

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 Communication 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 :	722544104
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 : 7225445202 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. ✘ $\theta = n\pi, n \in \mathbb{Z}$

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

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

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

Question Number : 2 Question Id : 7225445203 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 : 7225445204 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

$$x + y + z = 6, \quad x + 2y + 3z = 10, \quad x + 2y + \lambda z = 12 \text{ is inconsistent is}$$

Options :

1. ✘ $\lambda = 1$

2. ✘ $\lambda = 2$

3. ✘ $\lambda = -2$

4. ✔ $\lambda = 3$

Question Number : 4 Question Id : 7225445205 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 $|\text{adj } A|$ is

Options :

1. ✘ a^{27}

2. ✘ a^9

3. ✔ a^6

4. ✘ a^2

Question Number : 5 Question Id : 7225445206 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 : 7225445207 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✘ 14

2. ✘ 12

3. ✔ 25/4

4. ✘ -12

Question Number : 7 Question Id : 7225445208 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 : 7225445209 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 : 7225445210 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 : 7225445211 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 : 7225445212 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 : 7225445213 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 : 7225445214 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 : 7225445215 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 : 7225445216 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 : 7225445217 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 : 7225445218 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 : 7225445219 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 : 7225445220 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 : 7225445221 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 : 7225445222 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 : 7225445223 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 : 7225445224 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 : 7225445225 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 : 7225445226 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 : 7225445227 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 : 7225445228 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 : 7225445229 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 : 7225445230 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 : 7225445231 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 : 7225445232 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 :

1. ✓ $\frac{1}{x(1+\log y)}$

2. ✗ $\frac{1}{x+\log y}$

3. ✗ $\frac{1}{\log x(1+y)}$

4. ✗ $\frac{1}{y+\log x}$

Question Number : 32 Question Id : 7225445233 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 : 7225445234 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 : 7225445235 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 : 7225445236 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 : 7225445237 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 : 7225445238 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 : 7225445239 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 : 7225445240 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 : 7225445241 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✘ $29f(x)$
2. ✘ $-29f(x)$
3. ✘ $25f(x)$
4. ✔ $-25f(x)$

Question Number : 41 Question Id : 7225445242 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✘ $\frac{\sqrt{3}}{2}$

2. ✘ $2\sqrt{2}$

3. ✘ 2

4. ✔ $-\sqrt{2}$

Question Number : 42 Question Id : 7225445243 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 : 7225445244 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 $f(0) = 1$,

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

Options :

1. ✘ 6
2. ✘ 0
3. ✔ 9
4. ✘ -8

Question Number : 44 Question Id : 7225445245 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 : 7225445246 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 : 7225445247 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 : 7225445248 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

4. ✓ Not defined

Question Number : 48 Question Id : 7225445249 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 : 7225445250 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 : 7225445251 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 :	722544105
Section Number :	2
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 : 51 Question Id : 7225445252 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 : 7225445253 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 : 7225445254 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 : 7225445255 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 : 7225445256 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 : 7225445257 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 : 7225445258 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 : 7225445259 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 : 7225445260 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 : 7225445261 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 : 7225445262 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 : 7225445263 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 : 7225445264 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 :

1. ✘ Nuclear fission

- 2. Nuclear fusion
- 3. Gravitational contraction
- 4. Combustion

Question Number : 64 Question Id : 7225445265 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 : 7225445266 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 : 7225445267 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 : 7225445268 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 : 7225445269 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 : 7225445270 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 : 7225445271 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 : 7225445272 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 : 7225445273 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 : 7225445274 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 : 7225445275 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 : 7225445276 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 :	722544106
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 : 7225445277 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 : 7225445278 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 : 7225445279 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. ✘ PF_5

2. ✘ NO

3. ✘ ClO_2

4. ✔ O_2

Question Number : 79 Question Id : 7225445280 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. ✔ C^{4+}

2. ✘ N^{3-}

3. ✘ O^{2-}

4. ✘ Na^+

Question Number : 80 Question Id : 7225445281 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 : 7225445282 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 : 7225445283 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 : 7225445284 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 : 7225445285 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 : 7225445286 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 : 7225445287 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 : 7225445288 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 : 7225445289 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

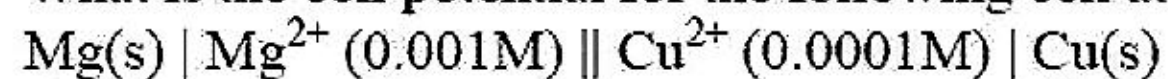
127.77 g

3. ✘

4. ✔ 63.54 g

Question Number : 89 Question Id : 7225445290 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?



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 : 7225445291 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 : 7225445292 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 : 7225445293 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 : 7225445294 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 : 7225445295 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 : 7225445296 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 : 7225445297 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 : 7225445298 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 : 7225445299 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 : 7225445300 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 : 7225445301 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 Communication Engineering

Section Id :	722544107
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 : 7225445302 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ripple factor of a half-wave rectifier is

Options :

1. ✘ 0.284
2. ✘ 0.482
3. ✘ 1.12
4. ✔ 1.21

Question Number : 102 Question Id : 7225445303 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The tuned amplifier is operated as

Options :

1. ✘ class AB
2. ✘ class B
3. ✘ class A
4. ✔ class C

Question Number : 103 Question Id : 7225445304 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The pulse width of the IC555 monostable multivibrator is given by

Options :

1. ✘ $0.693RC$
2. ✘ RC
3. ✔ $1.1RC$
4. ✘ $2RC$

Question Number : 104 Question Id : 7225445305 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Clampers are also known as _____.

Options :

1. ✘ slicers
2. ✘ amplitude limiters
3. ✔ dc restorers

Attenuators

4. ✘

Question Number : 105 Question Id : 7225445306 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ is a variable capacitor.

Options :

1. ✘ Zener diode
2. ✘ Light Emitting Diode
3. ✔ Varactor diode
4. ✘ Tunnel diode

Question Number : 106 Question Id : 7225445307 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A common-base configuration of BJT has

Options :

1. ✘ low input impedance and low output impedance
2. ✔ low input impedance and high output impedance
3. ✘ high input impedance and low output impedance
4. ✘ high input impedance and high output impedance

Question Number : 107 Question Id : 7225445308 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

FET is a _____ controlled device.

Options :

1. ✔ voltage
2. ✘ current
3. ✘ power

4. ✘ resistance

Question Number : 108 Question Id : 7225445309 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Potential barrier across Si diode is _____

Options :

1. ✘ 0.2 V

2. ✔ 0.7 V

3. ✘ 1 V

4. ✘ 2 V

Question Number : 109 Question Id : 7225445310 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When α is 0.95, β is _____.

Options :

1. ✘ 5

2. ✔ 19

3. ✘ 25

4. ✘ 42

Question Number : 110 Question Id : 7225445311 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The maximum rate of change of output voltage per unit time is

Options :

1. ✘ supply-voltage rejection ratio

2. ✘ offset voltage

3. ✘ CMRR

4. ✔ slew rate

Question Number : 111 Question Id : 7225445312 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Colpitts and Hartley oscillators use the _____ feedback.

Options :

1. ✔ voltage-series

- 2. ✘ current-series
- 3. ✘ voltage-shunt
- 4. ✘ current-shunt

Question Number : 112 Question Id : 7225445313 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 5 V dc regulated power supply has a regulation of 0.05 percent. Its output voltage will vary within the range of _____.

Options :

- 1. ✔ 4.9975 V to 5.0025 V
- 2. ✘ 4.95 V to 5.05 V
- 3. ✘ 4.995 V to 5.00 V
- 4. ✘ 4.5 V to 5.5 V

Question Number : 113 Question Id : 7225445314 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A transformer coupled amplifier would give _____.

Options :

1. ✘ maximum voltage gain
2. ✔ impedance matching
3. ✘ maximum current gain
4. ✘ larger bandwidth

Question Number : 114 Question Id : 7225445315 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A negative feedback amplifier has a gain A and feedback path gain is β . What will be the overall gain of the amplifier?

Options :

1. ✘ $\frac{1 - \beta A}{A}$

2. ✘ $\frac{1 + A}{1 + \beta A}$

3. ✘ $\frac{A}{1 - \beta A}$

$$\frac{A}{1 + \beta A}$$

4. ✓

Question Number : 115 Question Id : 7225445316 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Input and output almost have equal amplitudes in the following circuit.

Options :

1. ✗ Miller voltage time-base circuit

2. ✗ Constant-current charging

3. ✓ Bootstrap voltage time-base circuit

4. ✗ UJT relaxation oscillator

Question Number : 116 Question Id : 7225445317 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If a network contains B branches and N nodes, then the number of mesh current equations would be _____.

Options :

1. ✓ $B - (N-1)$

2. ✘ $N-(B-1)$

3. ✘ $B-N-1$

4. ✘ $(B+N)-1$

Question Number : 117 Question Id : 7225445318 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Norton's equivalent circuit consists of _____

Options :

1. ✘ voltage source in parallel with resistance

2. ✘ voltage source in series with resistance

3. ✘ current source in series with resistance

4. ✔ current source in parallel with resistance

Question Number : 118 Question Id : 7225445319 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If VSWR = 2, the magnitude of reflection coefficient is _____

Options :

1. ✘ $\frac{1}{2}$

2. ✔ $\frac{1}{3}$

3. ✘ $\frac{1}{4}$

4. ✘ $\frac{1}{5}$

Question Number : 119 Question Id : 7225445320 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the load impedance in a transmission line is Z_L and Z_0 is the characteristic impedance, reflection coefficient is _____

Options :

1. ✔ $\frac{(Z_L - Z_0)}{(Z_L + Z_0)}$

2. ✘ $\frac{(Z_L + Z_0)}{(Z_L - Z_0)}$

3. ✘ $\frac{Z_L}{Z_0}$

4. ✘ $\frac{Z_0}{Z_L}$

Question Number : 120 Question Id : 7225445321 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 total reactance of a series RLC circuit at resonance?

Options :

1. ✘ equal to X_L

2. ✘ equal to X_C

3. ✘ equal to R

4. ✔ zero

Question Number : 121 Question Id : 7225445322 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the lower cut-off frequency is 2400 Hz and the upper cut-off frequency is 2800 Hz, what is the bandwidth?

Options :

400 Hz

1. ✔

- 2. ✘ 2400 Hz
- 3. ✘ 2800 Hz
- 4. ✘ 5200 Hz

Question Number : 122 Question Id : 7225445323 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Maximum power is transferred when load impedance is _____

Options :

- 1. ✔ equal to source resistance
- 2. ✘ equal to zero
- 3. ✘ equal to half of the source resistance
- 4. ✘ equal to square root of the source resistance

Question Number : 123 Question Id : 7225445324 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Superposition theorem is not applicable to networks containing _____

Options :

1. ✘ transformers
2. ✘ dependent current sources
3. ✘ dependent voltage sources
4. ✔ non-linear elements

Question Number : 124 Question Id : 7225445325 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The sensitivity of a voltmeter is defined as ____.

Options :

1. ✘ I / Ω
2. ✘ V / Ω
3. ✔ Ω / V
4. ✘ Ω / I

Question Number : 125 Question Id : 7225445326 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Dual slope type DVM operates on the principle of ____.

Options :

1. voltage to time conversion
2. current to voltage conversion
3. frequency to voltage conversion
4. voltage to current conversion

Question Number : 126 Question Id : 7225445327 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Triggering pulses in the CRO are used ____.

Options :

1. to generate high voltage required for the CRT
2. to synchronize the input with the time base generator
3. to synchronize the input and the vertical amplifier
4. to generate low voltages required for the CRT

Question Number : 127 Question Id : 7225445328 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A Q meter is used to measure _____.

Options :

1. ✘ voltage
2. ✔ inductance
3. ✘ capacitance
4. ✘ resistance

Question Number : 128 Question Id : 7225445329 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The _____ sensitivity of a CRO is defined as the deflection in metres on the screen per volt of the deflecting voltage.

Options :

1. ✘ electric
2. ✘ magnetic

electrostatic deflection

3. ✓

electromagnetic

4. ✘

Question Number : 129 Question Id : 7225445330 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The input stage of Transistor Voltmeter (TVM) consists of _____.

Options :

UJT stage

1. ✘

FET stage

2. ✓

BJT stage

3. ✘

SCR stage

4. ✘

Question Number : 130 Question Id : 7225445331 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a digital frequency meter, the Schmitt trigger is used for

Options :

1. converting sinusoidal waveforms into rectangular pulses
2. scaling of sinusoidal waveforms
3. providing time base
4. scaling of triangular waveforms

Question Number : 131 Question Id : 7225445332 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The deviation of the measured value to the desired value is defined as

Options :

1. repeatability
2. hysteresis
3. resolution
4. error

Question Number : 132 Question Id : 7225445333 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

AF sine and square wave generator has an output impedance of _____.

Options :

1. ✘ 200 Ω
2. ✔ 600 Ω
3. ✘ 1000 Ω
4. ✘ 1200 Ω

Question Number : 133 Question Id : 7225445334 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Bolometers are used to measure power in _____.

Options :

1. ✘ AF range
2. ✔ RF range
3. ✘ ac mains range
4. ✘ microwave range

Question Number : 134 Question Id : 7225445335 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For an SCR, di/dt protection is achieved through the use of _____.

Options :

1. ✘ R in series with SCR
2. ✘ RL in series with SCR
3. ✔ L in series with SCR
4. ✘ C in series with SCR

Question Number : 135 Question Id : 7225445336 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A TRIAC is a

Options :

1. ✘ three-terminal unilateral switch
2. ✘ two-terminal unilateral switch

- 3. three-terminal bilateral switch
- 4. two-terminal bilateral switch

Question Number : 136 Question Id : 7225445337 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Thermistors have _____.

Options :

- 1. negative temperature coefficient
- 2. positive temperature coefficient
- 3. almost zero temperature coefficient
- 4. time-dependent temperature coefficient

Question Number : 137 Question Id : 7225445338 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An LVDT has

Options :

- 1. one primary coil and two secondary coils

- 2. ✘ two primary coils and two secondary coils
- 3. ✘ one primary coil and one secondary coil
- 4. ✘ two primary coils and one secondary coil

Question Number : 138 Question Id : 7225445339 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A photovoltaic cell is

Options :

- 1. ✘ a photodiode with reverse bias voltage
- 2. ✘ a type of phototransistor
- 3. ✘ a light dependent resistor
- 4. ✔ a photodiode without reverse bias voltage

Question Number : 139 Question Id : 7225445340 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Light-dependent resistors are prepared from _____.

Options :

1. ✘ intrinsic semiconductors
2. ✘ highly doped semiconductors
3. ✔ lightly doped semiconductors
4. ✘ insulating materials

Question Number : 140 Question Id : 7225445341 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

PWM technique in inverter is used for _____

Options :

1. ✔ harmonic reduction
2. ✘ higher output frequency
3. ✘ improving efficiency

reducing switching losses

4. ✖

Question Number : 141 Question Id : 7225445342 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A 1-phase fully controlled converter is charging a battery from exciting ac mains. It is possible to feedback power to ac supply when

Options :

1. ✖ Firing angle is between 0° and 90° with same battery connection

2. ✖ Firing angle is between 90° and 180° with same battery connection

3. ✖ Firing angle is between 0° and 90° with reverse battery connection

4. ✔ Firing angle is between 90° and 180° with reverse battery connection

Question Number : 142 Question Id : 7225445343 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The three terminals of the IGBT are

Options :

1. ✖ base, emitter and collector

2. gate, emitter and collector

3. gate, source and drain

4. base, source and drain

Question Number : 143 Question Id : 7225445344 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Cycloconverter is a device which converts

Options :

1. ac to dc

2. dc to ac

3. ac of one frequency to ac of another frequency

4. dc to dc

Question Number : 144 Question Id : 7225445345 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 analog modulation scheme requires the minimum transmitted power and minimum channel bandwidth?

Options :

1. ✘ VSB
2. ✘ DSB-SC
3. ✔ SSB
4. ✘ AM

Question Number : 145 Question Id : 7225445346 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a 100% amplitude-modulated signal, while the total transmitted power is P, the carrier power is equal to

Options :

1. ✘ $\frac{1}{4}P$
2. ✘ $\frac{1}{3}P$

3. ✘ $\frac{1}{2}P$

4. ✔ $\frac{2}{3}P$

Question Number : 146 Question Id : 7225445347 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The modulating frequency in frequency modulation is increased from 10 KHz to 20 KHz.
The bandwidth is

Options :

1. ✘ increased by 30 KHz

2. ✘ decreased by 30 KHz

3. ✔ increased by 20 KHz

4. ✘ decreased by 20 KHz

Question Number : 147 Question Id : 7225445348 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 blocks is not common in both AM and FM receivers?

Options :

1. ✘ RF amplifier

2. ✘ Mixer

3. ✘ IF amplifier

4. ✔ Slope detector

Question Number : 148 Question Id : 7225445349 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In phase modulation, the frequency deviation is

Options :

1. ✘ independent of the modulation signal frequency

2. ✘ inversely proportional to the modulating frequency

3. ✔ directly proportional to the modulating frequency

4. ✘ inversely proportional to the square root of the modulating frequency

Question Number : 149 Question Id : 7225445350 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The PAM signal can be detected by

Options :

1. ✓ low-pass filter
2. ✘ band-stop filter
3. ✘ high-pass filter
4. ✘ band-pass filter

Question Number : 150 Question Id : 7225445351 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The messages band limited to W , W , $2W$ and $3W$ respectively are to be multiplexed using TDM. The minimum bandwidth required for transmission of this TDM signal is

Options :

1. ✘ W
2. ✘ $3W$

3. ✘ 6W

4. ✔ 7W

Question Number : 151 Question Id : 7225445352 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In delta modulation, the slope overload distortion can be reduced by

Options :

1. ✘ decreasing the step size

2. ✘ decreasing the granular noise

3. ✘ decreasing the sampling rate

4. ✔ increasing the step size

Question Number : 152 Question Id : 7225445353 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 bits per sample in a PCM system is increased from 8 to 16. The bandwidth of the system will increase

Options :

8 times

1. ✘

4 times

2. ✘

2 times

3. ✔

1.5 times

4. ✘

Question Number : 153 Question Id : 7225445354 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 gives maximum probability of error?

Options :

1. ✔ ASK

2. ✘ BFSK

3. ✘ BPSK

4. ✘ DPSK

Question Number : 154 Question Id : 7225445355 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

___ is a type of digital modulation

Options :

1. ✘ Amplitude modulation
2. ✔ Frequency Shift Keying
3. ✘ Frequency modulation
4. ✘ Phase modulation

Question Number : 155 Question Id : 7225445356 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The main advantage of super heterodyne receiver is,

Options :

1. ✘ simple circuit
2. ✘ better tracking
3. ✔ improvement in selectivity and sensitivity

4. ✘ better alignment

Question Number : 156 Question Id : 7225445357 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A parity check code can

Options :

- 1. ✔ detect a single bit error
- 2. ✘ correct a single bit error
- 3. ✘ detect two-bit bit error
- 4. ✘ correct two-bit bit error

Question Number : 157 Question Id : 7225445358 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

TDMA is a multiple access technique that has

Options :

- 1. ✔ Different users in different time slots

2. ✘ Each user is assigned unique frequency slots
3. ✘ Each user is assigned a unique code sequence
4. ✘ Each signal is modulated with frequency modulation technique

Question Number : 158 Question Id : 7225445359 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Line of sight conditions are required for

Options :

1. ✘ Ionospheric propagation
2. ✘ Ground wave propagation
3. ✘ Sky wave propagation
4. ✔ Space wave propagation

Question Number : 159 Question Id : 7225445360 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Radiation resistance for half wave dipole is

Options :

1. ✘ 36.5 Ω
2. ✔ 73 Ω
3. ✘ 377 Ω
4. ✘ 733 Ω

Question Number : 160 Question Id : 7225445361 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Uplink frequency is _____ downlink frequency in satellite communication.

Options :

1. ✘ independent of
2. ✘ smaller than
3. ✘ equal to
4. ✔ greater than

Question Number : 161 Question Id : 7225445362 Display Question Number : Yes Is Question Mandatory : No Calculator : None

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

If the maximum directive gain of an antenna is 2, its directivity is

Options :

- 4
- 1. ✘
- 3
- 2. ✘
- 2
- 3. ✔
- 6
- 4. ✘

Question Number : 162 Question Id : 7225445363 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ is defined as the rate at which the wave propagates through the waveguide.

Options :

- 1. ✘ Phase Velocity
- 2. ✔ Group Velocity
- 3. ✘ Guide Velocity

Wave Velocity

4. ✘

Question Number : 163 Question Id : 7225445364 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The figure of merit for a satellite transmitter is

Options :

1. ✔ G/T ratio

2. ✘ C/N ratio

3. ✘ EIRP

4. ✘ C/G ratio

Question Number : 164 Question Id : 7225445365 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The term RADAR stands for

Options :

1. ✘ radio direction and reflection

2. ✔ radio detection and ranging

- 3. ✘ radio waves dispatching and receiving
- 4. ✘ random detection and radiation

Question Number : 165 Question Id : 7225445366 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The modulation method for GSM is

Options :

- 1. ✔ GMSK
- 2. ✘ MSK
- 3. ✘ GFSK
- 4. ✘ FSK

Question Number : 166 Question Id : 7225445367 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A certain optical fibre has a refractive index of clad (n_1) = 1.40 and that of core (n_2) = 1.05.

Its numerical aperture will be

Options :

1. ✘ 0.8575

2. ✔ 0.9260

3. ✘ 0.3500

4. ✘ 0.1585

Question Number : 167 Question Id : 7225445368 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Klystron operates on the principle of

Options :

1. ✘ Amplitude Modulation

2. ✘ Frequency Modulation

3. ✘ Pulse Modulation

4. ✔ Velocity Modulation

Question Number : 168 Question Id : 7225445369 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When two point sources separated at the distance of half wavelength and fed with uniform currents in the same phase, the array acts as a

Options :

1. ✘ End-fire array
2. ✔ Broadside array
3. ✘ Collinear array
4. ✘ Parasitic array

Question Number : 169 Question Id : 7225445370 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 true?

Options :

1. ✘ $A \cdot A = A$
2. ✘ $A \cdot \bar{A} = 0$
3. ✔ $A + \bar{A} = 0$
4. ✘ $A + 1 = 1$

Question Number : 170 Question Id : 7225445371 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The logic expression $Y = A + \bar{A}B$ is equivalent to ____

Options :

1. ✘ $Y = AB$

2. ✘ $Y = \bar{A}B$

3. ✔ $Y = A + B$

4. ✘ $Y = A + \bar{B}$

Question Number : 171 Question Id : 7225445372 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 build a Mod-15 counter is ____

Options :

1. ✔ 4

2. ✘ 5

3. ✘ 6

7

4. ✖

Question Number : 172 Question Id : 7225445373 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, the slowest ADC is

Options :

1. ✓ counting type

2. ✖ flash type

3. ✖ integrating type

4. ✖ successive-approximation type

Question Number : 173 Question Id : 7225445374 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The race around condition occurs in J-K flip-flop if

Options :

1. ✖ $J=0$ and $K=0$

- 2. ✘ J=0 and K=1
- 3. ✘ J=1 and K=0
- 4. ✔ J=1 and K=1

Question Number : 174 Question Id : 7225445375 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The address bus with a ROM of size 1024 X 8 bits is

Options :

- 1. ✘ 8 bits
- 2. ✔ 10 bits
- 3. ✘ 12 bits
- 4. ✘ 16 bits

Question Number : 175 Question Id : 7225445376 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A DAC uses a ladder of 10V full-scale output. The number of bits required of its input for a resolution of 5 mV will be

Options :

- 1. ✘ 7
- 2. ✘ 8
- 3. ✔ 11
- 4. ✘ 16

Question Number : 176 Question Id : 7225445377 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 bits in the binary representation of the decimal number 19 is

Options :

- 1. ✘ 3
- 2. ✘ 4
- 3. ✔ 5

6

4. ✘

Question Number : 177 Question Id : 7225445378 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A full-adder is characterized by

Options :

- 1. ✘ two inputs and two outputs
- 2. ✔ three inputs and two outputs
- 3. ✘ two inputs and three outputs
- 4. ✘ two inputs and one output

Question Number : 178 Question Id : 7225445379 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The group of bits 10110101 is serially shifted (right-most bit first) into an eight-bit parallel output shift register with an initial state of 11100100. After two clock pulses, the register contains

Options :

1. ✘ 01011110

2. ✘ 10110101

3. ✔ 01111001

4. ✘ 00101101

Question Number : 179 Question Id : 7225445380 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

8051 is _____ microcontroller.

Options :

1. ✘ 4-bit

2. ✔ 8-bit

3. ✘ 16-bit

4. ✘ 32-bit

Question Number : 180 Question Id : 7225445381 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 instructions is incorrect?

Options :

1. ✘ CPL A
2. ✘ SWAP A
3. ✘ CLR C
4. ✔ RLB

Question Number : 181 Question Id : 7225445382 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The _____ directive is used to set the location counter to a particular value.

Options :

1. ✘ DB
2. ✘ END
3. ✘ DW
4. ✔ ORG

Question Number : 182 Question Id : 7225445383 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The 8255 has _____ ports

Options :

- 1. 3
- 2. 5
- 3. 6
- 4. 7

Question Number : 183 Question Id : 7225445384 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The physical address when DS=2345H and IP=1000H is

Options :

- 1. 23450H
- 2. 24450H
- 3. 12345H

4. ✘ 2345H

Question Number : 184 Question Id : 7225445385 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The chip 8257 is a

Options :

1. ✔ programmable DMA controller
2. ✘ programmable keyboard display interface
3. ✘ counter
4. ✘ interrupt controller

Question Number : 185 Question Id : 7225445386 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Direction flag is used with which of the following instructions?

Options :

1. ✘ Arithmetic instructions
2. ✘ Branch control instructions

3. ✓ String instructions

4. ✗ Logical instructions

Question Number : 186 Question Id : 7225445387 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Pentium processor has

Options :

1. ✗ P3 architecture

2. ✓ Superscalar and super-pipelined architecture

3. ✗ 16-bit core architecture

4. ✗ 32-bit core architecture

Question Number : 187 Question Id : 7225445388 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 addressing mode of MOV A, 24H?

Options :

1. ✓ Direct addressing

- 2. ✘ Indirect addressing
- 3. ✘ Index addressing
- 4. ✘ Register addressing

Question Number : 188 Question Id : 7225445389 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

When the RET instruction is executed at the end of a subroutine

Options :

- 1. ✘ the memory address of the RET instruction is transferred to the program counter
- 2. ✘ two data bytes stored in the top locations of the stack are transferred to the stack pointer
- 3. ✘ the data where the stack is initialized is transferred to the stack pointer
- 4. ✔ two data bytes stored in the top two locations of the stack are transferred to the program counter

Question Number : 189 Question Id : 7225445390 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In television pictures an effective rate of _____ is utilized to reduce flicker.

Options :

1. ✘ 20 vertical scans per second
2. ✘ 30 vertical scans per second
3. ✘ 40 vertical scans per second
4. ✔ 50 vertical scans per second

Question Number : 190 Question Id : 7225445391 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the 625 line system, _____ has been allotted for the vertical sync pulses.

Options :

1. ✘ 1.5 line period
2. ✔ 2.5 line period
3. ✘ 5.5 line period
4. ✘ 12.5 line period

Question Number : 191 Question Id : 7225445392 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The camera tube that uses photo emission principle is

Options :

1. ✘ Vidicon
2. ✔ Image Orthicon
3. ✘ Plumbicon
4. ✘ Silicon diode array tube

Question Number : 192 Question Id : 7225445393 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The NTSC colour system is compatible with the _____

Options :

1. ✔ American 525 line monochrome system
2. ✘ 725 PAL system
3. ✘ 825 PAL system

4. ✘ 810 French system

Question Number : 193 Question Id : 7225445394 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The vertical and horizontal pulses in a TV set are separated at the

Options :

1. ✘ AFC

2. ✘ sync amp

3. ✔ sync separator

4. ✘ AGC

Question Number : 194 Question Id : 7225445395 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The OSI model consists of _____ layers.

Options :

1. ✘ three

2. ✘ four

3. ✘ five

4. ✔ seven

Question Number : 195 Question Id : 7225445396 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

_____ has extensive flow and error control at both the data link layer and the network layer.

Options :

1. ✘ X.23

2. ✘ X.24

3. ✔ X.25

4. ✘ X.26

Question Number : 196 Question Id : 7225445397 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Transmission media are usually categorized as _____

Options :

1. ✘ fixed or unfixed
2. ✘ determinate or indeterminate
3. ✔ guided or unguided
4. ✘ metallic or non-metallic

Question Number : 197 Question Id : 7225445398 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

IEEE has defined the specifications for a wireless LAN, called _____, which covers the physical and data link layers.

Options :

1. ✔ IEEE 802.11
2. ✘ IEEE 802.33
3. ✘ IEEE 802.44
4. ✘ IEEE 802.55

Question Number : 198 Question Id : 7225445399 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The system used to map host names and e-mail destination to IP address is called _____.

Options :

1. ✘ URL
2. ✘ WWW
3. ✘ e-mail
4. ✔ DNS

Question Number : 199 Question Id : 7225445400 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which network topology requires a central controller or hub?

Options :

1. ✘ mesh
2. ✔ star
3. ✘ bus

4. ✘ ring

Question Number : 200 Question Id : 7225445401 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In data communication, ATM is an acronym for _____

Options :

1. ✘ Automated Teller Machine

2. ✘ Automatic Transmission Mode

3. ✘ Asynchronous Telecommunication Mode

4. ✔ Asynchronous Transfer Mode