Electronics and Communications Engineering_Set2

Topic:- Mathematics_Set2

1) If $A+B=\begin{bmatrix}1 & -1\\ 3 & 0\end{bmatrix}$ and $A-B=\begin{bmatrix}3 & 1\\ 1 & 4\end{bmatrix}$, then $AB=$

[Question ID = 13593]

1. $\begin{bmatrix}-2 & 2\\ 0 & -6\end{bmatrix}$
2. $\begin{bmatrix}-2 & -2\\ 2 & -4\end{bmatrix}$
3. $\begin{bmatrix}-2 & -2\\ 0 & -6\end{bmatrix}$
4. $\begin{bmatrix}1 & 0\\ 0 & 1\end{bmatrix}$

Correct Answer :-

- $\begin{bmatrix}-2 & -2\\ 0 & -6\end{bmatrix}$

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2) If $A=\begin{bmatrix}1\\ 0\\ 2\end{bmatrix}$; $B=\begin{bmatrix}1 & -1 & 0\\ 0 & 2 & 3\\ 4 & 0 & -1\end{bmatrix}$, then $A^TBA=$

[Question ID = 13594]

1. $[5]$

2. $[0]$

3. $\begin{bmatrix} 1 & -1 & 0 \\ 0 & 1 & 0 \\ 0 & 6 & -2 \end{bmatrix}$

4. $\begin{bmatrix} 1 & -1 & 0 \\ 0 & 2 & 3 \\ 4 & 0 & -1 \end{bmatrix}$

Correct Answer :-

- $[5]$

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3) $\begin{vmatrix} x-y & p-q & a-b \\ y-z & q-r & b-c \\ z-x & r-p & c-a \end{vmatrix} =$

[Question ID = 13595]

1. 1
2. 2
3. xyz- pqr+ abc
4. 0

Correct Answer :-

- 0

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4) The solution of the equation $\begin{vmatrix} 5-x & 4 & 3 \\ 1-3x & 7 & 6 \\ 1-x & 6 & 5 \end{vmatrix} = 0$ is

[Question ID = 13596]

1. $x=1$

2. $x=2$

3. $x=0$

4. $x=5$

Correct Answer :-

- $x=1$

5) The inverse of the matrix $A=\begin{bmatrix} a+ib & c+id \\ -c+id & a-ib \end{bmatrix}$, if $a^2+b^2+c^2+d^2=1$ is

[Question ID = 13597]

1. $\begin{bmatrix} a-ib & c-id \\ c+id & a+ib \end{bmatrix}$

2. $\begin{bmatrix} a-ib & -c-id \\ c-id & a+ib \end{bmatrix}$

3. $\begin{bmatrix} c-id & a-ib \\ a+ib & c+id \end{bmatrix}$

4. $\begin{bmatrix} a-ib & c-id \\ -c-id & a+ib \end{bmatrix}$

Correct Answer :-

- $\begin{bmatrix} a-ib & -c-id \\ c-id & a+ib \end{bmatrix}$

6) $\dfrac{x^2}{x^2-3x+2}=$

[Question ID = 13598]

1. $\frac{1}{x-1}+\frac{2}{x-2}$

2. $1-\frac{1}{1-x}+\frac{3}{x-2}$

3. $1+\frac{1}{1-x}+\frac{4}{x-2}$

4. $1-\frac{1}{x-1}+\frac{2}{x-2}$

Correct Answer :-

- $1+\frac{1}{1-x}+\frac{4}{x-2}$

7) If $Sin\theta+Cosec\theta=2$, then the value of $Sin^3\theta+Cosec^3\theta=$

[Question ID = 13599]

1. 0
2. 1
3. 2
4. 8

Correct Answer :-

- 2

8) The value of $Sin^2\left(\frac{\pi}{8}+\frac{\theta}{2}\right)-Sin^2\left(\frac{\pi}{8}-\frac{\theta}{2}\right)=$

[Question ID = 13600]

1. $\frac{1}{\sqrt{2}}$

2. $\frac{1}{2}\sin\theta$

3. $\frac{1}{\sqrt{2}}\sin\theta$

4. $\sin(\frac{\theta}{2})$

Correct Answer :-

- $\frac{1}{\sqrt{2}}\sin\theta$

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9) If x, y are in first quadrant, $\tan(x-y)=\frac{7}{24}$ and $\tan(x)=\frac{4}{3}$, then $x+y=$

[Question ID = 13601]

1. $\frac{3}{4}$

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

3. $\frac{\pi}{4}$

4. 1

Correct Answer :-

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

---

10) If $A-B=\frac{3\pi}{4}$, then $(1-\tan A)(1+\tan B)=$

[Question ID = 13602]

1. 2
2. 1
3. 0
4. -1

Correct Answer :-

- 2

11) $\sec^2(\tan^{-1}3)+\cos ec^2(\cot^{-1}3)=$

[Question ID = 13603]

1. 1
2. 10
3. 20
4. 30

Correct Answer :-

- 20

12) $3Co\sec x=4Sinx \Rightarrow x=$

[Question ID = 13604]

1. $n\pi\pm\frac{\pi}{2};n\in z$
2. $n\pi\pm\frac{\pi}{3};n\in z$
3. $2n\pi\pm\frac{\pi}{2};n\in z$
4. $n\pi\mp\frac{\pi}{4};n\in z$

Correct Answer :-

- $n\pi\pm\frac{\pi}{3};n\in z$

13) If $x=\log_e\left(5+\sqrt{26}\right)$, then $\text{Sinhx}=$

[Question ID = 13605]

1. 5
2. 1

3. 2

4. $\log_e 5$

Correct Answer :-

- 5

14)

If a, b and c are the lengths of the sides opposite to the angles A,B and C of a triangle ABC, then

$$(b-c)^2 Cos^2 \frac{A}{2} + (b+c)^2 Sin^2 \frac{A}{2} =$$

[Question ID = 13606]

1. a

2. b

3. b^2

4. a^2

Correct Answer :-

- a^2

15) If $z = 2 - i\sqrt{7}$, then $2z^2 - 8z + 22 =$

[Question ID = 13607]

1. 0
2. 1
3. 2
4. 4

Correct Answer :-

- 0

16)

The least positive integer n, satisfying $\left(\frac{1+i}{1-i}\right)^n = 1$ is

[Question ID = 13608]

1. 2
2. 1
3. 4
4. 8

Correct Answer :-

- 4

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17) The distance between the parallel straight lines $3x+4y-3=0$ and $6x+8y-1=0$ is

[Question ID = 13609]

1. $\frac{1}{2}$
2. $\frac{1}{4}$
3. 1
4. $\sqrt{2}$

Correct Answer :-

- $\frac{1}{2}$

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18) Angle between the lines $3x-5y-9=0;\ 4x-y+7=0$ is

[Question ID = 13610]

1. $\theta=30^0$
2. $\theta=45^0$
3. $\theta=60^0$
4. $\theta=15^0$

Correct Answer :-

- $\theta = 45^0$

19)

Equation of the circle passing through (3,-4) and concentric with $x^2 + y^2 + 4x - 2y + 1 = 0$ is

[Question ID = 13611]

1. $x^2 + y^2 + 4x - 2y - 15 = 0$
2. $x^2 + y^2 + 4x - 2y - 30 = 0$
3. $x^2 + y^2 + x - 2y - 45 = 0$
4. $x^2 + y^2 + 4x - 2y - 45 = 0$

Correct Answer :-

- $x^2 + y^2 + 4x - 2y - 45 = 0$

20) The eccentricity of Ellipse $9x^2 + 16y^2 = 144$ is

[Question ID = 13612]

1. $\frac{7}{4}$
2. $\frac{\sqrt{7}}{4}$
3. $\frac{5}{4}$
4. $\frac{5}{3}$

Correct Answer :-

- $\frac{\sqrt{7}}{4}$

21) $\underset{x\to 0}{Lim}\frac{8^x-2^x}{x}=$

[Question ID = 13613]

1. log 2
2. 0
3. log 4
4. 1

Correct Answer :-

- log 4

22) If $y=\cos^{-1}(4x^3-3x)$, then $\frac{dy}{dx}=$

[Question ID = 13614]

1. $\frac{-3}{\sqrt{1-x^2}}$
2. $\frac{4}{\sqrt{1-x^2}}$
3. $\frac{1}{\sqrt{1+x^2}}$
4. $\frac{-4}{3\sqrt{1-x^2}}$

Correct Answer :-

- $\frac{-3}{\sqrt{1-x^2}}$

23)

If $y=(\sin x)^{\log x}$, $then \frac{dy}{dx}=$

[Question ID = 13615]

1. $(\sin x)^{\log x}\{\tan x.\log x+\log(\sin x)\}$
2. $\log x\left\{\cot x.\sin x+\frac{1}{x}\log(\sin x)\right\}$
3. $(\sin x)^{\log x}\left\{\cot x.\log x+\frac{1}{x}\log(\sin x)\right\}$
4. $(\cos x)^{\log x}\left\{\tan x.\log x+\frac{1}{x}\log(\cos x)\right\}$

Correct Answer :-

- $(\sin x)^{\log x}\left\{\cot x.\log x+\frac{1}{x}\log(\sin x)\right\}$

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24) If $y=\log\left(x+\sqrt{1+x^2}\right)$, then $(1+x^2)\frac{d^2y}{dx^2}+x\frac{dy}{dx}=$

[Question ID = 13616]

1. 1
2. 0
3. x
4. $\frac{1}{\sqrt{1+x^2}}$

Correct Answer :-

- 0

25) At $\theta = \frac{\pi}{4}$, the slope of the normal to the curve $x = aCos^3\theta$; $y = aSin^3\theta$ is

[Question ID = 13617]

1. -1
2. -2
3. 2
4. 1

Correct Answer :-

- 1

26) If $x^y = e^{x-y}$, then $\frac{dy}{dx} =$

[Question ID = 13618]

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

Correct Answer :-

- $\frac{\log x}{(1+\log x)^2}$

27) Equation of the tangent to the curve $y = 5x^4$ at the point $(1,5)$ is

[Question ID = 13619]

1. $y = 15(x-1)$

2. $y = 20x - 15$

3. $x = 15y - 20$

4. $y = 20(x-1)$

Correct Answer :-

- $y = 20x - 15$

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28) If $u = \sin^{-1}\left(\frac{x^2+y^2}{x+y}\right)$, then $x\frac{\partial u}{\partial y} + y\frac{\partial u}{\partial y} =$

[Question ID = 13620]

1. cot u
2. tan u
3. 1
4. sin u

Correct Answer :-

- tan u

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29) $\int \frac{a}{b+ce^x} dx =$

[Question ID = 13621]

1. $\frac{a}{b}\log\left(\frac{e^x}{b+ce^x}\right)+C$

2. $\frac{b}{a}\log\left(\frac{e^{-x}}{b+e^{-x}}\right)+C$

3. $\frac{a}{b}\log\left(\frac{1}{be^x+ce^{-x}}\right)+C$

4. $\frac{b}{a}e^{(b+ce^x)}+C$

Correct Answer :-

- $\frac{a}{b}\log\left(\frac{e^x}{b+ce^x}\right)+C$

30) $\int\frac{1}{(1+x^2)\tan^{-1}x}dx=$

[Question ID = 13622]

1. $\tan^{-1}x + C$
2. $\cot^{-1}x+C$
3. log(secx)tanx + C
4. log $(\tan^{-1}x)$ + C

Correct Answer :-

- log $(\tan^{-1}x)$ + C

31) $\int\frac{\cos(\log x^2)}{x^4}dx=$

[Question ID = 13623]

1. $\frac{1}{x^3}Cos\left[\log x^2+\tan^{-1}(\frac{3}{2})\right]+C$
2. $\frac{x^3}{\sqrt{13}}Cos\left[\log x^2+\cot^{-1}(\frac{2}{3})\right]+C$
3. $\frac{-1}{2\,x^3}Cos\left[\log x^2+\tan^{-1}(\frac{2}{3})\right]+C$
4. $\frac{1}{x^3\sqrt{13}}Cos\left[\log x^2+\cot^{-1}(\frac{3}{2})\right]+C$

Correct Answer :-

- $\frac{1}{x^3} Cos\left[\log x^2 + \tan^{-1}(\frac{3}{2})\right] + C$

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

[Question ID = 13624]

1. $\log\left(\frac{1-e^x}{e^x}\right) + C$
2. $\log\left(e^x - 1\right) + C$
3. $\log\left(\frac{e^x - 1}{e^x}\right) + C$
4. $\log\left(\frac{e^{-x} - 1}{e^{-x}}\right) + C$

Correct Answer :-

- $\log\left(\frac{e^x - 1}{e^x}\right) + C$

33) $\int \frac{\sin^3 x + \cos^3 x}{\sin^2 x \cos^2 x} dx =$

[Question ID = 13625]

1. $\sec x + \cot x$
2. $\operatorname{cosec} x - \cot x$
3. $\operatorname{cosec} x + \tan x$
4. $\sec x - \operatorname{cosec} x$

Correct Answer :-

- $\sec x - \cos ecx$

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34) $\int_0^{\pi/4} \frac{e^{\tan x}}{\cos^2 x} dx$

[Question ID = 13626]

1. $e-1$
2. $e^{-1}-1$
3. $e^{-1}+1$
4. $e^{-2}-1$

Correct Answer :-

- $e-1$

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35) $\int_0^{\pi} \sin^3 x(1-\cos x)^2 dx =$

[Question ID = 13627]

1. 5/3
2. 8/5
3. 1
4. 0

Correct Answer :-

- 8/5

36)

The volume generated by the revolution of the ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2}=1$ about its major axis is

[Question ID = 13628]

1. $4\pi ab^2$

2. $\frac{4}{3}\pi ab^2$

3. $\frac{4}{3}\pi a^2 b$

4. $\frac{8}{3}\pi a^2 b^2$

Correct Answer :-

- $\frac{4}{3}\pi ab^2$

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37) The general solution of $x\frac{dy}{dx} = y[\log y - \log x + 1]$ is

[Question ID = 13629]

1. $y = Ce^x$

2. $y = Ce^y$

3. $y = xe^{cx}$

4. $x = Ce^{y/x}$

Correct Answer :-

- $y = xe^{cx}$

38) A and B are arbitrary constants ,the differential equation having $xy = Ae^x + Be^{-x} + x^2$ as its general solution is

[Question ID = 13630]

1. $y'' + 2xy' - xy + x^2 = 0$

2. $xy'' + y' - xy - 2 = 0$

3. $xy'' + 2y' - 2xy + 3x^2 - 2 = 0$

4. $xy'' + 2y' - xy + x^2 - 2 = 0$

Correct Answer :-

- $xy'' + 2y' - xy + x^2 - 2 = 0$

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39) The solution of $\left(e^{-2\sqrt{x}} - y\right)\frac{dx}{dy} = \sqrt{x}$

[Question ID = 13631]

1. $y = e^{-2\sqrt{x}}\left(2\sqrt{x} + C\right)$

2. $y = e^{-2\sqrt{x}} + \sqrt{x} + C$

3. $y = e^{-2\sqrt{x}} + e^{\sqrt{x}}\sqrt{x} + C$

4. $y = e^{2\sqrt{x}} + \log x + C$

Correct Answer :-

- $y = e^{-2\sqrt{x}}\left(2\sqrt{x} + C\right)$

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40) The solution of $Cosx\, dy = (Sinx - y)ydx$

[Question ID = 13632]

1. $y = \sec x \tan x + C$

2. $y^{-1}Co\sec x = \cot x + C$

3. $y^{-1}\sec x = \tan x + C$

4. $y = \log \sin x + C$

Correct Answer :-

- $y^{-1}\sec x = \tan x + C$

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41) The solution of $\frac{d^2y}{dx^2} + 4\frac{dy}{dx} + 5y = 0$ satisfying $y(0) = 1$ *and* $y'(0) = 0$ is

[Question ID = 13634]

1. $y = e^{-2x}[\cos x + 2\sin x]$

2. $y = e^{-x}[2\cos x + \sin x]$

3. $y = e^{2x}[2\cos x + 3\sin x]$

4. $y = e^{x}[\cos x + 2\sin x]$

Correct Answer :-

- $y = e^{-2x}[\cos x + 2\sin x]$

42) $\frac{d^2y}{dx^2} - 5\frac{dy}{dx} + 6y = 2e^x$; with $y(0) = 1$; $y'(0) = 1$ satisfies

[Question ID = 13635]

1. $y = c_1e^{2x} + c_2e^{3x} + e^x$

2. $y = 2e^{2x} + 3e^{3x} + e^x$

3. $y = e^{2x} + 2e^{3x} + e^{-x}$

4. $y = e^x$

Correct Answer :-

- $y = e^x$

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43) The solution of $(y\log x - 2)ydx = xdy$

[Question ID = 13636]

1. $y = x(\log x + C)$

2. $y = \frac{1}{x}\log x + x + C$

3. $\frac{1}{y} = x\log x + x + Cx$

4. $\frac{1}{y} = x^2\log x + x + C$

Correct Answer :-

- $\frac{1}{y} = x^2\log x + x + C$

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44) Mean deviation about the median for the data 4,6,9,3,10,13,2 is [Question ID = 13641]

1. 4.31
2. 5.253
3. 3.285
4. 3.785

Correct Answer :-

- 3.285

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45) If E_1 , E_2 are any two events of a random experiment and P is a probability function then

[Question ID = 13642]

1. $P(E_1 \cap E_2) = P(E_1) + P(E_2) - P(E_1 \cap E_2)$

2. $P(E_1 \cup E_2) = P(E_1) + P(E_2) - P(E_1 \cap E_2)$

3. $P(E_1 \cap E_2) = P(E_1) + P(E_2) + P(E_1 \cup E_2)$

4. $P(E_1 \cup E_2) = P(E_1) + P(E_2) - P(E_1 \cup E_2)$

Correct Answer :-

- $P(E_1 \cup E_2) = P(E_1) + P(E_2) - P(E_1 \cap E_2)$

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46) The solution of the initial value problem $\frac{d^2x}{dt^2} - 3\frac{dx}{dt} + 2x = 0;$ with $x(0) = 2; \quad x'(0) = 0$ is

[Question ID = 23975]

1. $x(t) = Ae^t + Be^{2t}$

2. $x(t) = 2e^t - 4e^{2t}$

3. $x(t) = 4e^t - 2e^{2t}$

4. $x(t) = e^t - 2e^{2t}$

Correct Answer :-

- $x(t) = 4e^t - 2e^{2t}$

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47) The Laplace transform of $\left\{\frac{e^{-at}t^{n-1}}{(n-1)!}\right\} =$

[Question ID = 23976]

1. $\frac{e^{-at}}{(s+a)^n}$

2. $\frac{1}{(s+a)^n}$

3. $\frac{1}{(s-a)^n}$

4. $\frac{e^{at}}{(s-a)^n}$

Correct Answer :-

- $\frac{1}{(s+a)^n}$

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48) The inverse Laplace transform of $\left\{\frac{1}{(8s-27)^{1/3}}\right\}=$

[Question ID = 23977]

1. $\frac{e^{(3/2)t}\, t^{-2/3}}{\Gamma\left(\frac{1}{3}\right)}$

2. $\frac{e^{(8/27)t}\, t^{-3/2}}{2\Gamma\left(\frac{1}{3}\right)}$

3. $\frac{e^{(2/3)t}\, t^{-3/2}}{2\Gamma\left(\frac{1}{3}\right)}$

4. $\frac{e^{(27/8)t}\, t^{-2/3}}{2\Gamma\left(\frac{1}{3}\right)}$

Correct Answer :-

- $\dfrac{e^{(27/8)t}\, t^{-2/3}}{2\Gamma\left(\dfrac{1}{3}\right)}$

49)

If $f(x)=\begin{cases}0 & ;-\pi\le x\le 0\\ \sin x\,; & 0\le x\le\pi\end{cases}$, $f(x+2\pi)=\text{f(x)}$ and

$f(x)=\dfrac{a_0}{2}+\sum_{n=1}^{\infty}\left(a_n Cos\,nx+b_n Sin\,nx\right)$, then $a_0=$

[Question ID = 23978]

1. $\dfrac{1}{\pi}$
2. 1
3. 0
4. $\dfrac{2}{\pi}$

Correct Answer :-

- $\dfrac{2}{\pi}$

50)

The inverse Laplace transform of $\left\{\dfrac{s+3}{s^2+6s+25}\right\}=$

[Question ID = 23979]

1. $e^{-3t}\cos 4t$
2. $e^{3t}\sin 4t$

3. $e^{3t}\cos 4t$

4. $e^{-3t}\cos 3t$

Correct Answer :-

- $e^{-3t}\cos 4t$

Topic:- Physics_set2

1) The physical quantity having the dimension $[ML^2T^{-3}]$ is

[Question ID = 34198]

1. work
2. power
3. pressure
4. impulse

Correct Answer :-

- power

2) Force F is given by $F=at+bt^2$ where t is time. The dimensions of a and b are

[Question ID = 34199]

1. $[MLT^{-3}]$ and $[MLT^{-4}]$

2. $[MLT^{-1}]$ and $[MLT^{0}]$

3. $[MLT^{-3}]$ and $[MLT^{4}]$

4. $[MLT^{-4}]$ and $[MLT^{-1}]$

Correct Answer :-

- $[MLT^{-3}]$ and $[MLT^{-4}]$

3)

The magnitudes of two vectors are 4 and 5 and their scalar product is 10. Then the angle between the two vectors is [Question ID = 34200]

1. $30°$
2. $45°$
3. $60°$
4. $0°$

Correct Answer :-

- $60°$

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4) If $\bar{a} + \bar{b} = \bar{c}$ and $\bar{a}^2 + \bar{b}^2 = \bar{c}^2$, then the angle between the vectors $\bar{a}$ and $\bar{b}$ is

[Question ID = 34201]

1. $0°$
2. $20°$
3. $45°$
4. $90°$

Correct Answer :-

- $90°$

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5)

$\bar{a}$ and $\bar{b}$ are two vectors and θ is the angle between them. If $|\bar{a} \times \bar{b}| = \sqrt{3}(\bar{a} \cdot \bar{b})$, the value of θ is

[Question ID = 34202]

1. $30°$
2. $45°$

3. $60°$

4. $90°$

Correct Answer :-

- $30°$

6) A body under action of five forces can be in equilibrium [Question ID = 34203]

1. if all forces are equal
2. sum of resolved components along x-axis is zero
3. sum of resolved components along y-axis is zero
4. sum of resolved components along x-axis and y-axis, individually zero

Correct Answer :-

- sum of resolved components along x-axis and y-axis, individually zero

7) Two vibrating systems are said to be in resonance, if their [Question ID = 34204]

1. amplitudes are equal
2. temperatures are equal
3. frequencies are equal
4. phase values are equal

Correct Answer :-

- frequencies are equal

8)

A balloon is ascending at the rate of 9.8 ms^{-1} at a height of 39.2 m above the ground when a food packet is dropped from the balloon. The velocity with which the food packet reach the ground is

[Question ID = 34205]

1. $-9.8\ ms^{-1}$

2. $-58.8\ ms^{-1}$

3. $-4.9\ ms^{-1}$

4. $-29.4\ ms^{-1}$

Correct Answer :-

- $-29.4\ ms^{-1}$

9) The walls of hall built for music concerts should [Question ID = 34206]

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

Correct Answer :-

- absorb sound

10) When a star approaches the earth , the waves are shifted towards [Question ID = 34207]

1. green colour
2. yellow colour
3. blue end
4. red end

Correct Answer :-

- blue end

11)

A body of mass m is placed on a rough surface with coefficient of friction μ inclined at θ. If the mass is in equilibrium, then the value of θ is

[Question ID = 34208]

1. $Tan^{-1}\mu$
2. $Tan^{-1}(1/\mu)$
3. $Tan^{-1}(m/\mu)$
4. $Tan^{-1}(\mu/m)$

Correct Answer :-

- $Tan^{-1}\mu$

12)

If water falls from a dam into a turbine wheel 19.6 m below, then the velocity of water at the turbine is (given g=9.8 ms^{-2})

[Question ID = 34209]

1. $9.8\ ms^{-1}$
2. $19.6\ ms^{-1}$
3. $39.2\ ms^{-1}$
4. $98\ ms^{-1}$

Correct Answer :-

- $19.6\ ms^{-1}$

13) Two springs of spring constants 1000 N/m and 1500 N/m respectively are stretched with a same force. Their potential energies will be in the ratio of

[Question ID = 34210]

1. 2:3
2. 1:3
3. 3:2
4. 2:1

Correct Answer :-

- 3:2

14) The mass of a body at the centre of earth is

[Question ID = 34211]

1. less than that at the surface
2. remain constant
3. more than that at the surface
4. zero

Correct Answer :-

- remain constant

15)
The maximum velocity of a particle executing simple harmonic motion with an amplitude 7 mm is 4.4 ms^{-1}. The period of oscillation is

[Question ID = 34212]

1. 0.01 s
2. 0.1 s
3. 10 s
4. 100 s

Correct Answer :-

- 0.01 s

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16) In a simple harmonic oscillator, at the mean position [Question ID = 34213]

1. both kinetic energy and potential energies are minimum
2. kinetic energy is maximum, potential energy is minimum
3. kinetic energy is minimum, potential energy is maximum
4. both kinetic energy and potential energies are maximum

Correct Answer :-

- kinetic energy is maximum, potential energy is minimum

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17) The intensity of sound produced by thunder is $0.1 Wm^{-2}$. The intensity level in decibels is

[Question ID = 34214]

1. 110 dB
2. 100 dB
3. 90 dB
4. 140 dB

Correct Answer :-

- 110 dB

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18) A classroom has dimensions 20 x 15 x 5 m^3. The reverberation time is 3.5 s. The average absorption coefficient is

[Question ID = 34215]

1. 0.05
2. 0.09
3. 0.03
4. 0.07

Correct Answer :-

- 0.07

19) Which of the following is not a characteristic of musical sound? [Question ID = 34216]

1. pitch
2. loudness
3. frequency
4. quality

Correct Answer :-

- frequency

20) In a simple harmonic motion, the particle is [Question ID = 34217]

1. always accelerated
2. alternately accelerated and retarded
3. always retarded
4. neither accelerated nor retarded

Correct Answer :-

- alternately accelerated and retarded

21)

100 g of water is heated from 30°C to 50°C. Ignoring the slight expansion of water, the change in its internal energy is (specific heat of water is 4200 J $kg^{-1}K^{-1)}$

[Question ID = 34218]

1. 4.2 kJ
2. 84 kJ
3. 2.1 kJ
4. 8.4 kJ

Correct Answer :-

- 8.4 kJ

22) Which of the following is correct [Question ID = 34219]

1. $(T_1/H_2) + (T_2/H_1) = 0$
2. $(H_1/T_1) = (H_2/T_2)$
3. $H_1 T_1 = H_2 T_2$
4. $H_1 T_1 + H_2 T_2 = 0$

Correct Answer :-

- $(H_1/T_1) = (H_2/T_2)$

23) An ideal gas in a cylinder is compressed adiabatically to one-third its original volume. During the process 50J of work is done on the gas by the compressing agent. The change in the internal energy of the gas in the process is [Question ID = 34220]

1. 50 J
2. 50/3 J
3. 150 J
4. 45 J

Correct Answer :-

- 50 J

24) The maximum kinetic energy of photoelectrons ejected from a potassium surface by ultraviolet light of wavelength 200 nm is (photoelectric threshold wavelength for potassium is 440 nm) [Question ID = 34221]

1. 2.82 eV
2. 4.40 eV
3. 6.20 eV
4. 3.38 eV

Correct Answer :-

- 3.38 eV

25)

For a light wave to undergo total internal reflection ('i_c' is critical angle, 'i' is incident angle)

[Question ID = 34222]

1. light moves from rarer to denser medium and $i > i_c$
2. light moves from denser to rarer medium and $i > i_c$
3. light moves from rarer to denser medium and $i < i_c$
4. light moves from denser to rarer medium and $i < i_c$

Correct Answer :-

- light moves from denser to rarer medium and $i > i_c$

Topic:- Chemistry_Set2

1) For an f-orbital, the values of 'm' are [Question ID = 23999]

1. -1, 0, +1
2. -3, -2, -1, 0, +1, +2, +3

3. 0, +1, +2, +3
4. -2, -1, 0, +1, +2

Correct Answer :-

- -3, -2, -1, 0, +1, +2, +3

2) Among LiCl, $BeCl_2$, BCl_3 and CCl_4, the covalent character follows the order:

[Question ID = 24000]

1. $LiCl > BeCl_2 > BCl_3 > CCl_4$
2. $LiCl < BeCl_2 < BCl_3 < CCl_4$
3. $LiCl > BeCl_2 < BCl_3 > CCl_4$
4. $LiCl < BeCl_2 < BCl_3 > CCl_4$

Correct Answer :-

- $LiCl < BeCl_2 < BCl_3 < CCl_4$

3) Lowest oxidation state in its compound is exhibited by

[Question ID = 24001]

1. N
2. O
3. C
4. F

Correct Answer :-

- F

4) Which of the following contains ionic, covalent and coordinate covalent bonds

[Question ID = 24002]

1. NH_4Cl
2. $K_3[Fe(CN)_6]$
3. $CuSO_4$
4. NH_4Cl, $CuSO_4$ and $K_3[Fe(CN)_6]$

Correct Answer :-

- NH_4Cl, $CuSO_4$ and $K_3[Fe(CN)_6]$

5) Molarity of 4% (W/V) solution of NaOH is [Question ID = 24003]

1. 0.1
2. 0.5
3. 0.001
4. 1

Correct Answer :-

- 1

6) The weight of $H_2C_2O_4.\ 2H_2O$ required to prepare 500mL of 0.2 N solution is

[Question ID = 24004]

1. 1.26 g
2. 6.3g
3. 1.575g
4. 3.15g

Correct Answer :-

- 6.3g

7) The conjugate base of hydrogen molecule is [Question ID = 24005]

1. Electron
2. Hydride ion
3. Proton
4. Hydroxide ion

Correct Answer :-

- Hydride ion

8) p^H of a solution is 1. It is diluted by $1X\ 10^3$ times. The p^H of the resulting solution will be

[Question ID = 24006]

1. 1
2. 3
3. 4
4. 5

Correct Answer :-

- 4

9) Which of the following is a basic flux

[Question ID = 24007]

1. $Na_2B_4O_7$

2. **CaO**

3. SiO_2

4. P_2O_5

Correct Answer :-

- **CaO**

10) Roasting of a metal oxide is carried out in which of the following furnaces

[Question ID = 24008]

1. Blast furnace

2. Reverberatory furnace

3. Both reverbaratory furnace and blast furnace

4. Muffle furnace

Correct Answer :-

- Reverberatory furnace

11) Three faradays of electricity was passed through an aqueous solution of Ferrous chloride. The weight of iron metal (at Wt = 56) deposited at the cathode in grams is [Question ID = 24009]

1. 56
2. 84
3. 112
4. 168

Correct Answer :-

- 84

12) Which one of the following could not be liberated from a suitable electrolyte by the passage of 0.25 Faraday of electricity through the electrolyte

[Question ID = 24010]

1. 0.25 mole of Ag

2. 16 gms of Cu

3. 2gms of O_2 (g)

4. 2.8 lit of H_2 at STP

Correct Answer :-

- 16 gms of Cu

13) . Given standard electrode potentials

$Fe^{3+} + 3e^{-}$ -----> Fe $E^0 = -0.036$ V

$Fe^{2+} + 2e^{-}$ -----> Fe $E^0 = -0.440$ V

The standard electrode potential E^0 for $Fe^{3+} + e^{-}$ -----> Fe^{2+} is

[Question ID = 24011]

1. 0.476 V

2. -0.404 V

3. 0.40 V

4. 0.772 V

Correct Answer :-

- 0.772 V

14) Water acts as an excellent solvent, due to which property among the following:

[Question ID = 24012]

1. High viscosity

2. High Entholpy of formation

3. High dielectric constant

4. High density

Correct Answer :-

- High dielectric constant

15) A sample of water has $Mg(HCO_3)_2$=73 mg/L, $Ca(HCO_3)_2$ = 162 mg/L, $MgCl_2$ = 95 mg/L and $CaSO_4$ = 136 mg/L. Temporary hardness in ppm is

[Question ID = 24013]

1. 150

2. 350

3. 500

4. 200

Correct Answer :-

- 150

16) The process which removes all ionic, colloidal and high molecular weight organic matter in water is [Question ID = 24014]

1. Ion exchange process
2. zeolite process
3. Reverse osmosis
4. Lime soda process

Correct Answer :-

- Reverse osmosis

17) The monomer used in PVC preparation is [Question ID = 24015]

1. Ethene
2. Chloroethene
3. Dichloroethene
4. Tetrachloroethene

Correct Answer :-

- Chloroethene

18) The chemical used for accelerating Vulcanization is

[Question ID = 24016]

1. ZnO
2. SiO_2
3. Sulphur
4. Zinc sterate

Correct Answer :-

- Sulphur

19) Which one of the following type of forces are present in Nylon-6,6 [Question ID = 24017]

1. Electrostatic forces of attraction
2. Hydrogen bonding
3. Three dimensional network of bonds
4. Metallic bonding

Correct Answer :-

- Hydrogen bonding

20) Which one of the following is a primary pollutant

[Question ID = 24018]

1. **CO**
2. **PAN**
3. **Aldehyde**
4. H_2SO_4

Correct Answer :-

- **CO**

21) Ozone layer of upper atmosphere is being destroyed by

[Question ID = 24019]

1. Photochemical oxidants like O_2 and CO_2
2. **Chloro fluorocarbon**
3. **Smog**
4. SO_2

Correct Answer :-

- **Chloro fluorocarbon**

22) Eutrophication causes reduction in [Question ID = 24020]

1. Dissolved salts
2. Dissolved hydrogen
3. Dissolved oxygen
4. Dissolved solids

Correct Answer :-

- Dissolved oxygen

23) Which one of the chemical substance is maximum in natural gas [Question ID = 24021]

1. CH_4
2. C_2H_6

3. H_2

4. $CO+CO_2$

Correct Answer :-

- CH_4

24) Which one of the following metals could provide cathodic protection to iron [Question ID = 24022]

1. Cu and Ni
2. Zn and Cu
3. Al and Zn
4. Al, Zn and Ni

Correct Answer :-

- Al and Zn

25) Rusting of iron is catalysed by which of the following

[Question ID = 24023]

1. **Fe**

2. **Zn**

3. O_2

4. H^+

Correct Answer :-

- H^+

Topic:- ECE_Set2

1) Calculate the power dissipation of a silicon diode having $I_D = 40$ mA.

[Question ID = 34323]

1. 28 mW

2. 28 W

3. 280 mW

4. $2800\ \mu w$

Correct Answer :-

- 28 mW

2) The most stable biasing technique used is the [Question ID = 34324]

1. voltage-divider bias
2. base bias
3. emitter bias
4. collector bias

Correct Answer :-

- voltage-divider bias

3) How many V_{CC} connections does the 565 PLL use?

[Question ID = 34325]

1. 0
2. 1
3. 2
4. 3

Correct Answer :-

- 2

4) The common drain circuit has voltage gain [Question ID = 34326]

1. approximately equal to one
2. approximately equal to 100
3. typically 100
4. typically infinity

Correct Answer :-

- approximately equal to one

5) What is the function of the comparators in the 555 timer circuit? [Question ID = 34327]

1. to compare the output voltages to the internal voltage divider
2. to compare the input voltages to the internal voltage divider

3. to compare the output voltages to the external voltage divider
4. to compare the input voltages to the external voltage divider

Correct Answer :-

- to compare the input voltages to the internal voltage divider

6) The S_iO_2 layer in an IC acts as .....

[Question ID = 34328]

1. Resistor
2. Insulating layer
3. Mechanical output
4. Conductor

Correct Answer :-

- Insulating layer

7) The value of V_{GS} that makes I_D approximately zero is

[Question ID = 34329]

1. pinch-off voltage
2. cutoff voltage
3. breakdown voltage
4. ohmic voltage

Correct Answer :-

- cutoff voltage

8) The resistance of a JFET biased in the ohmic region is controlled by [Question ID = 34330]

1. V_D
2. V_{GS}
3. V_S
4. V_{DS}

Correct Answer :-

- V_{GS}

9) What is the level of the voltage between the input terminals of an op-amp? [Question ID = 34331]

1. Virtually zero
2. -12 V
3. 12 V
4. virtually infinity

Correct Answer :-

- Virtually zero

10) The main purpose of an instrumentation amplifier is to amplify _____ signals that are riding on _____ common-mode voltages. [Question ID = 34332]

1. small, small
2. small, large
3. large, small
4. large, large

Correct Answer :-

- small, large

11) Find I_2 from the following loop equation?

$$4I_1 + 4I_2 = 2$$

$$6I_1 + 7I_2 = 4$$

[Question ID = 34333]

1. 1 A
2. –1 A
3. 100 mA
4. –100 mA

Correct Answer :-

- 1 A

12) Thevenin resistance R_{th} is found

[Question ID = 34334]

1. by opening voltage sources along with their internal resistance
2. by short-circuiting the given two terminals
3. between any two 'open' terminals

4. between same open terminals as for E_{th}

Correct Answer :-

- between same open terminals as for E_{th}

13) The following values are found by using Norton's theorem ($R_N = 2.8\ \Omega$, $I_N = 5$ A). The converted Thevenin values will be_____.

[Question ID = 34335]

1. $R_{Th} = 2.8\ \Omega$, $E_{Th} = 14$ V
2. $R_{Th} = 2.8\ \Omega$, $E_{Th} = 0$ V
3. $R_{Th} = 14\ \Omega$, $I_{Th} = 5$ A
4. $R_{Th} = 2.8\ \Omega$, $I_{Th} = 0$ A

Correct Answer :-

- $R_{Th} = 2.8\ \Omega$, $E_{Th} = 14$ V

14) Superposition theorem can be applied only to circuits having [Question ID = 34336]

1. resistive elements
2. passive elements
3. non-linear elements
4. linear bilateral elements

Correct Answer :-

- linear bilateral elements

15) In a series RLC circuit that is operating above the resonant frequency, the current [Question ID = 34337]

1. leads the applied voltage
2. is zero
3. lags the applied voltage
4. is in phase with the applied voltage

Correct Answer :-

- lags the applied voltage

16) To tune a parallel resonant circuit to a higher frequency, the capacitance should be [Question ID = 34338]

1. decreased
2. same
3. replaced with inductance
4. increased

Correct Answer :-

- decreased

17) What is the Q (Quality factor) of a series RLC circuit that resonates at 6 kHz, has equal reactance of 4 kilo-ohms each, and a resistor value of 50 ohms? [Question ID = 34339]

1. 0.001
2. 50
3. 80
4. 4.0

Correct Answer :-

- 80

18) The characteristic impedance of a transmission line depends upon [Question ID = 34340]

1. shape of the conductor
2. surface treatment of the conductors
3. conductivity of the material
4. geometrical configuration of the conductors

Correct Answer :-

- geometrical configuration of the conductors

19) The SWR for a match-terminated line is [Question ID = 34341]

1. zero
2. one
3. infinity
4. 10

Correct Answer :-

- one

20) Special transmission lines constructed with copper patterns on a printed-circuit board that can be used as tuned circuits, filters, or impedance-matching circuits are called [Question ID = 34342]

1. microchip
2. stripline
3. graphical lines
4. special lines

Correct Answer :-

- stripline

21) 1 mA meter is to be converted to 1 A ammeter. The meter resistance is 100 ohm. The value of shunt resistance is

[Question ID = 34343]

1. 0.001 ohm

2. 0.1001 ohm

3. 100 ohm

4. 1000 ohm

Correct Answer :-

- 0.1001 ohm

22)

When condition $^{R1}/_{R2} = {}^{R3}/_{R4}$ is satisfied, current in galvanometer of Wheatstone bridge is

[Question ID = 34344]

1. 1
2. 0
3. min
4. max

Correct Answer :-

- 0

23) Schering bridge can be used to measure [Question ID = 34345]

1. Q factor
2. Dissipation factor
3. Resistance
4. Frequency

Correct Answer :-

- Dissipation factor

24) In a CRO which of the following is not a part of electron gun [Question ID = 34346]

1. cathode
2. grid
3. accelerating anode
4. X - Y plates

Correct Answer :-

- X - Y plates

25)

In a time base generator, a constant current source (I) is used to drive a capacitance (C). The Output voltage across the capacitance as a function of time (t) is given by [Question ID = 34347]

1. (I /C)t
2. (C/I)t
3. I Ct
4. t / IC

Correct Answer :-

- (I /C)t

26) The format identifier '%i' is also used for _____ data type?

[Question ID = 34348]

1. char
2. int
3. float
4. double

Correct Answer :-

- int

27) The precedence of arithmetic operators is (from highest to lowest) [Question ID = 34349]

1. %, *, /, +, –
2. %, +, /, *, –
3. +, -, %, *, /
4. %, +, -, *, /

Correct Answer :-

- %, *, /, +, –

28) What is the output of this C code?

```
#include <stdio.h>
int main()
{
printf("before continue ");
    continue;
printf("after continue\n");
}
```

[Question ID = 34350]

1. Before continue after continue
2. Before continue
3. After continue
4. Compile time error

Correct Answer :-

- Compile time error

29) What is the default return type if it is not specified in function definition? [Question ID = 34351]

1. void
2. int
3. double
4. short int

Correct Answer :-

- int

30) Number of bytes in memory taken by the below structure is

```
#include <stdio.h>
struct test
{
int k;
   char c;
};
```

[Question ID = 34352]

1. Multiple of integer size
2. Integer size + Character size
3. Depends on the platform
4. Multiple of word size

Correct Answer :-

- Multiple of integer size

31) One way to close an SCR is with: [Question ID = 34353]

1. forward current is less than holding current
2. forward break over voltage
3. low-current dropout
4. valley voltage

Correct Answer :-

- forward break over voltage

32) The voltage blocking capability of the IGBT is determined by the [Question ID = 34354]

1. injection layer
2. body layer
3. metal used for the contacts
4. drift layer

Correct Answer :-

- drift layer

33) In a single-pulse modulation of PWM inverters if pulse width is 72° then

[Question ID = 34355]

1. third harmonic will be eliminated
2. fifth harmonic will be eliminated
3. seventh harmonic will be eliminated
4. ninth harmonic will be eliminated

Correct Answer :-

- fifth harmonic will be eliminated

34) In dark, LDR has [Question ID = 34356]

1. low resistance
2. high current
3. high resistance
4. low voltage

Correct Answer :-

- high resistance

35) The resistive change of a strain gauge [Question ID = 34357]

1. is based on the weight placed upon it, but can be many thousands of ohms
2. is usually no more than 100
3. is based on the gauge factor, but is typically less than an ohm
4. has a positive temperature coefficient

Correct Answer :-

- is based on the gauge factor, but is typically less than an ohm

36) The type of modulation used in the T.V picture transmission is [Question ID = 34358]

1. amplitude modulation
2. phase modulation
3. frequency modulation
4. wavelength modulation

Correct Answer :-

- amplitude modulation

37) What is the maximum transmission efficiency of an AM signal? [Question ID = 34359]

1. 64.44%
2. 33.33%
3. 56.66%
4. 75.55%

Correct Answer :-

- 33.33%

38) A super-hetrodyne receiver selects a radio wave of frequency 850 kHz. Then the frequency of the local oscillator will be [Question ID = 34360]

1. 1305 kHz
2. 455 kHz
3. 850 kHz
4. 445 kHz

Correct Answer :-

- 1305 kHz

39) The sequence of operations in which PCM is done is [Question ID = 34361]

1. sampling, quantizing, encoding
2. quantizing, encoding, sampling
3. quantizing, sampling, encoding
4. encoding, sampling, quantizing

Correct Answer :-

- sampling, quantizing, encoding

40) In PCM encoding, quantization level varies as a function of _____ [Question ID = 34362]

1. Frequency
2. Amplitude
3. Square of frequency
4. Square of amplitude

Correct Answer :-

- Amplitude

41) To guarantee detection of up to 's' errors in all cases, minimum hamming distance in a block code must be [Question ID = 34363]

1. s
2. s+1
3. s-1
4. 0

Correct Answer :-

- s+1

42) To permit the selection of 1 out of 16 equiprobable events, the number of bits required is [Question ID = 34364]

1. 16
2. 8
3. 4
4. $\log_{10}{}^{16}$

Correct Answer :-

- 4

43) In DPSK technique, the technique used to encode bits is [Question ID = 34365]

1. AMI
2. Differential code
3. Uni polar RZ format
4. Manchester format

Correct Answer :-

- Differential code

44) TDMA allows the user to have use of [Question ID = 34366]

1. same frequency channel for same time slot
2. same frequency channel for different time slot
3. same time slot for different frequency channel
4. different time slot for different frequency channels

Correct Answer :-

- same frequency channel for different time slot

45) If the voice channel is free in PSTN, then what would be the maximum data rate supported by 3.0 kHz bandwidth of voice channel? [Question ID = 34367]

1. 2000 bps
2. 4000 bps
3. 6000 bps
4. 8000 bps

Correct Answer :-

- 6000 bps

46)

By how many times is an input impedance of a folded dipole at resonance greater than that of an isolated dipole with same length as one of its sides? [Question ID = 34368]

1. 2
2. 3
3. 4
4. 6

Correct Answer :-

- 4

47) Which among the following is regarded as a condition of an ordinary endfire array? [Question ID = 34369]

1. $\alpha < \beta d$
2. $\alpha > \beta d$
3. $\alpha = \pm \beta d$
4. $\alpha \neq \pm \beta d$

Correct Answer :-

- $\alpha = \pm \beta d$

48) A signal propagation in a waveguide has a full wave of electric intensity change between the two further walls, and no component of the electric field in the direction of propagation. The mode is [Question ID = 34370]

1. $TE_{1,1}$
2. $TE_{1,0}$
3. $TM_{2,2}$
4. $TE_{2,0}$

Correct Answer :-

- $TE_{2,0}$

49) Cylindrical cavity resonators are not used with klystrons because they have [Question ID = 34371]

1. a Q that is too low
2. a shape whose resonant frequency is too difficult to calculate
3. harmonically related resonant frequencies
4. too heavy losses

Correct Answer :-

- harmonically related resonant frequencies

50) If the peak transmitted power in a radar system is increased by a factor of 16, the maximum range will be increased by a factor [Question ID = 34372]

1. 2
2. 4
3. 256
4. 16

Correct Answer :-

- 2

51) The biggest disadvantage of CW Doppler radar is that [Question ID = 34373]

1. it does not give the target velocity
2. it does not give the target range
3. a transponder is required at the target
4. it does not give the target position

Correct Answer :-

- it does not give the target range

52) A satellite beam that covers almost 42.4% of the earths surface is [Question ID = 34374]

1. Zone beam
2. Hemispheric beam
3. Spot beam
4. Global beam

Correct Answer :-

- Global beam

53) The valid uplink / downlink frequencies of satellite communication are [Question ID = 34375]

1. 6/4 GHz
2. 11/8 GHz
3. 4/6 GHz
4. 14/12 GHz

Correct Answer :-

- 6/4 GHz

54) Identical telephone numbers in different parts of a country are distinguished by their [Question ID = 34376]

1. access digits
2. central office codes
3. language digits
4. area codes

Correct Answer :-

- area codes

55) which of this is not a call set up channel? [Question ID = 34377]

1. short pilot
2. long pilot
3. global pilot
4. access channel

Correct Answer :-

- global pilot

56) Which of the following is not an octal number [Question ID = 34378]

1. 101
2. 15
3. 77
4. 99

Correct Answer :-

- 99

57) The complete set of only those logic gates designated as universal gates is [Question ID = 34379]

1. AND, OR and NOT gates
2. NOR, NAND and XOR gates
3. NOR, NAND and AND gates
4. NAND and NOR gates

Correct Answer :-

- NAND and NOR gates

58) The gates required to build an half adder is [Question ID = 34380]

1. four NAND gates and one AND gate
2. XOR and NOR gates
3. XOR and NAND gates
4. XOR and OR gates

Correct Answer :-

- four NAND gates and one AND gate

59) Read and Write capabilities are available in [Question ID = 34381]

1. ROM and RAM
2. ROM
3. RAM
4. LATCH

Correct Answer :-

- RAM

60) Which of the following type of ADC is the fastest type of ADC [Question ID = 34382]

1. Dual slope integrator ADC
2. Flash type of ADC
3. Counter type of ADC
4. Integrator type of ADC

Correct Answer :-

- Flash type of ADC

61) If the counter is connected using six flip-flops, then the maximum number of states that the counter can count are [Question ID = 34383]

1. 16
2. 6
3. 32
4. 64

Correct Answer :-

- 64

62) The counter can be used in the measurement of [Question ID = 34384]

1. voltage
2. time
3. distance
4. length

Correct Answer :-

- time

63) For an *n*-variable Boolean function, the maximum number of prime implicants is

[Question ID = 34385]

1. $2(n-1)$
2. $\frac{n}{2}$

3. 2^n

4. $2^{(n-1)}$

Correct Answer :-

- $2^{(n-1)}$

64) The Boolean expression $XY + (\overline{X} + \overline{Y})Z$ is equivalent to

[Question ID = 34386]

1. $XY\overline{Z} + \overline{XYZ}$

2. $\overline{XYZ} + XYZ$

3. $(X + Z)(Y + Z)$

4. $(\overline{X} + Z)(\overline{Y} + Z)$

Correct Answer :-

- $(X + Z)(Y + Z)$

65) The minimum number of 2-input NAND gates required to implement a 2-input XOR gate is [Question ID = 34387]

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

Correct Answer :-

- 4

66) The instruction that is used as prefix to an instruction to execute it repeatedly until the CX register becomes zero is [Question ID = 34388]

1. SCAS
2. REP
3. CMPS
4. STOS

Correct Answer :-

- REP

67) The flag that acts as Borrow flag in the instruction, SBB is [Question ID = 34389]

1. direction flag
2. carry flag
3. parity flag
4. trap flag

Correct Answer :-

- carry flag

68) What type of control pins are needed in a microprocessor to regulate traffic on the bus, inorder to prevent two devices from trying to use it at the same time? [Question ID = 34390]

1. Bus control
2. Interrupts
3. Bus arbitration
4. Status

Correct Answer :-

- Bus arbitration

69) When 8051 wakes up then 0x00 is loaded to which register? [Question ID = 34391]

1. DPTR
2. SP
3. PC
4. PSW

Correct Answer :-

- PC

70)

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

```
MOV A,#9C

ADD A,#64H
```

[Question ID = 34392]

1. CY=0,AC=0,P=0
2. CY=1,AC=1,P=0
3. CY=0,AC=1,P=0
4. CY=1,AC=1,P=1

Correct Answer :-

- CY=1,AC=1,P=0

71) How many bytes of bit addressable memory is present in 8051 based micro controllers? [Question ID = 34393]

1. 8 bytes
2. 32 bytes
3. 16 bytes
4. 128 bytes

Correct Answer :-

- 16 bytes

72) A CALL instruction allows specifying _____address in the instruction and calling subroutine within _____ program memory block. [Question ID = 34394]

1. 2byte, 3K
2. 11bit, 2K
3. 9bit, 2K
4. 1byte, 3K

Correct Answer :-

- 11bit, 2K

73) What is the frequency of the clock that is being used as the clock source for the timer? [Question ID = 34395]

1. some externally applied frequency f
2. controller's crystal frequency f
3. controller's crystal frequency /12
4. externally applied frequency/12

Correct Answer :-

- controller's crystal frequency /12

74) The pin that clears the control word register of 8255 when enabled is [Question ID = 34396]

1. CLEAR
2. SET
3. RESET
4. CLK

Correct Answer :-

- RESET

75) The conversion delay in successive approximation of an ADC 0808/0809 is [Question ID = 34397]

1. 100 milliseconds
2. 100 microseconds
3. 50 milliseconds
4. 10 microseconds

Correct Answer :-

- 100 microseconds

76) What is the execution speed of instructions in PIC16F877 especially while operating at the maximum value of clock rate? [Question ID = 34398]

1. $0.1\ \mu s$
2. $0.2\ \mu s$
3. $0.4\ \mu s$
4. $0.8\ \mu s$

Correct Answer :-

- $0.2\ \mu s$

77) An instruction that is used to move data from an ARM Register to a Status Register (CPSR or SPSR) is called _____. [Question ID = 34399]

1. MRC
2. MRS
3. MSR
4. MCS

Correct Answer :-

- MSR

78) An impulse response of FIR filter is settles to [Question ID = 34400]

1. Zero in an infinite time
2. Zero in finite time
3. unity in an infinite time
4. unity in finite time

Correct Answer :-

- Zero in finite time

79) Embedded system applications typically involve processing information as [Question ID = 34401]

1. Block level
2. Logical volumes
3. Distance
4. Signals

Correct Answer :-

- Signals

80) In real time operating system [Question ID = 34402]

1. all processes have the same priority
2. a task must be serviced by its deadline period
3. process scheduling can be done only once
4. kernel is not required

Correct Answer :-

- a task must be serviced by its deadline period

81) A pressure wheel or pad which keeps the tape pressed against the capstan and minimises the possibility of tape slippage for varying speeds: [Question ID = 34403]

1. fly wheels
2. pinch roller
3. driving belts
4. idlers

Correct Answer :-

- pinch roller

82) The output of the vertical amplifier applied to the yoke in a TV receiver consists of [Question ID = 34404]

1. direct current
2. vertical sync pulse
3. saw tooth voltage
4. saw tooth current

Correct Answer :-

- saw tooth current

83) In the United States the television broadcast standard is...

[Question ID = 34405]

1. PAL
2. NTSC
3. SECAM
4. RGB

Correct Answer :-

- NTSC

84) The input used by an antenna or cable to a TV set uses frequencies called...

[Question ID = 34406]

1. IF

2. RF

3. AF

4. SAP

Correct Answer :-

- RF

85) The aspect ratio HDTV is [Question ID = 34407]

1. 4:3
2. 18:5
3. 14:8
4. 16:9

Correct Answer :-

- 16:9

86) The cable which consists of an inner copper core and a second conducting outer sheath is [Question ID = 34408]

1. Twisted pair
2. Shielded twisted pair
3. Fiber optic
4. Coaxial

Correct Answer :-

- Coaxial

87) Ray of light refracts and moves closer to surface then angle of incidence is [Question ID = 34409]

1. equal to critical angle
2. zero
3. less than critical angle
4. greater than critical angle

Correct Answer :-

- less than critical angle

88) If there are N routers from source to destination, the total end to end delay in sending packet P for L number of bits in the packet with transmission rate as R is [Question ID = 34410]

1. N
2. (N*L)/R
3. (2N*L)/R
4. L/R

Correct Answer :-

- (N*L)/R

89) UDP in the INTERNET protocol suite is related to [Question ID = 34411]

1. Layer-4
2. Layer-3
3. Layer-2
4. Layer-1

Correct Answer :-

- Layer-4

90) In Bluetooth, the _____ link is used when avoiding latency (delay in data delivery) is more important than integrity (error-free delivery). [Question ID = 34412]

1. SCO
2. ACL
3. ACO
4. SCL

Correct Answer :-

- ACL

91) Which WAN encapsulations can be configured on an asynchronous serial connection?

A. PPP

B. ATM

C. HDLC

D. SDLC

E. Frame Relay

[Question ID = 34413]

1. A and B
2. B and D
3. D and E
4. A and C

Correct Answer :-

- A and B

92) The root of the DNS tree is _____ [Question ID = 34414]

1. a string of 7 characters
2. a string of 63 characters

3. an empty string
4. a string of 8 characters

Correct Answer :-

- an empty string

93) Well-known port for FTP is used for control connection is [Question ID = 34415]

1. 6
2. 8
3. 19
4. 21

Correct Answer :-

- 21

94) A proxy firewall filters at the [Question ID = 34416]

1. physical layer
2. application layer
3. data link layer
4. network layer

Correct Answer :-

- application layer

95) The basic Web Services platform is combination of _____ and _____. [Question ID = 34417]

1. CSS + HTTP
2. XML + HTML
3. XML + HTTP
4. CSS + JAVA

Correct Answer :-

- XML + HTTP

96) Latch up does not occur

[Question ID = 34418]

1. between the power rails
2. from transient spikes
3. positive voltage spike on an input
4. negative voltage spike on an input

Correct Answer :-

- between the power rails

97) In HDL, LITERALS is/are: [Question ID = 34419]

1. digital systems
2. scalars
3. binary coded decimals
4. a numbering system

Correct Answer :-

- scalars

---

98) Which level of abstraction is available in Verilog but not in VHDL? [Question ID = 34420]

1. Behavioral level
2. Dataflow level
3. Gate level
4. Switch level

Correct Answer :-

- Switch level

---

99) How many flops will be synthesized by the given code?

```
always @ (posedge clock) begin
Q1<=d;
Q2<=q1;
Q3<=q2;
end
```

[Question ID = 34421]

1. 1
2. 2
3. 3
4. 4

Correct Answer :-

- 3

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100)

Where are signals received from, at the output decoder in generalized form of Mealy circuit?

A. Input of memory elements B. Output of memory elements

C. External inputs D. External outputs

[Question ID = 34422]

1. A & D
2. B & C
3. B & D
4. A & C

Correct Answer :-

- B & C