

Andhra Pradesh State Council of Higher Education

Notations :

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

Question Paper Name :	Electronics and Instrumentation Engineering 22nd July 2022 Shift 2
Duration :	180
Total Marks :	200
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
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?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No
Is this Group for Examiner? :	No
Examiner permission :	Cant View

Show Progress Bar? :

No

Mathematics

Section Id :	722544108
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
Maximum Instruction Time :	0

Question Number : 1 Question Id : 7225445402 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $A = \begin{bmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{bmatrix}$ then $A^T + A = I_2$ if

Options :

1. ✘ $\theta = n\pi, n \in Z$

2. ✘ $\theta = (2n+1)\frac{\pi}{2}, n \in Z$

3. ✔ $\theta = 2n\pi \pm \frac{\pi}{3}, n \in Z$

4. ✘ $\theta = (2n+1)\frac{\pi}{4}, n \in Z$

Question Number : 2 Question Id : 7225445403 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If for the matrix A, $A^3 = I$ then $A^{-1} =$

Options :

1. ✔ A^2

2. ✘ A^3

3. ✘ A

4. ✘ A^4

Question Number : 3 Question Id : 7225445404 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of λ for which the system of equations
 $x + y + z = 6$, $x + 2y + 3z = 10$, $x + 2y + \lambda z = 12$ is inconsistent is

Options :

1. ✘ $\lambda = 1$

2. ✘ $\lambda = 2$

3. ✘ $\lambda = -2$

4. ✔ $\lambda = 3$

Question Number : 4 Question Id : 7225445405 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $A = \begin{bmatrix} a & 0 & 0 \\ 0 & a & 0 \\ 0 & 0 & a \end{bmatrix}$ then the value of $|adj A|$ is

Options :

1. ✘ a^{27}

2. ✘ a^9

3. ✔ a^6

4. ✘ a^2

Question Number : 5 Question Id : 7225445406 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response

Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $A + 2B = \begin{bmatrix} 1 & 2 & 0 \\ 6 & -3 & 3 \\ -5 & 3 & 1 \end{bmatrix}$ and $2A - B = \begin{bmatrix} 2 & -1 & 5 \\ 2 & -1 & 6 \\ 0 & 1 & 2 \end{bmatrix}$ then $\text{tr}(A) - \text{tr}(B)$ value equal

to

Options :

1. ✘ 0

2. ✘ 1

3. ✔ 2

4. ✘ 3

Question Number : 6 Question Id : 7225445407 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\frac{2x+3}{(x+1)(x-3)} = \frac{a}{x+1} + \frac{b}{x-3}$ then $2a+3b =$

Options :

1. ✘ 14

2. ✖ 12

3. ✔ $25/4$

4. ✖ -12

Question Number : 7 Question Id : 7225445408 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Number of partial fractions of $\frac{3x^2 + 70x + 93}{(x-1)^4}$ is

Options :

1. ✔ 3

2. ✖ 4

3. ✖ 5

4. ✖ 2

Question Number : 8 Question Id : 7225445409 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Given that $A = \sin^2 \theta + \cos^4 \theta$, then for all real values of θ

Options :

1. ✘ $1 \leq A \leq 2$

2. ✔ $\frac{3}{4} \leq A \leq 1$

3. ✘ $\frac{13}{16} \leq A \leq 1$

4. ✘ $\frac{3}{4} \leq A \leq \frac{13}{16}$

Question Number : 9 Question Id : 7225445410 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\tan \theta = -\frac{4}{3}$, then $\sin \theta =$

Options :

1. ✘ $-\frac{4}{5}$ but not $\frac{4}{5}$

2. ✔ $-\frac{4}{5}$ or $\frac{4}{5}$

3. ✘ $\frac{4}{5}$ but not $-\frac{4}{5}$

4. ✘ $-\frac{3}{5}$ but not $\frac{3}{5}$

Question Number : 10 Question Id : 7225445411 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The general solution of

$$\sin x - 3 \sin 2x + \sin 3x = \cos x - 3 \cos 2x + \cos 3x \text{ is}$$

Options :

1. ✘ $n\pi + \frac{\pi}{8}$

2. ✔ $\frac{n\pi}{2} + \frac{\pi}{8}$

3. ✘ $(-1)^n \frac{n\pi}{2} + \frac{\pi}{8}$

4. ✘ $2n\pi + \cos^{-1} \frac{3}{2}$

Question Number : 11 Question Id : 7225445412 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If x, y, z are in AP and $\tan^{-1} x, \tan^{-1} y$ and $\tan^{-1} z$ are also in AP then

Options :

1. ✓ $x = y = z$

2. ✗ $2x = 3y = 6z$

3. ✗ $6x = 3y = 2z$

4. ✗ $6x = 4y = 3z$

Question Number : 12 Question Id : 7225445413 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\tan^{-1} 2x + \tan^{-1} 3x = \frac{\pi}{4}$ then $x =$

Options :

1. ✓ $\frac{1}{6}$

2. ✘ $\frac{1}{3}$

3. ✘ $\frac{1}{2}$

4. ✘ $\frac{3}{2}$

Question Number : 13 Question Id : 7225445414 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The sides of a triangle are in the ratio $1 : \sqrt{3} : 2$ then the angles of the triangle are in the ratio

Options :

1. ✘ 1:3:5

2. ✘ 2:3:2

3. ✘ 3:2:1

4. ✔ 1:2:3

Question Number : 14 Question Id : 7225445415 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Let $\cos(\alpha + \beta) = \frac{4}{5}$ and $\sin(\alpha - \beta) = \frac{5}{13}$ where $0 < \alpha, \beta \leq \frac{\pi}{4}$, then $\tan 2\alpha =$

Options :

1. ✘ $\frac{19}{12}$

2. ✘ $\frac{20}{7}$

3. ✘ $\frac{25}{16}$

4. ✔ $\frac{56}{33}$

Question Number : 15 Question Id : 7225445416 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $1 + \sin x + \sin^2 x + \sin^3 x + \dots \infty = 4 + 2\sqrt{3}$, $0 < x < \pi$, then $x =$

Options :

1. ✘ $\frac{\pi}{6}$

2. ✘ $\frac{\pi}{4}$

3. ✔ $\frac{2\pi}{3}$

4. ✘ $\frac{3\pi}{4}$

Question Number : 16 Question Id : 7225445417 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The angles of a triangle are in the ratio 3:5:10 then the ratio of the smallest side to the greatest side is

Options :

1. ✘ $1 : \sin 10^\circ$

2. ✘ $1 : 2\sin 10^\circ$

3. ✘ $1 : \cos 10^\circ$

4. ✔ $1 : 2\cos 10^\circ$

Question Number : 17 Question Id : 7225445418 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\sin^{-1} x + \sin^{-1} y = \frac{2\pi}{3}$ then $\cos^{-1} x + \cos^{-1} y =$

Options :

1. ✘ $\frac{2\pi}{3}$

2. ✔ $\frac{\pi}{3}$

3. ✘ $\frac{\pi}{6}$

4. ✘ π

Question Number : 18 Question Id : 7225445419 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The conjugate of a complex number is $\frac{1}{i-1}$, then that complex number is

Options :

1. ✓ $\frac{-1}{i+1}$

2. ✗ $\frac{1}{i-1}$

3. ✗ $\frac{-1}{i-1}$

4. ✗ $\frac{1}{i+1}$

Question Number : 19 Question Id : 7225445420 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\frac{(\sin \pi/8 + i \cos \pi/8)^8}{(\sin \pi/8 - i \cos \pi/8)^8} =$

Options :

1. ✗ -1

2. ✗ 0

3. ✓ 1

4. ✗ $2i$

Question Number : 20 Question Id : 7225445421 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The lines $2x - 3y - 5 = 0$ and $3x - 4y = 7$ are diameters of a circle of area 49π sq.units, then the equation of the circle is

Options :

1. ✗ $x^2 + y^2 + 2x - 2y - 62 = 0$

2. ✗ $x^2 + y^2 + 2x - 2y - 47 = 0$

3. ✓ $x^2 + y^2 - 2x + 2y - 47 = 0$

4. ✗ $x^2 + y^2 - 2x + 2y - 62 = 0$

Question Number : 21 Question Id : 7225445422 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the point $(a, -a)$ lies inside the circle $x^2 + y^2 - 4x + 2y - 8 = 0$,
then 'a' lies in the interval

Options :

1. ✓ $(-1, 4)$

2. ✗ $(-\infty, -1)$

3. ✗ $(4, \infty)$

4. ✗ $[-1, 4]$

Question Number : 22 Question Id : 7225445423 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The focus of the parabola $y^2 - 4y - 8x + 4 = 0$ is

Options :

1. ✗ $(1, 1)$

2. ✗ $(1, 2)$

3. ✗ $(2, 1)$

4. ✓ (2, 2)

Question Number : 23 Question Id : 7225445424 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The equation $\frac{x^2}{10-a} + \frac{y^2}{4-a} = 1$ represents an ellipse if

Options :

1. ✓ $a < 4$

2. ✗ $a > 4$

3. ✗ $4 < a < 10$

4. ✗ $a > 10$

Question Number : 24 Question Id : 7225445425 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The vertices of the hyperbola $9x^2 - 16y^2 - 36x + 96y - 252 = 0$, are

Options :

1. ✗ (6,3) and (-6,3)

2. ✓ $(6,3)$ and $(-2,3)$

3. ✗ $(-6,3)$ and $(-6,-3)$

4. ✗ $(0, \pm \frac{2}{3})$

Question Number : 25 Question Id : 7225445426 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The eccentricity of the hyperbola with latus rectum 12 and semi conjugate axis $2\sqrt{3}$ is

Options :

1. ✓ 2

2. ✗ 3

3. ✗ $\sqrt{3}/2$

4. ✗ $2\sqrt{3}$

Question Number : 26 Question Id : 7225445427 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The side of an equilateral triangle expands at the rate of 2 cm/sec, the rate of increase of its area when each side is 10 cm (in cm^2/sec)

Options :

1. ✘ $10\sqrt{2}$
2. ✘ $10\sqrt{3}$
3. ✔ 10
4. ✘ 5

Question Number : 27 Question Id : 7225445428 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $f(x+y) = f(x) f(y)$, for all x, y . $f(5) = 2$, $f'(0) = 3$, then $f'(5) =$

Options :

1. ✔ 6
2. ✘ 2
3. ✘ 3

4. ✘ 5

Question Number : 28 Question Id : 7225445429 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\lim_{x \rightarrow \infty} \left[\frac{x^2 + 2x - 1}{2x^2 - 3x - 2} \right]^{\frac{2x+1}{2x-1}} \text{ is equal to}$$

Options :

1. ✘ 0

2. ✘ ∞

3. ✔ 1/2

4. ✘ 1/3

Question Number : 29 Question Id : 7225445430 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\lim_{x \rightarrow 0} \frac{\sin^2 mx}{\tan^2 nx} \text{ is equal to}$$

Options :

1. ✘ m/n

2. ✘ $m^2 \cdot n^2$

3. ✔ m^2/n^2

4. ✘ n^2/m^2

Question Number : 30 Question Id : 7225445431 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $f(x) = |x^2 - 5x + 6|$ then $f'(x) =$

Options :

1. ✘ $2x - 5$ for $2 < x < 3$

2. ✔ $5 - 2x$ for $2 < x < 3$

3. ✘ $2x - 5$ for $x > 2$

4. ✘ $5 - 2x$ for $x < 3$

Question Number : 31 Question Id : 7225445432 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

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

1. ✓

$$\frac{1}{x + \log y}$$

2. ✗

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

3. ✗

$$\frac{1}{y + \log x}$$

4. ✗

Question Number : 32 Question Id : 7225445433 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The angle between tangents to the curve $y = x^2 - 5x + 6$ at the points (2,0) and (3,0) is

Options :

1. ✘ $\frac{\pi}{3}$

2. ✔ $\frac{\pi}{2}$

3. ✘ $\frac{\pi}{6}$

4. ✘ $\frac{\pi}{4}$

Question Number : 33 Question Id : 7225445434 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If errors of 1% is made in the base radius and height of a cylinder then the percentage error in its volume is

Options :

1. ✘ 1%

2. ✘ 2%

3. ✔ 3%

4. ✘ 4%

Question Number : 34 Question Id : 7225445435 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of 'a' for which the function $f(x) = a \sin x + \frac{1}{3} \sin 3x$

has an extremum at $x = \frac{\pi}{3}$ is

Options :

1. ✘ 1

2. ✘ -1

3. ✘ 0

4. ✔ 2

Question Number : 35 Question Id : 7225445436 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $u = x^y$ then $\frac{\partial^2 u}{\partial x \partial y} =$

Options :

1. ✘ $x^{y-1}(1+x \log y)$

2. ✘ $y^{x-1}(1+y \log x)$

3. ✔ $x^{y-1}(1+y \log x)$

4. ✘ $x^{y+1}(1-y \log x)$

Question Number : 36 Question Id : 7225445437 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\int e^{\sin^{-1}x} \frac{1}{\sqrt{1-x^2}} dx$

Options :

1. ✘ $2e^{\sin^{-1}x} + c$

2. ✔ $e^{\sin^{-1}x} + c$

3. ✘ $e^{\sin x} + c$

4. ✘ $e^{\cos^{-1}x} + c$

Question Number : 37 Question Id : 7225445438 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\text{If } \int \frac{4x+1}{x^2+3x+2} dx = a \log |x+1| + b \log |x+2| + C, \text{ then}$$

Options :

1. ✘ $a = b$

2. ✔ $a + b = 4$

3. ✘ $a = 2b$

4. ✘ $b = 2a$

Question Number : 38 Question Id : 7225445439 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\int \frac{\cos 2x}{(\sin x + \cos x)^2} dx =$$

Options :

1. ✘ $-\frac{1}{\sin x + \cos x} + c$

2. ✓ $\log |\sin x + \cos x| + c$

3. ✗ $\log |\sin x - \cos x| + c$

4. ✗ $(\sin x + \cos x)^2 + c$

Question Number : 39 Question Id : 7225445440 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\int f(x)dx = 2(f(x))^3 + C$ then $f(x) =$

Options :

1. ✗ $\frac{x}{2}$

2. ✗ x^3

3. ✗ $\frac{1}{\sqrt{x}}$

4. ✓ $\sqrt{\frac{x}{3}}$

Question Number : 40 Question Id : 7225445441 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $\int e^{ax} \cos bx \, dx = \frac{e^{2x}}{29} f(x) + C$, then $f''(x) =$

Options :

1. ✘ $29f(x)$

2. ✘ $-29f(x)$

3. ✘ $25f(x)$

4. ✔ $-25f(x)$

Question Number : 41 Question Id : 7225445442 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of x in $\int \frac{1}{\sqrt{2} t \sqrt{t^2 - 1}} dt = \frac{\pi}{2}$ is

Options :

1. ✘ $\frac{\sqrt{3}}{2}$

2. ✘ $2\sqrt{2}$

3. ✘ 2

4. ✔ $-\sqrt{2}$

Question Number : 42 Question Id : 7225445443 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\int_0^1 \frac{(\sin^{-1} x)^2}{\sqrt{1-x^2}} dx$

Options :

1. ✔ $\frac{\pi^3}{24}$

2. ✘ $\frac{\pi^3}{48}$

3. ✘ $\frac{\pi^3}{64}$

4. ✘ $\frac{\pi^3}{12}$

Question Number : 43 Question Id : 7225445444 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $f(x)$ is a polynomial of degree 2 satisfying $f(0) = 1$,

$f'(0) = -2$ and $f''(0) = 6$ then $\int_{-1}^2 f(x) dx =$

Options :

1. ✘ 6

2. ✘ 0

3. ✔ 9

4. ✘ -8

Question Number : 44 Question Id : 7225445445 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The degree of the differential equation $a^2 \frac{d^2 y}{dx^2} = \left[1 + \left(\frac{dy}{dx} \right)^2 \right]^{3/2}$ is

Options :

1. ✔ 2

2. ✘ 1

3. ✘ 3

4. ✘ 4

Question Number : 45 Question Id : 7225445446 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\log\left(\frac{y}{x}\right) = cx$, where c is arbitrary constant is a solution of the differential equation

Options :

1. ✔ $\log\left(\frac{y}{x}\right) = \frac{x}{y} \frac{dy}{dx} - 1$

2. ✘ $\log\left(\frac{x}{y}\right) = \frac{x}{y} \frac{dy}{dx} - 1$

3. ✘ $\log\left(\frac{x}{y}\right) = \frac{y}{x} \frac{dy}{dx} + 1$

4. ✘ $\frac{dy}{dx} = 1 + \log\left(\frac{y}{x}\right)$

Question Number : 46 Question Id : 7225445447 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The solution of the differential equation $\cos \theta dr - r \sin \theta d\theta = 0$ is

Options :

1. ✓ $r \cos \theta = c$, c – arbitrary constant
2. ✗ $r \sin \theta = c$, c – arbitrary constant
3. ✗ $r \cos \theta + r \sin \theta = c$, c – arbitrary constant
4. ✗ $r^2 \cos 2\theta = c$, c – arbitrary constant

Question Number : 47 Question Id : 7225445448 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The degree of $\left(\frac{d^2 y}{dx^2}\right)^2 + \left(\frac{dy}{dx}\right)^2 = x \sin \frac{dy}{dx}$ is

Options :

1. ✗ 1
2. ✗ 2
3. ✗ 3

Not defined

4. ✓

Question Number : 48 Question Id : 7225445449 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The complimentary function of the differential equation $\frac{d^2y}{dx^2} + 4\frac{dy}{dx} + 3y = e^{2x}$ is

Options :

1. ✘ $x = c_1e^{-y} + c_2e^{-3y}$, c_1, c_2 – arbitrary constants

2. ✓ $y = c_1e^{-x} + c_2e^{-3x}$, c_1, c_2 – arbitrary constants

3. ✘ $y = c_1e^x + c_2e^{3x}$, c_1, c_2 – arbitrary constants

4. ✘ $x = c_1e^y + c_2e^{3y}$, c_1, c_2 – arbitrary constants

Question Number : 49 Question Id : 7225445450 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The particular integral of $(D^2 + 4)y = \cos 2x$ is

Options :

1. ✘ $-\frac{1}{2}x \sin 2x$

2. ✘ $\frac{1}{2}x \sin 2x$

3. ✘ $-\frac{1}{4}x \cos 2x$

4. ✔ $\frac{1}{4}x \sin 2x$

Question Number : 50 Question Id : 7225445451 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The integrating factor of the equation $x^2y dx - (x^3 + y^3)dy = 0$ is

Options :

1. ✘ $-\frac{1}{x^4}$

2. ✘ $\frac{1}{x^4}$

3. ✘ $\frac{1}{y^4}$

4. ✓ $-\frac{1}{y^4}$

Physics

Section Id :	722544109
Section Number :	2
Mandatory or Optional :	Mandatory
Number of Questions :	25
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Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0

Question Number : 51 Question Id : 7225445452 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Parsec is the unit of

Options :

1. ✘ Time

2. ✓ Distance

3. ✘ Frequency

4. ✘ Angular acceleration

Question Number : 52 Question Id : 7225445453 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Among the following pairs, which pair does not have identical dimensions

Options :

1. ✓ Moment of inertia and moment of a force
2. ✗ Work and torque
3. ✗ Angular momentum and Planck's constant
4. ✗ Impulse and momentum

Question Number : 53 Question Id : 7225445454 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

One of the two forces is double the other and their resultant is equal to the greater force.

The angle between them is

Options :

1. ✗ $\cos^{-1}(1/2)$
2. ✗ $\cos^{-1}(-1/2)$
3. ✗ $\cos^{-1}(1/4)$

4. ✓ $\cos^{-1}(-1/4)$

Question Number : 54 Question Id : 7225445455 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If three vectors $\vec{A} = \hat{i} - 2\hat{j} + 3\hat{k}$, $\vec{B} = x\hat{i} + 3\hat{k}$ and $\vec{C} = 7\hat{i} + 3\hat{j} - 11\hat{k}$ are coplanar, then the value of x is

Options :

1. ✗ $36/21$

2. ✓ $-51/13$

3. ✗ $51/32$

4. ✗ $-36/21$

Question Number : 55 Question Id : 7225445456 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A body is allowed to fall from a height of 100 m. The time taken for the first 50 m is t_1 and for the remaining 50 m is t_2 , then

Options :

1. ✗ $t_1 = t_2$

2. ✓ $t_1 > t_2$

3. ✗ $t_1 < t_2$

4. ✗ Depends upon the mass

Question Number : 56 Question Id : 7225445457 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Two stones are projected with the same speed but making different angles with the horizontal. Their horizontal ranges are equal. The angle of projection of one stone is $\pi/3$ and the maximum height reached by it is 102 meters. Then the maximum height reached by the other in meters is

Options :

1. ✗ 336

2. ✗ 224

3. ✗ 56

4. ✓ 34

Question Number : 57 Question Id : 7225445458 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A cricket ball is thrown at a speed of 28 ms^{-1} in a direction 30° above the horizontal. The time taken by the ball to return to the same level in seconds is

Options :

1. ✓ 2.9

2. ✗ 3.9

3. ✗ 1.9

4. ✗ 2

Question Number : 58 Question Id : 7225445459 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The maximum height of a projectile is half of its range on the horizontal. If the velocity of the projection is u , then its range on the horizontal is

Options :

1. ✗ $\frac{2u^2}{5g}$

2. ✗ $\frac{3u^2}{5g}$

3. ✘ $\frac{u^2}{g}$

4. ✔ $\frac{4u^2}{5g}$

Question Number : 59 Question Id : 7225445460 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A cubical block rests on an inclined plane of coefficient of friction $\mu = \frac{1}{\sqrt{3}}$. What should be the angle of inclination so that the block just slides down the inclined plane?

Options :

1. ✔ 30°

2. ✘ 60°

3. ✘ 45°

4. ✘ 90°

Question Number : 60 Question Id : 7225445461 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For the equilibrium of a body on an inclined plane of inclination 45° , the coefficient of static friction will be

Options :

1. ✓ Greater than one
2. ✗ Zero
3. ✗ Less than one
4. ✗ Less than zero

Question Number : 61 Question Id : 7225445462 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The displacement x and time t for a particle are related to each other as $t = \sqrt{x} + 3$. The work done in first six seconds of its motion is

Options :

1. ✗ 6 J
2. ✓ Zero
3. ✗ 4 J

4. ✘ 2 J

Question Number : 62 Question Id : 7225445463 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A particle move with a velocity $v = (5\hat{i} - 3\hat{j} + 6\hat{k})$ m/s under the influence of a constant force $\vec{F} = 10\hat{i} + 10\hat{j} + 20\hat{k}$. The instantaneous power applied to the particle is

Options :

1. ✘ 200 J/sec

2. ✘ 40 J/sec

3. ✔ 140 J/sec

4. ✘ 170 J/sec

Question Number : 63 Question Id : 7225445464 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The main source of solar energy is

Options :

Nuclear fission

1. ✘

2. ✓ Nuclear fusion

3. ✗ Gravitational contraction

4. ✗ Combustion

Question Number : 64 Question Id : 7225445465 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The particle executing the simple harmonic motion passes through the mean position. It has

Options :

1. ✗ Minimum kinetic energy and maximum potential energy

2. ✓ Maximum kinetic energy and minimum potential energy

3. ✗ Maximum kinetic energy and maximum potential energy

4. ✗ Minimum kinetic energy and minimum potential energy

Question Number : 65 Question Id : 7225445466 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A simple pendulum has a time period T_1 on the earth's surface and T_2 at a height of R above the earth's surface, where R is the radius of the earth. The value of T_2/T_1 is

Options :

1. ✘ 1
2. ✘ 4
3. ✘ $\sqrt{2}$
4. ✔ 2

Question Number : 66 Question Id : 7225445467 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a characteristic of musical sound?

Options :

1. ✘ Quality
2. ✘ Pitch
3. ✔ Wavelength
4. ✘ Loudness

Question Number : 67 Question Id : 7225445468 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Doppler shift in frequency does not depend upon

Options :

1. ✘ The actual frequency of the wave
2. ✔ The distance of the source from the listener
3. ✘ The velocity of the source
4. ✘ The velocity of the observer

Question Number : 68 Question Id : 7225445469 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Inaudibility limit 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 : 7225445470 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An ideal gas at 27°C is compressed adiabatically to $8/27$ of its original volume. If $\gamma = 5/3$, then the rise in temperature is

Options :

1. ✘ 450K
2. ✔ 375K
3. ✘ 225K
4. ✘ 405K

Question Number : 70 Question Id : 7225445471 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A system is provided with 200 calories of heat and the work done by the system on the surrounding is 40 J. Then its internal energy

Options :

1. ✘ Increases by 600 J
2. ✘ Decreases by 800 J
3. ✔ Increases by 800 J
4. ✘ Decreases by 50J

Question Number : 71 Question Id : 7225445472 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The temperature of n moles of an ideal gas is increased from T to $4T$ through a process for which pressure $P = a T^{-1}$ where a is a constant. Then the work done by the gas is

Options :

1. ✘ nRT
2. ✘ $4nRT$
3. ✘ $2nRT$
4. ✔ $6nRT$

Question Number : 72 Question Id : 7225445473 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When an ideal gas with pressure P and volume V is compressed isothermally to one fourth of its volume, the pressure is P_1 . When the same gas is compressed polytropically according to the equation $PV^{1.5} = \text{constant}$ to one fourth of its initial volume, the pressure is P_2 . The ratio of P_2/P_1 is

Options :

1. ✘ $\frac{1}{2}$

2. ✘ $\frac{1}{2^{1.5}}$

3. ✔ 2

4. ✘ $2^{1.5}$

Question Number : 73 Question Id : 7225445474 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A Carnot engine whose efficiency is 40%, receives heat at 500K. If the efficiency is to be 50%, the source temperature for the same exhaust temperature is

Options :

1. ✘ 900 K

2. ✓ 600 K

3. ✗ 700 K

4. ✗ 800 K

Question Number : 74 Question Id : 7225445475 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Optical fibers carry very large information compared to copper cables because of their

Options :

1. ✗ Large thickness

2. ✓ Extremely wide bandwidth

3. ✗ Extremely less bandwidth

4. ✗ Light weight

Question Number : 75 Question Id : 7225445476 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A superconductor is a perfect material.

Options :

1. ✓ Diamagnetic
2. ✘ Dielectric
3. ✘ Insulating
4. ✘ Semiconducting

Chemistry

Section Id :	722544110
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
Maximum Instruction Time :	0

Question Number : 76 Question Id : 7225445477 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a characteristic of Plank's theory radiation?

Options :

1. ✘ Energy is always associated with radiations
2. ✔ The absorption and emission of energy occur continuously and not in small packets of energy called quanta
3. ✘ The energy associated with a quantum of radiation is directly proportional to its frequency
4. ✘ The emission and absorption of energy takes place in small packets called quanta

Question Number : 77 Question Id : 7225445478 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The atomic number of calcium is 20 and mass number is 40, it contains

Options :

1. ✔ 20 protons, 20 electrons and 20 neutrons
2. ✘ 20 protons, 20 electrons and 22 neutrons
3. ✘ 20 protons, 20 electrons and 40 neutrons
4. ✘ 40 protons, 20 electrons and 20 neutrons

Question Number : 78 Question Id : 7225445479 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which molecule among the following obeys the octet rule?

Options :

1. ✘ PF₅

2. ✘ NO

3. ✘ ClO₂

4. ✔ O₂

Question Number : 79 Question Id : 7225445480 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one among the following has higher ionic radius?

Options :

1. ✔ C⁴⁺

2. ✘ N³⁻

3. ✘ O²⁻

4. ✘ Na^+

Question Number : 80 Question Id : 7225445481 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

0.2 equivalents of H_2SO_4 is present in 100 mL of the solution. What is its normality?

Options :

1. ✘ 1 N

2. ✔ 2 N

3. ✘ 4 N

4. ✘ 20 N

Question Number : 81 Question Id : 7225445482 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which ion is isoelectronic with CO?

Options :

1. ✔ CN^-

2. ✘ O_2^+

3. ✘ O_2^-

4. ✘ N_2^+

Question Number : 82 Question Id : 7225445483 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

20 mL of 0.01 M HCl solution is diluted to 100 mL What is the molarity of final solution?

Options :

1. ✘ 0.02 M

2. ✔ 0.002 M

3. ✘ 0.05 M

4. ✘ 0.001 M

Question Number : 83 Question Id : 7225445484 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How many moles of HCl are required to react with completely with 2 moles of Na_2CO_3 ?

Options :

1. ✘ 1
2. ✘ 2
3. ✘ 3
4. ✔ 4

Question Number : 84 Question Id : 7225445485 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one among the following is a Lewis acid and also Bronsted acid?

Options :

1. ✘ CO_2
2. ✘ AlCl_3
3. ✔ H^+
4. ✘ Cu^{2+}

Question Number : 85 Question Id : 7225445486 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the pH of 0.01 M NaOH solution?

Options :

1. ✘ 2
2. ✘ 8
3. ✘ 10
4. ✔ 12

Question Number : 86 Question Id : 7225445487 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Four alkali metals A, B, C and D are having standard electrode potentials as -3.05, -1.66, -0.40 and 0.80 V respectively. Which one will be most reducing?

Options :

1. ✔ A
2. ✘ B
3. ✘ C
4. ✘ D

Question Number : 87 Question Id : 7225445488 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one among the following is used as depolarizer in dry cell battery?

Options :

1. ✘ Ammonium chloride
2. ✘ Potassium hydroxide
3. ✔ Manganese dioxide
4. ✘ Sodium phosphate

Question Number : 88 Question Id : 7225445489 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How much copper is deposited when 2 Faraday of electricity is passed through a CuSO_4 solution? (Cu atomic weight = 63.54)

Options :

1. ✘ 31.77 g
2. ✘ 159.54 g

127.77 g

3. ✘

4. ✔ 63.54 g

Question Number : 89 Question Id : 7225445490 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the cell potential for the following cell at 298 K?

$\text{Mg(s)} \mid \text{Mg}^{2+} (0.001\text{M}) \parallel \text{Cu}^{2+} (0.0001\text{M}) \mid \text{Cu(s)}$

Given E_0 of $\text{Cu}^{2+} \mid \text{Cu} = 0.34 \text{ V}$ and E_0 of $\text{Mg}^{2+} \mid \text{Mg} = -2.37 \text{ V}$

Options :

1. ✘ 1.34 V

2. ✔ 2.68 V

3. ✘ 0.268 V

4. ✘ 0.134 V

Question Number : 90 Question Id : 7225445491 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The hard water sample contains the following ions/salts. Which water sample is more in hardness?

Options :

1. ✘ 100 grams of CaCO_3 per litre
2. ✘ 50 equivalents of Ca^{2+} ions per litre
3. ✔ 20 moles of CaCO_3 per litre
4. ✘ 20 moles of MgCO_3 per litre

Question Number : 91 Question Id : 7225445492 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

20 ml of hard water required 10 ml of EDTA solution. The hardness of water sample is 1000 ppm. What is the molarity of EDTA?

Options :

1. ✔ 0.02 M
2. ✘ 0.03 M
3. ✘ 0.005 M
4. ✘ 0.05 M

Question Number : 92 Question Id : 7225445493 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The hardness of water sample is 500 ppm. What is the weight of MgSO_4 present in it, assume that the hardness is only due to the presence of magnesium sulphate.

Options :

1. ✘ 0.3 g
2. ✘ 1.2 g
3. ✔ 0.6 g
4. ✘ 0.01 g

Question Number : 93 Question Id : 7225445494 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The rate of corrosion is high if

Options :

1. ✔ Anodic areas are small and cathodic areas are large
2. ✘ Anodic areas are large and cathodic areas are small
3. ✘ Both anodic and cathodic areas are large

4. ✘ Does not depend upon the area of anode and cathode

Question Number : 94 Question Id : 7225445495 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In electroplating, the metal to be coated or electroplated is made of

Options :

1. ✘ Anode

2. ✔ Cathode

3. ✘ Both anode and cathode

4. ✘ Inert metal

Question Number : 95 Question Id : 7225445496 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a thermosetting plastic?

Options :

1. ✘ Bakelite

2. ✘ Melamine

3. ✘ Epoxy resins

4. ✔ Teflon

Question Number : 96 Question Id : 7225445497 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following molecule contains the functionality TWO?

Options :

1. ✘ 1, 2-Dihydroxy benzene

2. ✘ Benzene

3. ✘ Phenol

4. ✔ Ethylene

Question Number : 97 Question Id : 7225445498 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a synthetic rubber?

Options :

1. ✘ Buna-S

- 2. ✘ Buna-N
- 3. ✘ Neoprene
- 1. 4-Polyisoprene
- 4. ✔

Question Number : 98 Question Id : 7225445499 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a renewable source of energy?

Options :

- 1. ✘ Solar energy
- 2. ✘ Wind Energy
- 3. ✔ Petrol
- 4. ✘ Hydro energy

Question Number : 99 Question Id : 7225445500 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one among the following is not a greenhouse gas?

Options :

1. ✘ CH₄
2. ✘ Water vapour
3. ✘ Chlorofluoro carbons
4. ✔ SO₂

Question Number : 100 Question Id : 7225445501 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one is responsible for the depletion of ozone layer?

Options :

1. ✘ Carbon free radical
2. ✘ Oxygen free radical
3. ✔ Chlorine free radical
4. ✘ Fluorine free radical

Electronics and Instrumentation Engineering

Section Id :	722544111
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
Maximum Instruction Time :	0

Question Number : 101 Question Id : 7225445502 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following instruments indicate the instantaneous value of the electrical quantity being measured at the time at which it is being measured?

Options :

1. ✘ Absolute instruments
2. ✔ Indicating instruments
3. ✘ Recording instruments
4. ✘ Integrating instruments

Question Number : 102 Question Id : 7225445503 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Most common form of A.C. meters met with in every day domestic and industrial installations are

Options :

1. ✘ mercury motor meters
2. ✘ commutator motor meters
3. ✔ induction type single phase energy meters
4. ✘ watthour meters

Question Number : 103 Question Id : 7225445504 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In majority of instruments damping is provided by

Options :

1. ✘ fluid friction
2. ✘ spring
3. ✔ eddy currents

mass

4. ✘

Question Number : 104 Question Id : 7225445505 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For measurements on high voltage capacitors, the suitable bridge is

Options :

Wein bridge

1. ✘

Schering bridge

2. ✔

Modified De Santy's bridge

3. ✘

Wheatstone bridge

4. ✘

Question Number : 105 Question Id : 7225445506 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Digital voltmeters convert _____

Options :

analog to digital signal

1. ✔

2. ✘ digital to analog signal

3. ✘ current to voltage

4. ✘ resistance to voltage

Question Number : 106 Question Id : 7225445507 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What determines light intensity in a CRT?

Options :

1. ✘ voltage

2. ✘ current

3. ✘ fluorescent screen

4. ✔ momentum of electrons

Question Number : 107 Question Id : 7225445508 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Q meter works on the principle of _____

Options :

1. ✘ barkhausen criterion
2. ✘ piezoelectric effect
3. ✘ parallel resonance
4. ✔ series resonance

Question Number : 108 Question Id : 7225445509 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following signals are generated by Wien-bridge oscillators?

Options :

1. ✘ Square wave
2. ✔ Sine wave
3. ✘ Triangular wave

Pulse wave

4. ✖

Question Number : 109 Question Id : 7225445510 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following element is not used in an automatic control system?

Options :

Final control element

1. ✖

Sensor

2. ✖

Oscillator

3. ✔

Error detector

4. ✖

Question Number : 110 Question Id : 7225445511 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a control system the output of the controller is given to

Options :

Amplifier

1. ✖

- 2. ✘ Sensor
- 3. ✘ Comparator
- 4. ✔ Final control element

Question Number : 111 Question Id : 7225445512 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Feedback control system is basically _____

Options :

- 1. ✘ Band pass filter
- 2. ✘ Band stop filter
- 3. ✘ High pass filter
- 4. ✔ Low pass filter

Question Number : 112 Question Id : 7225445513 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the relation between output response and input signal in closed loop system?

Options :

1. ✘ Nonlinear
2. ✔ Linear
3. ✘ Exponential
4. ✘ Parabolic

Question Number : 113 Question Id : 7225445514 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An SCR is a

Options :

1. ✘ four-layer, four junction device
2. ✔ four-layer, three junction device
3. ✘ four-layer, two junction device

three-layer, single junction device

4. ✘

Question Number : 114 Question Id : 7225445515 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What should be the biasing of the LED?

Options :

1. ✔ Forward bias

2. ✘ Reverse bias

3. ✘ Both biases are applied

4. ✘ No biasing required

Question Number : 115 Question Id : 7225445516 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Ultrasonic waves carry more

Options :

1. ✘ energy only

2. ✘ frequency only
3. ✘ heat
4. ✔ energy and frequency

Question Number : 116 Question Id : 7225445517 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The insulating material used in dielectric heating is

Options :

1. ✘ Coal
2. ✘ Silver
3. ✘ Coin
4. ✔ Wool

Question Number : 117 Question Id : 7225445518 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Choose the incorrect statement.

Options :

1. ✘ SMPS is less sensitive to input voltage variations
2. ✘ SMPS is smaller as compared to rectifiers
3. ✔ SMPS has low input ripple
4. ✘ SMPS is a source of radio interference

Question Number : 118 Question Id : 7225445519 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The basic laws for analyzing an electric circuit are :-

Options :

1. ✘ Einstein's theory
2. ✘ Newtons laws
3. ✔ Kirchhoff's laws
4. ✘ Faradays laws

Question Number : 119 Question Id : 7225445520 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What happens to the voltage across the capacitor when the Q factor increases?

Options :

1. ✓ Increases
2. ✗ Decreases
3. ✗ Remains the same
4. ✗ Becomes zero

Question Number : 120 Question Id : 7225445521 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Norton's theorem is true for _____

Options :

1. ✗ Non-Linear networks
2. ✓ Linear networks
3. ✗ Both linear networks and nonlinear networks

Neither linear networks nor non-linear networks

4. ✘

Question Number : 121 Question Id : 7225445522 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which is the additional part used in automatic iron compared to non-automatic iron?

Options :

Heal Plate

1. ✘

Pressure Plate

2. ✘

Chord Wire.

3. ✘

4. ✔ Thermostat.

Question Number : 122 Question Id : 7225445523 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Current transformers are used for _____

Options :

to provide to measure voltages

1. ✘

2. ✓ to measure high value of currents
3. ✘ to short-circuit the unwanted instruments
4. ✘ to measure low value of currents.

Question Number : 123 Question Id : 7225445524 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following part is used in construction of DC machine but not in AC machine?

Options :

1. ✘ Armature Winding
2. ✘ Field winding
3. ✓ Commutator
4. ✘ Shaft

Question Number : 124 Question Id : 7225445525 Display Question Number : Yes Is Question Mandatory : No Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The barrier potential for silicon diode in forward bias condition is

Options :

1. ✘ 0.5 V
2. ✔ 0.7 V
3. ✘ 0.2 V
4. ✘ 1.2 V

Question Number : 125 Question Id : 7225445526 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The conductivity of the intrinsic semiconductor at absolute temperature is

Options :

1. ✔ Zero
2. ✘ 0.5 eV
3. ✘ 1.1 eV

Infinity

4. ✖

Question Number : 126 Question Id : 7225445527 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The voltage across Zener diode is constant in

Options :

Forward direction

1. ✖

Reverse direction

2. ✔

Both in Forward direction & Reverse direction

3. ✖

On state

4. ✖

Question Number : 127 Question Id : 7225445528 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Ripple factor of half wave rectifier is given by

Options :

0.482

1. ✖

- 2. ✘ 0.21
- 3. ✔ 1.21
- 4. ✘ 0.5

Question Number : 128 Question Id : 7225445529 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

CE- transistor configuration produces output phase shift of

Options :

- 1. ✘ 0°
- 2. ✘ 90°
- 3. ✘ 120°
- 4. ✔ 180°

Question Number : 129 Question Id : 7225445530 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For NPN transistor in active mode of operation the base-emitter junction and collector-base junctions are connected ____ respectively.

Options :

1. ✓ Forward bias & Reverse bias.
2. ✗ Reverse bias & Forward bias.
3. ✗ Reverse bias & Reverse bias
4. ✗ Forward bias & Forward bias.

Question Number : 130 Question Id : 7225445531 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The base current amplification factor β is given by

Options :

1. ✗ $\beta = I_C/I_E$
2. ✗ $\beta = I_B/I_C$
3. ✗ $\beta = I_B/I_E$

$$\beta = I_C/I_B$$

4. ✓

Question Number : 131 Question Id : 7225445532 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Calculate I_E in a transistor for which $\beta = 50$ and $I_B = 20 \mu\text{A}$.

Options :

1. ✓ 1.02 mA

2. ✗ 1.02 A

3. ✗ 1.20 mA

4. ✗ 1.20 A

Question Number : 132 Question Id : 7225445533 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The common collector amplifier is also known as

Options :

1. ✓ Emitter follower

2. ✗ Base follower

3. ✘ Collector follower

4. ✘ Gate follower

Question Number : 133 Question Id : 7225445534 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For a JFET, when V_{DS} is increased beyond the pinch off voltage, the drain current

Options :

1. ✘ Increases

2. ✘ Decreases

3. ✘ First decreases and then increases.

4. ✔ remains constant.

Question Number : 134 Question Id : 7225445535 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A BJT is _____ controlled and the FET is _____ controlled device.

Options :

1. ✘ Current, Current
2. ✘ Voltage, Voltage
3. ✔ Current, Voltage
4. ✘ Voltage, Current

Question Number : 135 Question Id : 7225445536 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the equivalent peak-to-peak voltage (V_{pp}) of a $3 V_{rms}$ sine wave?

Options :

1. ✘ 4.242
2. ✘ 1.06
3. ✘ 2.828
4. ✔ 8.484

Question Number : 136 Question Id : 7225445537 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Convert $(17)_8$ octal number to decimal

Options :

1. ✘ 19

2. ✘ 51

3. ✔ 15

4. ✘ 21

Question Number : 137 Question Id : 7225445538 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is called as Universal Gate

Options :

1. ✘ And gate

2. ✘ Or Gate

3. ✘ Ex-or Gate

Nor Gate

4. ✓

Question Number : 138 Question Id : 7225445539 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The fastest switching logic family is

Options :

1. ✓ ECL.

2. ✗ TTL.

3. ✗ DTL.

4. ✗ CMOS.

Question Number : 139 Question Id : 7225445540 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which is volatile memory

Options :

1. ✗ ROM.

2. ✓ RAM.

3. ✘ EPROM.

4. ✘ EEPROM.

Question Number : 140 Question Id : 7225445541 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A one-to-sixteen (1 X16) de-multiplexer requires

Options :

1. ✘ 2 select input lines.

2. ✘ 3 select input lines.

3. ✔ 4 select input lines.

4. ✘ 5 select input lines.

Question Number : 141 Question Id : 7225445542 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which digital circuit can be used to add more than one bit simultaneously

Options :

1. ✘ Half adder
2. ✘ Full adder
3. ✘ Decoder
4. ✔ Ripple carry adder.

Question Number : 142 Question Id : 7225445543 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How a JK-Flip flop made to toggle

Options :

1. ✘ $J= 0 \ \& \ K=0$
2. ✔ $J= 1 \ \& \ K=1$
3. ✘ $J= 0 \ \& \ K=1$
4. ✘ $J= 1 \ \& \ K=0$

Question Number : 143 Question Id : 7225445544 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Latch is a device with

Options :

1. ✘ One stable state
2. ✔ Two stable states
3. ✘ Four stable states
4. ✘ No stable states

Question Number : 144 Question Id : 7225445545 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The output of D-Flip-flop when input D=0 and clock is low is

Options :

1. ✘ 1
2. ✘ 0
3. ✘ Toggle between 0 & 1

4. ✓ No change

Question Number : 145 Question Id : 7225445546 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The number of flip-flops required to design a MOD-10 counter that counts from zero through decimal '9' is

Options :

1. ✗ 2

2. ✓ 4

3. ✗ 8

4. ✗ 10

Question Number : 146 Question Id : 7225445547 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ratio that quantifies the device's ability to reject the common mode signals is called as

Options :

1. ✓ Common mode rejection ratio
2. ✘ Common mode ratio of reference
3. ✘ Voltage gain
4. ✘ Current gain

Question Number : 147 Question Id : 7225445548 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following characteristics not exhibited by an ideal op-amp

Options :

1. ✘ Infinite open loop gain
2. ✘ Infinite input impedance
3. ✘ Infinite slew rate
4. ✓ Infinite output resistance.

Question Number : 148 Question Id : 7225445549 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An instrument amplifier has a high

Options :

1. ✓ CMRR
2. ✗ Output impedance
3. ✗ Power gain
4. ✗ Noise factor

Question Number : 149 Question Id : 7225445550 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Active load is used in the collector of the difference amplifier of an op-amp to

Options :

1. ✗ Provide symmetry.
2. ✓ Increase the differential gain
3. ✗ Handle large signals.

4. ✘ Increase the output resistance

Question Number : 150 Question Id : 7225445551 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The 'slew rate' of an operational amplifier indicates

Options :

- 1. ✘ How fast its output current can change
- 2. ✘ How fast its output impedance can change
- 3. ✘ How fast its output power can change
- 4. ✔ How fast its output voltage can change when a step input signal is given.

Question Number : 151 Question Id : 7225445552 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An op-amp when used as voltage follower has a voltage gain of

Options :

- 1. ✘ Zero.
- 2. ✔ Unity

3. ✘ less than unity.

4. ✘ Infinity.

Question Number : 152 Question Id : 7225445553 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which oscillator circuit converts sine wave signal into square wave signal

Options :

1. ✘ Multivibrator

2. ✘ Wein bridge oscillator

3. ✔ Schmitt trigger.

4. ✘ Colpitts oscillator.

Question Number : 153 Question Id : 7225445554 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Op-amp can amplify

Options :

1. ✘ D.C. signals only

- 2. ✘ A.C. signals only
- 3. ✔ Both D.C. and A.C. signals
- 4. ✘ Neither D.C. nor A.C. signals

Question Number : 154 Question Id : 7225445555 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Program counters (PC) stores

Options :

- 1. ✘ Address of the previous instruction executed
- 2. ✔ Address of the next instruction to be executed
- 3. ✘ Data of the previous instruction executed
- 4. ✘ Data of the next instruction to be executed

Question Number : 155 Question Id : 7225445556 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which instruction is used to reading data from code memory in 8051 microcontrollers

Options :

1. ✓ MOV C
2. ✗ MOV X
3. ✗ MOV
4. ✗ XCH

Question Number : 156 Question Id : 7225445557 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How many timers/counter 8051 have

Options :

1. ✓ 2
2. ✗ 3
3. ✗ 4
4. ✗ 8

Question Number : 157 Question Id : 7225445558 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which instruction move the contents of register to accumulator

Options :

1. ✘ PUSH

2. ✘ POP

3. ✔ MOV

4. ✘ XCHG

Question Number : 158 Question Id : 7225445559 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Number of pins in a 8-bit microcontroller

Options :

1. ✘ 24

2. ✘ 30

3. ✘ 32

4. ✓ 40

Question Number : 159 Question Id : 7225445560 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

DMA stands for

Options :

1. ✗ Direct memory address

2. ✓ Direct memory access

3. ✗ Data memory address

4. ✗ Data memory access

Question Number : 160 Question Id : 7225445561 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How many interrupt signals are there in 8051.

Options :

1. ✗ 2

2. ✗ 4

3. ✓ 5

4. ✗ 8

Question Number : 161 Question Id : 7225445562 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which register is responsible for enabling and disabling the interrupt?

Options :

1. ✗ IP Register

2. ✓ IE Register

3. ✗ TCON Register

4. ✗ Timers

Question Number : 162 Question Id : 7225445563 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Positive displacement flowmeters are

Options :

1. ✗ Variable area flowmeters

2. ✓ Quantity flow meters

3. ✘ Steady flow of gases

4. ✘ Variable head type flowmeters

Question Number : 163 Question Id : 7225445564 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Rotameter is a

Options :

1. ✘ Variable head type flowmeter

2. ✓ variable area type flowmeter

3. ✘ Positive displacement type flowmeter

4. ✘ mass flow meter

Question Number : 164 Question Id : 7225445565 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The term connected with the amount of water vapour present in air or gas.

Options :

1. ✓ Moisture
2. ✘ humidity
3. ✘ viscosity
4. ✘ density

Question Number : 165 Question Id : 7225445566 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Optical sensors used for the displacement measurement works on the principal

Options :

1. ✘ Intensity of light increases with distance
2. ✓ Intensity of light decreases with distance
3. ✘ Intensity of light remains constant with distance
4. ✘ Intensity of light increases with time

Question Number : 166 Question Id : 7225445567 Display Question Number : Yes Is Question Mandatory : No Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ionization gauge an instrument used for the measurement of

Options :

1. ✓ Very low pressure
2. ✗ Medium pressure
3. ✗ High pressure
4. ✗ Very high pressure

**Question Number : 167 Question Id : 7225445568 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The displacement measuring instruments is

Options :

1. ✗ Potentiometer only
2. ✗ LVDT only
3. ✗ RVDT only

4. ✓ Potentiometer, LVDT and RVDT

Question Number : 168 Question Id : 7225445569 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the output of a thermocouple

Options :

1. ✓ Voltage

2. ✗ Current

3. ✗ Resistance

4. ✗ Change in capacitance

Question Number : 169 Question Id : 7225445570 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Thermistor has a

Options :

1. ✗ Positive temperature coefficient of resistance

2. ✓ Negative temperature coefficient of resistance
3. ✘ Zero Temperature Coefficient of Resistance
4. ✘ Temperature Coefficient of 10

Question Number : 170 Question Id : 7225445571 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Boiler drum level can be measured by

Options :

1. ✘ Venturi tube
2. ✘ Orifice meter
3. ✓ Ultrasonic level switch
4. ✘ Rotameter

Question Number : 171 Question Id : 7225445572 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The device used to measure the moisture content in air

Options :

1. ✘ PH Meter
2. ✔ Hygrometer
3. ✘ Hydrometer
4. ✘ Viscometer

Question Number : 172 Question Id : 7225445573 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hot wire anemometer is used for the measurement of

Options :

1. ✔ Flow
2. ✘ Temperature
3. ✘ Pressure
4. ✘ Composition

Question Number : 173 Question Id : 7225445574 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The draw back of the proportional control is

Options :

1. ✓ Offset
2. ✗ Lag
3. ✗ Lead
4. ✗ Oscillations

Question Number : 174 Question Id : 7225445575 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Highest settling time is observed in

Options :

1. ✓ Integral Control
2. ✗ Proportional control
3. ✗ Derivative control

P+D control

4. ✘

Question Number : 175 Question Id : 7225445576 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Feed forward control can be used only

Options :

1. ✓ If the disturbance variable is measured

2. ✘ If the disturbance variable is manipulated

3. ✘ If the disturbance variable is ignored

4. ✘ If a regulatory control is needed

Question Number : 176 Question Id : 7225445577 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A pneumatic actuator converts

Options :

1. ✘ The pneumatic signal into electrical signal

2. ✓ The pneumatic signal into position

3. ✘ The pneumatic signal into pressure

4. ✘ mechanical signal into electrical signal

Question Number : 177 Question Id : 7225445578 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

I/P Converter converts

Options :

1. ✓ (4-20)mA to (3-15)psi

2. ✘ (0 – 4) mA to (3 – 15) psi

3. ✘ (4-20)mV to (3-15)psi

4. ✘ (0 – 4) mV to (3 – 15) psi

Question Number : 178 Question Id : 7225445579 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If Proportional band increases K_p

Options :

1. ✘ Increases
2. ✔ decreases
3. ✘ constant
4. ✘ PB and K_p are not related

Question Number : 179 Question Id : 7225445580 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Cascade control is recommended only if

Options :

1. ✘ The overall process is fast to respond
2. ✘ The process is in the steady state
3. ✔ The overall process is slow to respond

4. ✘ There is no relation between process variables

Question Number : 180 Question Id : 7225445581 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For temperature process control the following controller is not recommended

Options :

1. ✘ Derivative control

2. ✘ P+D

3. ✓ P+I

4. ✘ P + I + D

Question Number : 181 Question Id : 7225445582 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

IAE, ITAE, ISE are the

Options :

1. ✓ Performance Indices

2. ✘ Types of errors

3. ✘ Tuning parameters

4. ✘ process parameters

Question Number : 182 Question Id : 7225445583 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A transducer converts

Options :

1. ✘ Physical quantity to mechanical quantity

2. ✔ Physical quantity to electrical quantity

3. ✘ Electrical quantity to mechanical quantity

4. ✘ Electrical quantity to physical quantity

Question Number : 183 Question Id : 7225445584 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a desirable characteristic of an instrument

Options :

1. ✘ High drift
2. ✔ High fidelity
3. ✘ High measuring lag
4. ✘ Poor reproducibility

Question Number : 184 Question Id : 7225445585 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A Magnetic flow meter is

Options :

1. ✔ Based on the principle of Faradays law
2. ✘ Used for non conducting fluids
3. ✘ Based on the non linear relation between flow rate and EMF
4. ✘ used for measuring flow of gases

Question Number : 185 Question Id : 7225445586 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Principle of radiation pyrometer is based on

Options :

- 1. ✘ Kirchoff's law
- 2. ✘ Seeback Effect
- 3. ✔ Stefan Boltzman law
- 4. ✘ Peltier effect

Question Number : 186 Question Id : 7225445587 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Load cells are used for the measurement of

Options :

- 1. ✔ Weight
- 2. ✘ Stress
- 3. ✘ Strain

Pressure

4. ✖

Question Number : 187 Question Id : 7225445588 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

PH meter has

Options :

One cell

1. ✖

Two cells

2. ✔

Three cells

3. ✖

No cell

4. ✖

Question Number : 188 Question Id : 7225445589 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which is the most suitable instrument to calibrate the pressure gauges

Options :

Ionization guage

1. ✖

Bourdon Guage

2. ✘

Mc Leod guage

3. ✘

Dead weight tester

4. ✔

Question Number : 189 Question Id : 7225445590 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which thermocouple can be used to measure 1500°C temperature

Options :

Copper constaton

1. ✘

Chromel alumel

2. ✘

Platinum platinum rhodium

3. ✔

Iron constanton

4. ✘

Question Number : 190 Question Id : 7225445591 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

ECG is the electrical activity of

Options :

1. ✓ heart
2. ✘ brain
3. ✘ muscle
4. ✘ eye

Question Number : 191 Question Id : 7225445592 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Phonocardiography is listening to

Options :

1. ✘ arm muscle sound
2. ✘ lungs sound
3. ✓ heart sound

respiration sound

4. ✘

Question Number : 192 Question Id : 7225445593 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

EMG Instrument is used to monitor

Options :

cardiovascular function

1. ✘

neuro muscular function

2. ✔

nervous function

3. ✘

immune function

4. ✘

Question Number : 193 Question Id : 7225445594 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Spirometer is an instrument used to measure

Options :

heart rate

1. ✘

2. ✘ heart sounds

3. ✔ lung parameters

4. ✘ blood flow

Question Number : 194 Question Id : 7225445595 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

PPG is used to measure

Options :

1. ✔ pulse rate

2. ✘ ECG

3. ✘ lung volume

4. ✘ EEG

Question Number : 195 Question Id : 7225445596 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Zirconia analyzer is used to measure

Options :

1. ✓ oxygen
2. ✗ nitrogen
3. ✗ CO
4. ✗ carbon dioxide

Question Number : 196 Question Id : 7225445597 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which device is used to isolate the radiation of the desired wavelength from wavelength of the continuous spectra ?

Options :

1. ✗ source
2. ✗ detector
3. ✓ monochromator

entrance and exit slits

4. ✘

Question Number : 197 Question Id : 7225445598 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the principle of IR spectroscopy

Options :

absorption

1. ✔

emission

2. ✘

adsorption

3. ✘

AAS

4. ✘

Question Number : 198 Question Id : 7225445599 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which method is used to separation of thermally stable and volatile substance ?

Options :

NMR

1. ✘

- 2. ✘ Mass spectroscopy
- 3. ✘ HPLC
- 4. ✔ Gas chromatography

Question Number : 199 Question Id : 7225445600 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The detector used for X-Ray Spectroscopy

Options :

- 1. ✔ scintillation counter
- 2. ✘ FID
- 3. ✘ ECD
- 4. ✘ TCD

Question Number : 200 Question Id : 7225445601 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a PLC, the scan time refers to the amount of time in which

Options :

the technician enters the program

1. ✘

timers and counters are indexed by processor

2. ✘

one “rung” of ladder logic takes to complete

3. ✘

the entire program takes to execute

4. ✔