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 :-

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

- -

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 $A^T B A =$

[Question ID = 13594]

1. $\begin{bmatrix} 5 \end{bmatrix}$

2. $\begin{bmatrix} 0 \end{bmatrix}$

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 :-

- $\begin{bmatrix} 5 \end{bmatrix}$

---

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

---

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

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

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

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

Correct Answer :-

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

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 $Sin^2\left(\dfrac{\pi}{8} + \dfrac{\theta}{2}\right) - Sin^2\left(\dfrac{\pi}{8} - \dfrac{\theta}{2}\right) =$

[Question ID = 13600]

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

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

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

4. $\sin\left(\dfrac{\theta}{2}\right)$

Correct Answer :-

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

---

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

[Question ID = 13601]

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

2. $\dfrac{\pi}{2}$

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

4. 1

Correct Answer :-

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

---

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

[Question ID = 13602]

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

Correct Answer :-

- 2

---

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

[Question ID = 13603]

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

Correct Answer :-

- 20

---

12) $3 \csc x = 4 \sin x \Rightarrow x =$

[Question ID = 13604]

1. $n\pi \pm \dfrac{\pi}{2}; n \in z$

2. $n\pi \pm \dfrac{\pi}{3}; n \in z$

3. $2n\pi \pm \dfrac{\pi}{2}; n \in z$

4. $n\pi \mp \dfrac{\pi}{4}; n \in z$

Correct Answer :-

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

---

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

[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

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

Correct Answer :-

- 4

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

1. $\dfrac{1}{2}$

2. $\dfrac{1}{4}$

3. 1

4. $\sqrt{2}$

Correct Answer :-

- $\dfrac{1}{2}$

-----

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

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. $\dfrac{7}{4}$

2. $\dfrac{\sqrt{7}}{4}$

3. $\dfrac{5}{4}$

4. $\dfrac{5}{3}$

Correct Answer :-

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

21) $\displaystyle Lim_{x \to 0} \frac{8^x - 2^x}{x} =$

[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 $\dfrac{dy}{dx} =$

[Question ID = 13614]

1. $\dfrac{-3}{\sqrt{1-x^2}}$

2. $\dfrac{4}{\sqrt{1-x^2}}$

3. $\dfrac{1}{\sqrt{1+x^2}}$

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

Correct Answer :-

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

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

[Question ID = 13615]

1. $(\sin x)^{\log x} \{\tan x . \log x + \log(\sin x)\}$

2. $\log x \left\{ \cot x . \sin x + \dfrac{1}{x} \log(\sin x) \right\}$

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

4. $(\cos x)^{\log x} \left\{ \tan x . \log x + \dfrac{1}{x} \log(\cos x) \right\}$

Correct Answer :-

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

- -

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

[Question ID = 13616]

1. 1

2. 0

3. x

4. $\dfrac{1}{\sqrt{1 + x^2}}$

Correct Answer :-

- 0

- -

25)

At $\theta = \dfrac{\pi}{4}$, the slope of the normal to the curve $x = a\,Cos^3\theta$; $y = a\,Sin^3\theta$ is

[Question ID = 13617]

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

Correct Answer :-

- 1

---

26)

If $x^y = e^{x-y}$, then $\dfrac{dy}{dx} =$

[Question ID = 13618]

1. $\dfrac{\log x}{(1+\log x)^2}$

2. $\dfrac{1}{(1+\log x)^2}$

3. $\dfrac{\log x}{1-\log x}$

4. $\dfrac{(\log x)^2}{(1-\log x)^2}$

Correct Answer :-

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

---

27) Equation of the tangent to the curve $y = 5x^3$ 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 :-

- $y = 20x - 15$

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

[Question ID = 13620]

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

Correct Answer :-

- tan u

29) $\displaystyle\int \dfrac{a}{b + ce^x}\,dx =$

[Question ID = 13621]

1. $\dfrac{a}{b}\log\left|\dfrac{e^x}{b + ce^x}\right| + C$

2. $\dfrac{b}{a}\log\left|\dfrac{e^{-x}}{b - e^{-x}}\right| + C$

3. $\dfrac{a}{b}\log\left|\dfrac{1}{be^x + ce^{-x}}\right| + C$

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

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. $\log(\sec x)\tan x + C$

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

2. $\dfrac{x^3}{\sqrt{13}}\cos\left[\log x^2 + \cot^{-1}\left(\dfrac{2}{3}\right)\right]+C$

3. $\dfrac{-1}{2\,x^3}\cos\left[\log x^2 + \tan^{-1}\left(\dfrac{2}{3}\right)\right]+C$

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

Correct Answer :-

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

-

---

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. $\cos ecx - \cot x$

3. $\cos ecx + \tan x$

4. $\sec x - \cos ecx$

Correct Answer :-

- $\sec x - \cos ecx$

---

34) $\int\limits_{0}^{\pi/4} \dfrac{e^{\tan x}}{\cos^2 x} dx$

[Question ID = 13626]

1. $e - 1$

2. $e^{-1} - 1$

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

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

Correct Answer :-

- $e - 1$

---

35) $\int\limits_{0}^{\pi} \sin^3 x(1 - \cos x)^2 dx =$

[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 $\dfrac{x^2}{a^2} + \dfrac{y^2}{b^2} = 1$ about its major axis is

[Question ID = 13628]

1. $4\pi ab^2$

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

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

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

Correct Answer :-

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

---

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

[Question ID = 13629]

1. $y = Ce^x$

2. $y = Ce^x$

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 :-

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

---

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

[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 :-

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

---

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

[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 :-

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

----

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

[Question ID = 13634]

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

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

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

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

Correct Answer :-

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

----

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

[Question ID = 13635]

1. $y = c_1 e^{2x} + c_2 e^{3x} + e^x$

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

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

4. $y = e^x$

Correct Answer :-

- $y = e^x$

43) The solution of $(y \log x - 2) y \, dx = x \, dy$

[Question ID = 13636]

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

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

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

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

Correct Answer :-

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

---

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

45) If E_1, E_2 are any two events of a random experiment and

P is a probability function then

[Question ID = 13642]

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

1.

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

2.

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

3.

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

4.

Correct Answer :-

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

•

46) The solution of the initial value problem $\dfrac{d^2x}{dt^2} - 3\dfrac{dx}{dt} - 2x = 0$;

with $x(0) = 2$; $x'(0) = 0$ 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 :-

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

•

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

[Question ID = 23976]

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

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

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

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

Correct Answer :-

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

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

[Question ID = 23977]

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

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

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

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

Correct Answer :-

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

---

49)

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

$f(x) = \dfrac{a_0}{2} + \sum\limits_{n=1}^{\infty} (a_n \cos nx + b_n \sin nx)$, then $a_n =$

[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 :-

- $60°$

---

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

[Question ID = 34201]

1. $0°$

2. $20°$

3. $45°$

4. $90°$

Correct Answer :-

- $90°$

---

5)

$\vec{a}$ and $\vec{b}$ are two vectors and θ is the angle between them. If $|\vec{a} \times \vec{b}| = \sqrt{3} (\vec{a} \cdot \vec{b})$, 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. $- 9.8 \text{ ms}^{-1}$

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

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

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

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. $\text{Tan}^{-1}\mu$

2. $\text{Tan}^{-1}(1/\mu)$

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

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

Correct Answer :-

- $\text{Tan}^{-1}\mu$

---

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

---

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

---

17) The intensity of sound produced by thunder is 0.1 W m^{-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

---

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 :-

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$_4$Cl

2. K$_3$[Fe(CN)$_6$]

3. CuSO$_4$

4. NH$_4$Cl, 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 1×10^3 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
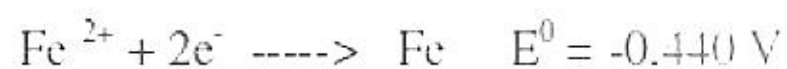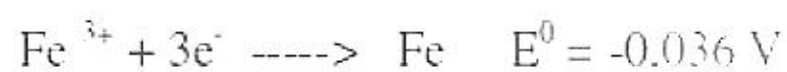
[Question ID = 24010]

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

$$Fe^{3+} + 3e^- \longrightarrow Fe \quad E^0 = -0.036 \text{ V}$$

$$Fe^{2+} + 2e^- \longrightarrow Fe \quad E^0 = -0.440 \text{ V}$$

The standard electrode potential E^0 for $Fe^{3+} + e^- \longrightarrow Fe^{2+}$ 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:- EIE_Set2

1)

Two identical coaxial circular coils carry the same current I but in opposite directions. The magnitude of the magnetic field $\vec{B}$ at a point on the axis midway between the coil is

[Question ID = 11811]

1. Zero
2. The same as that produces by one coil
3. Twice that produced by one coil
4. Half that produced by one

Correct Answer :-

- Zero

---

2) High dielectric constant material is must for _____ [Question ID = 11812]

1. Insulation of wires
2. Generators
3. Switch bases
4. On-chip interconnection of ULSI devices

Correct Answer :-

- Insulation of wires

3) The indication of the state of charge of a battery is best given by [Question ID = 11813]

1. temperature of electrolyte
2. colour of electrolyte
3. specific gravity of electrolyte
4. level of electrolyte

Correct Answer :-

- specific gravity of electrolyte

---

4) A star connected load has three equal impedance each of $(40 + j30)\Omega$. If the line current is 5 A then value of line voltage is

[Question ID = 11814]

1. 250 V

2. $250 \sqrt{3}$ V

3. $250 / \sqrt{3}$

4. 200 V

Correct Answer :-

- 250 √3 V

---

5) The magnitude of various voltage drops that occur in an alternator, depends on [Question ID = 11815]

1. power factor of the load
2. load current
3. power factor x load current
4. power factor x (load current)^2

Correct Answer :-

- load current

---

6) The solar cell is a device of [Question ID = 11816]

1. photo transistor
2. photo conductive
3. photo emissive
4. photo voltaic

Correct Answer :-

- photo voltaic

---

7) A dot matrix printer

(i)prints an entire line at time

(ii)is a non-impact printer

(iii)allows multiple copies to be taken at a time

(iv)prints one character at a time

[Question ID = 11817]

1. i and ii

2. i and iii

3. iii and iv

4. ii and iii

Correct Answer :-

- iii and iv

---

8) 7 segment generates output [Question ID = 11818]

1. a to b

2. a to g
3. a to f
4. a to z

Correct Answer :-

- a to g

---

9) **Which of the following heating methods has maximum power factor? [Question ID = 11819]**

1. Arc heating
2. Dielectric heating
3. Induction heating
4. Resistance heating

Correct Answer :-

- Resistance heating

10) **In open loop system the control action [Question ID = 11820]**

1. depends on the size of the system
2. depends on system variables
3. depends on the input signal
4. is independent of the output

Correct Answer :-

- is independent of the output

---

11) **Technique is not applicable to nonlinear system? [Question ID = 11821]**

1. Nyquist Criterion
2. Quasi linearization
3. Functional analysis
4. Phase plane representation

Correct Answer :-

- Nyquist Criterion

---

12) **_____ can be extended to systems which are time-varying? [Question ID = 11822]**

1. Bode-Nyquist stability methods
2. Transfer functions
3. Root locus design
4. State model representatives

Correct Answer :-

- State model representatives

13) **For which systems are the signal flow graphs applicable? [Question ID = 11823]**

1. Causal
2. Invertible
3. Linear time invariant system

4. Dynamic

Correct Answer :-

- Linear time invariant system

---

14) The number of roots of $s^3 + 5s^2 + 7s + 3 = 0$ in the left half of the S-plane is

[Question ID = 11824]

1. Zero
2. One
3. Two
4. Three

Correct Answer :-

- Three

---

15) For a second-order system with the closed-loop transfer function $T(s) = 9/(s^2 + 4s + 9)$ the settling time for 2-percent band, in seconds, is

[Question ID = 11825]

1. 1.5
2. 2.0
3. 3.0
4. 4.0

Correct Answer :-

- 2.0

---

16) After a voltage has been applied to an inductor, the current will be ____ of its full value after 2 time constants. [Question ID = 11826]

1. 63%
2. 86%
3. 95%
4. 98%

Correct Answer :-

- 86%

---

17) An RF choke: [Question ID = 11827]

1. passes RF but not dc
2. passes both RF and dc
3. passes dc but not RF
4. blocks both dc and RF

Correct Answer :-

- passes dc but not RF

---

18) The relay used for the feeder protection is: [Question ID = 11828]

1. Under-voltage relay
2. Translay relay
3. Thermal relay
4. Buchholz relay

Correct Answer :-

- Translay relay

---

19) What causes the depletion region? [Question ID = 11829]

1. diffusion
2. barrier potential
3. ions
4. doping

Correct Answer :-

- diffusion

---

20) The ratio of reverse resistance and forward resistance of a germanium crystal diode is about _____ [Question ID = 11830]

1. 1 : 1
2. 100 : 1
3. 1000 : 1
4. 40,000 : 1

Correct Answer :-

- 40,000 : 1

---

21) In a pnp transistor, the current carriers are_____ [Question ID = 11831]

1. acceptor ions
2. donor ions
3. free electrons
4. holes

Correct Answer :-

- holes

---

22) The capacitance of a varactor diode increases when the reverse voltage across it___ [Question ID = 11832]

1. Decreases
2. Increases
3. Breaks down
4. Stores charges

Correct Answer :-

- Decreases

---

23) The device that does not have the gate terminal is_____ [Question ID = 11833]

1. Triac
2. FET
3. SCR
4. Diac

Correct Answer :-

- Diac

---

24) The current gain of a Darlington pair is approximately [Question ID = 11834]

1. $\beta/(1+\beta)$

2. $1/\beta$

3. β^2

4. β

Correct Answer :-

- β^2

---

25) When Q decreases in a Colpitts oscillator, the frequency of oscillation [Question ID = 11835]

1. Decreases
2. Remains the same
3. Increases
4. Becomes erratic

Correct Answer :-

- Decreases

26) Maxwell's inductance-capacitance bridge is used for the measurement of inductance of [Question ID = 11836]

1. low Q coils

2. medium Q coils

high Q coils

3.

low and medium Q coils

4.

Correct Answer :-

medium Q coils

•

---

27) Frequency can be measured by using [Question ID = 11837]

1. Maxwell's bridge
2. Schering bridge
3. Heaviside Campbell bridge
4. Wien's bridge

Correct Answer :-

• Wien's bridge

---

28) Wagner's earth devices are used in a.c. bridge circuits for [Question ID = 11838]

1. eliminating the effect of earth capacitance
2. eliminating the effect of inter-component capacitances
3. isolation from earth
4. Shielding the bridge elements

Correct Answer :-

• eliminating the effect of earth capacitance

---

29) Identify the instrument that does not exist [Question ID = 11839]

1. Dynamo-meter type ammeter
2. Dynamo-meter type wattmeter
3. Moving-iron voltmeter
4. Moving-iron wattmeter

Correct Answer :-

• Moving-iron wattmeter

---

30) A CRO is generally not used to measure [Question ID = 11840]

1. Voltage
2. Time period
3. Current
4. Direct impedence

Correct Answer :-

• Direct impedence

---

31) Lissajous pattern is a term associated with [Question ID = 11841]

1. VTVM
2. frequency meters
3. CRO
4. multimeters

Correct Answer :-

- CRO

32) A double beam oscilloscope has [Question ID = 11842]

1. two screens
2. two electron guns
3. two different phosphor coatings
4. one wave form divided into two parts

Correct Answer :-

- two electron guns

33) Which meter has the highest accuracy in the prescribed limit of the frequency range [Question ID = 11843]

1. PMMC
2. Moving iron
3. Electrodynamometer
4. rectifier

Correct Answer :-

- Electrodynamometer

34) Electrostatic type instruments are primarily used as [Question ID = 11844]

1. ammeters
2. wattmeters
3. voltmeters
4. ohmmeters

Correct Answer :-

- voltmeters

35) The moving iron voltmeter indicate [Question ID = 11845]

1. indicate the same value for a.c. and d.c.voltges
2. lower values for a.c. voltages than for corresponding d.c. voltages
3. higher values for a.c. voltages than for corresponding d.c. voltages
4. RMS value for d.c. voltages, constant for a.c. voltage

Correct Answer :-

- lower values for a.c. voltages than for corresponding d.c. voltages

36) Self generating type transducers are _____ transducers [Question ID = 11846]

1. active
2. passive
3. secondary
4. inverse

Correct Answer :-

- active

---

37) Potentiometer transducers are used for the measurement of [Question ID = 11847]

1. Current
2. displacement
3. humidity
4. velocity

Correct Answer :-

- displacement

---

38) Which of the following is an inverse transducer [Question ID = 11848]

1. Photo diode
2. Peizo- electric transducer
3. Capacitive transducer
4. Accelerometer transducer

Correct Answer :-

- Peizo- electric transducer

---

39) The most suitable pressure gauge to measure pressure in the range of 10^{-4} to 10^{-3} torr is

[Question ID = 11849]

1. Bellows
2. Barometer
3. Strain gauge
4. Pirani gauge

Correct Answer :-

- Pirani gauge

---

40) The temperature coefficient of thermistor is [Question ID = 11850]

1. negative
2. positive
3. zero
4. infinity

Correct Answer :-

- negative

---

41) Strain gauge is a _____ type of transducer [Question ID = 11851]

1. inductive
2. capacitive
3. resistive
4. self generating

Correct Answer :-

- resistive

42) Piezo electric transducers generates the signals within ___ frequency [Question ID = 11852]

1. 20 − 20 KHz
2. 0.5 − 20 KHz
3. 20 KHz − 1 MHz
4. 1 KHz − 10 KHz

Correct Answer :-

- 20 KHz − 1 MHz

----

43) Thermocouple is a _____ type of transducer [Question ID = 11853]

1. inductive
2. capacitive
3. resistive
4. self generating

Correct Answer :-

- self generating

----

44) Venturi is associated with [Question ID = 11854]

1. blood flow in heart lung machine
2. venous blood pressure
3. digital plethysmography
4. dialysate volume in Dialyser

Correct Answer :-

- blood flow in heart lung machine

45) A psychrometric chart is used to determine [Question ID = 11855]

1. pH
2. Sound velocity in glasses

3. CO_2 concentration

4. Relative humidity

Correct Answer :-

- Relative humidity

46) In a LVDT, the two secondary voltages [Question ID = 11856]

1. are independent of the core position
2. are always in series opposition
3. vary equally depending on the core position
4. are always in same phase

Correct Answer :-

- are always in series opposition

---

47) Liquid flow rate is measured by using [Question ID = 11857]

1. apirani gauge
2. a pyrometer
3. an orifice plate
4. a bourdon tube

Correct Answer :-

- an orifice plate

48) Capacitive transducers are normally employed for _____ measurements [Question ID = 11858]

1. static
2. dynamic
3. transient
4. steady state

Correct Answer :-

- dynamic

---

49) Spectroscopy deals with the study of interaction of _____ with matter [Question ID = 11859]

1. electromagnetic radiation
2. current
3. frequency
4. density

Correct Answer :-

- electromagnetic radiation

50) Which of the following can be measured with the help of piezo electric crystal [Question ID = 11860]

1. force
2. acceleration
3. sound
4. velocity

Correct Answer :-

- force

51) Identify the signal types that are not used in the process control industry? [Question ID = 11861]

1. Pneumatic signal
2. Analog signal
3. Digital signals
4. Exponential signal

Correct Answer :-

- Exponential signal

---

52) A Lag network for compensation normally consists of [Question ID = 11862]

1. R, L and C elements
2. R and L elements
3. R and C elements
4. R only

Correct Answer :-

- R and C elements

---

53) Manufactures control the production process for [Question ID = 11863]

1. Increase variability
2. Increase efficiency
3. Decrease in sensitivity
4. Increase in sensitivity

Correct Answer :-

- Increase efficiency

---

54) The correct sequence of steps needed to improve system stability is [Question ID = 11864]

1. reduce gain, use negative feedback, insert derivative action
2. reduce gain, insert derivative action, use negative feedback
3. insert derivative action, use negative feedback, reduce gain
4. use negative feedback, reduce gain, insert derivative action

Correct Answer :-

- use negative feedback, reduce gain, insert derivative action

---

55) The term 'reset control 'refers to [Question ID = 11865]

1. integral control
2. derivative control
3. proportional control
4. exponential control

Correct Answer :-

- integral control

---

56) A proportional controller leads to [Question ID = 11866]

1. infinite error for step input for type 1 system
2. finite error for step input for type 1 system
3. zero steady state error for step input for type 1 system
4. zero steady state error for step input for type 0 system

Correct Answer :-

- zero steady state error for step input for type 1 system

---

57) The steady state deviations of the process variable from set point is called as [Question ID = 11867]

1. offset
2. sensitivity
3. gains
4. precision

Correct Answer :-

- offset

58) If stability error for step input and speed of response be the criteria for design, the suitable controller will be [Question ID = 11868]

1. P controller
2. PI controller
3. PD controller
4. PID controller

Correct Answer :-

- PID controller

---

59) The term hysteresis is associated with [Question ID = 11869]

1. On-Off control
2. P-I control
3. Feed forward control
4. Ratio control

Correct Answer :-

- On-Off control

---

60) Derivative control [Question ID = 11870]

1. Increases damping
2. reduces damping
3. is predictive in nature
4. increases the order of the system

Correct Answer :-

- reduces damping

---

61) The gain of the operational amplifier is [Question ID = 11871]

1. independent of internal structure
2. dependent of internal resistance
3. depend upon two external resistances
4. depend on applied d.c. voltage

Correct Answer :-

- depend upon two external resistances

---

62) **The aerial current of an AM transmitter is 18 A when unmodulated but increases to 20 A when modulated. The modulation index is** [Question ID = 11872]

1. 0.68
2. 0.73
3. 0.89
4. 0.58

Correct Answer :-

- 0.68

63) **Another name of unity gain amplifier is** [Question ID = 11873]

1. difference amplifier
2. inverting amplifier
3. non-inverting amplifier
4. voltage follower

Correct Answer :-

- voltage follower

---

64) **In a DSB-SC system with 100% modulation, the power saving is** [Question ID = 11874]

1. 50%
2. 66%
3. 75%
4. 100%

Correct Answer :-

- 66%

---

65) **An ideal operational amplifier has** [Question ID = 11875]

1. infinite output impedance
2. zero input impedance
3. infinite bandwidth
4. unity voltage gain

Correct Answer :-

- infinite bandwidth

66) **For an AM signal, the bandwidth is 10 kHz and the highest frequency component present is 705 kHz. The carrier frequency used for this AM signal is** [Question ID = 11876]

1. 695 kHz
2. 700 kHz
3. 705 kHz
4. 710 kHz

Correct Answer :-

- 700 kHz

---

67) In PCM system, if the quantization levels are increased from 2 to 8, the relative bandwidth requirement will. [Question ID = 11877]

1. remain same
2. be doubled
3. be tripled
4. become four times

Correct Answer :-

- be tripled

68) _____can measure the angle of rotation caused by passing light through an optically active substance [Question ID = 11878]

1. polari meter
2. refractometer
3. spectrophotometer
4. spectroflurometer

Correct Answer :-

- polari meter

---

69) The pH of blood for normal human being is [Question ID = 11879]

1. acidic
2. neutral
3. highly acidic
4. alkaline

Correct Answer :-

- alkaline

---

70) _____ is used to provide information regarding their concentration and chemical environment in a sample. [Question ID = 11880]

1. polari meter
2. refractometer
3. venturi meter
4. spectroflurometer

Correct Answer :-

- spectroflurometer

71) pH meter works on the principle of [Question ID = 11881]

1. Nerns't equation
2. Concentration Gradient
3. Diffusion
4. Maxwell's equation

Correct Answer :-

- Nerns't equation

---

72) _____ cannot be used to detect ionizing radiation [Question ID = 11882]

1. Ionization chambers
2. Geiger counter
3. scintillation counters
4. decade counter

Correct Answer :-

- decade counter

---

73) HF range is [Question ID = 11883]

1. 30-300 GHz
2. 3-30 GHz
3. 30-300 MHz
4. 3-30 MHz

Correct Answer :-

- 3-30 MHz

---

74) Photo transistor converts [Question ID = 11884]

1. light into voltage
2. voltage into light
3. light into current
4. light into light

Correct Answer :-

- light into current

---

75) Which of the following rays are more penetrating? [Question ID = 11885]

1. beta rays
2. alpha rays
3. gamma rays
4. X- rays

Correct Answer :-

- gamma rays

---

76) _____ is used to record electrical activity of the brain. [Question ID = 11886]

1. ECG
2. EEG

3. EMG
4. EOG

Correct Answer :-

- EEG

---

77) Which one of the following imaging modality is used for the internal organs of the body [Question ID = 11887]

1. PET
2. SPECT
3. Gamma Camera
4. MRI

Correct Answer :-

- MRI

78) The internal RAM memory of the 8051 is [Question ID = 11888]

1. 32 bytes
2. 64 bytes
3. 128 bytes
4. 256 bytes

Correct Answer :-

- 128 bytes

---

79) The 8051 has _____16-bit counters/timers [Question ID = 11889]

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

Correct Answer :-

- 2

---

80) Which is not the characteristic of an embedded system [Question ID = 11890]

1. tightly constrained
2. single functioned
3. reactive and real time
4. double functioned

Correct Answer :-

- double functioned

81) _____called universal synchronous asynchronous receiver transmitter [Question ID = 11891]

1. 8251
2. 8255

3. 8257
4. 8259

Correct Answer :-

- 8251

---

82) _____called programmable interrupt controller [Question ID = 11892]

1. 8251
2. 8255
3. 8257
4. 8259

Correct Answer :-

- 8259

---

83) What is the binary equivalent of the decimal number 368? [Question ID = 11893]

1. 101110000
2. 110110000
3. 111010000
4. 111100000

Correct Answer :-

- 101110000

---

84) The decimal equivalent of the Hex number 1A53 is_____ [Question ID = 11894]

1. 6793
2. 6739
3. 6973
4. 6379

Correct Answer :-

- 6739

---

85) By using DeMorgan's theorem, $X = \overline{A(B + C)}$ is simplified to _____.

[Question ID = 11895]

$$X = A(B + \overline{C})$$

1.

$$X = A\,B\,\overline{C}$$

2.

$$X = \overline{A + B + \bar{C})}$$

3.

$$X = A + B\ \bar{C}$$

4.

Correct Answer :-

$$X = A + B\ \bar{C}$$

•

---

86) When ones in a Karnaugh Map are not next to each other visually, they can be grouped if they are next to each other by means of [Question ID = 11896]

1. technique
2. complements
3. wraparound
4. virtuosity

Correct Answer :-

- wraparound

---

87) If a 3-input NOR gate has eight input possibilities, how many of those possibilities will result in a HIGH output? [Question ID = 11897]

1. 1
2. 2
3. 7
4. 8

Correct Answer :-

- 1

---

88) What does connecting together the inputs of NAND and NOR gates do? [Question ID = 11898]

1. Help produce multi-input gates
2. Produce and EXNOR gate
3. Produce a NOT gate
4. Damage the gate

Correct Answer :-

- Produce a NOT gate

---

89) Which one of the following gate will give the sum of full adder as output? [Question ID = 11899]

1. AND
2. OR

3. NAND
4. XOR

Correct Answer :-

- XOR

---

90) Which gate must be interposed between the cascaded stages of a parallel binary adder comprising full adders for transmission purpose of carry C11 or C22 to the next stage? [Question ID = 11900]

1. OR gate
2. AND gate
3. EX-OR gate
4. NAND gate

Correct Answer :-

- OR gate

---

91) Determine the values of A, B, C, and D that make the sum term equal to zero. [Question ID = 11901]

1. A = 1, B = 0, C = 0, D = 0
2. A = 1, B = 0, C = 1, D = 0
3. A = 0, B = 1, C = 0, D = 0
4. A = 1, B = 0, C = 1, D = 1

Correct Answer :-

- A = 1, B = 0, C = 1, D = 0

---

92) When an inverter is placed between both inputs of an SR flip-flop, then resulting flip-flop is : [Question ID = 11902]

1. JK flip flop
2. D flip flop
3. T flip flop
4. Master slave JK flip flop

Correct Answer :-

- D flip flop

---

93) The master slave JK flip-flop is effectively a combination of : [Question ID = 11903]

1. an SR flip-flop and a D flip-flop
2. an SR flip-flop and a T flip-flop
3. a T flip-flop and a D flip-flop
4. two T flip-flops

Correct Answer :-

- an SR flip-flop and a T flip-flop

---

94) Encoders are designed with [Question ID = 11904]

1. single input and multiple inputs
2. multiple inputs and single output
3. multiple inputs and multiple outputs
4. two inputs and single two outputs

Correct Answer :-

- multiple inputs and single output

---

95) Three decade counter would have [Question ID = 11905]

1. 2 BCD counters
2. 3 BCD counters
3. 4 BCD counters
4. 5 BCD counters

Correct Answer :-

- 3 BCD counters

---

96) A MOD-16 ripple counter is holding the count 1001_2. What will be the count after 31 clock pulses?

[Question ID = 11906]

1.
$$1000_2$$

2.
$$1010_2$$

3.
$$1011_2$$

4.
$$1101_2$$

Correct Answer :-

-
$$1000_2$$

---

97) Which time interval specify the shifting of overall contents of the shift registers? [Question ID = 11907]

1. Bit time
2. Shift time
3. Word time
4. Code time

Correct Answer :-

- Word time

98) How many address bits are needed to select all memory locations in the 2118 16K x 1 RAM?

[Question ID = 11908]

1. 8

2. 10

3. 14

4. 16

Correct Answer :-

- 14

99) The conversion delay in successive approximation of an ADC 0808/0809 is [Question ID = 11909]

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

Correct Answer :-

- 100 microseconds

100) A 4-bit R/2R digital-to-analog (DAC) converter has a reference of 5 volts. What is the analog output for the input code 0101. [Question ID = 11910]

1. 0.3125 V
2. 3.125 V
3. 0.78125 V
4. −3.125 V

Correct Answer :-

- 3.125 V