Number : Yes 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 : 140 Question Id : 6780945543 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The shunt type ohmmeter is not suitable for high resistance measurements because_____

Options :

1. Very low resistance of the meter would short the high unknown resistance

2. Scale is highly cramped for high resistance values

3. Full scale value of the meter may be exceeded

4. Battery cannot supply the necessary current for proper meter deflection

Question Number : 141 Question Id : 6780945544 Display Question Number : Yes 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 : 142 Question Id : 6780945545 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. 1 MΩ

3. 10 Ω

4. 10 μΩ

Question Number : 143 Question Id : 6780945546 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The X and Y inputs of a CRO are respectively V Sin ωt and -V Sin ωt. The resultant Lissajous pattern will be _____

Options :

1. A straight line

2. A circle

3. An ellipse

4. A figure of eight

Question Number : 144 Question Id : 6780945547 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In distortion factor meter, the filter is used to suppress _____

Options :

1. DC component

2. Odd harmonics

3. Even harmonics

4. Fundamentals

Question Number : 145 Question Id : 6780945548 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 : 146 Question Id : 6780945549 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 : 6780945550 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The sensitivity factor of strain gauge is normally of the order of

Options :

1. 1 to 1.5

2. 1.5 to 2

3. 0.5 to 1

4. 5 to 10

Question Number : 148 Question Id : 6780945551 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 coefficients

4. High tolerance

Question Number : 149 Question Id : 6780945552 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

2. Iron - Constantan

3. Alumel - Chromel

4. Platinum Rhodium – Platinum

Question Number : 150 Question Id : 6780945553 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The principle of operation of LVDT is based on variation of

Options :

1. Self inductance

2. Mutual inductance

3. Reluctance

4. Permeance

Question Number : 151 Question Id : 6780945554 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 : 152 Question Id : 6780945555 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The piezoelectric crystal voltage sensitivity is defined as

Options :

1. Field developed per unit force

2. Field developed per unit stress

3. Voltage developed per unit stress

4. Voltage developed per unit force

Question Number : 153 Question Id : 6780945556 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. Venturi meter

4. Orifice meter

Question Number : 154 Question Id : 6780945557 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following can be employed for measuring only fluid level

Options :

1. Radioactive flow method

2. Electromagnetic Flow Method

3. Electrostatic Flow Method

4. Ultrasonic Flow Method

Question Number : 155 Question Id : 6780945558 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The non contact method of measuring thickness or density of cold or hot materials while in motion or when stationary is

Options :

1. Inductive

2. Capacitive

3. Nuclear radiation

4. Ultrasonic

Question Number : 156 Question Id : 6780945559 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 thermal conductivity using thermostat

Question Number : 157 Question Id : 6780945560 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. Self heating phenomenon

2. Resistance increases with temperature

3. Resistance decreases with temperature

4. Change of resistivity

Question Number : 158 Question Id : 6780945561 Display Question Number : Yes 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. Pressure

Question Number : 159 Question Id : 6780945562 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Self generating type transducers are _____ transducers

Options :

1. Active

2. Passive

3. Secondary

4. Inverse

Question Number : 160 Question Id : 6780945563 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

Question Number : 161 Question Id : 6780945564 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. controlled variable

2. manipulated variable

3. input variable

4. output variable

Question Number : 162 Question Id : 6780945565 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If 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 can be used

2. an I controller can be used

3. a PID controller can be used

4. a PD controller can be used

Question Number : 163 Question Id : 6780945566 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 : 6780945567 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A plant is controlled by a proportional controller. If a time delay element is 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 : 6780945568 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following controller is also known as Reset Controller?

Options :

1. Proportional

2. Derivative

3. Integral

4. Proportional + Derivative

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. $K_p = 100 \times PB$

Which of the following control mode anticipates future errors?

Options :

1. Derivative

2. Proportional + Integral

3. Integral

4. Proportional

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

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 : 6780945573 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Ratio control system is a special type of _____ control System

Options :

1. cascade

2. Distributive

3. feedback

4. feed forward

Question Number : 171 Question Id : 6780945574 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In cascade control, if the manipulated variable affects one variable, which in turn affects a second controlled variable, the structure is called_____

Options :

1. Series cascade control

2. Parallel cascade control

3. Hybrid cascade control

4. Compound cascade control

Question Number : 172 Question Id : 6780945575 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In adaptive control system, the control includes_____

Options :

1. Only Controller and Performance index

2. Only Controller and adjustment algorithm

3. Only Performance index and adjustment algorithm

4. Controller, Performance index and adjustment algorithm

Question Number : 173 Question Id : 6780945576 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

2. electrical

3. hydraulic

4. pneumatic

Question Number : 174 Question Id : 6780945577 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A Schmitt trigger converts slowly varying waveform into

Options :

1. Sine wave

2. Saw tooth wave

3. Triangular wave

4. Square wave

Question Number : 175 Question Id : 6780945578 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Modulation is primarily accomplished to _____

Options :

1. Produce sidebands

2. Mix two waves of different frequencies

3. Transmit audio-frequency signals over long distances

4. Improve transmission efficiency

In amplitude modulation, the modulation envelope has a peak value which is double the unmodulated carrier value. What is the value of the modulation index?

Options :

1. 25%

2. 50%

3. 75%

4. 100%

Which of the following modulated signals can be detected by an envelope detector?

Options :

1. DSB-suppressed carrier

2. DSB-full carrier

3. Frequency modulated signal

4. SSB-supported carrier

The type of multivibrator used for generation of clock pulses is

Options :

1. Monostable multivibrator

2. Astable multivibrator

3. Bistable multivibrator

4. Schmitt trigger

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

Options :

1. 0

2. 0.5

3. 2

4. Infinity

Question Number : 180 Question Id : 6780945583 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Instrumentation amplifiers are used primarily in _____

Options :

1. High noise environment

2. Medical equipment

3. Test instruments

4. Filter circuits

Question Number : 181 Question Id : 6780945584 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A 555 timer consists of _____

Options :

1. Two comparators, one flip-flop and one transistor

2. Only operational amplifiers

3. One comparator, one flip-flop

4. One comparator and one transistor

Question Number : 182 Question Id : 6780945585 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 : 6780945586 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

Options :

1. 100

2. 1000

3. 3000

4. 5000

Question Number : 184 Question Id : 6780945587 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 : 6780945588 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 : 6780945589 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The wavelength range for IR spectroscopy is _____

Options :

1. 200nm-400nm

2. 400nm-700nm

3. 700nm-1000nm

4. 0nm-100nm

Question Number : 187 Question Id : 6780945590 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 : 6780945591 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 : 6780945592 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

3. left leg

4. right arm

Question Number : 190 Question Id : 6780945593 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

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

Electromyogram is used for the measurement of the _____

Options :

1. Blood flow

2. Action potential of muscles

3. activity of brain

4. cardiac activity

Which of the following register is used to store operands for multiply and divide instructions?

Options :

1. Accumulator

2. B register

3. program status word

4. serial data buffer

Question Number : 194 Question Id : 6780945597 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Among the following special function registers which is a bit addressable register?

Options :

1. SP

2. SCON

3. DPH

4. TMOD

Question Number : 195 Question Id : 6780945598 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The instruction: MOV A, #100 represents which of the following addressing modes?

Options :

1. Direct addressing

2. Indirect addressing

3. Indexed addressing

4. Immediate mode of addressing

Question Number : 196 Question Id : 6780945599 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following 8051 interfacing peripheral acts as a DMA Controller?

Options :

1. 8255

2. 8251

3. 8257

4. 8259

Question Number : 197 Question Id : 6780945600 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In 8051 microcontroller, _____ register is used to control the operation of the serial port.

Options :

1. TMOD

2. PSW

3. PCON

4. SCON

Question Number : 198 Question Id : 6780945601 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

PLCs are _____ designed for use in the control of a wide variety of manufacturing machines and systems.

Options :

1. Special purpose industrial computers

2. Personal Computers

3. Electromechanical Systems

4. Chemical Systems

Question Number : 199 Question Id : 6780945602 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

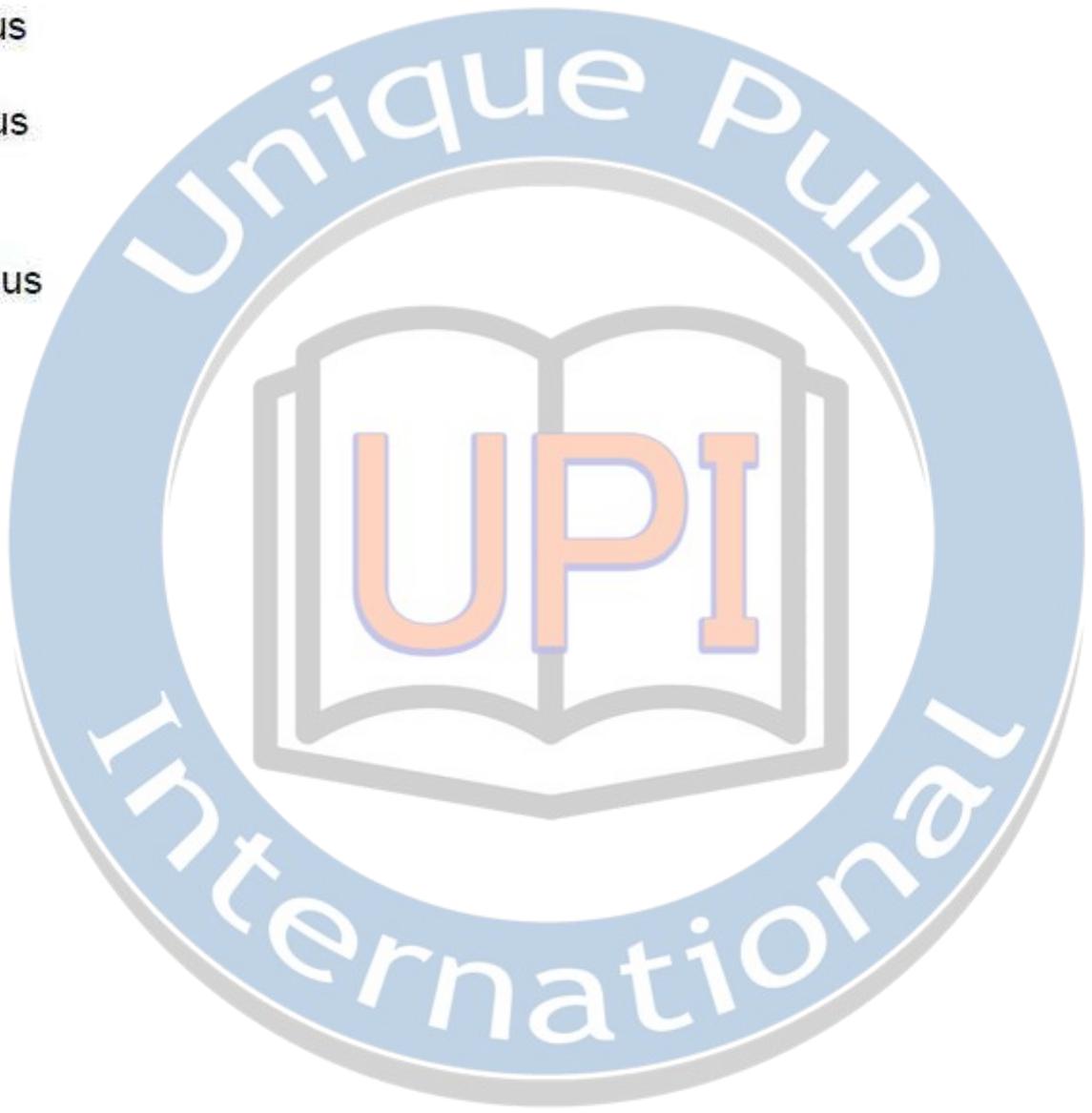The total response time of a PLC is _____

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 : 200 Question Id : 6780945603 Display Question Number : Yes 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