

Telangana State Council of Higher Education

TS ECET [FDH & B.Sc. (Mathematics)] - 2018

Date of Examination: 09-05-2018

Time of Examination: 10.00 A.M. to 1.00 P.M.

Master Question Paper Copy

Electronics and Instrumentation Engineering

Notations :

1. Options shown in green color and with ✓ icon are correct.
2. Options shown in red color and with ✗ icon are incorrect.

Question Number : 1 Question Id : 5105296413 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If A is square matrix of order 3 and if the matrix obtained by replacing the elements of A with

their corresponding cofactors is $\begin{bmatrix} 1 & -2 & 1 \\ 4 & -5 & -2 \\ -2 & 4 & 1 \end{bmatrix}$ then determinant of A is _____

Options :

1. ✗ 9
2. ✗ 16
3. ✓ 3
4. ✗ 4

Question Number : 2 Question Id : 5105296414 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The system of equations $x + y + z = 6$, $x + 2y + 3z = 10$, $x + 2y + \lambda z = K$ is

inconsistent for $\lambda = l$ and $K \neq m$, then $(l, m) =$

Options :

1. ✘ (3, 7)
2. ✔ (3, 10)
3. ✘ (7, 10)
4. ✘ (10, 4)

Question Number : 3 Question Id : 5105296415 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If A is a square matrix of order n and $A = P + Q$, where P is symmetric and Q is non symmetric

matrices, then $P - Q =$

Options :

1. ✘ A
2. ✔ A^T
3. ✘ $A + A^T$
4. ✘ $A - A^T$

Question Number : 4 Question Id : 5105296416 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & x \\ -2 & y & -1 \end{bmatrix}$ is orthogonal then _____

Options :

1. ✔ $x = -2, y = 2$

2. ✘ $x = -2, y = -2$

3. ✘ $x = 2, y = 2$

4. ✘ $x = 2, y = -2$

Question Number : 5 Question Id : 5105296417 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $X = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & 3 \\ 1 & 3 & k \end{bmatrix}$ is singular matrix then $k =$

Options :

1. ✘ 2

2. ✘ 3

3. ✘ 4

4. ✔ 5

Question Number : 6 Question Id : 5105296418 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $\frac{7x-17}{(x-1)(x-3)} = \frac{m}{x-1} + \frac{k}{x-3}$, then $m - k - 1 =$

Options :

1. ✘ 1

2. ✔ 2

3. ✘ 3

4. ✘ -2

Question Number : 7 Question Id : 5105296419 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A complex number 'z' having least modulus value and satisfying $|z - 2 + 2i| = 1$ is _____

Options :

$$\left(2 - \frac{1}{\sqrt{2}}\right)(1+i)$$

1. ✘

$$\left(2 + \frac{1}{\sqrt{2}}\right)(1+i)$$

2. ✘

$$\left(2 - \frac{1}{\sqrt{2}}\right)(1-i)$$

3. ✔

$$\left(2 + \frac{1}{\sqrt{2}}\right)(1-i)$$

4. ✘

Question Number : 8 Question Id : 5105296420 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The solution of the simultaneous equations $x + y = \frac{2\pi}{3}$ and $\cos x + \cos y = \frac{3}{2}$ where x and y

are real is _____

Options :

$$x = \frac{\pi}{3}, y = \pi$$

1. ✘

$$x = \pi, y = \frac{\pi}{3}$$

2. ✘

$$x = \pi, y = \frac{\pi}{2}$$

3. ✘

does not exist.

4. ✔

Question Number : 9 Question Id : 5105296421 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If both the distinct roots of the equation $|\sin x|^2 + |\sin x| + b = 0$ in $[0, \pi]$ are real then all the values of b lie in the interval _____

Options :

1. ✘ $[-2, 0]$
2. ✘ $(-2, 0)$
3. ✘ $[-2, 0)$
4. ✔ $(-2, 0]$

Question Number : 10 Question Id : 5105296422 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$$\frac{a \cos A + b \cos B + c \cos C}{2s} =$$

Options :

1. ✘ Δ
2. ✘ $\frac{1}{R}$
3. ✔ $\frac{r}{R}$
4. ✘ $\frac{\Delta}{R}$

Question Number : 11 Question Id : 5105296423 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\cos A = \frac{3}{4}$, then the value of $32 \sin \frac{A}{2} \cdot \sin \frac{5A}{2}$

Options :

1. ✔ 11

2. ✘ 36

3. ✘ 27

4. ✘ 10

Question Number : 12 Question Id : 5105296424 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $z_1 = 3 (\cos 15^\circ + i \sin 15^\circ)$ and $z_2 = 5 (\cos 63^\circ + i \sin 63^\circ)$ then $\frac{z_1}{z_2} =$

Options :

1. ✘ $\frac{3}{5} [\cos 48^\circ + i \sin 48^\circ]$

2. ✔ $\frac{3}{5} [\cos 48^\circ - i \sin 48^\circ]$

3. ✘ $\frac{3}{5} [\cos 78^\circ + i \sin 78^\circ]$

4. ✘ $\frac{5}{3} [\cos 78^\circ - i \sin 78^\circ]$

Question Number : 13 Question Id : 5105296425 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$2 \tan^{-1} \frac{1}{7} + \tan^{-1} \frac{1}{13} =$

Options :

1. ✔ $\tan^{-1} \frac{23}{61}$

2. ✘ $\tan^{-1} \frac{14}{61}$

3. ✘ $\tan^{-1} \frac{32}{61}$

4. ✘ $\tan^{-1} \frac{3}{51}$

Question Number : 14 Question Id : 5105296426 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\text{If } \cos 20^\circ \cos 40^\circ \cos 80^\circ = p, \text{ then } p =$$

Options :

1. ✘ $\frac{1}{2}$

2. ✘ $\frac{1}{4}$

3. ✔ $\frac{1}{8}$

4. ✘ 1

Question Number : 15 Question Id : 5105296427 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\sin A \sin (120^\circ - A) \sin (120^\circ + A) =$$

Options :

1. ✘ $\frac{1}{4} \sin A$

2. ✔ $\frac{1}{4} \sin 3A$

3. ✘ $\frac{1}{4} \cos A$

4. ✘ $\frac{1}{4} \cos 3A$

Question Number : 16 Question Id : 5105296428 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\cos 5^\circ - \sin 25^\circ =$$

Options :

1. ✘ $\sin 30^\circ$

2. ✓ $\sin 35^\circ$

3. ✗ $\sin 45^\circ$

4. ✗ $\sin 55^\circ$

Question Number : 17 Question Id : 5105296429 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If n is the length of perpendicular from the point $(3, -2)$ to the straight line

$L \equiv 12x - 5y + 6 = 0$ and m is distance of that line $L=0$ from $12x - 5y - 7 = 0$, then _____

Options :

1. ✗ $n + m = 2$

2. ✗ $n = m$

3. ✗ $n = 2m$

4. ✓ $n = 4m$

Question Number : 18 Question Id : 5105296430 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The equation of the straight line passing through $(2, 3)$ and perpendicular to the line

$4x - 3y = 10$ is _____

Options :

1. ✗ $3x + 4y + 18 = 0$

2. ✓ $3x + 4y - 18 = 0$

3. ✗ $3x - 4y - 18 = 0$

4. ✗ $3x - 4y + 18 = 0$

Question Number : 19 Question Id : 5105296431 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

L is a straight line passing through the point P(1, 2) such that P bisects the portion of the line intercepted between the coordinate axes, then the perpendicular distance of line L from the origin is _____

Options :

1. ✘ $\frac{1}{\sqrt{5}}$

2. ✘ $\frac{2}{\sqrt{5}}$

3. ✘ $\frac{3}{\sqrt{5}}$

4. ✔ $\frac{4}{\sqrt{5}}$

Question Number : 20 Question Id : 5105296432 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the focus of the parabola $(y-2)^2 = 4(x-1)$ is (a, b), then a+b =

Options :

1. ✘ (-1, -2)

2. ✘ (1, 2)

3. ✘ (2, 1)

4. ✔ (2, 2)

Question Number : 21 Question Id : 5105296433 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The function $y = |x|$ $-\infty < x < \infty$ is _____

Options :

1. ✘ Differentiable at x=0

2. ✘ not continuous at $x=0$
3. ✔ continuous and differentiable at $x \neq 0$
4. ✘ continuous but not differentiable at $x \neq 0$

Question Number : 22 Question Id : 5105296434 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\lim_{x \rightarrow 0} \left(\frac{\sqrt{1 - \cos 2x}}{x} \right)$$

Options :

1. ✔ Does not exist
2. ✘ 1
3. ✘ -1
4. ✘ 0

Question Number : 23 Question Id : 5105296435 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $f(x) = |x^2 - 3x + 2|$ then $\frac{df}{dx} =$

Options :

1. ✔ $2x-3$ when $x > 2$
2. ✘ $3-2x$, when $x < 1$
3. ✘ $3-2x$ when $x > 2$
4. ✘ $2x+3$, when $1 < x < 2$

Question Number : 24 Question Id : 5105296436 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $Z = \text{Log}_e\left(\frac{xy}{x+y}\right)$, then $x\frac{\partial Z}{\partial x} + y\frac{\partial Z}{\partial y} =$

Options :

1. ✘ 0

2. ✘ $2Z$

3. ✔ 1

4. ✘ $\frac{Z}{2}$

Question Number : 25 Question Id : 5105296437 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Two cars with equal speed V started from a place are such that one is moving towards East and the other is moving towards North. The rate at which they are separated from each other when they travel same distance is _____

Options :

1. ✔ $V\sqrt{2}$

2. ✘ $\frac{V}{\sqrt{2}}$

3. ✘ $\frac{\sqrt{2}}{V}$

4. ✘ $2V^2$

Question Number : 26 Question Id : 5105296438 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The derivative of $\sin x^2$ with respect to x^5 is _____

Options :

1. ✘ $\frac{\cos x^2}{5x^4}$

2. ✘ $\frac{2 \cos x^2}{5x^4}$

3. ✔ $\frac{2 \cos x^2}{5x^3}$

4. ✘ $\frac{2 \sin x^2}{5x^4}$

Question Number : 27 Question Id : 5105296439 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. ✘ $\frac{y}{x(1-y \log x)}$

2. ✔ $\frac{y^2}{x(1-y \log x)}$

3. ✘ $\frac{y^2}{x(1+y \log x)}$

4. ✘ $\frac{y}{(1-y \log x)}$

Question Number : 28 Question Id : 5105296440 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $x = at^2, y = 2at$, then $\frac{d^2y}{dx^2} =$

Options :

1. ✘ $-\frac{1}{t^2}$

2. ✘ $-\frac{1}{2at}$

3. ✔ $-\frac{1}{2at^2}$

4. ✘ $-\frac{1}{2at^4}$

Question Number : 29 Question Id : 5105296441 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $I_1 = \int_0^{\infty} e^{-x} x^n dx$, then $\int_0^{\infty} e^{-x^2} x^{2n+1} dx =$

Options :

1. ✘ 0

2. ✔ $\frac{I_1}{2}$

3. ✘ $\frac{I_1}{3}$

4. ✘ $2I_1$

Question Number : 30 Question Id : 5105296442 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $\int \frac{\sin 2x}{\sin 5x \sin 3x} dx = A \log \sin 3x + B \log \sin 5x + C$, then $A + B =$

Options :

1. ✘ $2/7$

2. ✘ $1/3$

3. ✘ $-2/5$

4. ✔ $2/15$

Question Number : 31 Question Id : 5105296443 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The area of the region bounded by the curve $y = x^2 - x$, x-axis and the line $x=2$ is _____

Options :

1. ✘ $\frac{5}{4}$

2. ✘ $\frac{5}{3}$

3. ✔ $\frac{5}{6}$

4. ✘ $\frac{5}{2}$

Question Number : 32 Question Id : 5105296444 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $0 < x < \frac{\pi}{2}$, then $\int \frac{\sin x + \cos x}{\sqrt{1 + \sin 2x}} dx =$

Options :

1. ✘ $\frac{1}{x} + c$

2. ✔ $x + c$

3. ✘ $2x + c$

4. ✘ $\frac{2}{x} + c$

Question Number : 33 Question Id : 5105296445 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$\int \frac{x^4 + 1}{x^2 + 1} dx =$

Options :

1. ✘ $\frac{x^3}{3} + x + 2 \tan^{-1} x + c$

2. ✘ $\frac{x^3}{3} + x + \tan^{-1}x + c$

3. ✔ $\frac{x^3}{3} - x + 2\tan^{-1}x + c$

4. ✘ $\frac{x^3}{3} - x + \tan^{-1}x + c$

Question Number : 34 Question Id : 5105296446 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\int \frac{e^x(1-x)}{x^2} dx =$$

Options :

1. ✘ $-\frac{1}{xe^x} + C$

2. ✘ $\frac{1}{xe^x} + C$

3. ✔ $-\frac{1}{x}e^x + C$

4. ✘ $xe^x + C$

Question Number : 35 Question Id : 5105296447 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\int_0^{\pi/2} \frac{\sin x}{\sin x + \cos x} dx =$$

Options :

1. ✔ $\frac{\pi}{4}$

2. ✘ $\frac{\pi}{6}$

3. ✘ $\frac{\pi}{8}$

4. ✘ π

Question Number : 36 Question Id : 5105296448 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$$\int_0^{\pi/2} \sin^4 x \cos^2 x \, dx =$$

Options :

1. ✘ $\frac{\pi}{12}$

2. ✔ $\frac{\pi}{32}$

3. ✘ $\frac{\pi}{42}$

4. ✘ $\frac{\pi}{2}$

Question Number : 37 Question Id : 5105296449 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The solution of $(x + 2y^3) \frac{dy}{dx} = y$

Options :

1. ✘ $y = x^3 + cx$

2. ✔ $x = y^3 + cy$

3. ✘ $x = y^2 + cy$

4. ✘ $y = x^3 + cy^2$

Question Number : 38 Question Id : 5105296450 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The general solution of $\frac{dy}{dx} = \frac{x^2 + 4x - 9}{x + 2}$ is _____

Options :

1. ✘ $y = (x + 2)^2 - 13 \log|x + 2| + c$

2. ✘ $y = (x + 2)^2 - 5 \log|x + 2| + c$

3. ✘ $y = \frac{x^2}{2} + 2x + 13 \log|x + 2| + c$

4. ✔ $y = \frac{x^2}{2} + 2x - 13 \log|x + 2| + c$

Question Number : 39 Question Id : 5105296451 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The differential equation representing the family of curves $y^2 = 2c(x + \sqrt{c})$, where c being a positive parameter is of _____

Options :

1. ✘ Order 3

2. ✘ Order 2

3. ✔ degree 3

4. ✘ degree 1

Question Number : 40 Question Id : 5105296452 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The differential equation formed by eliminating the arbitrary constants a and b from the

Equation $\frac{x}{a} + \frac{y}{b} = 1$ is _____

Options :

1. ✘ $x y' = 1$

2. ✘ $x y'' = 0$

3. ✔ $y'' = 0$

4. ✘ $y'' = 1$

Question Number : 41 Question Id : 5105296453 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The solution of the differential equation $\frac{dy}{dx} = (1+x^2)(1+y^2)$ is _____

Options :

1. ✔ $\tan^{-1}y = x + \frac{x^3}{3} + c$

2. ✘ $\tan^{-1}y = x - \frac{x^3}{3} + c$

3. ✘ $\cot^{-1}y = x + \frac{x^3}{3} + c$

4. ✘ $\sin^{-1}y = x + \frac{x^3}{3} + c$

Question Number : 42 Question Id : 5105296454 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The solution of the differential equation $y dx - x dy + \log x dx$ is _____

Options :

1. ✘ $c x + y + (1 - \log x) = 0$

2. ✔ $c x - y - (1 + \log x) = 0$

3. ✘ $c y + x + \log x - 1 = 0$

4. ✘ $c x - y + (1 + \log x) = 0$

Question Number : 43 Question Id : 5105296455 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The general solution of the equation $(D^2 - D - 2)y = \sin 2x$, $(D = \frac{d}{dx})$ is _____

Options :

1. ✓ $y = c_1 e^{-x} + c_2 e^{2x} + \frac{1}{20}(\cos 2x - 3\sin 2x)$
2. ✗ $y = c_1 e^{-x} + c_2 e^{-2x} + \frac{1}{20}(\cos 2x + 3\sin 2x)$
3. ✗ $y = c_1 e^{-x} + c_2 e^{2x} + \frac{1}{20}(\cos 2x - 3\sin 3x)$
4. ✗ $y = c_1 e^x + c_2 e^{-2x} + \frac{1}{20}(\cos 2x + 3\sin 2x)$

Question Number : 44 Question Id : 5105296456 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The particular integral of $(D^2 - 5D + 6)y = e^{4x}$ is _____

Options :

1. ✗ e^{4x}
2. ✗ $-e^{4x}$
3. ✓ $\frac{1}{2}e^{4x}$
4. ✗ $\frac{1}{4}e^{4x}$

Question Number : 45 Question Id : 5105296457 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If $L[f(t)]$ denotes the Laplace Transform of $f(t)$, then $L[t^2 e^{-2t}] =$

Options :

1. ✗ $\frac{1}{(s+2)^3}$

2. ✓ $\frac{2}{(s+2)^3}$

3. ✗ $\frac{1}{(s+2)^2}$

4. ✗ $\frac{2}{(s+2)^2}$

Question Number : 46 Question Id : 5105296458 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$f : \mathbb{R} \rightarrow \mathbb{R}$, $f(x) = x^2$, $-\pi \leq x \leq \pi$ and $f(x+2\pi) = f(x)$, $\forall x \in \mathbb{R}$. If the Fourier series of

$f(x)$ is represented as $f(x) = \sum_{n=0}^{\infty} a_n \cos nx$, then $a_0 =$ _____

Options :

1. ✗ $\frac{2\pi^2}{3}$

2. ✓ $\frac{\pi^2}{3}$

3. ✗ $\frac{4\pi^2}{3}$

4. ✗ $\frac{5\pi^2}{3}$

Question Number : 47 Question Id : 5105296459 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

$f(t) = 2t^2 - 5$, $-2 \leq t \leq 2$ and $f(t+4) = f(t)$. If $2t^2 - 5 = \sum_{n=0}^{\infty} A_n \cos\left(\frac{n\pi t}{2}\right)$, then $A_1 =$

Options :

1. ✗ 0

2. ✓ $\frac{-32}{\pi^2}$

3. ✗ $\frac{1-(-1)^n}{n} \frac{2}{\pi^2}$

4. ✗ $\frac{16}{\pi^2}$

Question Number : 48 Question Id : 5105296460 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the Laplace transform of a function $f(t)$ is $F(S)$, then $\int_0^{\infty} f(t)dt =$

Options :

1. ✗ $F(1)$

2. ✗ $F(\infty)$

3. ✓ $F(0)$

4. ✗ $F(S-1)$

Question Number : 49 Question Id : 5105296461 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Mean deviation from median for the data 340, 150, 210, 240, 300, 310, 320

is approximately equal to _____

Options :

1. ✓ 52.8

2. ✗ 54.8

3. ✗ 53.8

4. ✗ 51.8

Question Number : 50 Question Id : 5105296462 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Two numbers are chosen at random from $\{1, 2, 3, 4, 5, 6, 7, 8\}$ at a time. The probability that smaller of the two numbers is not more than 3 is

Options :

1. ✘ $\frac{7}{14}$

2. ✔ $\frac{9}{14}$

3. ✘ $\frac{8}{14}$

4. ✘ $\frac{10}{14}$

Display Number Panel:

Yes

Group All Questions:

No

Question Number : 51 Question Id : 5105296463 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The dimensional formula for angular momentum is _____

Options :

1. ✘ $M L T^{-1}$

2. ✘ $M L^{-1} T^{-1}$

3. ✔ $M L^2 T^{-1}$

4. ✘ $M^1 L^2 T^{-2}$

Question Number : 52 Question Id : 5105296464 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following has not been expressed in proper unit?

Options :

1. ✘ stress/strain = N/m^2
2. ✘ surface tension = N/m
3. ✔ energy = $\text{Kg} \times \text{m/s}$
4. ✘ pressure = N/m^2

Question Number : 53 Question Id : 5105296465 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Two adjacent sides of a parallelogram are represented by the two vectors $\mathbf{I}+2\mathbf{J}+3\mathbf{K}$ and $3\mathbf{I}-2\mathbf{J}+\mathbf{K}$. What is the area of the parallelogram?

Options :

1. ✘ 8
2. ✔ $8\sqrt{3}$
3. ✘ $3\sqrt{8}$
4. ✘ 192

Question Number : 54 Question Id : 5105296466 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Given the points $A = (0, a)$ and $B = (1, 2)$, what is the value of a if the magnitude of the vector \overline{AB} is 1?

Options :

1. ✘ 3
2. ✔ 1
3. ✘ 4
4. ✘ 2

Question Number : 55 Question Id : 5105296467 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If A and B are perpendicular, vector $A = 5i+7j-3k$ and $B = 2i+2j-ak$. What is the value of a?

Options :

1. ✘ -2

2. ✘ 8

3. ✘ -7

4. ✔ -8

Question Number : 56 Question Id : 5105296468 Question Type : MCQ Option Shuffling : Yes 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° with the horizontal. The coefficient of static friction between the block and plane is 0.7. The frictional force on the block is _____

Options :

1. ✘ 9.8 N

2. ✔ $0.7 \times 9.8 \times \sqrt{3}$ N

3. ✘ $9.8 \times \sqrt{3}$ N

4. ✘ 0.7×0.9 N

Question Number : 57 Question Id : 5105296469 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A body sliding on a smooth inclined plane required 4 seconds to reach the bottom starting from rest at the top. How much time does it take to cover one-fourth the distance starting from rest at top?

Options :

1. ✘ 1 second

2. ✓ 2 seconds
3. ✗ 4 seconds
4. ✗ 16 seconds

Question Number : 58 Question Id : 5105296470 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A body of mass 2 Kg is hung on a spring balance mounted vertically in a lift. If the lift descends with an acceleration equal to the acceleration due to gravity g , the reading on the spring balance will be changed by _____

Options :

1. ✗ 2 Kg
2. ✗ 4 Kg
3. ✗ $2/g$ Kg
4. ✓ zero

Question Number : 59 Question Id : 5105296471 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If g is the acceleration due to gravity at the earth surface, the gain in the potential energy of an object of mass is raised, then the surface of the earth to a height equal to the radius R of earth is _____

Options :

1. ✓ $(\frac{1}{2})mgR$
2. ✗ $2mgR$
3. ✗ mgR
4. ✗ $(\frac{1}{4})mgR$

Question Number : 60 Question Id : 5105296472 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A ship of mass $3 \times 10^7 \text{ Kg}$ initially at rest is pulled by a force of $5 \times 10^4 \text{ N}$ through a distance of 3 m. Assume that the resistance due to water is negligible, the speed of the ship is _____

Options :

1. ✘ 1.5 m/s
2. ✘ 60m/s
3. ✔ 0.1 m/s
4. ✘ 5 m/s

Question Number : 61 Question Id : 5105296473 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Clock A is based on oscillations of a spring and clock B is based on pendulum motion. Both clocks run at the same rate on earth. On a planet having the same density as earth but twice the radius, _____

Options :

1. ✘ A will run faster than B
2. ✔ B will run faster than A
3. ✘ both run at the same rate as on earth
4. ✘ both run at equal rates but not the same as on earth

Question Number : 62 Question Id : 5105296474 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The potential energy at a point r when a particle is moving under the central force

$F = -Kr^2$ is _____

Options :

1. ✘ K^2/r

2. ✘ K/r
3. ✘ K/r^2
4. ✔ $-K/r$

Question Number : 63 Question Id : 5105296475 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

When the body is acted upon by a resultant force, then work done by the resultant force is equal to _____

Options :

1. ✘ its initial kinetic energy
2. ✘ its initial potential energy
3. ✘ change in the kinetic energy
4. ✔ change in momentum

Question Number : 64 Question Id : 5105296476 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A Jet engine works on the principle of _____

Options :

1. ✘ conservation of energy
2. ✘ conservation of mass
3. ✔ conservation of linear momentum
4. ✘ conservation of angular momentum

Question Number : 65 Question Id : 5105296477 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. ✘ 1 cm
2. ✘ $\sqrt{2}$ cm
3. ✘ 2 cm
4. ✔ $2\sqrt{2}$ cm

Question Number : 66 Question Id : 5105296478 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The walls of Hall built for music concerns should _____

Options :

1. ✘ amplify sound
2. ✘ reflect sound
3. ✘ transmit sound
4. ✔ absorb sound

Question Number : 67 Question Id : 5105296479 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

When a surrounding body and listener approach each other the pitch appears to rise and when they move away from each other pitch appears to decrease. This is known as _____

Options :

1. ✔ Doppler's principle
2. ✘ Newton's formula
3. ✘ Interference
4. ✘ Sabine's formula

Question Number : 68 Question Id : 5105296480 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

An engine driver moving towards a wall with a velocity of 50 m/sec., emits a note of 1.2 KHz. Speed of sound in air is 350 m/sec. The frequency of the note after reflection from the wall as heard by the engine driver is _____

Options :

1. ✘ 1.2 KHz
2. ✔ 1.6 KHz
3. ✘ 0.24 KHz
4. ✘ 2.4 KHz

Question Number : 69 Question Id : 5105296481 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

What is the maximum number of syllables a person can speak in one second?

Options :

1. ✘ 1
2. ✘ 3
3. ✘ 4
4. ✔ 5

Question Number : 70 Question Id : 5105296482 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The speed of sound in air at NTP is 300m/s, if the air pressure becomes four times then the speed of sound will be _____

Options :

1. ✘ 150 m/s
2. ✘ 300 m/s
3. ✔ 600 m/s
4. ✘ 1200 m/s

Question Number : 71 Question Id : 5105296483 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For the efficiency of the Carnot cycle to be maximum, _____

Options :

1. ✓ the temperature of the source should be infinity
2. ✗ the temperature of the sink should be infinity
3. ✗ the temperature of the source should be zero
4. ✗ both should be infinity

Question Number : 72 Question Id : 5105296484 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Specific heat of a gas at constant volume C_v and at constant pressure C_p are related as

Options :

1. ✗ $C_p/C_v = 1-R/J$
2. ✓ $C_p - C_v = R/J$
3. ✗ $C_p - C_v = J/R$
4. ✗ $C_p + C_v = R/J$

Question Number : 73 Question Id : 5105296485 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If the pressure remains constant the volume of the gas will _____

Options :

1. ✓ increase with the increase in temperature
2. ✗ decrease with the increase in temperature
3. ✗ not change with the temperature
4. ✗ become zero

Question Number : 74 Question Id : 5105296486 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A super conducting material when placed in a magnetic field will _____

Options :

1. ✘ attract the magnetic field towards its centre
2. ✘ attract the magnetic field but transfer it into a concentrated zone
3. ✔ repel all the magnetic lines of force passing through it
4. ✘ not influence the magnetic field

Question Number : 75 Question Id : 5105296487 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For long distance communication _____

Options :

1. ✘ grand index fibers are more suitable
2. ✔ single mode step index fibers are more suitable
3. ✘ step index fibers are more suitable
4. ✘ silica fibers are more suitable

Display Number Panel:

Yes

Group All Questions:

No

Question Number : 76 Question Id : 5105296488 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The set of quantum number for the 19th electron in chromium is _____

Options :

1. ✔ $n=4, l=0, m=0, S=+1/2$ or $-1/2$
2. ✘ $n=3, l=2, m=1, S=+1/2$ or $-1/2$

3. ✘ $n=3, l=2, m = -1, S=+1/2$ or $-1/2$

4. ✘ $n=4, l=1, m = 0, S=+1/2$ or $-1/2$

Question Number : 77 Question Id : 5105296489 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In which of the following compounds, is coordinate covalent bond present?

Options :

1. ✘ PH_3

2. ✘ H_2O

3. ✔ NH_4OH

4. ✘ HBr

Question Number : 78 Question Id : 5105296490 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Variable valency is shown by _____

Options :

1. ✘ N and O

2. ✔ P and S

3. ✘ F and Cl

4. ✘ N and S

Question Number : 79 Question Id : 5105296491 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In the following balanced equation



The values of x, Y, Z would be _____

Options :

1. ✘ $x=4, Y=8, Z=5$
2. ✘ $x=6, Y=3, Z=4$
3. ✔ $x=8, Y=4, Z=4$
4. ✘ $x=3, Y=5, Z=4$

Question Number : 80 Question Id : 5105296492 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

50cc of decinormal NaOH solution will be completely neutralised by 'x' ml of
decimolar H_2SO_4 solution. The value of 'x' is _____

Options :

1. ✘ 10
2. ✔ 25
3. ✘ 50
4. ✘ 1

Question Number : 81 Question Id : 5105296493 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Arrange the following in the decreasing order of acidity:

I) H_2SO_3 II) H_3PO_4 III) $HClO_3$

Options :

1. ✘ I > II > III
2. ✘ II > III > I
3. ✔ III > II > I

4. ✘ I > III > II

Question Number : 82 Question Id : 5105296494 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which anion is the weakest conjugate base?

Options :

1. ✘ $\text{C}_2\text{H}_5\text{O}^\ominus$

2. ✘ F^\ominus

3. ✘ $\text{CH}_3\text{COO}^\ominus$

4. ✔ NO_3^\ominus

Question Number : 83 Question Id : 5105296495 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In the preparation of wrought iron from cast iron, the furnace employed is _____

Options :

1. ✘ Electrical

2. ✘ Open hearth

3. ✔ Reverberatory

4. ✘ Blast

Question Number : 84 Question Id : 5105296496 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Number of coulombs of current required to convert completely one mole of MnO_4^\ominus

ions in acid medium to one mole of Mn^{+2} ions electrically _____

Options :

1. ✘ 96500
2. ✘ 96500 x 2
3. ✘ 96500 x 6
4. ✔ 5 x 96500

Question Number : 85 Question Id : 5105296497 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following elements has the highest value of the electrochemical equivalent?

Options :

1. ✘ Mg
2. ✘ Ca
3. ✔ K
4. ✘ Na

Question Number : 86 Question Id : 5105296498 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The standard reduction potential for Zn^{+2}/Zn and Cu^{+2}/Cu electrodes are

-0.76 V and +0.34 V respectively. For the cell reaction $Zn + Cu^{+2} \rightarrow Zn^{+2} + Cu$ the

standard e.m.f is _____

Options :

1. ✔ +1.10 V
2. ✘ -0.42 V

3. ✘ +0.42 V

4. ✘ -1.10 V

Question Number : 87 Question Id : 5105296499 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The type of protection against corrosion applied to marine piers and water box coolers

is _____

Options :

1. ✔ Impressed current cathodic protection

2. ✘ Metal rusting

3. ✘ Tinning

4. ✘ Metal painting

Question Number : 88 Question Id : 5105296500 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A metal is dipped separately in different pH solutions of 1, 2, 3 and 4. In which pH
solution is the metal easily corroded?

Options :

1. ✔ 1

2. ✘ 2

3. ✘ 3

4. ✘ 4

Question Number : 89 Question Id : 5105296501 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A raw water sample has 300 ppm calcium ions and its CaCO_3 equivalent in ppm

is ____

Options :

1. ✘ 625

2. ✔ 750

3. ✘ 1500

4. ✘ 25

Question Number : 90 Question Id : 5105296502 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A Process which removes ionic, non ionic, colloidal and organic matter from water

is _____

Options :

1. ✘ Ion exchange process

2. ✘ Permutit process

3. ✘ Zeolite process

4. ✔ Reverse osmosis

Question Number : 91 Question Id : 5105296503 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The exhausted anion exchange column in the demineralization process is regenerated

by passing a solution of _____

Options :

1. ✘ dil H₂SO₄

2. ✘ dil HCl

3. ✔ dil NaOH

4. ✘ dil NH₄OH

Question Number : 92 Question Id : 5105296504 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which one of the following is not an example of addition polymer?

Options :

1. ✘ Polythene

2. ✔ Terylene

3. ✘ Neoprene

4. ✘ Polystyrene

Question Number : 93 Question Id : 5105296505 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following is an example of fibre polymer?

Options :

1. ✘ Rubber

2. ✘ PVC

3. ✘ Bakelite

4. ✔ Nylon-66

Question Number : 94 Question Id : 5105296506 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following can enhance the Physical properties of rubber?

Options :

1. ✘ ZnO
2. ✘ Zn stearate
3. ✔ Sulphur
4. ✘ SiO₂

Question Number : 95 Question Id : 5105296507 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The basic component of the smog may be _____

Options :

1. ✘ O₃
2. ✔ O₃ + PAN
3. ✘ PAN + SO₂
4. ✘ O₃ + PAN + SO₃

Question Number : 96 Question Id : 5105296508 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In Antarctica, Ozone depletion is due to the formation of the following

Compound(s) _____

Options :

1. ✘ Chlorine nitrate

2. ✘ PAN
3. ✔ Acrolein
4. ✘ SO₂ and SO₃

Question Number : 97 Question Id : 5105296509 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The pollutant responsible for smog formation and acid rain is _____

Options :

1. ✔ SO₂
2. ✘ CH₄
3. ✘ He
4. ✘ SO₂Cl₂

Question Number : 98 Question Id : 5105296510 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The normality of 26% (Wt/Vol) solution of ammonia (d=0.55) is approximately ____

Options :

1. ✘ 1.5
2. ✔ 15.3
3. ✘ 0.4
4. ✘ 4

Question Number : 99 Question Id : 5105296511 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Wolframite impurity in Cassiterite is removed by _____

Options :

1. ✘ Liqutation
2. ✘ Froth flotation
3. ✔ Electromagnetic separation
4. ✘ Hand picking

Question Number : 100 Question Id : 5105296512 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The highest ranking coal is _____

Options :

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

Display Number Panel: Yes
Group All Questions: No

Question Number : 101 Question Id : 5105296513 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Hysteresis loss in a transformer depends on

Options :

1. ✘ Voltage alone
2. ✘ Frequency alone

3. ✘ Square of the frequency
4. ✔ Both voltage and frequency

Question Number : 102 Question Id : 5105296514 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A two winding transformer has iron losses and full load copper losses equal to W watts each. It is tested along with another similar transformer for back to back test.

The total power input would be

Options :

1. ✔ 4 W
2. ✘ 2 W
3. ✘ 1 W
4. ✘ 0.5 W

Question Number : 103 Question Id : 5105296515 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Superposition theorem is not applicable for

Options :

1. ✘ Voltage calculations
2. ✘ Bilateral elements
3. ✔ Power calculations
4. ✘ Passive elements

Question Number : 104 Question Id : 5105296516 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a linear network, the ratio of voltage excitation to current response is unaltered when the position of excitation and response are interchanged. This assertion stems from the

Options :

1. ✘ Principle of duality
2. ✔ Reciprocity theorem
3. ✘ Principle of Superposition
4. ✘ Equivalence theorem

Question Number : 105 Question Id : 5105296517 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The final value theorem is used to find the

Options :

1. ✘ Initial value of the system output
2. ✘ Transient behaviour of the system output
3. ✔ Steady-state value of the system output
4. ✘ Dynamic behaviour of the system output

Question Number : 106 Question Id : 5105296518 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For a feedback control system of type-2, the steady-state error for a ramp input is

Options :

1. ✘ Infinite
2. ✘ Constant
3. ✔ Zero
4. ✘ Indeterminate

Question Number : 107 Question Id : 5105296519 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Signal flow graph is used to find

Options :

1. ✘ Stability of the system

2. ✘ Controllability of the system
3. ✔ Transfer function of the system
4. ✘ Poles of the system

Question Number : 108 Question Id : 5105296520 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A servomotor is usually designed to have

Options :

1. ✘ High rotor inertia and high bearing friction
2. ✘ High rotor inertia and low bearing friction
3. ✘ Low rotor inertia and high bearing friction
4. ✔ Low rotor inertia and low bearing friction

Question Number : 109 Question Id : 5105296521 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The Nyquist plot of a loop transfer function $G(j\omega)H(j\omega)$ of a system encloses the

$(-1, j0)$ point. The gain margin of the system is

Options :

1. ✔ Less than zero
2. ✘ Zero
3. ✘ Greater than zero
4. ✘ Infinity

Question Number : 110 Question Id : 5105296522 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The term that deals with the study of electrical activity of muscle's action

potential is

Options :

1. ✘ ECG

2. ✓ EMG

3. ✗ EEG

4. ✗ MRI

Question Number : 111 Question Id : 5105296523 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Match List-I with List-II and select the correct answer using the codes given below

the list

List-I

List-II

a) Derivative control

1) Improved overshoot response

b) Integral control

2) Less steady-state error

c) Rate feedback control

3) Less stable

d) Proportional Control

4) more damping

a b c d

Options :

1. ✗ 1 2 3 4

2. ✗ 2 3 1 4

3. ✗ 4 3 1 2

4. ✓ 1 2 4 3

Question Number : 112 Question Id : 5105296524 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a digital system all the electronic components operate in

Options :

1. ✘ Continuous mode
2. ✘ Pulse mode
3. ✘ Active mode
4. ✔ Switching mode

Question Number : 113 Question Id : 5105296525 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A digital signal can be generated with the help of a

Options :

1. ✔ Mechanical switch
2. ✘ Push button switch
3. ✘ Mechanical relay
4. ✘ Multiplexer

Question Number : 114 Question Id : 5105296526 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Knowledge of binary number system is required by the designers of computers

and other digital systems because

Options :

1. ✘ It is easy to learn binary system
2. ✘ It is easy to learn Boolean algebra
3. ✘ It is easy to use binary codes
4. ✔ The devices used in these systems operate in a binary manner

Question Number : 115 Question Id : 5105296527 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Hexadecimal number system is used in digital computers and digital systems to

Options :

1. ✘ Perform arithmetic operations

2. ✓ Input binary data into the system
3. ✗ Perform logical operations
4. ✗ Perform arithmetic and logic operations

Question Number : 116 Question Id : 5105296528 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The ASCII code is basically is

Options :

1. ✓ 7-bit code
2. ✗ 12-bit code
3. ✗ 4-bit code
4. ✗ 6-bit code

Question Number : 117 Question Id : 5105296529 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The parity of the binary number 100110011 is

Options :

1. ✓ Even
2. ✗ Odd
3. ✗ 2
4. ✗ 1

Question Number : 118 Question Id : 5105296530 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

If each successive code differs from its preceding code by a single bit only, then

this code is called

Options :

1. ✗ BCD code

- 2. ✓ Gray code
- 3. ✗ Weighted code
- 4. ✗ Binary code

Question Number : 119 Question Id : 5105296531 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The output of a gate is LOW when at least one of its inputs is HIGH. This is true

for

Options :

- 1. ✗ AND
- 2. ✗ NAND
- 3. ✓ OR
- 4. ✗ NOR

Question Number : 120 Question Id : 5105296532 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Two-input XNOR gate gives HIGH output

Options :

- 1. ✗ When one input is HIGH and other is LOW
- 2. ✗ Only when both the inputs are LOW
- 3. ✓ When both the inputs are the same
- 4. ✗ Only when both the inputs are HIGH

Question Number : 121 Question Id : 5105296533 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Any logical expression can be realized by using only

Options :

- 1. ✗ AND gates
- 2. ✗ AND and NOT gates

- 3. ✘ OR and NOT gates
- 4. ✔ AND, OR and NOT gates

Question Number : 122 Question Id : 5105296534 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following gates is known as universal gate?

Options :

- 1. ✘ OR
- 2. ✔ NOR
- 3. ✘ AND
- 4. ✘ NOT

Question Number : 123 Question Id : 5105296535 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The dual of a Boolean function is obtained by

Options :

- 1. ✘ Interchanging all 0s and 1s only
- 2. ✘ Changing all 0s to 1s only
- 3. ✘ Changing all 1s to 0s only
- 4. ✔ Interchanging (i) all 0s and 1s and (ii) '+' and '-' signs

Question Number : 124 Question Id : 5105296536 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The number of cells in the Karnaugh map of a switching function (A,B,C)

consisting of only three variables is

Options :

- 1. ✘ 4
- 2. ✔ 8
- 3. ✘ 10

4. ✘ 12

Question Number : 125 Question Id : 5105296537 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Karnaugh map is used to

Options :

1. ✘ Minimise the number of flip-flops in a digital circuit
2. ✘ To design gates
3. ✘ To minimize the number of gates in only a digital circuit

To minimize the number of gates and fan-in requirements of the gates in a

4. ✔ digital circuit

Question Number : 126 Question Id : 5105296538 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

To produce ' P ' type semiconductor, we add _____

Options :

1. ✘ Acceptor atoms
2. ✘ Donor atoms
3. ✔ Pentavalent impurity
4. ✘ Trivalent impurity

Question Number : 127 Question Id : 5105296539 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The biggest disadvantage of state-space method is

Options :

1. ✘ They consume too much of computer time
2. ✔ Physical insight is lost after modelling a system in state-space
3. ✘ The analysis is done in time-domain
4. ✘ They cannot be used to solve a general class of problems in control

Question Number : 128 Question Id : 5105296540 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

State-space methods are superior to solving multi-degree dynamic problems that use modal approach because

Options :

1. ✓ In state-space analysis, there are no restrictions placed on the damping matrix
2. ✗ In state-space analysis, the information obtained is of about two stat-variables corresponding to each degree of freedom
3. ✗ State-space analysis can be used to determine the response due to any arbitrary excitation
4. ✗ Error in the system

Question Number : 129 Question Id : 5105296541 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Observability means

Options :

1. ✓ The output is related to all the stat-variables
2. ✗ The output is related to most dominant state-variables
3. ✗ The output is related to the least dominant state-variables
4. ✗ Error in the system

Question Number : 130 Question Id : 5105296542 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

To ascertain stability, Nyquist plots should be drawn for various values of the open-loop gain K

Options :

1. ✗ The above statement is true since that is how one can ascertain the system stability

2. ✘ The above statement is not true since it increases computation

Different values of gain should be considered for plotting only when the

3. ✔ phase crosses the negative real axis.

4. ✘ Stability cannot be ascertained only from Nyquist plots.

Question Number : 131 Question Id : 5105296543 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The criterion for determining the range of frequencies for Nyquist plots is

Options :

1. ✘ Frequencies from 0 to 1000 rad/s

2. ✘ Frequencies from 0 to 100 rad/s

The frequency values should be chosen from the view of obtaining a

3. ✔ reasonable size plot that can provide clarity around the (-1,0) point

4. ✘ The range of frequencies does not matter

Question Number : 132 Question Id : 5105296544 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a J F E T the drain current is maximum when _____

Options :

1. ✘ $V_{GS} = V_{DS}$

2. ✘ $V_{GS} =$ Pinch of voltage

3. ✔ $V_{GS} = 0$

4. ✘ V_{GS} is negative

Question Number : 133 Question Id : 5105296545 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

An enhancement mode MOSFET is off when the gate voltage is

Options :

1. ✘ Zero
2. ✘ Positive
3. ✘ Negative
4. ✔ More than threshold value

Question Number : 134 Question Id : 5105296546 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In an ideal junction transistor, the impurity concentration in emitter (E) base (B) and collector (C) is such that

Options :

1. ✔ $E > B > C$
2. ✘ $B > C > E$
3. ✘ $C > E > B$
4. ✘ $C = E = B$

Question Number : 135 Question Id : 5105296547 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

AE 139 is a

Options :

1. ✘ Tunnel diode
2. ✔ Germanium power transistor
3. ✘ Photo conductive cell
4. ✘ Silicon diode

Question Number : 136 Question Id : 5105296548 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In JFET avalanche break down occurs when $V_{DS} = 22\text{v}$, $V_{GS} = 0$. If $V_{GS} = -1\text{ v}$,

avalanche break down will occur at

Options :

1. ✘ $V_{DS} = 22v$
2. ✘ V_{DS} is more than 22v
3. ✘ V_{DS} is equal to 02v
4. ✔ V_{DS} is less than 22v

Question Number : 137 Question Id : 5105296549 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The e.m.f. induced in the windings of a transformer will be

Options :

1. ✔ Lag the core flux by 90^0
2. ✘ Be in-phase with the core flux
3. ✘ Be out-of phase with the core flux
4. ✘ Be independent of the core flux

Question Number : 138 Question Id : 5105296550 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A transformer when supplying a load maintained 11 kV across load terminals.

When the load was switched off, the terminal voltage became 11,550 V. What is the voltage regulation at this load?

Options :

1. ✘ 11.55%
2. ✘ 5.5%
3. ✔ 5%
4. ✘ 55%

Question Number : 139 Question Id : 5105296551 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a DC machine, interlopes are used to

Options :

1. ✓ Neutralize the effect of armature reaction in the inter polar region
2. ✗ Generate more induced e.m.f. in the armature
3. ✗ Avoid interference of the armature flux with the main-field flux
4. ✗ Reduce the demagnetizing effect of armature reaction

Question Number : 140 Question Id : 5105296552 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The direction of rotation of a dc motor can be reversed

Options :

By reversing the connections of both armature and the field windings with

1. ✗ the supply
2. ✓ By reversing the connections of either the armature or the field.
3. ✗ By reducing the field flux
4. ✗ By introducing an extra resistance in the armature circuit

Question Number : 141 Question Id : 5105296553 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A DC series motor should always be started with load because

Options :

1. ✓ At no-load it will rotate at a dangerously high speed
2. ✗ At no-load it will not develop high starting torque
3. ✗ It cannot start without load
4. ✗ It draws a small amount of current at no-load

Question Number : 142 Question Id : 5105296554 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The slip of 400 V, three phase, 4-pole induction motor when rotating at 1440 rpm is

Options :

1. ✘ 2%
2. ✘ 3%
3. ✔ 4%
4. ✘ 5%

Question Number : 143 Question Id : 5105296555 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following exhibits negative resistance in a portion of its characteristics

Options :

1. ✔ Tunnel diode
2. ✘ Zener diode
3. ✘ JFET
4. ✘ MOSFET and tunnel diode

Question Number : 144 Question Id : 5105296556 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

For maximum unclipped output from a CE amplifier, the Q point should be

Options :

1. ✘ At the centre of dc load line
2. ✔ At the centre of ac load line
3. ✘ At the centre of collector current
4. ✘ At the midpoint of d.c load line

Question Number : 145 Question Id : 5105296557 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The range of RTD using platinum is about

Options :

1. ✔ -100°C to 700°C

2. ✘ – 200°C to 1000°C
3. ✘ 100°C to 1000°C
4. ✘ About 500°C

Question Number : 146 Question Id : 5105296558 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following combinations is not used in thermocouple transducer measurement of temperature?

Options :

1. ✘ Iron - constantan
2. ✘ Chromel - aluminium
3. ✘ Copper - constantan
4. ✔ Iron – silver

Question Number : 147 Question Id : 5105296559 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The moving system of an indicating type of electrical instrument is subjected to

Options :

1. ✘ a deflecting torque
2. ✘ a controlling torque
3. ✘ a damping torque
4. ✔ deflecting, controlling and damping torques

Question Number : 148 Question Id : 5105296560 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The damping force acts on the moving system of an indicating instrument only

when it is

Options :

1. ✔ Moving

2. ✘ Stationary
3. ✘ Near its full deflection
4. ✘ Just starting to move

Question Number : 149 Question Id : 5105296561 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The most efficient form of damping employed in electrical instruments is

Options :

1. ✘ Air-friction
2. ✘ Fluid friction
3. ✔ Eddy current
4. ✘ Air and fluid frictions

Question Number : 150 Question Id : 5105296562 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Moving iron instruments can be used for measuring

Options :

1. ✘ Direct currents and voltages
2. ✘ Alternating current and voltages
3. ✘ Radio frequency current
4. ✔ Radial Frequency Only

Question Number : 151 Question Id : 5105296563 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Permanent magnet moving coil ammeters have uniform scales because

Options :

1. ✘ Of eddy current damping
2. ✘ They are spring controlled

3. ✘ Their deflecting torque varies directly as current
4. ✔ Direct and alternating currents and voltages

Question Number : 152 Question Id : 5105296564 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The meter is suitable for only direct current measurements is

Options :

1. ✘ Moving iron type
2. ✔ Permanent magnet type
3. ✘ Electro dynamic type
4. ✘ Hot-wire type

Question Number : 153 Question Id : 5105296565 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A moving coil voltmeter measures

Options :

1. ✘ Only AC voltages
2. ✔ Only DC voltages
3. ✘ Both AC and DC voltages
4. ✘ Flux and density

Question Number : 154 Question Id : 5105296566 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following is basically a current sensitive instrument

Options :

1. ✔ Permanent Magnet Moving Coil instrument
2. ✘ Cathode ray oscilloscope
3. ✘ Electro-static instrument

4. ✘ FET input electronic voltmeter

Question Number : 155 Question Id : 5105296567 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following materials is used in the fabrication of swamping
resistance of a PMMC instrument

Options :

1. ✘ Copper
2. ✘ Aluminium
3. ✔ Manganin
4. ✘ Tungsten

Question Number : 156 Question Id : 5105296568 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A dynamometer type wattmeter respond to the

Options :

1. ✘ Average value of reactive power
2. ✘ Peak value of reactive power
3. ✔ Average value of active power
4. ✘ Peak value of active power

Question Number : 157 Question Id : 5105296569 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which one of the following types of instruments can be used to determine the rms
value of AC voltage of high magnitude (10 kV) and of any wave shape

Options :

1. ✘ Moving iron instruments
2. ✘ Dynamometer type instrument
3. ✘ Induction instrument

4. ✓ Electrostatic instrument

Question Number : 158 Question Id : 5105296570 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A moving coil instrument gives full scale deflection for 1 mA and has a resistance of 5 ohms. If a resistance of 0.55 ohms is connected in parallel to the instrument, what is the maximum value of current it can measure?

Options :

1. ✗ 100 mA
2. ✗ 50 mA
3. ✓ 10 mA
4. ✗ 5 mA

Question Number : 159 Question Id : 5105296571 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A transducer is a device which

Options :

1. ✗ Transfers a signal from one circuit to the other
2. ✓ Converts a physical quantity to be measured into an equivalent electrical signal
3. ✗ Amplifies a signal for the purpose of measurement
4. ✗ Converts an ac signal into a dc signal.

Question Number : 160 Question Id : 5105296572 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Transducers requiring external power supply for their operation are called

Options :

1. ✓ Passive transducers
2. ✗ Active transducers
3. ✗ Separately excited transducers

4. ✘ Self-excited transducers

Question Number : 161 Question Id : 5105296573 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following is an active transducer?

Options :

1. ✘ Thermistor
2. ✘ LVDT
3. ✘ Photo transistor
4. ✔ Thermocouple

Question Number : 162 Question Id : 5105296574 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Sensitivity of a transducers is

Options :

1. ✘ The quality of output produced by the transducers
2. ✘ The variation of output produced under any disturbed condition
3. ✔ The output produced per unit change in the input quantity being measured
4. ✘ The correctness of the output produced as a proportion to the input variations

Question Number : 163 Question Id : 5105296575 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A thermistor is a

Options :

1. ✘ Temperature-dependent resistor made of conducting material having negative temperature coefficient of resistance
2. ✔ Temperature-dependent resistor made of semiconducting material having negative temperature coefficient of resistance
3. ✘ Temperature-dependent resistor made of conducting material having positive temperature coefficient of resistance

Temperature-dependent resistor made of semiconducting material having

- ✘ positive temperature coefficient of resistance

Question Number : 164 Question Id : 5105296576 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Linear variable differential transformer is a

Options :

- ✘ Temperature-sensitive transducer
- ✘ Pressure transducer
- ✔ Displacement transducer
- ✘ Vibration measuring transducer

Question Number : 165 Question Id : 5105296577 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In an electronic weighing machine, we can use

Options :

- ✔ LVDT-type transducer
- ✘ Thermistor transducers
- ✘ Thermocouple-type transducer
- ✘ Instrumentation amplifier

Question Number : 166 Question Id : 5105296578 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a pressure measurement transducer?

Options :

- ✘ Piezoelectric transducers
- ✘ Strain gauge
- ✘ LVDT
- ✔ Thermocouple

Question Number : 167 Question Id : 5105296579 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a communication medium?

Options :

1. ✘ Free space
2. ✔ Vacuum
3. ✘ Twisted cables
4. ✘ Fibre-optic cable

Question Number : 168 Question Id : 5105296580 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The original information signal to be transmitted is called

Options :

1. ✘ Carrier
2. ✘ Baseband signal
3. ✔ Modulating signal
4. ✘ Modulated signal

Question Number : 169 Question Id : 5105296581 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Modifying a high frequency carrier with the information signal to be transmitted is called

Options :

1. ✔ Modulation
2. ✘ Demodulation
3. ✘ Multiplexing
4. ✘ Detection

Question Number : 170 Question Id : 5105296582 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Recovering information from a modulated signal is called

Options :

1. ✘ Modulation
2. ✘ Multiplexing
3. ✔ Demodulation
4. ✘ Carrier recovery

Question Number : 171 Question Id : 5105296583 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Voice frequency is of the range

Options :

1. ✔ 300-3000Hz
2. ✘ 30-300 kHz
3. ✘ 3-300MHz
4. ✘ 30-300 MHz

Question Number : 172 Question Id : 5105296584 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following statements is not correct?

Options :

1. ✘ Bandwidth is that portion of the electromagnetic spectrum occupied by a signal
Bandwidth is the frequency range over which an information signal is
2. ✘ transmitted
3. ✘ Bandwidth is the frequency range over which a receiver operates
4. ✔ Bandwidth is the sum of upper and lower frequency limits of the signal

Question Number : 173 Question Id : 5105296585 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following is not true for amplitude modulation?

Options :

1. ✘ The information signal varies the amplitude of the carrier sine wave
2. ✘ Frequency of the carrier remains constant
3. ✔ Frequency of the carrier changes

Instantaneous value of carrier amplitude changes in accordance with amplitude and frequency variations of the modulating signal

4. ✘

Question Number : 174 Question Id : 5105296586 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In frequency modulation

Options :

1. ✘ Carrier amplitude is changed by the modulating signal
2. ✔ Carrier frequency is changed by the modulating signal

If amplitude of modulating signal increases the carrier frequency remains constant

3. ✘

4. ✘ Frequency of the carrier must be lower than the modulating frequency

Question Number : 175 Question Id : 5105296587 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Super heterodyne receivers convert all incoming signals to

Options :

1. ✘ A high frequency signal
2. ✔ A lower intermediate frequency signal
3. ✘ A stronger signal
4. ✘ A resonant signal

Question Number : 176 Question Id : 5105296588 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Multiplexing is a process of

Options :

1. ✓ Transmitting multiple signals over a signals over a single channel
2. ✗ Transmitting multiple signals over a signals over a multiple channel
3. ✗ Transmitting same signal over multiple channels

Transmitting multiple signals simultaneously to a receiver on a common

4. ✗ frequency

Question Number : 177 Question Id : 5105296589 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Microwaves are signals with frequency of

Options :

1. ✗ Greater than 1 MHz
2. ✓ Greater than 1 GHz
3. ✗ Greater than 100 MHz
4. ✗ Lower than 100 Hz

Question Number : 178 Question Id : 5105296590 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a common micro-wave application?

Options :

1. ✗ Mobile telephone
2. ✗ Satellite communication
3. ✗ Radar
4. ✓ Fax communication

Question Number : 179 Question Id : 5105296591 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Main advantage of using micro-wave communication is

Options :

1. ✘ Low cost
2. ✘ Simple equipment
3. ✘ Greater transmission distances
4. ✔ Availability of more spectrum space of signals

Question Number : 180 Question Id : 5105296592 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

As the height of the orbit of a satellite from the earth increases, the speed of the satellite

Options :

1. ✘ Increases
2. ✔ Decreases
3. ✘ Remains constant
4. ✘ Increases proportionality

Question Number : 181 Question Id : 5105296593 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The main electronic equipment in a satellite is

Options :

1. ✔ Transponder
2. ✘ Reflector
3. ✘ Solar cells
4. ✘ Modulator

Question Number : 182 Question Id : 5105296594 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Communication satellites are approximately

Options :

1. ✔ 36,000 km away from earth

2. ✘ 22,300 km away from earth
3. ✘ 6,800 km away from earth
4. ✘ 11,000 km away from earth

Question Number : 183 Question Id : 5105296595 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Speed of a communication satellite orbiting at a height of 36,000 km approximately

Options :

1. ✘ 36, 000 km/h
2. ✘ 22, 300 km/h
3. ✘ 6800 km/h
4. ✔ 11, 000 km/h

Question Number : 184 Question Id : 5105296596 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A temperature sensitive transducer is subjected to sudden temperature change. Its

takes 10 seconds for transducer to reach equilibrium condition (five times time

constant). The time taken to reach half of the temperature difference will be

Options :

1. ✔ 1.38 seconds
2. ✘ 5 seconds
3. ✘ 8.62 seconds
4. ✘ 9.8 seconds

Question Number : 185 Question Id : 5105296597 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

In a resistance strain gauge, $G = 2$, stress = 1050 kg/cm^2

young's modulus = $2.1 \times 10^6 \text{ kg/cm}^2$, $R = 1000\Omega$. The value of ΔR will be

Options :

1. ✘ 2Ω
2. ✘ 3Ω
3. ✘ 4Ω
4. ✔ 1Ω

Question Number : 186 Question Id : 5105296598 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A capacitor a transducer has two plates each of area 5mm^2 . The coil gap in 2 mm.

Displacement sensitivity due to change in gap length is

Options :

1. ✔ 11.1 PF/cm
2. ✘ 44.2 PF/cm
3. ✘ 52.3 PF/cm
4. ✘ 66.3 PF/cm

Question Number : 187 Question Id : 5105296599 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Radiation pyrometer to measure temperature in the range of

Options :

1. ✘ -200°c to 500°c
2. ✘ 0°c to 500°c
3. ✘ 500°c to 1200°c
4. ✔ 1200°c to 2500°c

Question Number : 188 Question Id : 5105296600 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

What does API stand of

Options :

1. ✓ Address programming interface
2. ✗ Application programming interface
3. ✗ Accessing peripheral through interface
4. ✗ Address peripheral interface

Question Number : 189 Question Id : 5105296601 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Logic gate is an example of

Options :

1. ✗ Small-scale integrated circuits (SSI)
2. ✓ Medium-scale integrated circuits (MSI)
3. ✗ Large-scale integrated circuits (LSI)
4. ✗ Very-large scale integrated circuits (VLSI)

Question Number : 190 Question Id : 5105296602 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

It is required that a strain gauge has gauge factor of 100. The proper strain gauge is

Options :

1. ✗ Constantan strain gauge
2. ✗ Nichrome strain gauge
3. ✓ Semiconductor strain gauge
4. ✗ Alloy strain gauge

Question Number : 191 Question Id : 5105296603 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. ✓ P S W

2. ✘ S P

3. ✘ D P T R

4. ✘ P C

Question Number : 192 Question Id : 5105296604 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

An RS flip-flop is an integral part of

Options :

1. ✔ IC 555

2. ✘ IC 741

3. ✘ MC 1741

4. ✘ IC 78XX

Question Number : 193 Question Id : 5105296605 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

A IC 555 will have

Options :

1. ✔ 2 comparators, 1 RS flip-flop, 1 discharge transistor

2. ✘ 2 comparators, 2 RS flip-flop, 1 discharge transistor

3. ✘ 1 comparator, 2 RS flip-flop, 1 discharge transistor

4. ✘ 1 comparator, 1 RS flip-flop, 1 discharge transistor

Question Number : 194 Question Id : 5105296606 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

How is the status of the carry, auxiliary carry and parity affected if write instruction

MOV A, #9C

ADD A, #64H

Options :

1. ✘ CY = 0, AC = 0, P = 0

2. ✘ $CY = 1, AC = 1, P = 0$
3. ✘ $CY = 0, AC = 1, P = 0$
4. ✔ $CY = 1, AC = 1, P = 1$

Question Number : 195 Question Id : 5105296607 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

SCADA systems encompass the transfer of data between a central host computer and a number of _____ and/ or programmable logic controllers and the central host and the operator terminals

Options :

1. ✘ Distributed control systems
2. ✘ Microcontroller
3. ✔ Remote terminal unit
4. ✘ Master terminal unit

Question Number : 196 Question Id : 5105296608 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which of the following statements is not true?

Options :

Logic gates, flip-flops, counters, shift registers, etc., form a digital integrated

1. ✘ circuit
2. ✘ The NAND or NOR gates are the universal building block of digital systems
3. ✘ TTL stands for transistor-transistor logic
4. ✔ In an integrated circuit only active components incorporated in a single chip

Question Number : 197 Question Id : 5105296609 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Connecting of inverters at all the inputs of an AND gate produces a

Options :

1. ✘ NAND gate
2. ✘ OR gate
3. ✔ NOR gate
4. ✘ XOR gate

Question Number : 198 Question Id : 5105296610 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

Which activity is concerned with identifying the task at the final embedded systems

Options :

1. ✘ High – level transformation
2. ✘ Compilation
3. ✘ Scheduling
4. ✔ Task-level concurrency management

Question Number : 199 Question Id : 5105296611 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

An astable multivibrator

Options :

1. ✔ Generates a continuous flow of pulses
2. ✘ Is a flip-flop
3. ✘ Generates a single short pulse
4. ✘ Always is in one of the two stable states.

Question Number : 200 Question Id : 5105296612 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes
Single Line Question Option : No Option Orientation : Vertical

The master-slave JK flip-flop is an example of

Options :

1. ✘ Level-triggered device
2. ✘ Positive edge-triggered device

3. ✘ Negative edge-triggered device
4. ✔ Pulse-triggered device