

# Andhra Pradesh State Council of Higher Education

## Notations :

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

|                                                                            |                                                                  |
|----------------------------------------------------------------------------|------------------------------------------------------------------|
| Question Paper Name :                                                      | Electronics and Instrumentation Engineering 19th Sep 2021 Shift2 |
| Duration :                                                                 | 180                                                              |
| Total Marks :                                                              | 200                                                              |
| Display Marks:                                                             | No                                                               |
| Calculator :                                                               | None                                                             |
| Magnifying Glass Required? :                                               | No                                                               |
| Ruler Required? :                                                          | No                                                               |
| Eraser Required? :                                                         | No                                                               |
| Scratch Pad Required? :                                                    | No                                                               |
| Rough Sketch/Notepad Required? :                                           | No                                                               |
| Protractor Required? :                                                     | No                                                               |
| Show Watermark on Console? :                                               | Yes                                                              |
| Highlighter :                                                              | No                                                               |
| Auto Save on Console? ( SA type of questions will be always auto saved ) : | Yes                                                              |
| Is this Group for Examiner? :                                              | No                                                               |

## Mathematics

|                                                              |           |
|--------------------------------------------------------------|-----------|
| Section Id :                                                 | 477203409 |
| Section Number :                                             | 1         |
| Mandatory or Optional :                                      | Mandatory |
| Number of Questions :                                        | 50        |
| Section Marks :                                              | 50        |
| Enable Mark as Answered Mark for Review and Clear Response : | Yes       |

Question Number : 1 Question Id : 47720320833 Display Question Number : Yes Is Question Mandatory : No

If  $k \neq -5$  is a real number, then, the number of solutions to the following system of equations

$$3x - y + 4z = 3$$

$$x + 2y - 3z = -2$$

$$6x + 5y + kz = -3 \quad \text{is}$$

Options :

1. ✖ 0

2. ✔ 1

3. ✖ 2

4. ✖ infinitely many

Question Number : 2 Question Id : 47720320834 Display Question Number : Yes Is Question Mandatory : No

$$\begin{vmatrix} 1 & 1+p & 1+p+q \\ 2 & 3+2p & 4+3p+2q \\ 3 & 6+3p & 10+6p+3q \end{vmatrix} =$$

Options :

1. ✖ 0

2. ✔ 1

3. ✖ 2

4. ✖ 3

Question Number : 3 Question Id : 47720320835 Display Question Number : Yes Is Question Mandatory : No

Let  $|A|$  denote the determinant of the matrix  $A$ . If  $A$  is a square matrix of order 3, and  $|4A| = r|A|$ , then the value of  $r$  is

Options :

1. ✖ 0

2. ✖ 4

3. ✖ 16

4. ✔ 64

Question Number : 4 Question Id : 47720320836 Display Question Number : Yes Is Question Mandatory : No

If  $\begin{vmatrix} y & y \\ 1 & y \end{vmatrix} = \begin{vmatrix} 3 & 4 \\ 1 & 2 \end{vmatrix}$ , then the value of  $y$  is

Options :

1. ✖ 0

2. ✖ 1

3. ✔ 2

4. ✖ 3

Question Number : 5 Question Id : 47720320837 Display Question Number : Yes Is Question Mandatory : No

Let  $\begin{vmatrix} 2 & 3+i & -1 \\ 3-i & 0 & -1+i \\ -1 & -1-i & 1 \end{vmatrix} = a + ib$ , where  $a$  and  $b$  are real numbers. Then the value of  $b$  is

Options :

1. ✔ 0

2. ✖ 1

3. ✖ 3

4. ✖ 4

Question Number : 6 Question Id : 47720320838 Display Question Number : Yes Is Question Mandatory : No

If  $\frac{y^2-5y+1}{(y+1)(y+2)(y+3)} = \frac{a}{y+1} + \frac{b}{(y+1)(y+2)} + \frac{c}{(y+1)(y+2)(y+3)}$ , then,

Options :

1. ✖  $a = 1, b = 10, c = 25$

2. ✔  $a = 1, b = -10, c = 25$

3. ✖  $a = 5, b = 10, c = 25$

4. ✖  $a = 5, b = -10, c = 25$

Question Number : 7 Question Id : 47720320839 Display Question Number : Yes Is Question Mandatory : No

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

Options :

1. ✖  $\frac{5}{17(x+4)} + \frac{5x+14}{17(x^2+1)}$

2. ✖  $\frac{-5}{17(x+4)} - \frac{5x+14}{17(x^2+1)}$

3. ✔  $\frac{-5}{17(x+4)} + \frac{5x+14}{17(x^2+1)}$

$$\frac{-5}{17(x+4)} + \frac{5x-14}{17(x^2+1)}$$

4. ✖

**Question Number : 8 Question Id : 47720320840 Display Question Number : Yes Is Question Mandatory : No**

If  $x$  and  $y$  are two distinct real numbers, then, the number of values of  $\theta$  in  $[0, 2\pi]$  for which  $\operatorname{cosec} \theta = \frac{x^2 - y^2}{x^2 + y^2}$  is

**Options :**

1. ✔ 0

2. ✖ 1

3. ✖ 2

4. ✖ 3

**Question Number : 9 Question Id : 47720320841 Display Question Number : Yes Is Question Mandatory : No**

If  $\cos(\alpha - \beta) + \cos(\beta - \gamma) + \cos(\gamma - \alpha) = -\frac{3}{2}$ , then  $\cos \alpha + \cos \beta + \cos \gamma =$

**Options :**

1. ✖  $-\frac{3}{2}$

2. ✖  $-1$

3. ✔ 0

4. ✖ 1

**Question Number : 10 Question Id : 47720320842 Display Question Number : Yes Is Question Mandatory : No**

For all real numbers  $\theta$ , the value of  $\sin^2 \theta + \cos^4 \theta$  is greater than or equal to

**Options :**

1. ✔  $\frac{3}{4}$

2. ✖ 1

3. ✖  $\frac{5}{4}$

4. ✖ 2

**Question Number : 11 Question Id : 47720320843 Display Question Number : Yes Is Question Mandatory : No**

Let  $x$  be a real number such that  $\tan\left(\frac{\pi}{4} + x\right) + \tan\left(\frac{\pi}{4} - x\right) = 2$ . Then  $x$  is of the form  $x = n\pi + a$ , where  $n \in \mathbb{Z}$ , and  $a =$

**Options :**

1. ✔ 0

2. ✖  $\frac{\pi}{3}$

3. ✖  $\frac{\pi}{4}$

4. ✖  $\frac{\pi}{6}$

Question Number : 12 Question Id : 47720320844 Display Question Number : Yes Is Question Mandatory : No

If  $(\sin^{-1} x) > (\cos^{-1} x)$ , then  $x$  belongs to the interval

Options :

1. ✖  $[0, \frac{1}{\sqrt{2}})$

2. ✔  $(\frac{1}{\sqrt{2}}, 1]$

3. ✖  $[\frac{1}{\sqrt{2}}, 1]$

4. ✖  $[0, \frac{1}{\sqrt{2}}]$

Question Number : 13 Question Id : 47720320845 Display Question Number : Yes Is Question Mandatory : No

Consider a triangle  $\triangle ABC$ , with sides of length  $a, b$  and  $c$ , and angles  $A, B$  and  $C$ . If

$a, b, c$  and the area of the triangle  $\triangle ABC$  are all rational, then

Options :

1. ✖  $\tan \frac{B}{2}$  is rational and  $\tan \frac{C}{2}$  is irrational.

2. ✖

$\tan \frac{B}{2}$  is irrational and  $\tan \frac{C}{2}$  is rational.

3. ✓  $\tan \frac{B}{2}$  and  $\tan \frac{C}{2}$  are both rational.

4. ✗  $\tan \frac{B}{2}$  and  $\tan \frac{C}{2}$  are both irrational.

Question Number : 14 Question Id : 47720320846 Display Question Number : Yes Is Question Mandatory : No

Consider a triangle  $\triangle ABC$ , with sides of length  $a, b$  and  $c$ , and angles  $A, B$  and  $C$ . If

$3a=b+c$ , then the value of  $\cot \frac{B}{2} \cdot \cot \frac{C}{2}$  is

Options :

1. ✗ 0

2. ✗  $\frac{1}{2}$

3. ✗  $\sqrt{3}$

4. ✓ 2

Question Number : 15 Question Id : 47720320847 Display Question Number : Yes Is Question Mandatory : No

$$2 \tan^{-1} \left( \frac{3}{4} \right) - \tan^{-1} \left( \frac{17}{31} \right) =$$

Options :

1. ✖ 0

2. ✔  $\frac{\pi}{4}$

3. ✖  $\frac{\pi}{2}$

4. ✖  $\pi$

**Question Number : 16 Question Id : 47720320848 Display Question Number : Yes Is Question Mandatory : No**

Consider a triangle  $\triangle ABC$  with angles  $A, B$  and  $C$ . If  $\cos A + \cos B + \cos C = \frac{3}{2}$ , then the triangle  $\triangle ABC$  is

**Options :**

1. ✔ equilateral.

2. ✖ isosceles, and right-angled.

3. ✖ isosceles, with one of the angles equal to  $\frac{\pi}{6}$ .

4. ✖ scalene

**Question Number : 17 Question Id : 47720320849 Display Question Number : Yes Is Question Mandatory : No**

The value of  $\cos^2 x + \cos^2 \left(x + \frac{\pi}{3}\right) + \cos^2 \left(x - \frac{\pi}{3}\right)$  is

Options :

1. ✖ 1

2. ✔  $\frac{3}{2}$

3. ✖ 2

4. ✖  $\frac{5}{2}$

Question Number : 18 Question Id : 47720320850 Display Question Number : Yes Is Question Mandatory : No

The value of  $\left(\frac{\sqrt{3}+i}{\sqrt{3}-i}\right)^3$  is

Options :

1. ✖  $-2\sqrt{2}$

2. ✔  $-1$

3. ✖ 0

4. ✖  $2\sqrt{2}$

Question Number : 19 Question Id : 47720320851 Display Question Number : Yes Is Question Mandatory : No

If  $x + iy = \frac{a+ib}{a-ib}$ , then  $x^2 + y^2 =$

Options :

1. ✖ 0

2. ✔ 1

3. ✖ 2

4. ✖ 4

Question Number : 20 Question Id : 47720320852 Display Question Number : Yes Is Question Mandatory : No

If a circle of radius 5 touches the circle  $x^2 + y^2 - 2x - 4y = 20$  at the point  $(5,5)$ , then, its center is

Options :

1. ✖ (8,8)

2. ✖ (8,9)

3. ✔ (9,8)

4. ✖ (9,9)

Question Number : 21 Question Id : 47720320853 Display Question Number : Yes Is Question Mandatory : No

The equation  $9x^2 - 24xy + 16y^2 - 20x - 15y = 60$  represents

Options :

1. ✓ a parabola

2. ✗ an ellipse

3. ✗ a hyperbola

4. ✗ a circle

**Question Number : 22 Question Id : 47720320854 Display Question Number : Yes Is Question Mandatory : No**

Let  $(x_j, y_j)$ ,  $j=1,2,3,4$ , be points of intersection of the parabola  $y^2 = 4ax$  and the circle  $x^2 + y^2 + 2gx + 2fy + c = 0$ .

Then  $y_1 + y_2 + y_3 + y_4 =$

**Options :**

1. ✗  $-2$

2. ✗  $-\frac{1}{2}$

3. ✓  $0$

4. ✗  $\frac{1}{2}$

**Question Number : 23 Question Id : 47720320855 Display Question Number : Yes Is Question Mandatory : No**

The length of the major axis of the ellipse  $9x^2 + 5y^2 - 30y = 0$  is

Options :

1. ✖  $\sqrt{5}$

2. ✖ 3

3. ✖  $2\sqrt{5}$

4. ✔ 6

Question Number : 24 Question Id : 47720320856 Display Question Number : Yes Is Question Mandatory : No

If  $S(-1, 1)$  is one of the foci of a hyperbola,  $x - y + 3 = 0$  is its directrix corresponding to  $S$  and 3 is its eccentricity, then, the equation of the hyperbola is

Options :

1. ✖  $7x^2 + 18xy + 7y^2 + 50x + 50y + 77 = 0$

2. ✖  $7x^2 + 18xy + 7y^2 + 50x - 50y + 77 = 0$

3. ✔  $7x^2 - 18xy + 7y^2 + 50x - 50y + 77 = 0$

4. ✖  $7x^2 - 18xy - 7y^2 - 50x + 50y + 77 = 0$

Question Number : 25 Question Id : 47720320857 Display Question Number : Yes Is Question Mandatory : No

The equation  $4(x - 2y + 1)^2 + 9(2x + y + 2)^2 = 25$  represents

**Options :**

1. ✖ a parabola
2. ✔ an ellipse
3. ✖ a hyperbola
4. ✖ a circle

**Question Number : 26 Question Id : 47720320858 Display Question Number : Yes Is Question**

**Mandatory : No**

Let  $f$  be a twice differentiable function such that  $f''(x) + f(x) = 0$ , and  $f'(x) = g(x)$ . If  $h(x) = [f(x)]^2 + [g(x)]^2$ , and  $h(10) = 20$ , then  $h(40) =$

**Options :**

1. ✔ 20
2. ✖ 40
3. ✖ 80
4. ✖ 160

**Question Number : 27 Question Id : 47720320859 Display Question Number : Yes Is Question**

**Mandatory : No**

$$\lim_{x \rightarrow \frac{\pi}{2}} \left( \frac{\cot x - \cos x}{\cos^2 x} \right) =$$

Options :

1. ✖  $-1$

2. ✔  $0$

3. ✖  $\sqrt{3}$

4. ✖  $\frac{\pi}{2}$

Question Number : 28 Question Id : 47720320860 Display Question Number : Yes Is Question Mandatory : No

Let  $\mathbb{R}$  be the set of all real numbers. Let  $f : \mathbb{R} \rightarrow \mathbb{R}$  satisfy the condition:

$|f(x) - f(y)| \leq |x - y|^{2021}$ , for all  $x, y \in \mathbb{R}$ . Then the value of  $f'(2022)$  is

Options :

1. ✔  $0$

2. ✖  $1$

3. ✖  $2021$

4. ✖  $2022$

Question Number : 29 Question Id : 47720320861 Display Question Number : Yes Is Question

**Mandatory : No**

The number of real roots of the equation  $x + e^x = 0$  is

**Options :**

1. ✖ 0

2. ✔ 1

3. ✖ 2

4. ✖ Infinitely many

**Question Number : 30 Question Id : 47720320862 Display Question Number : Yes Is Question**

**Mandatory : No**

If  $y = \tan^{-1} \left( \frac{\sqrt{1+\sin x} + \sqrt{1-\sin x}}{\sqrt{1+\sin x} - \sqrt{1-\sin x}} \right)$ , then  $\frac{dy}{dx} =$

**Options :**

1. ✖  $\cot^2 x$

2. ✖  $\sec^2 x$

3. ✔  $-\frac{1}{2}$

4. ✖  $\frac{1}{2}$

**Question Number : 31 Question Id : 47720320863 Display Question Number : Yes Is Question Mandatory : No**

The equation of the tangent to the curve  $x = \sin 3t$ ,  $y = \cos 2t$ , at  $t = \frac{\pi}{4}$  is given by

**Options :**

1. ✖  $\sqrt{2}x - 3y - 2 = 0$

2. ✖  $\sqrt{2}x + 3y - 2 = 0$

3. ✔  $2\sqrt{2}x - 3y - 2 = 0$

4. ✖  $2\sqrt{2}x - 3y + 2 = 0$

**Question Number : 32 Question Id : 47720320864 Display Question Number : Yes Is Question Mandatory : No**

An open tank with a square base (with side  $x$ ) and vertical sides (with height  $y$ ) is to be constructed from a metal sheet so as to hold a given quantity of water. The cost of the material will be the least if

**Options :**

1. ✖  $x=y$

2. ✔  $x=2y$

3. ✖  $2x=y$

4. ✖

$$4x=y$$

**Question Number : 33 Question Id : 47720320865 Display Question Number : Yes Is Question Mandatory : No**

The function  $f(x) = x^3 - 12x^2 + 36x + 48$ , is decreasing in the interval

**Options :**

1. ✖  $(-\infty, 2)$

2. ✖  $(-\infty, 6)$

3. ✔  $(2, 6)$

4. ✖  $(6, \infty)$

**Question Number : 34 Question Id : 47720320866 Display Question Number : Yes Is Question Mandatory : No**

A shopkeeper can buy  $x$  items for Rs.  $\left(\frac{x}{5} + 500\right)$ . He can sell the  $x$  items at the rate

Rs.  $\left(5 - \frac{x}{100}\right)$  per item. Then the number of items he should sell to make maximum profit is

**Options :**

1. ✔ 240

2. ✖ 360

3. ✖ 400

4. ✖ 500

Question Number : 35 Question Id : 47720320867 Display Question Number : Yes Is Question Mandatory : No

If  $z = ax^2 + 2hxy + by^2$ , then  $x \frac{\partial z}{\partial x} + y \frac{\partial z}{\partial y} =$

Options :

1. ✖  $z$

2. ✖  $z^2$

3. ✖  $\frac{1}{2}z$

4. ✔  $2z$

Question Number : 36 Question Id : 47720320868 Display Question Number : Yes Is Question Mandatory : No

$\int_{-1}^1 \frac{x \sin^{-1} x}{\sqrt{1-x^2}} dx =$

Options :

1. ✖ 0

2. ✖ 1

3. ✖  $\frac{3}{2}$

4. ✔ 2

**Question Number : 37 Question Id : 47720320869 Display Question Number : Yes Is Question Mandatory : No**

The area of the region bounded by the curve  $y = x^2 + 4$ , the x-axis and the ordinates at  $x=1$  and  $x=5$  is

**Options :**

1. ✖  $\frac{147}{3}$

2. ✔  $\frac{172}{3}$

3. ✖  $\frac{187}{3}$

4. ✖  $\frac{227}{3}$

**Question Number : 38 Question Id : 47720320870 Display Question Number : Yes Is Question Mandatory : No**

$$\lim_{n \rightarrow \infty} \sum_{k=0}^{n-1} \frac{1}{\sqrt{n^2 - k^2}} =$$

**Options :**

1. ✖ 0

2. ✔

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

3. ✖  $\pi$

4. ✖  $2\pi$

Question Number : 39 Question Id : 47720320871 Display Question Number : Yes Is Question Mandatory : No

$$\int_0^1 \frac{2x}{1+x^2} dx =$$

Options :

1. ✖ 1

2. ✖ 2

3. ✔  $\log 2$

4. ✖  $3 \log 2$

Question Number : 40 Question Id : 47720320872 Display Question Number : Yes Is Question Mandatory : No

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

(In the following,  $c$  is a constant.)

Options :

1. ✓  $\frac{1}{a} \log |e^{ax} + e^{-ax}| + c$

2. ✗  $\frac{1}{a} \log |e^{ax} - e^{-ax}| + c$

3. ✗  $\frac{1}{2a} \log |e^{ax} + e^{-ax}| + c$

4. ✗  $\frac{1}{2a} \log |e^{ax} - e^{-ax}| + c$

Question Number : 41 Question Id : 47720320873 Display Question Number : Yes Is Question Mandatory : No

$$\int_0^{\pi} \frac{e^{\cos x}}{e^{\cos x} + e^{-\cos x}} dx =$$

Options :

1. ✗  $-\pi$

2. ✗  $0$

3. ✓  $\frac{\pi}{2}$

4. ✗  $\pi$

Question Number : 42 Question Id : 47720320874 Display Question Number : Yes Is Question Mandatory : No

$$\int_{-\pi}^{\pi} \sin^5 x \, dx =$$

Options :

1. ✓ 0

2. ✗  $\frac{\pi}{2}$

3. ✗  $\pi$

4. ✗  $2\pi$

Question Number : 43 Question Id : 47720320875 Display Question Number : Yes Is Question Mandatory : No

The area of the region bounded by  $y=|x+3|$ , the x-axis and the lines  $x = -6$  and  $x = 0$  is

Options :

1. ✗ 3 square units

2. ✓ 9 square units

3. ✗ 12 square units

4. ✗ 18 square units

Question Number : 44 Question Id : 47720320876 Display Question Number : Yes Is Question

**Mandatory : No**

The degree of the differential equation  $7x \left( \frac{dy}{dx} \right)^2 - \frac{d^2y}{dx^2} + 10y = \log x$  is

**Options :**

1. ✓ 1

2. ✗ 2

3. ✗ 3

4. ✗ 4

**Question Number : 45 Question Id : 47720320877 Display Question Number : Yes Is Question**

**Mandatory : No**

The solution of the differential equation  $\frac{dy}{dx} = y \tan x$ , given that  $y=1$  when  $x=0$ , is given by

**Options :**

1. ✗  $y = \cos x$

2. ✗  $y = \cos 2x$

3. ✓  $y = \sec x$

4. ✗  $y = \sec 2x$

**Question Number : 46 Question Id : 47720320878 Display Question Number : Yes Is Question Mandatory : No**

The solution to the differential equation  $(3x^2 + y) \frac{dx}{dy} = x$ , ( $x > 0$ ), such that  $y=1$  if  $x=1$  is

**Options :**

1. ✖  $y = 2x^2 - x$

2. ✔  $y = 3x^2 - 2x$

3. ✖  $y = 4x^2 - 3x$

4. ✖  $y = 5x^2 - 4x$

**Question Number : 47 Question Id : 47720320879 Display Question Number : Yes Is Question Mandatory : No**

The differential equation of the family of parabolas having vertex at the origin and axis along the positive y-axis is

**Options :**

1. ✖  $xy' = 2$

2. ✔  $xy' = 2y$

3. ✖  $xy' = -2y$

4. ✖  $xy' = 2y^2$

**Question Number : 48 Question Id : 47720320880 Display Question Number : Yes Is Question**

**Mandatory : No**

The solution of the differential equation  $\frac{dy}{dx} + y \cot x = 4x \operatorname{cosec} x$ , ( $x \neq 0$ ), given that  $y=0$  when  $x = \frac{\pi}{2}$  is

**Options :**

$$y \operatorname{cosec} x = x^2 - \frac{\pi^2}{4}$$

1. ✖

$$y \operatorname{cosec} x = 2x^2 - \frac{\pi^2}{2}$$

2. ✖

$$y \sin x = x^2 - \frac{\pi^2}{4}$$

3. ✖

$$y \sin x = 2x^2 - \frac{\pi^2}{2}$$

4. ✔

**Question Number : 49 Question Id : 47720320881 Display Question Number : Yes Is Question**

**Mandatory : No**

The general solution of the differential equation  $\log_e \left( \frac{dy}{dx} \right) = ax + by$  is given by

**Options :**

$$ae^{ax} + be^{-by} + C = 0$$

1. ✖

$$ae^{ax} - be^{-by} + C = 0$$

2. ✖

$$\frac{1}{a}e^{ax} + \frac{1}{b}e^{-by} + C = 0$$

3. ✔

4. ✖  $\frac{1}{a}e^{ax} - \frac{1}{b}e^{-by} + C = 0$

**Question Number : 50 Question Id : 47720320882 Display Question Number : Yes Is Question Mandatory : No**

The particular integral of the differential equation  $(D^2 + D - 2)y = \sin x$  is given by

**Options :**

1. ✖  $-\frac{1}{10}(\cos x + \sin x)$

2. ✔  $-\frac{1}{10}(\cos x + 3 \sin x)$

3. ✖  $-\frac{1}{10}(\cos 3x + \sin 3x)$

4. ✖  $-\frac{1}{10}(3 \cos x + \sin x)$

## Physics

|                                                    |           |
|----------------------------------------------------|-----------|
| <b>Section Id :</b>                                | 477203410 |
| <b>Section Number :</b>                            | 2         |
| <b>Mandatory or Optional :</b>                     | Mandatory |
| <b>Number of Questions :</b>                       | 25        |
| <b>Section Marks :</b>                             | 25        |
| <b>Enable Mark as Answered Mark for Review and</b> | Yes       |

Clear Response :

Question Number : 51 Question Id : 47720320883 Display Question Number : Yes Is Question Mandatory : No

The dimensional formula for gravitational constant, G is

Options :

1. ✖  $M^1L^3T^{-2}$

2. ✔  $M^{-1}L^3T^{-2}$

3. ✖  $M^0L^3T^{-2}$

4. ✖  $M^2L^3T^{-2}$

Question Number : 52 Question Id : 47720320884 Display Question Number : Yes Is Question Mandatory : No

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

Options :

1. ✖ electric field = Newton/Coulomb

2. ✖ surface tension = Newton/meter

3. ✔ energy = kg m/s

4. ✖ pressure = Newton/m<sup>2</sup>

Question Number : 53 Question Id : 47720320885 Display Question Number : Yes Is Question

Mandatory : No

A vector A is along positive x-axis. If B is another vector such that  $A \times B$  is zero, then B could be

Options :

1. ✖  $4\hat{j}$

2. ✔  $-4\hat{i}$

3. ✖  $-(\hat{i} + \hat{j})$

4. ✖  $(\hat{j} + \hat{k})$

Question Number : 54 Question Id : 47720320886 Display Question Number : Yes Is Question

Mandatory : No

The scalar product of two vectors is  $2\sqrt{3}$  and the magnitude of their vector product is 2.

The angle between them is

Options :

1. ✔  $30^\circ$

2. ✖  $45^\circ$

3. ✖  $60^\circ$

4. ✖  $90^\circ$

Question Number : 55 Question Id : 47720320887 Display Question Number : Yes Is Question

**Mandatory : No**

The work done by a force is defined as  $W = \mathbf{F} \cdot \mathbf{S}$ . In a certain situation  $\mathbf{F}$  and  $\mathbf{S}$  are not zero but the work done is zero when

**Options :**

1. ✖  $\mathbf{F}$  and  $\mathbf{S}$  are in the same direction
2. ✖  $\mathbf{F}$  and  $\mathbf{S}$  are in opposite direction
3. ✔  $\mathbf{F}$  and  $\mathbf{S}$  are at right angles
4. ✖  $\mathbf{F}$  and  $\mathbf{S}$  are at  $45^\circ$

**Question Number : 56 Question Id : 47720320888 Display Question Number : Yes Is Question**

**Mandatory : No**

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

**Options :**

1. ✖  $y = 4x$
2. ✖  $y = x$
3. ✔  $y = 3x$
4. ✖  $y = 2x$

**Question Number : 57 Question Id : 47720320889 Display Question Number : Yes Is Question**

**Mandatory : No**

A projectile is projected with initial velocity  $(6\hat{i} + 8\hat{j})$  m/s. If  $g = 10 \text{ m/s}^2$  then horizontal range is

**Options :**

1. ✖ 4.8 m
2. ✔ 9.6 m
3. ✖ 19.2 m
4. ✖ 14.0 m

**Question Number : 58 Question Id : 47720320890 Display Question Number : Yes Is Question**

**Mandatory : No**

The maximum range of a projectile fired with some initial velocity is found to be 1000 m/s, in the absence of wind and air resistance. The maximum height reached by this projectile is

**Options :**

1. ✔ 250 m
2. ✖ 500 m
3. ✖ 1000 m
4. ✖ 2000 m

**Question Number : 59 Question Id : 47720320891 Display Question Number : Yes Is Question**

**Mandatory : No**

The force of friction between two bodies is

**Options :**

1. ✓ parallel to the contact surface
2. ✗ perpendicular to the contact surface
3. ✗ inclined at  $30^0$  to the contact surface
4. ✗ inclined at  $60^0$  to the contact surface

**Question Number : 60 Question Id : 47720320892 Display Question Number : Yes Is Question**

**Mandatory : No**

A body is sliding down an inclined plane under its own weight at constant speed. If the inclination of the plane to the horizontal is  $30^0$ , the angle of friction is

**Options :**

1. ✓  $30^0$
2. ✗  $60^0$
3. ✗  $45^0$
4. ✗  $90^0$

Question Number : 61 Question Id : 47720320893 Display Question Number : Yes Is Question

Mandatory : No

A block of mass 5 kg is resting on a smooth surface. At what angle, a force of 20 N be acted on the body so that it will acquire a kinetic energy of 40 J after moving 4m

Options :

1. ✖  $30^0$

2. ✖  $45^0$

3. ✔  $60^0$

4. ✖  $120^0$

Question Number : 62 Question Id : 47720320894 Display Question Number : Yes Is Question

Mandatory : No

Two men with the weights in the ratio 4:3 run up a staircase in time, in the ratio 12:11. The ratio of power of the first to that of second is

Options :

1. ✖  $\frac{4}{3}$

2. ✖  $\frac{12}{11}$

3. ✖  $\frac{48}{33}$

4. ✔  $\frac{11}{9}$

Question Number : 63 Question Id : 47720320895 Display Question Number : Yes Is Question Mandatory : No

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

Options :

- 1. ✖ Solar
- 2. ✔ Hydel
- 3. ✖ Tidal
- 4. ✖ Geothermal

Question Number : 64 Question Id : 47720320896 Display Question Number : Yes Is Question Mandatory : No

The total mechanical energy of a spring-mass system in simple harmonic motion is  $E = 0.5 m\omega^2 A^2$ . If the oscillating particle is replaced by another particle of double the mass while the amplitude  $A$  remains the same. The new mechanical energy is

Options :

- 1. ✖  $2E$
- 2. ✖  $0.5 E$
- 3. ✖  $\sqrt{2} E$
- 4. ✔  $E$

**Question Number : 65 Question Id : 47720320897 Display Question Number : Yes Is Question**

**Mandatory : No**

Sound of frequency 1000 Hz from a stationary source is reflected from an object approaching the source at 30 m/s back to a stationary observer located at the source. The speed of sound in air is 330 m/s. The frequency of the sound heard by the observer is

**Options :**

1. ✓ 1200 Hz
2. ✗ 1000 Hz
3. ✗ 1090 Hz
4. ✗ 1100 Hz

**Question Number : 66 Question Id : 47720320898 Display Question Number : Yes Is Question**

**Mandatory : No**

The frequency of a pendulum if it is taken from the earth's surface to deep into a mine

**Options :**

1. ✗ increases
2. ✓ decreases
3. ✗ first increases then decreases
4. ✗ remains unchanged

**Question Number : 67 Question Id : 47720320899 Display Question Number : Yes Is Question Mandatory : No**

Two waves of lengths 50 cm and 51 cm produced 12 beats per second. The velocity of sound is

**Options :**

- 1. ✖ 340 m/s
- 2. ✖ 2. 331 m/s
- 3. ✔ 306 m/s
- 4. ✖ 360 m/s

**Question Number : 68 Question Id : 47720320900 Display Question Number : Yes Is Question Mandatory : No**

According to reverberation time the final intensity is around

**Options :**

- 1. ✖ one-hundredth of the initial intensity
- 2. ✖ one-tenth of the initial intensity
- 3. ✖ one-thousandth of the initial intensity
- 4. ✔ one-millionth of the initial intensity

**Question Number : 69 Question Id : 47720320901 Display Question Number : Yes Is Question Mandatory : No**

An ideal gas has volume  $V$  at pressure  $P$  and temperature  $T$ . Mass of each molecule is  $m$ . The density of the gas is

**Options :**

1. ✖  $mKT$

2. ✖  $\frac{P}{KT}$

3. ✖  $\frac{P}{KTV}$

4. ✔  $\frac{Pm}{KT}$

**Question Number : 70 Question Id : 47720320902 Display Question Number : Yes Is Question Mandatory : No**

Work done by 0.1 mole of a gas at  $27^{\circ}\text{C}$  to double its volume at constant pressure is  
( $R=2 \text{ cal/mol/K}$ )

**Options :**

1. ✖ 54 cal

2. ✖ 600 cal

3. ✔ 60 cal

4. ✖

546 cal

**Question Number : 71 Question Id : 47720320903 Display Question Number : Yes Is Question Mandatory : No**

If the pressure of a gas contained in a closed vessel is increased by 0.4%, when heated by  $1^{\circ}\text{C}$ , its initial temperature is

**Options :**

1. ☒ 250 K

2. ☐ 150 K

3. ☐ 100 K

4. ☐ 50 K

**Question Number : 72 Question Id : 47720320904 Display Question Number : Yes Is Question Mandatory : No**

A monoatomic ideal gas, initially at temperature  $T_1$  is enclosed in a cylinder fitted with a frictionless piston. The gas is allowed to expand adiabatically to a temperature  $T_2$  by releasing the piston suddenly. If  $L_1$  and  $L_2$  are the lengths of the gas column, before and after expansion respectively,  $T_1/T_2$  is given by

**Options :**

1. ☐  $\left(\frac{L_1}{L_2}\right)^{2/3}$

2. ☒  $\left(\frac{L_2}{L_1}\right)^{2/3}$

3. ✖  $\frac{L_1}{L_2}$

4. ✖  $\frac{L_2}{L_1}$

**Question Number : 73 Question Id : 47720320905 Display Question Number : Yes Is Question Mandatory : No**

A Carnot's engine operates with source at  $127^0\text{C}$  and sink at  $27^0\text{C}$ . If the source supplies 40 kJ of heat energy, the work done by the engine is

**Options :**

1. ✖ 30 kJ

2. ✔ 10 kJ

3. ✖ 4 kJ

4. ✖ 1 kJ

**Question Number : 74 Question Id : 47720320906 Display Question Number : Yes Is Question Mandatory : No**

The optical fibre consisting of a central core is clad by material of

**Options :**

1. ✔ slightly lower refractive index

2. ✖

slightly higher refractive index

equal refractive index

3. ✖

very high refractive index

4. ✖

**Question Number : 75 Question Id : 47720320907 Display Question Number : Yes Is Question Mandatory : No**

The susceptibility of the superconductor is

**Options :**

1. ✖ positive and small

2. ✖ negative and small

3. ✖ positive and unity

4. ✔ negative and unity

## Chemistry

|                         |           |
|-------------------------|-----------|
| Section Id :            | 477203411 |
| Section Number :        | 3         |
| Mandatory or Optional : | Mandatory |
| Number of Questions :   | 25        |
| Section Marks :         | 25        |

Enable Mark as Answered Mark for Review and  
Clear Response :

Yes

Question Number : 76 Question Id : 47720320908 Display Question Number : Yes Is Question  
Mandatory : No

The nucleus of tritium consists of -----

Options :

1. ✖ 1 proton + 1 neutron
2. ✖ 1 proton + 3 neutrons
3. ✖ 1 proton + zero neutron
4. ✔ 1 proton + 2 neutrons

Question Number : 77 Question Id : 47720320909 Display Question Number : Yes Is Question  
Mandatory : No

Which of the following electronic configuration is not possible?

Options :

1. ✖  $1s^2 2s^2 2p^6$
2. ✔  $1s^2 2s^2 2p^7$
3. ✖  $1s^2 2s^2$
4. ✖  $1s^2 2s^2 2p^5$

Question Number : 78 Question Id : 47720320910 Display Question Number : Yes Is Question Mandatory : No

Radius of 3<sup>rd</sup> Bohr orbit of hydrogen atom is -----

Options :

1. ✖ 6.529A<sup>0</sup>

2. ✔ 4.761A<sup>0</sup>

3. ✖ 2.116A<sup>0</sup>

4. ✖ 8.464A<sup>0</sup>

Question Number : 79 Question Id : 47720320911 Display Question Number : Yes Is Question Mandatory : No

Covalent compounds are generally soluble in -----

Options :

1. ✔ Non-polar solvents

2. ✖ Polar solvents

3. ✖ Concentrated acids

4. ✖ All solvents

Question Number : 80 Question Id : 47720320912 Display Question Number : Yes Is Question Mandatory : No

Six electrons are mutually shared in -----

Options :

1. ✖  $F_2$

2. ✖  $Cl_2$

3. ✖  $O_2$

4. ✔  $N_2$

Question Number : 81 Question Id : 47720320913 Display Question Number : Yes Is Question Mandatory : No

To half the molarity of a solution, the following should be adopted.

Options :

1. ✖ Weight of the solute to be doubled

2. ✖ Weight of the solvent to be doubled

3. ✖ Volume of the solvent to be doubled

4. ✔ Volume of the solution to be doubled

**Question Number : 82 Question Id : 47720320914 Display Question Number : Yes Is Question Mandatory : No**

The molecular weight of  $\text{KMnO}_4$  is "M". In a reaction  $\text{KMnO}_4$  is reduced to  $\text{K}_2\text{MnO}_4$ . The equivalent weight of  $\text{KMnO}_4$  is

**Options :**

- 1. ✓ M
- 2. ✗  $M/2$
- 3. ✗  $M/3$
- 4. ✗  $M/4$

**Question Number : 83 Question Id : 47720320915 Display Question Number : Yes Is Question Mandatory : No**

Calculate the weight of NaOH present in 500 ml of 0.5 N Solution

**Options :**

- 1. ✗ 5 g
- 2. ✓ 10 g
- 3. ✗ 12 g
- 4. ✗ 15 g

**Question Number : 84 Question Id : 47720320916 Display Question Number : Yes Is Question Mandatory : No**

On addition of NaOH to water

Options :

1. ✖ Ionic product will increase
2. ✖ Ionic product will decrease
3. ✔ No change in ionic product of water
4. ✖  $\text{H}_3\text{O}^+$  concentration increases

Question Number : 85 Question Id : 47720320917 Display Question Number : Yes Is Question Mandatory : No

Which of the following is not a buffer solution?

Options :

1. ✖  $(\text{CH}_3\text{COOH}/\text{CH}_3\text{COONa})$
2. ✔  $(\text{HCl}/\text{NaCl})$
3. ✖  $(\text{HCOOH}/\text{HCOONa})$
4. ✖  $(\text{NH}_4\text{OH}/\text{NH}_4\text{Cl})$

Question Number : 86 Question Id : 47720320918 Display Question Number : Yes Is Question Mandatory : No

Which of the following is a good conductor of electricity?

Options :

1. ✖ Diamond
2. ✔ Graphite
3. ✖ Solid NaCl
4. ✖ Wood

Question Number : 87 Question Id : 47720320919 Display Question Number : Yes Is Question Mandatory : No

Which of the following (1M) conducts more electricity?

Options :

1. ✖ Acetic acid
2. ✖ Boric acid
3. ✖ Phosphorous acid
4. ✔ Sulphuric acid

Question Number : 88 Question Id : 47720320920 Display Question Number : Yes Is Question Mandatory : No

In electrolysis of dilute  $\text{H}_2\text{SO}_4$ , which of the following is liberated at anode in presence of inert electrode?

**Options :**

1. ✖  $\text{H}_2$

2. ✖  $\text{SO}_2$

3. ✔  $\text{O}_2$

4. ✖  $\text{SO}_3$

**Question Number : 89 Question Id : 47720320921 Display Question Number : Yes Is Question Mandatory : No**

The EMF of the cell  $\text{Ni}/\text{Ni}^{2+} (0.01\text{M})/\text{Cl}^-(0.01\text{M})/\text{Cl}_2, \text{Pt}$  is ---V if the SRP of nickel and chlorine electrodes are -0.25V and +1.36V respectively

**Options :**

1. ✖ + 1.61

2. ✖ - 1.61

3. ✔ + 1.79

4. ✖ - 1.79

**Question Number : 90 Question Id : 47720320922 Display Question Number : Yes Is Question Mandatory : No**

Which of the following is correct relation used to measures the hardness of water?

Options :

1. ✓  $1 \text{ mg/L} = 1 \text{ ppm} = 0.07^\circ\text{Cl} = 0.1^\circ\text{Fr}$
2. ✗  $1 \text{ mg/L} = 0.1 \text{ ppm} = 0.7^\circ\text{Cl} = 0.1^\circ\text{Fr}$
3. ✗  $1 \text{ mg/L} = 1 \text{ ppm} = 0.7^\circ\text{Cl} = 0.01^\circ\text{Fr}$
4. ✗  $1 \text{ mg/L} = 1 \text{ ppm} = 0.7^\circ\text{Cl} = 1^\circ\text{Fr}$

Question Number : 91 Question Id : 47720320923 Display Question Number : Yes Is Question Mandatory : No

Which of the following is used as effective coagulant in the municipal water treatment to remove fine suspended and colloidal impurities?

Options :

1. ✗  $\text{Fe}_2\text{SO}_4(\text{NH}_4)_2\text{SO}_4 \cdot 7\text{H}_2\text{O}$
2. ✓  $\text{K}_2\text{SO}_4 \cdot \text{Al}_2(\text{SO}_4)_3 \cdot 24\text{H}_2\text{O}$
3. ✗  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$
4. ✗  $\text{Na}_2\text{SO}_4 \cdot 6\text{H}_2\text{O}$

Question Number : 92 Question Id : 47720320924 Display Question Number : Yes Is Question Mandatory : No

The general chemical formula of zeolite is

Options :

1. ✓  $\text{Na}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot x \text{SiO}_2 \cdot y \text{H}_2\text{O}$
2. ✗  $\text{Al}_2\text{O}_3 \cdot \text{H}_2\text{O}$
3. ✗  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
4. ✗  $\text{MgSO}_4 \cdot 5\text{H}_2\text{O}$

Question Number : 93 Question Id : 47720320925 Display Question Number : Yes Is Question Mandatory : No

----- is resulted when electrochemical corrosion happened in acidic environment.

Options :

1. ✗ Evolution of oxygen
2. ✗ Absorption of oxygen
3. ✓ Evolution of hydrogen
4. ✗ Absorption of hydrogen

Question Number : 94 Question Id : 47720320926 Display Question Number : Yes Is Question Mandatory : No

Impure metal corrodes faster than pure metal due to

**Options :**

1. ✓ Heterogeneity
2. ✗ Homogeneity
3. ✗ Non-galvanic cell
4. ✗ localize corrosion

**Question Number : 95 Question Id : 47720320927 Display Question Number : Yes Is Question Mandatory : No**

The number of repeating units in a polymer is called

**Options :**

1. ✗ Functionality
2. ✗ Tacticity
3. ✓ degree of polymerization
4. ✗ Specificity

**Question Number : 96 Question Id : 47720320928 Display Question Number : Yes Is Question Mandatory : No**

The process of vulcanisation makes rubber -----

**Options :**

1. ✖ Soft
2. ✔ Hard
3. ✖ Elastic
4. ✖ Swells oils

**Question Number : 97 Question Id : 47720320929 Display Question Number : Yes Is Question Mandatory : No**

Which of the following is thermosetting plastic

**Options :**

1. ✖ PVC
2. ✖ Polystyrene
3. ✖ Teflon
4. ✔ Bakelite

**Question Number : 98 Question Id : 47720320930 Display Question Number : Yes Is Question Mandatory : No**

The boiling range of petrol fraction is found to be

**Options :**

1. ✖  $120^{\circ}\text{C}-180^{\circ}\text{C}$

2. ✖  $250^{\circ}\text{C}-320^{\circ}\text{C}$

3. ✔  $40^{\circ}\text{C}-120^{\circ}\text{C}$

4. ✖  $180^{\circ}\text{C}-250^{\circ}\text{C}$

**Question Number : 99 Question Id : 47720320931 Display Question Number : Yes Is Question Mandatory : No**

Which of the following is not a common component of photochemical smog?

**Options :**

1. ✖ Ozone

2. ✖ Acrolein

3. ✖ Peroxyacetyl nitrate

4. ✔ Chlorofluorocarbons

**Question Number : 100 Question Id : 47720320932 Display Question Number : Yes Is Question Mandatory : No**

White lung cancer is caused by

**Options :**

1. ✖ Asbestos

2. ✔ Textiles

3. ✖ Paper

4. ✖ Silica

## Electronics and Instrumentation Engineering

Section Id : 477203412  
Section Number : 4  
Mandatory or Optional : Mandatory  
Number of Questions : 100  
Section Marks : 100  
Enable Mark as Answered Mark for Review and Clear Response : Yes

Question Number : 101 Question Id : 47720320933 Display Question Number : Yes Is Question Mandatory : No

With 100 V applied across ten  $50\ \Omega$  resistances in parallel, the current through each resistance equals

Options :

1. ✖ 100 A

2. ✖ 50 A

3. ✖ 10 A

4. ✔ 2 A

Question Number : 102 Question Id : 47720320934 Display Question Number : Yes Is Question

**Mandatory : No**

Which of the following motors has a high starting torque?

**Options :**

1. ✖ AC series motor
2. ✔ DC series motor
3. ✖ Induction motor
4. ✖ Synchronous motor

**Question Number : 103 Question Id : 47720320935 Display Question Number : Yes Is Question**

**Mandatory : No**

A current source has

**Options :**

1. ✖ Series resistance
2. ✔ Parallel resistance
3. ✖ Series capacitance
4. ✖ Parallel capacitance

**Question Number : 104 Question Id : 47720320936 Display Question Number : Yes Is Question**

**Mandatory : No**

Voltage equation of a DC motor is

**Options :**

1. ✓  $V = E_b + I_a R_a.$
2. ✗  $E_b = V + I_a R_a.$
3. ✗  $V = E_b / I_a R_a.$
4. ✗  $V = E_b + I_a 2R_a.$

**Question Number : 105 Question Id : 47720320937 Display Question Number : Yes Is Question Mandatory : No**

Which machine is used for battery charging?

**Options :**

1. ✗ DC series generator
2. ✗ Compounded DC generator
3. ✓ DC shunt generator
4. ✗ AC series generator

**Question Number : 106 Question Id : 47720320938 Display Question Number : Yes Is Question Mandatory : No**

Star – delta starter of an induction motor

**Options :**

1. ✗ Inserts resistance in rotor circuit.

- 2. ✖ Inserts resistance in stator circuit.
- 3. ✔ Applies reduced voltage to stator.
- 4. ✖ Applies reduced voltage to rotor

**Question Number : 107 Question Id : 47720320939 Display Question Number : Yes Is Question Mandatory : No**

Solar cell works based on

**Options :**

- 1. ✖ Laser technology
- 2. ✔ Photo conduction
- 3. ✖ Thermal emission
- 4. ✖ Tyndall effect

**Question Number : 108 Question Id : 47720320940 Display Question Number : Yes Is Question Mandatory : No**

Which of the following methods of heating is not dependent on the frequency of supply?

**Options :**

- 1. ✖ Induction Heating
- 2. ✖ Dielectric Heating

3. ✓ Electric Resistance Heating

4. ✗ Radiation Heating

**Question Number : 109 Question Id : 47720320941 Display Question Number : Yes Is Question Mandatory : No**

Ultrasonic waves have frequency

**Options :**

1. ✓ Greater than 20 kHz

2. ✗ Less than 20 kHz

3. ✗ Between 20 Hz – 20 kHz

4. ✗ Less than 20 Hz

**Question Number : 110 Question Id : 47720320942 Display Question Number : Yes Is Question Mandatory : No**

The transient response, with feedback system,

**Options :**

1. ✗ Rises slowly

2. ✗ Rises quickly

3. ✖ Decays slowly

4. ✔ Decays quickly

**Question Number : 111 Question Id : 47720320943 Display Question Number : Yes Is Question Mandatory : No**

Adding a pole to a system transfer function in terms of compensator represents

**Options :**

1. ✖ Lead Compensator

2. ✔ Lag Compensator

3. ✖ Lead-Lag Compensator

4. ✖ Lag-Lead Compensator

**Question Number : 112 Question Id : 47720320944 Display Question Number : Yes Is Question Mandatory : No**

Which of the following is the best method for determining the stability and transient response?

**Options :**

1. ✔ Root locus

2. ✖ Bode plot

3. ✖ Nyquist plot

4. ✖ Nicholes

**Question Number : 113 Question Id : 47720320945 Display Question Number : Yes Is Question Mandatory : No**

In control system, integrator is represented by

**Options :**

1. ✖  $s$

2. ✖  $s^2$

3. ✖  $1/s^2$

4. ✔  $1/s$

**Question Number : 114 Question Id : 47720320946 Display Question Number : Yes Is Question Mandatory : No**

A system with a double pole at the origin is unstable since the corresponding term in the time domain

**Options :**

1. ✖ Is a constant

2. ✔ Grows linearly with time

3. ✖ Grows exponentially with time

4. ✖ Decays linearly with time

**Question Number : 115 Question Id : 47720320947 Display Question Number : Yes Is Question Mandatory : No**

Which of the following is a first order system

**Options :**

1. ✖ Damped vibrator

2. ✖ Interacting system of two tanks in series

3. ✔ Mercury in glass thermometer kept in boiling water

4. ✖ Interacting system of two tanks in parallel

**Question Number : 116 Question Id : 47720320948 Display Question Number : Yes Is Question Mandatory : No**

A resistor with colour bands Red, Violet, Green and Black will have a value

**Options :**

1. ✖  $27\text{ K} \pm 10\% \text{ K}$

2. ✔  $2.7\text{ M} \pm 20\% \text{ K}$

3. ✖  $270\text{ K} \pm 5\% \text{ K}$

4. ✖  $2.7 \text{ K} \pm 2\% \text{ K}$

Question Number : 117 Question Id : 47720320949 Display Question Number : Yes Is Question Mandatory : No

A  $10\text{-}\mu\text{F}$  capacitance charged to  $10 \text{ V}$  has a stored charge equal to

Options :

1. ✖  $10 \mu\text{C}$

2. ✔  $100 \mu\text{C}$

3. ✖  $200 \mu\text{C}$

4. ✖  $100 \text{ C}$

Question Number : 118 Question Id : 47720320950 Display Question Number : Yes Is Question Mandatory : No

P-N junction is

Options :

1. ✔ A rectifier

2. ✖ An amplifier

3. ✖ An Oscillator

4. ✖ A Coupler

Question Number : 119 Question Id : 47720320951 Display Question Number : Yes Is Question Mandatory : No

When  $I_C$  in a junction transistor is 99.9 mA and  $I_B$  is 0.1 mA, how much is  $I_E$ ?

Options :

1. ✖ 0.1 mA

2. ✖ 1 mA

3. ✖ 10 mA

4. ✔ 100 mA

Question Number : 120 Question Id : 47720320952 Display Question Number : Yes Is Question Mandatory : No

Resistance of a wire is  $r$  ohms. The wire is stretched to double its length, then its resistance in ohms is

Options :

1. ✖  $r/2$

2. ✔  $4r$

3. ✖  $2r$

4. ✖  $r/4$

Question Number : 121 Question Id : 47720320953 Display Question Number : Yes Is Question

**Mandatory : No**

Which of the following is an emitter follower circuit ?

**Options :**

1. ✖ CE

2. ✔ CC

3. ✖ CB

4. ✖ BE

**Question Number : 122 Question Id : 47720320954 Display Question Number : Yes Is Question**

**Mandatory : No**

In a differential amplifier an ideal CMRR is

**Options :**

1. ✔ Infinity

2. ✖ zero

3. ✖ -1

4. ✖ +1

**Question Number : 123 Question Id : 47720320955 Display Question Number : Yes Is Question**

**Mandatory : No**

The following characteristic makes FET superior to BJT

**Options :**

1. ✓ High input impedance
2. ✗ High gain-bandwidth product
3. ✗ Its current controlled behaviour
4. ✗ High noise immunity

**Question Number : 124 Question Id : 47720320956 Display Question Number : Yes Is Question Mandatory : No**

In a Zener diode large reverse current is due to

**Options :**

1. ✗ Collision
2. ✗ Presence of impurities
3. ✗ Rupture of bonds
4. ✓ Lower resistance in reverse biased region

**Question Number : 125 Question Id : 47720320957 Display Question Number : Yes Is Question Mandatory : No**

How many diodes are required for a full wave rectifier ?

**Options :**

1. ✗

8

2. ✖ 6

3. ✔ 2

4. ✖ 1

**Question Number : 126 Question Id : 47720320958 Display Question Number : Yes Is Question Mandatory : No**

A device whose characteristics are very close to that of an ideal current source is

**Options :**

1. ✖ A gas diode

2. ✖ A BJT in CB mode

3. ✔ A BJT in CE mode

4. ✖ A triode

**Question Number : 127 Question Id : 47720320959 Display Question Number : Yes Is Question Mandatory : No**

Which of the following device can be used as an ideal voltage source ?

**Options :**

1. ✖ A vacuum diode

2. ✖ A DIAC

3. ✖ A FET

4. ✔ A zener diode

**Question Number : 128 Question Id : 47720320960 Display Question Number : Yes Is Question Mandatory : No**

What is the binary equivalent of the decimal number 368 ?

**Options :**

1. ✔ 101110000

2. ✖ 110110000

3. ✖ 111010000

4. ✖ 111100000

**Question Number : 129 Question Id : 47720320961 Display Question Number : Yes Is Question Mandatory : No**

The digital logic family which has minimum power dissipation is

**Options :**

1. ✖ TTL

2. ✖ RTL

3. ✓ CMOS

4. ✗ DTL

**Question Number : 130 Question Id : 47720320962 Display Question Number : Yes Is Question Mandatory : No**

The output of a logic gate is 1 when all its inputs are at logic 0. The gate is either

**Options :**

1. ✗ A NAND or an EX-OR

2. ✗ An OR or an EX-NOR

3. ✗ An AND or an EX-OR

4. ✓ A NOR or an EX-NOR

**Question Number : 131 Question Id : 47720320963 Display Question Number : Yes Is Question Mandatory : No**

Data selectors are basically the same as

**Options :**

1. ✗ Counters

2. ✓ Multiplexers

3. ✖ Demultiplexers

4. ✖ Encoders

Question Number : 132 Question Id : 47720320964 Display Question Number : Yes Is Question Mandatory : No

The speed of conversion is maximum in

Options :

1. ✖ Successive-approximation A/D converter

2. ✔ Parallel-comparative A/D converter

3. ✖ Counter ramp A/D converter

4. ✖ Dual-slope A/D converter

Question Number : 133 Question Id : 47720320965 Display Question Number : Yes Is Question Mandatory : No

A Flip-Flop is in the toggle condition when

Options :

1. ✖  $J=1, K=0$

2. ✖  $J=0, K=1$

3. ✓ J=1, K=1

4. ✗ J=0, K=0

**Question Number : 134 Question Id : 47720320966 Display Question Number : Yes Is Question Mandatory : No**

The 2's complement of the number 1101101 is

**Options :**

1. ✗ 0101110

2. ✗ 0111110

3. ✗ 0110010

4. ✓ 0010011

**Question Number : 135 Question Id : 47720320967 Display Question Number : Yes Is Question Mandatory : No**

To serially shift a byte of data into a shift register, there must be

**Options :**

1. ✗ One clock pulse

2. ✗ One load pulse

3. ✓ Eight clock pulses

4. ✗ One clock pulse for each 1 in the data

**Question Number : 136 Question Id : 47720320968 Display Question Number : Yes Is Question Mandatory : No**

When the set of input data to an even parity generator is 0111, the output will be

**Options :**

1. ✗ 1

2. ✓ 0

3. ✗ Unpredictable

4. ✗ Depends on the previous input

**Question Number : 137 Question Id : 47720320969 Display Question Number : Yes Is Question Mandatory : No**

An 8-bit DAC has a resolution of

**Options :**

1. ✗ 0.1%

2. ✗ 1%

3. ✓

0.392%

4. ✖ 3.92%

**Question Number : 138 Question Id : 47720320970 Display Question Number : Yes Is Question Mandatory : No**

Watt hour is the unit of

**Options :**

1. ✖ Electric power

2. ✖ Electric capacity

3. ✔ Electric energy

4. ✖ Electric charge

**Question Number : 139 Question Id : 47720320971 Display Question Number : Yes Is Question Mandatory : No**

In an ammeter, the shunt is used to

**Options :**

1. ✖ Decrease the voltage range

2. ✖ Increase the voltage range

3. ✖

Decrease the current range

4. ✓ Increase the current range

**Question Number : 140 Question Id : 47720320972 Display Question Number : Yes Is Question Mandatory : No**

Triggering in a CRO

**Options :**

1. ✗ Generates the sweep signal
2. ✗ Provides input to the vertical plates
3. ✓ Provides stability in a repeated waveform
4. ✗ Chops the input signal

**Question Number : 141 Question Id : 47720320973 Display Question Number : Yes Is Question Mandatory : No**

The time base signal in a CRO is a

**Options :**

1. ✗ Rectangular waveform
2. ✗ High frequency sinusoidal wave form
3. ✓ High frequency sawtooth wave form

4. ✖ Square wave form

Question Number : 142 Question Id : 47720320974 Display Question Number : Yes Is Question Mandatory : No

In a signal generator, energy is

Options :

1. ✖ Created

2. ✖ Generated

3. ✖ Supplied by ac input to the generator

4. ✔ Converted from a dc source into ac energy at a particular frequency

Question Number : 143 Question Id : 47720320975 Display Question Number : Yes Is Question Mandatory : No

The principle of operation of Q-meter is based on

Options :

1. ✖ Self inductance

2. ✖ Mutual inductance

3. ✔ Series resonance

4. ✖ Parallel resonance

Question Number : 144 Question Id : 47720320976 Display Question Number : Yes Is Question Mandatory : No

The internal resistance of the ammeter should ideally be

Options :

1. ✓ Zero
2. ✗ Very Large
3. ✗ Very Small
4. ✗ Infinite

Question Number : 145 Question Id : 47720320977 Display Question Number : Yes Is Question Mandatory : No

Astable multivibrators can be used to generate

Options :

1. ✗ Only a square wave
2. ✓ Both square and triangular waves
3. ✗ Only a triangular wave
4. ✗ A sine wave

**Question Number : 146 Question Id : 47720320978 Display Question Number : Yes Is Question Mandatory : No**

Which of the following type of bourdon tube shape has a small tip travel and necessitates amplification?

**Options :**

1. ✓ C-type
2. ✗ Spiral
3. ✗ Helical
4. ✗ Square

**Question Number : 147 Question Id : 47720320979 Display Question Number : Yes Is Question Mandatory : No**

Load cells are used for the measurement of

**Options :**

1. ✗ Strain
2. ✗ Stress
3. ✗ Velocity
4. ✓ Weight

**Question Number : 148 Question Id : 47720320980 Display Question Number : Yes Is Question Mandatory : No**

Working principle of radiation pyrometer is based on the

**Options :**

1. ✖ Wien's law
2. ✔ Stefan-Boltzman law
3. ✖ Kirchoffs law
4. ✖ Seebeck effect

**Question Number : 149 Question Id : 47720320981 Display Question Number : Yes Is Question Mandatory : No**

An LVDT is an inductive transducer which functions due to

**Options :**

1. ✖ Change in the air gap
2. ✖ Change in the amount of core material
3. ✖ Mutual inductance
4. ✔ Variation in the position of the core

**Question Number : 150 Question Id : 47720320982 Display Question Number : Yes Is Question Mandatory : No**

The following transducer is generally used for dynamic rather than static measurements?

**Options :**

1. ✖ Capacitive
2. ✖ Resistive
3. ✔ Piezo-electric
4. ✖ Inductive transducer

**Question Number : 151 Question Id : 47720320983 Display Question Number : Yes Is Question Mandatory : No**

Which of the following instruments is a rate meter?

**Options :**

1. ✔ Venturimeter
2. ✖ Hot wire anemometer
3. ✖ Nutating disk meter
4. ✖ Current meter

**Question Number : 152 Question Id : 47720320984 Display Question Number : Yes Is Question Mandatory : No**

Hot wire anemometer is used to measure

**Options :**

1. ✖ Pressure in gases
2. ✖ Liquid discharges
3. ✔ Gas velocities
4. ✖ Wind velocities at airports

**Question Number : 153 Question Id : 47720320985 Display Question Number : Yes Is Question Mandatory : No**

The electrical output from a thermocouple circuit is detected by using

**Options :**

1. ✖ Wheatstone bridge
2. ✔ Voltage balancing circuit
3. ✖ Current sensitive device
4. ✖ Current balancing circuit

**Question Number : 154 Question Id : 47720320986 Display Question Number : Yes Is Question Mandatory : No**

Psychrometer determines the

**Options :**

1. ✖ Water of crystallisation

- 2. ✖ Moisture content of solids
- 3. ✔ Humidity of gases
- 4. ✖ Hygroscopic nature of solids

**Question Number : 155 Question Id : 47720320987 Display Question Number : Yes Is Question Mandatory : No**

A dead weight tester is used for

**Options :**

- 1. ✔ Calibrating pressure measuring instruments
- 2. ✖ Testing the magnitude of a given weight
- 3. ✖ Producing high pressures
- 4. ✖ Accurate measurement of load

**Question Number : 156 Question Id : 47720320988 Display Question Number : Yes Is Question Mandatory : No**

Liquid discharge from a tank or reservoir can not be measured by

**Options :**

- 1. ✔ Orifice meters
- 2. ✖ Weirs

3. ✖ Notches

4. ✖ Mouthpieces

**Question Number : 157 Question Id : 47720320989 Display Question Number : Yes Is Question Mandatory : No**

The use of semi conductor strain gauge is limited due to their

**Options :**

1. ✖ High frequency response

2. ✖ High value of gauge factor

3. ✖ Small size and high cost auxiliary equipment

4. ✔ Poor linearity and sensitivity to temperature changes

**Question Number : 158 Question Id : 47720320990 Display Question Number : Yes Is Question Mandatory : No**

Magnetic flow meters are generally not used for the velocity/flow measurement of hydrocarbons due to their

**Options :**

1. ✔ Low electrical conductivity

2. ✖ Low flash point

3. ✖ Low thermal conductivity

4. ✖ High viscosity index

**Question Number : 159 Question Id : 47720320991 Display Question Number : Yes Is Question Mandatory : No**

Which instrument arrangement has the manual null balance operation?

**Options :**

1. ✔ Optical pyrometer

2. ✖ Resistance thermometer

3. ✖ Liquid in glass thermometer

4. ✖ Thermistor

**Question Number : 160 Question Id : 47720320992 Display Question Number : Yes Is Question Mandatory : No**

Flapper Nozzle is used in the following controller

**Options :**

1. ✖ Hydraulic

2. ✖ Electric

3. ✓ Pneumatic

4. ✗ Electronic

**Question Number : 161 Question Id : 47720320993 Display Question Number : Yes Is Question Mandatory : No**

On-Off Controllers are normally used for

**Options :**

1. ✓ Low Loads

2. ✗ High Loads

3. ✗ Temperature changes

4. ✗ Flow Rate changes

**Question Number : 162 Question Id : 47720320994 Display Question Number : Yes Is Question Mandatory : No**

The best example of a first order instrument is:

**Options :**

1. ✗ Piezoelectric pick up

2. ✗ Amplifier

3. ✓ Thermocouple

4. ✖ Spring mass system

**Question Number : 163 Question Id : 47720320995 Display Question Number : Yes Is Question Mandatory : No**

The most common pneumatic signal standard for industrial process instruments is:

**Options :**

1. ✖ 0 to 20 psi

2. ✔ 3 to 15 psi

3. ✖ 4 to 20 psi

4. ✖ 0 to 10 psi

**Question Number : 164 Question Id : 47720320996 Display Question Number : Yes Is Question Mandatory : No**

Which of the following have the ability to receive input, to perform a mathematical function with the input, and produce an output signal?:

**Options :**

1. ✖ Actuators

2. ✖ Transmitters

3. ✖ Transducers

4. ✔

## Controllers

**Question Number : 165 Question Id : 47720320997 Display Question Number : Yes Is Question Mandatory : No**

Which of the following is the most common final control element in process control industries?

**Options :**

1. ✖ Agitator
2. ✖ Pump motor
3. ✔ Valve
4. ✖ Louver

**Question Number : 166 Question Id : 47720320998 Display Question Number : Yes Is Question Mandatory : No**

What does the acronym P&ID stand for?

**Options :**

1. ✖ Piping and Instrument Designing
2. ✔ Piping and Instrumentation Drawing
3. ✖ Process Control and Installation Drawing
4. ✖ Proportional, Integral and Derivative control

**Question Number : 167 Question Id : 47720320999 Display Question Number : Yes Is Question Mandatory : No**

In a feedback control system, the controller gets its input from the

**Options :**

- 1. ✖ Load variable
- 2. ✖ Manipulated variable
- 3. ✔ Controlled variable
- 4. ✖ Dynamic variable

**Question Number : 168 Question Id : 47720321000 Display Question Number : Yes Is Question Mandatory : No**

The main purpose of a control valve positioner is to

**Options :**

- 1. ✔ Improve the precision of the valve
- 2. ✖ Alter the characterization of the valve
- 3. ✖ Increase transmitter accuracy
- 4. ✖ Eliminate cavitation in the valve

**Question Number : 169 Question Id : 47720321001 Display Question Number : Yes Is Question Mandatory : No**

Cavitation in a control valve is caused by:

**Options :**

1. ✖ Process noise
2. ✖ Vibration in the piping
3. ✖ The Von Karman effect
4. ✔ Pressure recovery

**Question Number : 170 Question Id : 47720321002 Display Question Number : Yes Is Question Mandatory : No**

Which of the following is not a “final control element”?

**Options :**

1. ✔ A pressure transmitter
2. ✖ An electric motor
3. ✖ A heating element
4. ✖ A control valve

**Question Number : 171 Question Id : 47720321003 Display Question Number : Yes Is Question Mandatory : No**

The most common analog signal standard for industrial process instruments is:

**Options :**

1. ✖ 10 to 50 milliamps DC
2. ✔ 4 to 20 milliamps DC
3. ✖ 0 to 5 amps AC
4. ✖ 0 to 20 milliamps

**Question Number : 172 Question Id : 47720321004 Display Question Number : Yes Is Question Mandatory : No**

When a step-input is given to an op-amp integrator, the output will be

**Options :**

1. ✔ A ramp
2. ✖ A sinusoidal wave
3. ✖ A rectangular wave
4. ✖ A triangular wave with dc bias

**Question Number : 173 Question Id : 47720321005 Display Question Number : Yes Is Question Mandatory : No**

An ideal differential amplifier has CMRR equalling

Options :

1. ✖ Unity

2. ✖  $-1$

3. ✔ Infinity

4. ✖ Zero

Question Number : 174 Question Id : 47720321006 Display Question Number : Yes Is Question Mandatory : No

Which factor makes the differentiator circuit unstable?

Options :

1. ✖ Output impedance

2. ✖ Input voltage

3. ✖ Noise

4. ✔ Gain

Question Number : 175 Question Id : 47720321007 Display Question Number : Yes Is Question Mandatory : No

What happens if 741 op-amp is configured as a closed loop inverting amplifier?

**Options :**

1. ✖ Gain increases
2. ✔ Gain roll-off at a rate 20dB/decade
3. ✖ No gain roll-off takes place
4. ✖ Gain decreases

**Question Number : 176 Question Id : 47720321008 Display Question Number : Yes Is Question Mandatory : No**

Find out the value that is related to the resolution of an 8 bit ADC?

**Options :**

1. ✖ 562
2. ✖ 625
3. ✔ 256
4. ✖ 265

**Question Number : 177 Question Id : 47720321009 Display Question Number : Yes Is Question Mandatory : No**

Misalignment of a super heterodyne receiver does not affect

**Options :**

1. ✖ Bandwidth
2. ✔ Distortion
3. ✖ Noise
4. ✖ Output

**Question Number : 178 Question Id : 47720321010 Display Question Number : Yes Is Question Mandatory : No**

Which circuit converts irregularly shaped waveform to regular shaped waveforms?

**Options :**

1. ✔ Schmitt trigger
2. ✖ Voltage limiter
3. ✖ Comparator
4. ✖ integrator

**Question Number : 179 Question Id : 47720321011 Display Question Number : Yes Is Question Mandatory : No**

A highly stable resonance characteristic is the property of which oscillator ?

**Options :**

1. ✖ Hartley
2. ✖ Colpitts
3. ✖ Weinbridge
4. ✔ Crystal

**Question Number : 180 Question Id : 47720321012 Display Question Number : Yes Is Question Mandatory : No**

Positive feedback is used in

**Options :**

1. ✖ Amplifiers
2. ✔ Oscillators
3. ✖ Tuned amplifiers
4. ✖ Video amplifiers

**Question Number : 181 Question Id : 47720321013 Display Question Number : Yes Is Question Mandatory : No**

Zero Crossing Detectors are also called as

**Options :**

1. ✖ Square to sine wave generator
2. ✔ Sine to square wave generator
3. ✖ Sine to triangular wave generator
4. ✖ Triangular to sine wave generator

**Question Number : 182 Question Id : 47720321014 Display Question Number : Yes Is Question Mandatory : No**

A wide range of oscillations in the audio range is obtained with

**Options :**

1. ✖ Phase shift oscillator
2. ✔ Wien bridge oscillator
3. ✖ Hartley oscillator
4. ✖ Colpitts oscillator

**Question Number : 183 Question Id : 47720321015 Display Question Number : Yes Is Question Mandatory : No**

Bio medical signals are often corrupted by

**Options :**

1. ✓ Noise
2. ✗ Electrodes
3. ✗ Amplifiers used
4. ✗ Power

**Question Number : 184 Question Id : 47720321016 Display Question Number : Yes Is Question Mandatory : No**

X-ray tubes make use of

**Options :**

1. ✗ Thermionic emission
2. ✓ High field emission
3. ✗ Secondary emission
4. ✗ Photoelectric emission

**Question Number : 185 Question Id : 47720321017 Display Question Number : Yes Is Question Mandatory : No**

Which of the following medical technique gives a detailed structure of internal organs especially of soft tissues?

**Options :**

1. ✖ ECG
2. ✖ EEG
3. ✖ X-Ray
4. ✔ MRI

**Question Number : 186 Question Id : 47720321018 Display Question Number : Yes Is Question Mandatory : No**

Absorbance may be referred to

**Options :**

1. ✔ Optical density
2. ✖ Specific extinction
3. ✖ Radiant energy
4. ✖ Concentration

**Question Number : 187 Question Id : 47720321019 Display Question Number : Yes Is Question Mandatory : No**

Beer's Law is a limiting law and should be expected to apply only at

**Options :**

1. ✖ High concentrations
2. ✖ Medium concentrations
3. ✔ Low concentrations
4. ✖ Any concentrations

**Question Number : 188 Question Id : 47720321020 Display Question Number : Yes Is Question Mandatory : No**

Which of the following is used as monochromator most commonly

**Options :**

1. ✖ Glass
2. ✖ Convex lense
3. ✖ Concave lense
4. ✔ Prism

**Question Number : 189 Question Id : 47720321021 Display Question Number : Yes Is Question Mandatory : No**

Photoconductive cells are made from the following

**Options :**

1. ✔ Lead sulphide

- 2. ✖ Tin sulphide
- 3. ✖ Zinc sulphide
- 4. ✖ Magnesium sulphide

**Question Number : 190 Question Id : 47720321022 Display Question Number : Yes Is Question Mandatory : No**

Flame photometry is mostly concerned with

**Options :**

- 1. ✖ Molecules
- 2. ✔ Atoms
- 3. ✖ Ions
- 4. ✖ Gases

**Question Number : 191 Question Id : 47720321023 Display Question Number : Yes Is Question Mandatory : No**

The principal difference between various types of spectrometers lies in the means for separating the ions according to their

**Options :**

- 1. ✖ Charge
- 2. ✖

Mass

3. ✓ Mass to charge ratio

4. ✗ Atomic weight

**Question Number : 192 Question Id : 47720321024 Display Question Number : Yes Is Question Mandatory : No**

Thermal detectors used in HPLC are also known as

**Options :**

1. ✓ Micro-adsorption detectors

2. ✗ Conductivity detectors

3. ✗ Refractive detectors

4. ✗ Fluorescence Detectors

**Question Number : 193 Question Id : 47720321025 Display Question Number : Yes Is Question Mandatory : No**

The internal RAM memory of the 8051 is

**Options :**

1. ✗ 32 bytes

- 2. ✖ 64 bytes
- 3. ✔ 128 bytes
- 4. ✖ 256 bytes

Question Number : 194 Question Id : 47720321026 Display Question Number : Yes Is Question Mandatory : No

MOV A, @ R1 will

Options :

- 1. ✖ Copy R1 to the accumulator
- 2. ✖ Copy the accumulator to R1
- 3. ✔ Copy the contents of memory whose address is in R1 to the accumulator
- 4. ✖ Copy the accumulator to the contents of memory whose address is in R1

Question Number : 195 Question Id : 47720321027 Display Question Number : Yes Is Question Mandatory : No

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

Options :

- 1. ✖ 32K

2. ✓ 64K

3. ✗ 128K

4. ✗ 256K

**Question Number : 196 Question Id : 47720321028 Display Question Number : Yes Is Question Mandatory : No**

What is the difference between the 8031 and the 8051?

**Options :**

1. ✗ The 8031 has no interrupts

2. ✓ The 8031 is ROM-less

3. ✗ The 8051 is ROM-less

4. ✗ The 8051 has 64 bytes more memory

**Question Number : 197 Question Id : 47720321029 Display Question Number : Yes Is Question Mandatory : No**

An OR function implemented in ladder logic uses:

**Options :**

1. ✗ Normally Open contacts in series

- 2. ✓ Normally Open contacts in parallel
- 3. ✗ Normally Closed contacts in parallel
- 4. ✗ Normally Closed contacts in series

**Question Number : 198 Question Id : 47720321030 Display Question Number : Yes Is Question Mandatory : No**

An alternate function of port P3.4 in the 8051 is

**Options :**

- 1. ✓ Timer 0
- 2. ✗ Timer 1
- 3. ✗ Interrupt 0
- 4. ✗ Interrupt 1

**Question Number : 199 Question Id : 47720321031 Display Question Number : Yes Is Question Mandatory : No**

The cycle time of a PLC is the time it takes to:

**Options :**

- 1. ✗ Read an input signal

2. ✖ Read all the input and output signals
3. ✖ Check all the input signals against the program
4. ✔ Read all the inputs, run the program, and update all outputs

**Question Number : 200 Question Id : 47720321032 Display Question Number : Yes Is Question Mandatory : No**

The acronym SCADA stands for

**Options :**

1. ✖ Super Computer And Data Acquisition
2. ✖ Super Computer And Data Analysis
3. ✖ Supervisory control And Data Analysis
4. ✔ Supervisory Control And Data Acquisition