Mining 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 $A^TBA=$

[Question ID = 13594]

1. $[5]$

2. $[0]$

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

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

Correct Answer :-

- $[5]$

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

[Question ID = 13595]

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

Correct Answer :-

- 0

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

[Question ID = 13596]

1. $x = 1$
2. $x = 2$
3. $x = 0$

4. $x=5$

Correct Answer :-

- $x=1$

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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 :-

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

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

[Question ID = 13598]

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

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

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

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

Correct Answer :-

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

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

[Question ID = 13599]

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

Correct Answer :-

- 2

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

[Question ID = 13600]

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

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

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

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

Correct Answer :-

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

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

[Question ID = 13601]

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

Correct Answer :-

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

---

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

[Question ID = 13602]

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

Correct Answer :-

- 2

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

[Question ID = 13603]

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

Correct Answer :-

- 20

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

[Question ID = 13604]

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

Correct Answer :-

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

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

[Question ID = 13605]

1. 5
2. 1
3. 2

4. $\log_e 5$

Correct Answer :-

- 5

14)
If a, b and c are the lengths of the sides opposite to the angles A,B and C of a triangle ABC, then

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

[Question ID = 13606]

1. a
2. b
3. b^2
4. a^2

Correct Answer :-

- a^2

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

[Question ID = 13607]

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

Correct Answer :-

- 0

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

[Question ID = 13608]

1. 2

2. 1
3. 4
4. 8

Correct Answer :-

- 4

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

[Question ID = 13609]

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

Correct Answer :-

- $\frac{1}{2}$

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 :-

- $\theta = 45^0$

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19)

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

[Question ID = 13611]

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

Correct Answer :-

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

---

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

[Question ID = 13612]

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

Correct Answer :-

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

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

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

[Question ID = 13614]

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

Correct Answer :-

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

23)

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

[Question ID = 13615]

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

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

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

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

Correct Answer :-

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

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24)

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

[Question ID = 13616]

1. 1

2. 0

3. x

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

Correct Answer :-

- 0

25)

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

[Question ID = 13617]

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

Correct Answer :-

- 1

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26)

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

[Question ID = 13618]

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

Correct Answer :-

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

---

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

[Question ID = 13619]

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

2. $y = 20x - 15$

3. $x = 15y - 20$

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

Correct Answer :-

- $y = 20x - 15$

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

[Question ID = 13620]

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

Correct Answer :-

- tan u

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

[Question ID = 13621]

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

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

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

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

Correct Answer :-

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

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

[Question ID = 13622]

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

Correct Answer :-

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

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

[Question ID = 13623]

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

[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 :-

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

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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 :-

- $\sec x - \cos ecx$

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

[Question ID = 13626]

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

Correct Answer :-

- $e-1$

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

[Question ID = 13627]

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

Correct Answer :-

- 8/5

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36)

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

[Question ID = 13628]

1. $4\pi ab^2$

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

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

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

Correct Answer :-

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

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

[Question ID = 13629]

1. $y = Ce^x$

2. $y = Ce^y$

3. $y = xe^{cx}$

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

Correct Answer :-

- $y = xe^{cx}$

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

[Question ID = 13630]

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

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

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

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

Correct Answer :-

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

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

[Question ID = 13631]

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

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

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

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

Correct Answer :-

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

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

[Question ID = 13632]

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

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

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

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

Correct Answer :-

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

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

[Question ID = 13634]

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

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

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

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

Correct Answer :-

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

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

[Question ID = 13635]

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

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

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

4. $y = e^x$

Correct Answer :-

- $y = e^x$

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

[Question ID = 13636]

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

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

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

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

Correct Answer :-

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

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]

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

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

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

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

Correct Answer :-

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

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

[Question ID = 23975]

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

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

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

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

Correct Answer :-

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

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

[Question ID = 23976]

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

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

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

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

Correct Answer :-

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

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

[Question ID = 23977]

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

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

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

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

Correct Answer :-

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

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49)

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

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

[Question ID = 23978]

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

Correct Answer :-

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

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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

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

[Question ID = 34199]

1. $[MLT^{-3}]$ and $[MLT^{-4}]$
2. $[MLT^{-1}]$ and $[MLT^{0}]$
3. $[MLT^{-3}]$ and $[MLT^{4}]$
4. $[MLT^{-4}]$ and $[MLT^{-1}]$

Correct Answer :-

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

3)

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

1. $30°$
2. $45°$
3. $60°$
4. $0°$

Correct Answer :-

- $60°$

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

[Question ID = 34201]

1. $0°$
2. $20°$
3. $45°$
4. $90°$

Correct Answer :-

- $90°$

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5)

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

[Question ID = 34202]

1. $30°$
2. $45°$

3. $60°$

4. $90°$

Correct Answer :-

- $30°$

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

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

Correct Answer :-

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

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

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

Correct Answer :-

- frequencies are equal

8)

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

[Question ID = 34205]

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

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

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

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

Correct Answer :-

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

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

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

Correct Answer :-

- absorb sound

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

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

Correct Answer :-

- blue end

11)

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

[Question ID = 34208]

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

Correct Answer :-

- $Tan^{-1}\mu$

12)

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

[Question ID = 34209]

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

Correct Answer :-

- $19.6\ ms^{-1}$

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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

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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 0.1Wm^{-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 x 15 x 5 m^3. The reverberation time is 3.5 s. The average absorption coefficient is

[Question ID = 34215]

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

Correct Answer :-

- 0.07

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

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

Correct Answer :-

- frequency

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

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

Correct Answer :-

- alternately accelerated and retarded

21)

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

[Question ID = 34218]

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

Correct Answer :-

- 8.4 kJ

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

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

Correct Answer :-

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

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

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

Correct Answer :-

- 50 J

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

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

Correct Answer :-

- 3.38 eV

25)

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

[Question ID = 34222]

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

Correct Answer :-

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

Topic:- Chemistry_Set2

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

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

Correct Answer :-

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

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

[Question ID = 24000]

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

Correct Answer :-

- $LiCl < BeCl_2 < BCl_3 < CCl_4$

3) Lowest oxidation state in its compound is exhibited by

[Question ID = 24001]

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

Correct Answer :-

- F

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

[Question ID = 24002]

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

Correct Answer :-

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

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

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

Correct Answer :-

- 1

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

[Question ID = 24004]

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

Correct Answer :-

- 6.3g

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

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

Correct Answer :-

- Hydride ion

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

[Question ID = 24006]

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

Correct Answer :-

- 4

9) Which of the following is a basic flux

[Question ID = 24007]

1. $Na_2B_4O_7$

2. **CaO**

3. SiO_2

4. P_2O_5

Correct Answer :-

- **CaO**

---

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

[Question ID = 24008]

1. Blast furnace

2. Reverberatory furnace

3. Both reverbaratory furnace and blast furnace

4. Muffle furnace

Correct Answer :-

- Reverberatory furnace

---

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

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

Correct Answer :-

- 84

---

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

[Question ID = 24010]

1. 0.25 mole of Ag

2. 16 gms of Cu

3. 2gms of O_2 (g)

4. 2.8 lit of H_2 at STP

Correct Answer :-

- 16 gms of Cu

---

13) . Given standard electrode potentials

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

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

The standard electrode potential E^0 for $Fe^{3+} + e^- \text{ -----> } Fe^{2+}$ 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:- Mining_Set2

1) Which of the following information is required to estimate the RQD [Question ID = 10700]

1. Compressive strength
2. Core length
3. Permeability
4. Density

Correct Answer :-

- Core length

2) Which of the following is a friction based- mechanically anchored bolt [Question ID = 10701]

1. Slot & wedge
2. Grouted
3. Resin
4. Soil bolt

Correct Answer :-

- Slot & wedge

3) Which of the following is not a theory of rock failure? [Question ID = 10702]

1. Griffith's theory
2. Mohr's theory
3. coulomb's criterion
4. suspension criterion

Correct Answer :-

- suspension criterion

4) Detonating cord [Question ID = 10703]

1. has very low VOD
2. has highest accuracy in delay timing
3. has VOD more than 7000m/s
4. should not be used in metal mines

Correct Answer :-

- has VOD more than 7000m/s

5) Shock tube initiation [Question ID = 10704]

1. should not be used in metal mines
2. is used to achieve individual hole delay
3. has VOD more than 7000m/s
4. shouldn't be used in coal mines

Correct Answer :-

- is used to achieve individual hole delay

6) ANFO [Question ID = 10705]

1. has very low VOD
2. shouldn't be used in coal mines

3. has VOD more than 7000m/s
4. should not be used in metal mines

Correct Answer :-

- shouldn't be used in coal mines

7) Safety fuse [Question ID = 10706]

1. has very low VOD
2. shouldn't be used in coal mines
3. has VOD more than 7000m/s
4. should not be used in metal mines

Correct Answer :-

- has very low VOD

8) Electronic detonator [Question ID = 10707]

1. has very low VOD
2. has highest accuracy in delay timing
3. has VOD more than 7000m/s
4. should not be used in metal mines

Correct Answer :-

- has highest accuracy in delay timing

9) Which of the following is not a method of coal mining [Question ID = 10708]

1. Highwall
2. Top slicing
3. Longwall
4. Cut & fill mining

Correct Answer :-

- Cut & fill mining

10) Minimum distance to be maintained between two shafts is estimated based on [Question ID = 10709]

1. Strength of material
2. Stress distribution
3. Density of rockmass
4. Cohesion of rockmass

Correct Answer :-

- Stress distribution

11) Coal is geologically which formation? [Question ID = 10710]

1. Igneous
2. Metamorphic
3. Sedimentary

4. None

Correct Answer :-

- Sedimentary

12) Petrology is the study of [Question ID = 10711]

1. Petroleum resources
2. Petro products
3. Rocks
4. Minerals

Correct Answer :-

- Rocks

13) What is the approximate age of the earth? [Question ID = 10712]

1. 50,000 years
2. 10,000 years
3. 20 to 60million years
4. 100 to 150million years

Correct Answer :-

- 20 to 60million years

14) What is the approximate hardness of zircon? [Question ID = 10713]

1. 1.5
2. 3.5
3. 5.5
4. 7.5

Correct Answer :-

- 7.5

15) A good quality stone must absorb water less than: [Question ID = 10714]

1. 2.5%
2. 5%
3. 10%
4. 20%

Correct Answer :-

- 5%

16) Most weather resisting rock among the following is: [Question ID = 10715]

1. Quartzite
2. Marble
3. Limestone
4. Slate

Correct Answer :-

- Quartzite

17) Which of the following states is not producing coal? [Question ID = 10716]

1. Orissa
2. West Bengal
3. Telangana
4. Andhra Pradesh

Correct Answer :-

- Andhra Pradesh

18) In India, diamond deposits are located close to [Question ID = 10717]

1. Panna
2. Panjim
3. Kothagudem
4. Singbhum

Correct Answer :-

- Panna

19) Goan iron ore is also called as [Question ID = 10718]

1. Red dust
2. Blue dust
3. Pink dust
4. White dust

Correct Answer :-

- Red dust

20) Which of the following is not a coal field [Question ID = 10719]

1. Krishna coal fields
2. Godavari coal fields
3. Mahanadi coal fields
4. Talcher coal fields

Correct Answer :-

- Krishna coal fields

21) A Bord and Pillar panel will be developed with square pillars of size 25m and an extraction ratio of 30%. The width of the gallery in m is : [Question ID = 10720]

1. 4.2
2. 4.9
3. 4.6
4. 5.3

Correct Answer :-

- 4.9

22) In Bord and Pillar panels worked in conjunction with hydraulic stowing, preferred extraction line is : [Question ID = 10721]

1. Step diagonal
2. Steep diagonal
3. Diagonal
4. Straight line

Correct Answer :-

- Step diagonal

23) In India, the single lift extraction is limited to a height of : [Question ID = 10722]

1. 4.2m
2. 3.8m
3. 4.8m
4. 4.6m

Correct Answer :-

- 4.8m

24) During depillaring, extraction of coal from the rib pillar is called : [Question ID = 10723]

1. Splitting
2. Robbing
3. Slicing
4. Widening

Correct Answer :-

- Robbing

25) The conveyor which receives coal from the face conveyor for its transport out-bye is called : [Question ID = 10724]

1. Trunk conveyor
2. Chain conveyor
3. Main gate belt conveyor
4. Stage loader

Correct Answer :-

- Stage loader

26) The mining method used in thick and steep coal seam, where the slices are neither horizontal nor parallel to the inclination of the seam is called : [Question ID = 10725]

1. Transverse slicing
2. Inclined slicing
3. Horizontal slicing
4. Integral caving

Correct Answer :-

- Transverse slicing

27) Remote controlled LHD's are used in which of the following methods : [Question ID = 10726]

1. Room and pillar mining
2. Sublevel caving
3. Horizon mining
4. Blasting gallery method

Correct Answer :-

- Blasting gallery method

28) Contiguous seams means the parting between two seams is within : [Question ID = 10727]

1. 10m
2. 9m
3. 8m
4. 12m

Correct Answer :-

- 9m

29) Hydraulic mining of coal is normally applicable to mining seams, which are : [Question ID = 10728]

1. Thick and steeply inclined and have soft coal
2. Thick and flat gradient and have soft coal
3. Thin and flat gradient and have soft coal
4. Thin and steeply inclined and have soft coal

Correct Answer :-

- Thick and steeply inclined and have soft coal

30) For hydraulic transportation of solids in pipelines, the ratio of size of solids to the pipe diameter should not be more than : [Question ID = 10729]

1. 1:2
2. 1:3
3. 1:4
4. 1:7

Correct Answer :-

- 1:3

31) Ore grade for which revenue from the recoverable reserve exactly equals the cost of mining, treatment and marketing is called : [Question ID = 10730]

1. Cut-off grade
2. Average grade
3. Break-even grade
4. Liquidation grade

Correct Answer :-

- Break-even grade

32) Which of the following is an unsupported method for the extraction of ore deposit : [Question ID = 10731]

1. Sublevel stoping
2. Stull stoping
3. Block caving
4. Sublevel caving

Correct Answer :-

- Sublevel stoping

33) Coarse screening device that prevents oversized bulk material from entering a material transfer system is called : [Question ID = 10732]

1. Bell
2. Grizzly
3. Chute
4. Bleeder

Correct Answer :-

- Grizzly

34) Tertiary horizontal opening oriented perpendicular to the strike of a pitching deposit is called : [Question ID = 10733]

1. Drift
2. Entry
3. Decline
4. Crosscut

Correct Answer :-

- Crosscut

35) The diameter of holes in mm commonly used for ring drilling by drifters in sublevel stoping is between : [Question ID = 10734]

1. 25-32
2. 33-44
3. 45-64
4. 65-100

Correct Answer :-

- 65-100

36) Blasting of stope in VCR method consists of : [Question ID = 10735]

1. Blasting one row after another
2. Creating initial slot going for mass blast
3. Blasting all the holes in slices

4. Blasting one column after another

Correct Answer :-

- Blasting all the holes in slices

37) If RQD of ore and wall rock are low, the stoping method suitable is: [Question ID = 10736]

1. Shrinkage stoping
2. Sublevel stoping
3. Block caving
4. Cut and fill stoping

Correct Answer :-

- Cut and fill stoping

38) A block ore between two levels 30m apart is 40m long. The ore body thickness, specific gravity and grade are 2m, 2.8 and 2% respectively. The tonnage of copper available in the block of ore is : [Question ID = 10737]

1. 134.4
2. 236.2
3. 156.8
4. 290.3

Correct Answer :-

- 134.4

39) High production rates coupled with large scale and extensive subsidence results from the method of : [Question ID = 10738]

1. Top slicing
2. Block caving
3. Shrinkage stoping
4. Cut and fill stoping

Correct Answer :-

- Block caving

40) Cut and fill stoping is operated by : [Question ID = 10739]

1. Overhand
2. Underhand
3. Breast
4. Both overhand and underhand

Correct Answer :-

- Underhand

41) Which statement is wrong? [Question ID = 10741]

1. The auxiliary fan requires earthing
2. The auxiliary fan should not suck more than 50% of the available air

3. Two auxiliary fans cannot be installed in district without permission of RIM
4. Auxiliary fan is installed in a district to increase the air quantity in the district

Correct Answer :-

- Auxiliary fan is installed in a district to increase the air quantity in the district

42) The pressure developed by main fan suddenly reduced abruptly. This is due to [Question ID = 10742]

1. A heavy roof fall has occurred in the main return airway
2. A heavy roof fall has occurred in the main intake airway
3. Heavy leakages of air through pit bottom door or surface airlock
4. Power factor of the supply system has reduced

Correct Answer :-

- Power factor of the supply system has reduced

43) In auxiliary ventilation, exhaust system is adopted where the main problem is _____ [Question ID = 10743]

1. Heat
2. Methane layering
3. Heat and methane layering
4. Respirable dust

Correct Answer :-

- Respirable dust

44) The overall system efficiency of ventilation is 37.3%. The airpower is 100 hp. The input motor power will be _____ kW [Question ID = 10744]

1. 268
2. 200
3. 134
4. 67

Correct Answer :-

- 200

45) The resistance in a ventilation duct can be reduced by [Question ID = 10745]

1. using a duct of very long length
2. using a large diameter duct
3. increasing the flow of air through the duct
4. using a duct having corrugated internal surface

Correct Answer :-

- using a large diameter duct

46) Air power can be reduced by [Question ID = 10746]

1. reducing the pressure development in fan

2. by reducing the resistance of the mine
3. reducing the pressure development in fan and by reducing the resistance of the mine
4. by increasing the rpm of the fan

Correct Answer :-

- reducing the pressure development in fan and by reducing the resistance of the mine

47) For measuring relative humidity we use [Question ID = 10747]

1. Anemometer
2. Velometer
3. Psychrometer
4. Manometer

Correct Answer :-

- Psychrometer

48) Isolation/ fire stoppings in degree -III mine in case of depillaring with caving should have _____ stoppings each _____m. thick and _____m apart, with the intervening space packed solid with _____ Material. [Question ID = 10748]

1. 3, 0.5, 5, Incombustible
2. 2, 0.5, 5, Incombustible
3. 2, 1, 4.5, Combustible
4. 2,1, 4.5, Incombustible

Correct Answer :-

- 2,1, 4.5, Incombustible

49) Which of the following is not a type of auxiliary ventilation? [Question ID = 10750]

1. Exhausting
2. Overlapping
3. Reversible
4. Irreversible

Correct Answer :-

- Irreversible

50) Harmful gases present in blasting fumes are _____ and _____ & their permissible limits are _____ % and _____%. [Question ID = 10751]

1. Carbon dioxide Nitrous fumes, 0.5%, 0.005%
2. Carbon dioxide, Carbon Monoxide, 0.5%, 0.0005%
3. Carbon Monoxide, Nitrous fumes, 0.005%, 0.0005%
4. Carbon Monoxide, Nitrous fumes, 0.05%, 0.0005%

Correct Answer :-

- Carbon dioxide Nitrous fumes, 0.5%, 0.005%

51) Which of the following is not an experimental method of spontaneous combustion of coal? [Question ID = 10752]

1. Isothermal method
2. Adiabatic method
3. Chemical method
4. Physical method

Correct Answer :-

- Physical method

52) Which of the following is not a fire extinguisher? [Question ID = 10753]

1. Soda acid
2. Foam
3. Carbon dioxide
4. Carbon monoxide

Correct Answer :-

- Carbon monoxide

53) Degree of gassiness is estimated based on the following. [Question ID = 10754]

1. Coal production per shift
2. OMS
3. Amount of air required per tonne
4. Amount of methane emission per tonne of coal

Correct Answer :-

- Amount of methane emission per tonne of coal

54) Generally the range of flammability of bituminous coal is [Question ID = 10755]

1. $30 \text{ to } 300 g/Nm^3$
2. $3 \text{ to } 30 g/Nm^3$
3. $300 \text{ to } 600 g/Nm^3$
4. $600 \text{ to } 900 g/Nm^3$

Correct Answer :-

- $30 \text{ to } 300 g/Nm^3$

55) Polish shelves are related to [Question ID = 10756]

1. Water barrier
2. Dedusting
3. Stone dust barrier
4. Barrier pillar

Correct Answer :-

- Stone dust barrier

56) Which of the following can cause conjunctivitis [Question ID = 10757]

1. Carbon monoxide
2. Carbon dioxide
3. Hydrogen sulphide
4. Nitogen

Correct Answer :-

- Hydrogen sulphide

57) Which of the following has highest relative heat conductivity [Question ID = 10758]

1. Oxygen
2. Nitrogen
3. Hydrogen
4. Methane

Correct Answer :-

- Methane

58) X-axis of Coward flammability diagram consists of [Question ID = 10759]

1. Percentage of oxygen
2. Percentage of methane
3. Percentage of nitrogen
4. Parentage of air

Correct Answer :-

- Percentage of methane

59) A level cannot be used for [Question ID = 10760]

1. Profile levelling
2. Slope profile
3. Vertical Angles
4. Contouring

Correct Answer :-

- Vertical Angles

60) Which of the following methods of theodolite traversing is suitable for locating the details which are far away from transit stations? [Question ID = 10761]

1. Measuring angle and distance from one transit station
2. Measuring angles to the point from at least two stations
3. Measuring angle at one station and distance from other
4. Measuring distance from two points on traverse line

Correct Answer :-

- Measuring angles to the point from at least two stations

61) Which of the following methods of contouring is most suitable for a hilly terrain? [Question ID = 10762]

1. Direct method
2. Square method
3. Cross-sections method
4. Tachometric method

Correct Answer :-

- Tachometric method

62) If the reduced bearing of a line AB is N60°W and length is 100 m, then the latitude and departure respectively of the line AB will be [Question ID = 10763]

1. +50 m, +86.6 m
2. +86.6 m, -50 m
3. +50 m, -86.6 m
4. +70.7 m, -50 m

Correct Answer :-

- +86.6 m, -50 m

63) The smaller horizontal angle between the true meridian and a survey line, is known [Question ID = 10764]

1. Declination
2. Bearing
3. Azimuth
4. Dip

Correct Answer :-

- Azimuth

64) Contour interval is [Question ID = 10765]

1. The vertical distance between two consecutive contours
2. The horizontal distance between two consecutive contours
3. The vertical distance between two points on same contour
4. The horizontal distance between two points on same contour

Correct Answer :-

- The vertical distance between two consecutive contours

65) A metallic tape is made of [Question ID = 10766]

1. Steel
2. Invar
3. Linen
4. Cloth and wires

Correct Answer :-

- Cloth and wires

66) A line which joins subsidiary stations on the main lines of a chain survey network and serves to facilitate taking offsets to objects located at great distances from the main survey lines is called [Question ID = 10767]

1. Chain line
2. Check line
3. Tie line
4. Base line

Correct Answer :-

- Tie line

67) A horizontal angle which a line makes with the true meridian through one of the extremities of lines, is called [Question ID = 10768]

1. Bearing
2. True Bearing
3. Imaginary Bearing
4. Magnetic Bearing

Correct Answer :-

- True Bearing

68) If 'N' is the number of sides, then the total sum of interior angles of a closed traverse should be

[Question ID = 10769]

1. N+2
2. (2N-4)90
3. (2N+4)90
4. 4N-2

Correct Answer :-

- (2N-4)90

69) In the event of power failure during winding, the brake automatically applied is [Question ID = 10770]

1. Mechanical brake
2. Thrustor brake
3. Regenarative brake
4. None

Correct Answer :-

- Thrustor brake

70) The force required to cause haulage movement is called [Question ID = 10771]

1. Drawbar pull
2. Tractive effort
3. Running force
4. None

Correct Answer :-

- Tractive effort

71) In koepe winding, the overwind is prevented by [Question ID = 10772]

1. Detaching hook
2. Automatic contrivances
3. Convergence of the guides
4. None

Correct Answer :-

- Convergence of the guides

72) Where the series of belt conveyors are used for transport of coal, there shall be [Question ID = 10773]

1. Remote control
2. Sequence control
3. Single point control
4. Multipoint control

Correct Answer :-

- Sequence control

73) The most common type of flame proof protection in mine electrical cables is [Question ID = 10774]

1. Hermitically sealed protection
2. Flange protection
3. Hinge protection
4. Open protection

Correct Answer :-

- Flange protection

74) Smalman clip is the device used in [Question ID = 10775]

1. Direct rope haulage
2. Endless rope haulage
3. Main tail rope haulage
4. Gravity haulage

Correct Answer :-

- Endless rope haulage

75) Armoured flexible conveyors are principally used

[Question ID = 10776]

1. for Bord and pillar
2. In gate roads
3. for Prop free front of L/W face
4. On surface

Correct Answer :-

- for Prop free front of L/W face

76) For bending the rail to suitable curvature, the device used is [Question ID = 10777]

1. Retaining key
2. Jokey
3. Creeper
4. Jim crow

Correct Answer :-

- Jim crow

77) To remove the oxides and aldehydes from the exhaust gases, locomotives are fitted with [Question ID = 10778]

1. Dust trap
2. Gas collectors
3. Exhaust conditioners
4. None

Correct Answer :-

- Exhaust conditioners

78) A monocable aerial ropeway is generally preferred [Question ID = 10779]

1. In flat terrain
2. For large tonnage
3. In hilly terrains
4. For small distances

Correct Answer :-

- In hilly terrains

79) The valve which is used in the suction pipe to prevent water returning to the pump [Question ID = 10780]

1. Foot valve
2. Retaining valve
3. Bypass valve
4. Sluice valve

Correct Answer :-

- Foot valve

80) The fitting common for all the pumps but not required for submersible pumps is [Question ID = 10781]

1. Suction pipe
2. Delievery pipe
3. air valve
4. Retaining valve

Correct Answer :-

- Suction pipe

81) The rope used for track rope in aerial rope way is [Question ID = 10782]

1. Locked coil
2. Lang's lay
3. Regular lay
4. Flattened strand

Correct Answer :-

- Locked coil

82) Friction head of a pump varies proportionally with the [Question ID = 10783]

1. Square root of the length of the pipe range
2. Square of the length of the pipe range
3. Length of the pipe range
4. Thrice the pipe range

Correct Answer :-

- Length of the pipe range

83) Clifton pulley used in [Question ID = 10784]

1. Direct rope haulage
2. Endless rope haulage
3. Gravity haulage
4. Main and tail rope haulage

Correct Answer :-

- Endless rope haulage

84) Internal stresses of the rope can be relieved with the use of [Question ID = 10785]

1. Normalizing the wire
2. Annealing the wire
3. Preformed wire
4. Wessington pattern

Correct Answer :-

- Preformed wire

85) The diameter of headgear pulley should be atleast.....times the dia of the rope [Question ID = 10786]

1. 60
2. 100
3. 120
4. 150

Correct Answer :-

- 100

86) Main source of power for jack hammer drill is [Question ID = 10787]

1. Diesel
2. Electricity
3. Hydraulic
4. Compressed air

Correct Answer :-

- Compressed air

87) Mines Act came into force on [Question ID = 10788]

1. 1st July 1952
2. 15th March 1952
3. 27th May 1952
4. 1st April 1952

Correct Answer :-

- 15th March 1952

88) In highwall mining the main machinery is [Question ID = 10789]

1. Shearer
2. Continuous miner
3. LHD
4. SDL

Correct Answer :-

- Continuous miner

89) If the number of persons are 3000 in a mine then the number of workmen inspectors required is/are [Question ID = 10790]

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

Correct Answer :-

- 3

90) No apprentice or trainee of the age of .... years shall be employed in a mine except under immediate supervision of a competent person [Question ID = 10791]

1. 20 to 23 years
2. 18 to 20 years
3. 16 to 18 years
4. Above 23 years

Correct Answer :-

- 16 to 18 years

91) The annual returns shall be submitted to chief inspector by manager on or before ..... of every year

[Question ID = 10792]

1. 20th February
2. 1st January
3. 1st April
4. 20th January

Correct Answer :-

- 20th February

92) As per CMR1957, the minimum quantity of air (in cu.m per min) that is required to be sent in a mine having a daily production of 500 tonnes and 70, 80, 90 persons employed in three shifts a day respectively is [Question ID = 10793]

1. 420
2. 540
3. 1250
4. 3000

Correct Answer :-

- 3000

93) If the number of persons employed in the mine is 500, then the minimum quantity of water required in litres is [Question ID = 10794]

1. 1000
2. 500
3. 250
4. 1500

Correct Answer :-

- 1000

94) Register of return of reportable accidents is maintained in the form of [Question ID = 10795]

1. FORM J
2. FORM K
3. FORM L
4. FORM M

Correct Answer :-

- FORM K

95) No adult employed below ground in a mine shall be allowed to work for more than .... hours in any week or for more than ... hours in any day [Question ID = 10796]

1. 36 ; 6
2. 48 ; 9
3. 48 ;8
4. 50 ;10

Correct Answer :-

- 48 ;8

96) As per CMR 1957, the wet bulb temperature in any working place should not exceed [Question ID = 10797]

1. $33.5^{\circ}\ C$
2. $30.5^{\circ}\ C$
3. $33^{\circ}\ C$
4. $30^{\circ}\ C$

Correct Answer :-

- $33.5^{\circ}\ C$

97) No workings shall be made and no work of extraction or reduction of pillars shall be conducted any point within.....of any railway line [Question ID = 10798]

1. 30 m
2. 45 m
3. 100 m
4. 60 m

Correct Answer :-

- 45 m

98) The mine air shall be tested for percentage of CO, once atleast in every ..... [Question ID = 10799]

1. 7 days
2. 15 days
3. 30 days
4. 60 days

Correct Answer :-

- 7 days

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99) The evasee of a fan has an area of 4 m^2 at the base and 10 m^2 at the outlet. When the output of fan is 6000 m^3/min, the saving in air column in meter due to evasee will be approximately equal to (assume g=10m/s^2):

[Question ID = 10800]

1. 25
2. 32
3. 40
4. 45

Correct Answer :-

- 40

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100) Which of the following is associated with presence of CH_4

[Question ID = 10801]

1. Black Damp
2. Fire Damp
3. After Damp
4. Stink Damp

Correct Answer :-

- Fire Damp