

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 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. ✘ $\theta = n\pi, n \in Z$

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 : 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
 $x + y + z = 6$, $x + 2y + 3z = 10$, $x + 2y + \lambda z = 12$ is inconsistent is

Options :

1. ✘ $\lambda = 1$

2. ✘ $\lambda = 2$

3. ✘ $\lambda = -2$

4. ✔ $\lambda = 3$

Question Number : 4 Question Id : 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 $|adj A|$ 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

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

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

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 : 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

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 : 7225445242 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 : 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 $f(0) = 1$,

$f'(0) = -2$ 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 : 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

Not defined

4. ✓

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 :

Nuclear fission

1. ✘

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. ✘ PF₅

2. ✘ NO

3. ✘ ClO₂

4. ✔ O₂

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. ✔ C⁴⁺

2. ✘ N³⁻

3. ✘ O²⁻

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?

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

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 : 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
4. ✘ Attenuators

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 0^0 and 90^0 with same battery connection

2. ✘ Firing angle is between 90^0 and 180^0 with same battery connection

3. ✘ Firing angle is between 0^0 and 90^0 with reverse battery connection

4. ✔ Firing angle is between 90^0 and 180^0 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 :

detect a single bit error

1. ✔

correct a single bit error

2. ✘

detect two-bit bit error

3. ✘

correct two-bit bit error

4. ✘

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 :

Different users in different time slots

1. ✔

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. ✔ RL B

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

810 French system

4. ✘

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 :

AFC

1. ✘

sync amp

2. ✘

sync separator

3. ✔

AGC

4. ✘

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 :

three

1. ✘

four

2. ✘

five

3. ✘

seven

4. ✔

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 :

X.23

1. ✘

X.24

2. ✘

X.25

3. ✔

X.26

4. ✘

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