Electrical and Electronics 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 :-

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

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 $A^T BA =$

[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 :-

- $[5]$

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 :-

- $x = 1$

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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 :-

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

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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 :-

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

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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)

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

[Question ID = 13603]

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

Correct Answer :-

- 20

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

[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 $Sinhx =$

[Question ID = 13605]

1. 5

2. 1

3. 2

4. $\log_e 5$

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

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

[Question ID = 13607]

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

16)
The least positive integer n, satisfying $\left(\dfrac{1+i}{1-i}\right)^n = 1$ 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. $\dfrac{1}{2}$

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

3. 1

4. $\sqrt{2}$

Correct Answer :-

- $\dfrac{1}{2}$

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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. $\dfrac{7}{4}$

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

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

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

Correct Answer :-

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

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

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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 :-

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

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

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 $(1 + x^2) \dfrac{d^2 y}{dx^2} + x \dfrac{dy}{dx} =$

[Question ID = 13616]

1. 1

2. 0

3. X

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

Correct Answer :-

- 0

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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

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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 :-

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

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

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

[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 :-

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

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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 :-

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

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

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

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

2. $\log(e^x-1)\ +C$

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

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

Correct Answer :-

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

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

1. $\sec x+\cot x$

2. $\cos ecx-\cot x$

3. $\cos ecx+\tan x$

4. $\sec x-\cos ecx$

Correct Answer :-

- $\sec x-\cos ecx$

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

1. $e-1$

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

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

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

Correct Answer :-

- $e-1$

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

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

1. $4\pi ab^2$

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

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

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

Correct Answer :-

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

37) The general solution of $x\frac{dy}{dx} = y\left[\log y - \log x + 1\right]$ 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 $\left(e^{-2\sqrt{x}} - y\right)\dfrac{dx}{dy} = \sqrt{x}$

[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 :-

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

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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 $\dfrac{d^2y}{dx^2} + 4\dfrac{dy}{dx} + 5y = 0$ 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 :-

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

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42) $\dfrac{d^2y}{dx^2} - 5\dfrac{dy}{dx} + 6y = 2e^x$; 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]

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

1.

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

2.

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

3.

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

4.

Correct Answer :-

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

-

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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]

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

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 :-

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

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

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 :-

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

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

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

4.

Correct Answer :-

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

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48)

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

[Question ID = 23977]

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

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

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

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

Correct Answer :-

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

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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

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

[Question ID = 23978]

1. $\dfrac{1}{\pi}$

2. 1

3. 0

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

Correct Answer :-

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

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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

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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 $[MLT^{-4}]$

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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. $0°$

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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 :-

• $90°$

---

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

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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

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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 :-

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

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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 0.1Wm^{-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 $20 \times 15 \times 5 \text{ m}^3$. 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 $H_2C_2O_4 \cdot 2H_2O$ 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
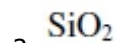
[Question ID = 24006]

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

Correct Answer :-

- 4

9) Which of the following is a basic flux

[Question ID = 24007]
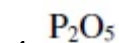
1. $Na_2B_4O_7$

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
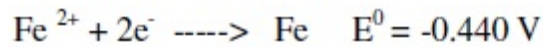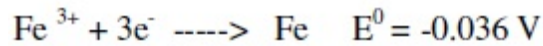
[Question ID = 24010]

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

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

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

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:- EEE_Set2

1)

For the circuit shown in the figure. 1, the potential difference between points C and E (V_{CE}) is
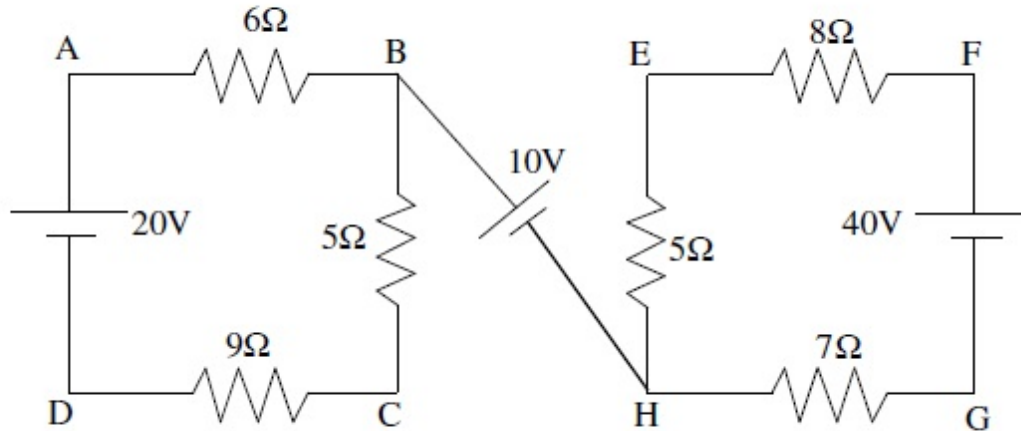

Figure.1

[Question ID = 11510]

1. C is higher potential of 5 V with respect to point E

2. C is lower potential of 5 V with respect to point E

3. C is lower potential of 10 V with respect to point E

4. C is higher potential of 15 V with respect to point E

Correct Answer :-

- C is lower potential of 5 V with respect to point E

2) For the circuit given in figure 2 , the value of battery current I is
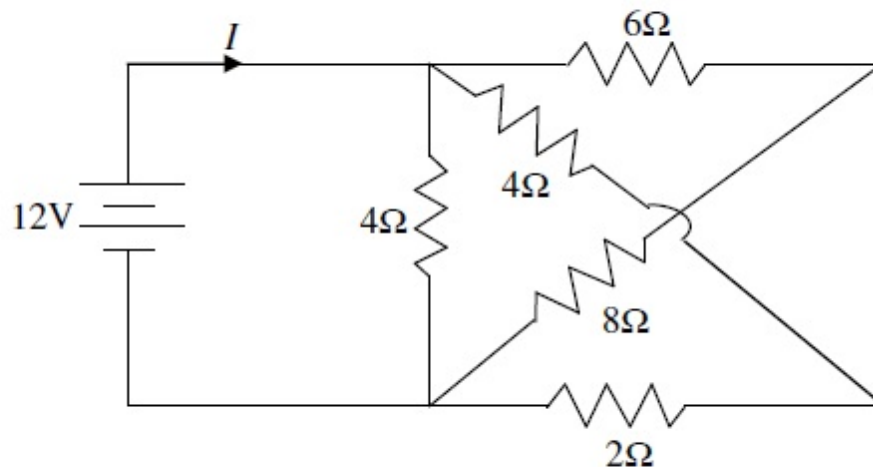

Figure 2

1. 4 A
2. 6 A
3. 8 A
4. 12 A

Correct Answer :-

- 6 A

---

3)

For the circuit given in figure. 3, the thevenin's equivalent circuit values at the terminals A and B are
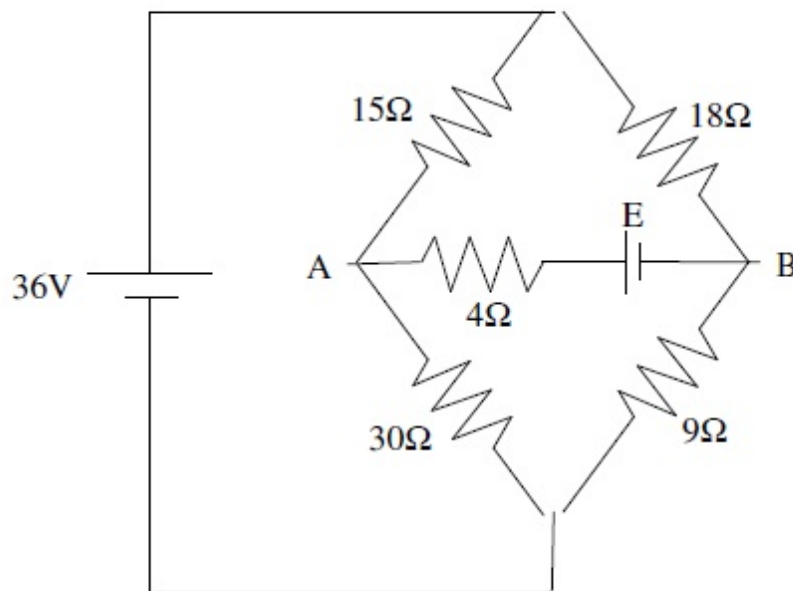

Figure 3

[Question ID = 11512]

1.
$V_{th}=24V, R_{th}=16\Omega$

2.
$V_{th}=24V, R_{th}=8\Omega$

3.
$V_{th}=12V, R_{th}=16\Omega$

4.
$V_{th}=12V, R_{th}=8\Omega$

Correct Answer :-

$V_{th} = 12V, R_{th} = 16\Omega$

-

---

4) An electric bulb is rated 220 V, 100 W. The power consumed by it when operated on 110 V will be [Question ID = 11513]

1. 75 W
2. 40 W
3. 25 W
4. 50 W

Correct Answer :-

- 25 W

---

5) A heater coil is cut into two equal parts and only one part is now used in the heater. The heat generated will now be [Question ID = 11514]

1. doubled
2. four times
3. one fourth
4. halved

Correct Answer :-

- doubled

---

6) An electric current is passed through a circuit containing two wires of the same material connected in parallel. If the lengths and radii of the wires are in the ratio of 4/3 and 2/3, then the ratio of currents passing through the wires will be [Question ID = 11515]

1. 1/2
2. 1/3
3. 8/9
4. 2

Correct Answer :-

- 1/3

---

7) Curie temperature is the temperature above which [Question ID = 11516]

1. a ferromagnetic material becomes paramagnetic
2. a paramagnetic material becomes diamagnetic
3. a ferromagnetic material becomes diamagnetic
4. a paramagnetic material becomes ferromagnetic

Correct Answer :-

- a ferromagnetic material becomes paramagnetic

---

8) Which one of the following is semiconductor material [Question ID = 11517]

1. Copper
2. Aluminium

3. Germanium
4. Rubber

Correct Answer :-

- Germanium

9) The dielectric strength of mica at 25° c is_____

[Question ID = 11518]

1. 1 kv / mm
2. 250 kv / mm
3. 10 kv/mm
4. 80 kv/mm

Correct Answer :-

- 80 kv/mm

10) For which of the following materials the temperature coefficient of resistance is negative
[Question ID = 11519]

1. Copper
2. Gold
3. Silicon
4. Mercury

Correct Answer :-

- Silicon

11) If a coil of 150 turns is linked with a flux of 0.01wb when carrying a current of 10 Amps. If this current is uniformly reversed in 0.01 second, then the induced emf in the coil is

[Question ID = 11520]

1. 150 V

2. 200 V

3. 300 V

4. 350 V

Correct Answer :-

- 300 V

12) According to Coulomb's law the force exerted between two point charges is [Question ID = 11521]

1. directly proportional to the distance between the charges
2. directly proportional to the square of the distance between the charges
3. inversely proportional to the distance between the charges

4. Inversely proportional to the square of the distance between the charges

Correct Answer :-

- Inversely proportional to the square of the distance between the charges

---

13) An ammeter reads up to 1 A. The meter resistance is 0.81 Ω. To increase the range of the meter to 10 A, the value of the required shunt is

[Question ID = 11522]

1. 0.03 Ω

2. 0.3 Ω

3. 0.9 Ω

4. 0.09 Ω

Correct Answer :-

- 0.09 Ω

---

14) A 230 V single phase Energy Meter has a constant load of 4 A passing through it for 6 hours at unity power factor. If the meter disc makes 2208 revolutions during this period, then the meter constant is [Question ID = 11523]

1. 300 rev/kwh
2. 400 rev/kwh
3. 500 rev/kwh
4. 350 rev/kwh

Correct Answer :-

- 400 rev/kwh

---

15) PMMC type instrument normally use [Question ID = 11524]

1. Air-friction damping
2. Fluid -friction damping
3. Eddy current damping
4. Hysteresis current damping

Correct Answer :-

- Eddy current damping

16) Which of the following instruments can be used only for AC measurements [Question ID = 11525]

1. PMMC
2. Moving iron
3. Dynamometer
4. Induction

Correct Answer :-

- Induction

17) Aluminium is used for making pointers of measuring instruments because it is [Question ID = 11526]

1. lighter in weight
2. cheaper
3. it is ferro magnetic
4. It is good conductor

Correct Answer :-

- lighter in weight

18) Thermocouples are [Question ID = 11527]

1. Passive transducers
2. Active transducers
3. both active and Passive transducers
4. neither active nor Passive transducers

Correct Answer :-

- Active transducers

19) If the field winding of a running d.c shunt motor suddenly opens then [Question ID = 11528]

1. its speed slows down
2. it stops at once
3. it runs at the same speed
4. its speed becomes dangerously high

Correct Answer :-

- its speed becomes dangerously high

20) The speed of a DC Shunt motor can be increased above its normal speed by [Question ID = 11529]

1. increasing the field current
2. decreasing the field current
3. decreasing the terminal voltage
4. increasing the armature resistance

Correct Answer :-

- decreasing the field current

21) The function of interpoles in a DC machine is [Question ID = 11530]

1. reduce field winding heating
2. improve commutation
3. compensate for air gap variation
4. reduce losses

Correct Answer :-

- improve commutation

22) A 220 V DC Shunt Motor develops a Torque of 45 N-m at an armature current of 10 A. The torque developed when the armature current 20 A is [Question ID = 11531]

1. 45 N-m
2. 90 N-m
3. 22.50 N-m
4. 180 N-m

Correct Answer :-

- 90 N-m

23) In a DC Shunt motor, three point starters are not suitable for applications where speed variation by flux control is required because the motor may [Question ID = 11532]

1. not start
2. run away
3. stop at very high speed
4. stop at very low speed

Correct Answer :-

- stop at very high speed

24) Which of the following tests can be used to determine the no-load losses in a DC shunt motor [Question ID = 11533]

1. running down test
2. Swineburne's test
3. Field test
4. Brake test

Correct Answer :-

- Swineburne's test

25) A 150 V DC Motor of armature resistance 0.4Ω has backemf of 142V. The armature current is

[Question ID = 11534]

1. 10 A
2. 20 A
3. 150 A
4. 100 A

Correct Answer :-

- 20 A

---

26) **In a DC Series Motor if saturation occurs at overload condition then the Torque/armature current characteristic (Ta/Ia graph) is a [Question ID = 11535]**

1. Parabola from no load to overload
2. straight line from no load to overload
3. Parabola up to full load and a straight line at overloads
4. straight line up to full load and a Parabola at overloads

Correct Answer :-

- Parabola up to full load and a straight line at overloads

---

27) A circuit has a resistance of 12 Ω and an impedance of 15 Ω then the power factor of the circuit will be

[Question ID = 11536]

1. 0.8
2. 0.4
3. 0.6
4. unity

Correct Answer :-

- 0.8

---

28) **In a series RLC Circuit, capacitance is changed from C to 2C. For the resonant frequency to remain unchanged, the inductance should be changed from L to [Question ID = 11537]**

1. 4L
2. 2L
3. L/2
4. L/4

Correct Answer :-

- L/2

---

29) **The power of a three phase three wire balanced system was measured by two watt meter method. The reading of one of the watt meters was found to zero. The power factor of the system is [Question ID = 11538]**

1. 1
2. 0.866
3. 0.707
4. 0.5

Correct Answer :-

- 0.5

---

30)

The essential condition for operating two single phase transformers in parallel is that they should have same [Question ID = 11539]

1. Polarity
2. KVA rating
3. Voltage ratio
4. Impedance

Correct Answer :-

- Polarity

31) The efficiency of a Transformer is usually in the range of [Question ID = 11540]

1. 60 to 70 %
2. 70 to 74 %
3. 95 to 99 %
4. 80 to 85%

Correct Answer :-

- 95 to 99 %

32) Transformer zero voltage regulation occurs at

[Question ID = 11541]

1. unity power factor

2. leading power factor

3. lagging power factor

4. zero power factor

Correct Answer :-

- leading power factor

33) The efficiency of a transformer at full load 0.8 pf lagging is 95% then its efficiency at full load 0.8 pf leading will be [Question ID = 11542]

1. 85%
2. 90%
3. 95%
4. 100%

Correct Answer :-

- 95%

34) At full load the iron loss in a transformer is 600 watts. At half load the iron loss will be [Question ID = 11543]

1. 300 watts
2. 150 watts

3. 75 watts
4. 600 watts

Correct Answer :-

- 600 watts

35) The function of a breather in a Transformer is [Question ID = 11544]

1. To provide protection against over currents
2. To suppress harmonics
3. To arrest flow of moisture into the tank
4. To control the level of oil in tank

Correct Answer :-

- To arrest flow of moisture into the tank

36) An auto transformer having a transformation ratio of 0.8 supplies a load of 10 kw. The power transferred inductively from the primary to the secondary is_____ [Question ID = 11545]

1. 10 kw
2. 8 kw
3. 2 kw
4. 18 kw

Correct Answer :-

- 2 kw

37) A 3 – phase star-delta transformer has secondary to primary turns ratio per phase of 5. For a primary voltage of 400 v, the secondary voltage would be nearly_____ [Question ID = 11546]

1. 1154.7 v
2. 2000 v
3. 3463 v
4. 46.2 v

Correct Answer :-

- 1154.7 v

38) The form factor of a sinusoidal alternating voltage wave form is [Question ID = 11547]

1. 0.637
2. 0.707
3. 1.11
4. 1.414

Correct Answer :-

- 1.11

39) A balanced three phase star connected load of (8+j6) Ω per phase is connected to a

balanced three phase $400\sqrt{3}$ V supply. Then the phase current in amperes is

1. 40 √3

2. 40/√3

3. 120
4. 40

Correct Answer :-

- 40

40) A 50 HZ, 20 V AC sinusoidal voltage source is connected across a series RC circuit. If the Voltage across resistor is 12 Volts, then the voltage across capacitor is [Question ID = 11549]

1. 8 V
2. 16V
3. 12V
4. not possible to determine unless values of R and C are given

Correct Answer :-

- 16V

41) If the synchronous generator operating at zero power factor lagging the effect of armature reaction is _____

[Question ID = 11550]

1. Demagnetizing

2. magnetizing

3. cross-magnetizing

4. partially cross magnetizing

Correct Answer :-

- Demagnetizing

42) If in a three phase Alternator, a field current of 50A produces a full load armature current of 200 A on short circuit and a generated emf of 1000 V /phase on open circuit, then the synchronous impedance is [Question ID = 11551]

1. 5 Ω

2. 20 Ω

3. $10 \, \Omega$

4. $8.5 \, \Omega$

Correct Answer :-

- $5 \, \Omega$

---

43) The rotor of an Induction motor cannot run with synchronous speed because [Question ID = 11552]

1. rotor torque would then become zero
2. Lenz's law would be violated
3. Induction motor would then become synchronous motor
4. air friction prevents it from doing so

Correct Answer :-

- rotor torque would then become zero

44) Squirrel cage bars placed in the rotor pole faces of an alternator help to reduce hunting [Question ID = 11553]

1. Above synchronous speed
2. below synchronous speed
3. Above and below synchronous speed
4. does not depend on speed

Correct Answer :-

- Above and below synchronous speed

---

45) Earthing is necessary to give protection for [Question ID = 11554]

1. Over Voltages
2. Danger of electric shock
3. Over currents
4. Lightning

Correct Answer :-

- Danger of electric shock

---

46) The stator winding of a single phase induction motor is splitted into two parts in order to [Question ID = 11555]

1. improve efficiency
2. improve power factor
3. develop starting torque
4. increase speed

Correct Answer :-

- develop starting torque

---

47) V' curves of a Synchronous motor give relation between which quantities [Question ID = 11556]

1. Power factor and field current
2. Armature current and field current
3. Armature current and Power factor
4. Applied voltage and field current

Correct Answer :-

- Armature current and field current

---

48) A 6 pole 50 HZ , three phase Induction motor is running at 950 rpm and has a rotor Cu loss of 5 KW it's rotor input is [Question ID = 11557]

1. 100 KW
2. 10 KW
3. 95 KW
4. 5.3 KW

Correct Answer :-

- 100 KW

---

49) Which one of the following methods of speed control cannot be applied for controlling the speed of a three phase squirrel cage induction motor [Question ID = 11558]

1. By changing the applied voltage
2. By changing the supply frequency
3. By changing the number of stator poles
4. By rotor Rheostat control

Correct Answer :-

- By rotor Rheostat control

---

50) Which of the following types of motors is not self starting motor [Question ID = 11559]

1. DC Shunt motor
2. DC Series motor
3. Three phase induction motor
4. Three phase synchronous motor

Correct Answer :-

- Three phase synchronous motor

---

51)

In a synchronous motor, if V is the applied voltage and E_b is the back emf then the motor is said to be overexcited if

[Question ID = 11560]

1. $E_b = V$

2. $E_b \leq V$

3. $E_b < v$

4. $E_b > V$

Correct Answer :-

- $E_b > V$

---

52) Which of the following motors is generally used for Vacuum cleaners [Question ID = 11561]

1. Universal motor
2. Hysteresis motor
3. Shaded pole motor
4. Reluctance motor

Correct Answer :-

- Universal motor

---

53) For low values of slip the Torque/Slip characteristic of an Induction motor is [Question ID = 11562]

1. straight line
2. Parabola
3. Hyperbola
4. Rectangular Hyperbola

Correct Answer :-

- straight line

---

54) In hydro power plants water hammer occurs in [Question ID = 11563]

1. surge tank
2. penstock
3. turbine casing
4. draft tube

Correct Answer :-

- penstock

---

55) The maximum demand of a consumer is 2kW and his daily energy consumption is 24kWh then the load factor of the consumer is [Question ID = 11564]

1. 25%
2. 50%
3. 75%
4. 90%

Correct Answer :-

- 50%

56) In which part of a Thermal power plant, the steam pressure is less than that of atmosphere [Question ID = 11565]

1. Boiler
2. Turbine
3. Superheater
4. Condenser

Correct Answer :-

- Condenser

57) Graphite is used in Nuclear power plant as a [Question ID = 11566]

1. Fuel
2. Coolant
3. Moderator
4. electrode

Correct Answer :-

- Moderator

58) Power factor of industrial loads is generally [Question ID = 11567]

1. Unity
2. Leading
3. Lagging
4. zero

Correct Answer :-

- Lagging

59) Distance relays are preferred for protection of [Question ID = 11568]

1. Transmission lines
2. Generators
3. Motors
4. Transformer

Correct Answer :-

- Transmission lines

60) The buchholtz relay is normally recommended with the following rating of a transformer for protection [Question ID = 11569]

1. 50 KVA
2. 100KVA
3. 25 KVA
4. 750 KVA and above

Correct Answer :-

- 750 KVA and above

61) Which of the following circuit breakers normally we can find in a 220kV/132kV substation

[Question ID = 11570]

1. Vacuum circuit breaker

2. Air break circuit breaker

3. Minimum oil circuit breaker

4. SF$_6$ circuit breaker

Correct Answer :-

- SF$_6$ circuit breaker

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62) A lightning arrester provides [Question ID = 11571]

1. A low impedance path between line and ground during normal operation and lightning
2. A high impedance path between line and ground during normal operation and lightning
3. A high impedance path between line and ground during lightning and low impedance path during normal operation
4. A low impedance path between line and ground during lightning and high impedance path during normal operation

Correct Answer :-

- A low impedance path between line and ground during lightning and high impedance path during normal operation

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63) In a large building, there are 15 bulbs of 40 W, 5 bulbs of 100 W , 5 fans of 80 W and 1 heater of 1 kW. The voltage of the electric mains is 220 V. The minimum capacity of the main fuse of the building will be [Question ID = 11572]

1. 8 A
2. 10 A
3. 12 A
4. 14 A

Correct Answer :-

- 12 A

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64) Ring main distribution is preferred to a radial system because [Question ID = 11573]

1. Voltage drop in the feeder is less and supply is more reliable
2. Voltage drop in the feeder is less and power factor is high
3. Power factor is high and supply is more reliable
4. Power factor is high and system is less expensive

Correct Answer :-

- Voltage drop in the feeder is less and supply is more reliable

---

65) If the height of the transmission towers is changed, which of the following parameters is likely to change [Question ID = 11574]

1. Resistance
2. Inductance
3. Capacitance
4. Conductance

Correct Answer :-

- Capacitance

---

66) The insulators used on 220 kV transmission line are of [Question ID = 11575]

1. Suspension type
2. Pin type
3. Shackle type
4. Cone type

Correct Answer :-

- Suspension type

---

67) Ferranti effect on long overhead line is experienced when it is [Question ID = 11576]

1. lightly loaded
2. on full load at unity pf
3. on full load at 0.8 pf lag
4. on any load

Correct Answer :-

- lightly loaded

68) Hundred percent string efficiency means [Question ID = 11577]

1. one of the insulator discs shorted
2. zero potential across each disc
3. Equal potential across each insulator disc
4. one of the insulator discs open circuited

Correct Answer :-

- Equal potential across each insulator disc

69) Transposition of transmission line is done to [Question ID = 11578]

1. reduce line loss
2. reduce skin effect
3. balance line voltage drop
4. reduce corona

Correct Answer :-

- balance line voltage drop

70) The insulation resistance of a cable of length 10 km is 1 M ohm, its resistance of 50 Km length will be

[Question ID = 11579]

1. 1 M Ohm

2. 5 M Ohm

3. 0.2 M Ohm

4. 0.5 M Ohm

Correct Answer :-

- 0.2 M Ohm

71) Which of the following is not the advantage of HVDC transmission [Question ID = 11580]

1. No skin effect
2. Less corona loss
3. Less radio interference
4. HVDC transmission is economical for short distances

Correct Answer :-
- HVDC transmission is economical for short distances

72) The increase in resistance due to non uniform distribution of current in the conductor is known as [Question ID = 11581]

1. Ferranti effect
2. Corona effect
3. Skin effect
4. Pinch effect

Correct Answer :-
- Skin effect

73)

A single phase transmission line with an impedance of $(4+j10)\Omega$ operating with a receiving end voltage of 33kV supplying a load current of 132 A at unity power factor has a % voltage regulation of

[Question ID = 11582]

1. 12%
2. 1.2%
3. 16%
4. 1.6%

Correct Answer :-

- 1.6%

74) The output of the gate is 1 if and only if all the inputs are zero, then the gate is

1. NOR

2. AND

3. OR

4. EX- OR

Correct Answer :-

- NOR

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75) For the use of a transistor as an amplifier [Question ID = 11584]

1. both the junctions are forward biased
2. both the junctions are reverse biased
3. the emitter base circuit is forward biased and the collector base circuit is reverse biased
4. no matter how the transistor is biased, it always acts as an amplifier

Correct Answer :-

- the emitter base circuit is forward biased and the collector base circuit is reverse biased

76) If the input frequency is 50 HZ then the output frequency of the full wave rectifier is [Question ID = 11585]

1. 50 HZ
2. 100 HZ
3. 25 HZ
4. 200 HZ

Correct Answer :-

- 100 HZ

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77) Which of the following devices is designed to operate with reverse bias [Question ID = 11586]

1. LED, Zener diode
2. Photodiode, LED
3. Photodiode, Zener diode
4. LED, Zener diode and photodiode

Correct Answer :-

- Photodiode, Zener diode

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78) The vertical gain control of a CRO is set at a deflection sensitivity of 5V/cm.

An unknown AC Sinusoidal voltage signal is applied to the Y input.

A 10 cm long straight line trace is observed on the screen.

Then the RMS value of the unknown voltage applied is

[Question ID = 11587]

1. 50 V

2. $50/\sqrt{2}$ V

3. 25 V

4. $25/\sqrt{2}$ V

Correct Answer :-

- $25/\sqrt{2}$ V

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79) The minimum forward current above which the SCR starts conducting is called [Question ID = 11588]

1. Latching current
2. Holding current
3. leakage current
4. Saturation current

Correct Answer :-

- Latching current

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80) SCR can be protected against di/dt using [Question ID = 11589]

1. Series inductor
2. Series capacitor
3. Series resistor
4. snubber circuit

Correct Answer :-

- Series inductor

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81) A static device which converts fixed DC input voltage to a variable DC output voltage is called [Question ID = 11590]

1. Rectifier
2. Cycloconverter
3. Inverter
4. Chopper

Correct Answer :-

- Chopper

---

82) A device which converts input power at one frequency to output power at a different frequency is called [Question ID = 11591]

1. Rectifier
2. Cycloconverter

3. Inverter
4. Chopper

Correct Answer :-

- Cycloconverter

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83)

In DC choppers, If T_{on} is the on-period and f is the chopping frequency, then output voltage in terms of input voltage V_s is given by

[Question ID = 11592]

1.
$$V_s . (T_{on}/ f)$$

2.
$$V_s . (f/ T_{on})$$

3.
$$(V_s /f) . T_{on}$$

4.
$$V_s . f . T_{on}$$

Correct Answer :-

- $$V_s . f . T_{on}$$

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84) Stack pointer in 8051 micro controller is a/an_____ bit register [Question ID = 11593]

1. 8
2. 16
3. 32
4. 64

Correct Answer :-

- 8

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85) The percentage efficiency of diesel locomotive is around [Question ID = 11594]

1. 70 – 80
2. 20 – 25
3. 50 – 60
4. 60 – 70

Correct Answer :-

- 20 – 25

86) Which of the motor is best suited for traction? [Question ID = 11595]

1. DC shunt motor
2. Reluctance motor
3. Differential compound motor
4. DC series motor

Correct Answer :-

- DC series motor

87) The supply frequency for 25 kV single phase system used in traction is _____

[Question ID = 11596]

1. 50/3 Hz

2. 40 Hz

3. 60 Hz

4. 30 Hz

Correct Answer :-

- 50/3 Hz

88) The co-efficient of adhesion value will be high when rails are [Question ID = 11597]

1. Cleaned with sand
2. Fog
3. Greased
4. Wet

Correct Answer :-

- Cleaned with sand

89) The crest speed of train means [Question ID = 11598]

1. Minimum speed
2. Average speed
3. Maximum speed
4. Scheduled speed

Correct Answer :-

- Maximum speed

90) In the electric passenger train the power for lighting is provided by [Question ID = 11599]

1. Rails
2. Individual generator of bogie and batteries
3. Locomotive
4. Overhead line

Correct Answer :-

- Individual generator of bogie and batteries

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91) What type of earthing is used in transmission lines? [Question ID = 11600]

1. Plate earthing
2. Rod earthing
3. wire earthing
4. Strip earthing

Correct Answer :-

- Strip earthing

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92) The maximum allowable value of earthing resistance for large power stations is: [Question ID = 11601]

1. $0.5 \, \Omega$

2. $0.1 \, \Omega$

3. $100 \, \Omega$

4. $10.23 \, \Omega$

Correct Answer :-

- $0.5 \, \Omega$

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93) What is the maximum load that can be connected in a circuit connecting only lighting points? [Question ID = 11602]

1. 800 Watts
2. 500 Watts
3. 750 Watts
4. 1000 Watts

Correct Answer :-

- 800 Watts

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94) The material used for wiring continuous bus bar is [Question ID = 11603]

1. Copper
2. Aluminium
3. Brass
4. Bronze

Correct Answer :-

- Aluminium

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95) The section with respect to IE Act1910, the theft of electrical energy correspond to [Question ID = 11604]

1. Section 49
2. Section 40
3. Section 59
4. Section 39

Correct Answer :-

- Section 39

96) Lumens = [Question ID = 11605]

1. Candle power x solid angle
2. Candle power / solid angle
3. Candle power + solid angle
4. Solid angle / candle power

Correct Answer :-

- Candle power x solid angle

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97) The electrode of direct arc furnace is made of [Question ID = 11606]

1. Copper
2. Silver
3. Graphite
4. Aluminium

Correct Answer :-

- Graphite

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98) To join the electronic components the following method is used [Question ID = 11607]

1. Seam welding
2. Spot welding
3. Brazing
4. Soldering

Correct Answer :-

- Soldering

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99) To start the DC shunt motor the starter used is [Question ID = 11608]

1. 3 – point starter
2. DOL starter
3. Star / Delta starter
4. Auto transformer starter

Correct Answer :-

- 3 – point starter

100) The class of fire occur in the electrical equipment is [Question ID = 11609]

1. Class - D fire
2. Class – C fire
3. Class – B fire
4. Class – A fire

Correct Answer :-

- Class – C fire