

Bio-Technology_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 :-

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

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

[Question ID = 13594]

1. $[5]$

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 :-

• $x = 1$

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

[Question ID = 13598]

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

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

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

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

Correct Answer :-

• $1 + \frac{1}{1-x} + \frac{4}{x-2}$

7) If $\sin\theta + \operatorname{Cosec}\theta = 2$, then the value of $\sin^3\theta + \operatorname{Cosec}^3\theta =$

[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. $\sin\left(\frac{\theta}{2}\right)$

Correct Answer :-

• $\frac{1}{\sqrt{2}}\sin\theta$

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

[Question ID = 13603]

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

Correct Answer :-

- 20
-

12) $3\operatorname{Cosec} x = 4\operatorname{Sin} x \Rightarrow x =$

[Question ID = 13604]

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

Correct Answer :-

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

13) If $x = \log_e(5 + \sqrt{26})$, then $\operatorname{Sin}hx =$

[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. $\theta = 30^\circ$
- 2. $\theta = 45^\circ$
- 3. $\theta = 60^\circ$
- 4. $\theta = 15^\circ$

Correct Answer :-

• $\theta = 45^\circ$

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

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

Correct Answer :-

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

24) If $y = \log(x - \sqrt{1+x^2})$, 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 $x = a \cos^3 \theta$; $y = a \sin^3 \theta$ is

[Question ID = 13617]

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

Correct Answer :-

- 1
-

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

[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 :-

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

- 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 $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} =$

[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. $\log(\sec x)\tan x + C$
4. $\log(\tan^{-1}x) + C$

Correct Answer :-

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

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

[Question ID = 13623]

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

Correct Answer :-

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

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

[Question ID = 13624]

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

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

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

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

Correct Answer :-

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

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

[Question ID = 13625]

1. $\sec x + \cot x$

2. $\operatorname{cosec} x - \cot x$

3. $\operatorname{cosec} x + \tan x$

4. $\sec x - \operatorname{cosec} x$

Correct Answer :-

- $\sec x - \csc x$
-

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 :-

- $e - 1$
-

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

[Question ID = 13627]

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

Correct Answer :-

- $8/5$
-

36)

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

[Question ID = 13628]

1. $4\pi ab^2$

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

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

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

Correct Answer :-

• $\frac{4}{3}\pi ab^2$

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 :-

• $xy'' + 2y' - xy + x^2 - 2 = 0$

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

[Question ID = 13631]

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

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 :-

• $y = e^{-2\sqrt{x}}(2\sqrt{x} + C)$

40) The solution of $\cos x \, dy = (\sin x - y) \, y \, dx$

[Question ID = 13632]

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

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

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

[Question ID = 13634]

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

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

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

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

Correct Answer :-

• $y = e^{-2x} [\cos x + 2 \sin x]$

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

[Question ID = 13635]

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

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

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

4. $y = e^x$

Correct Answer :-

• $y = e^x$

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

[Question ID = 13636]

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

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

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]

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

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

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

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

Correct Answer :-

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

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

[Question ID = 23975]

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

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

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

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

Correct Answer :-

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

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 :-

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

49)

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

$$f(x) = \frac{a_0}{2} + \sum_{n=1}^{\infty} (a_n \cos nx + b_n \sin nx), \text{ then } a_n =$$

[Question ID = 23978]

1. $\frac{1}{\pi}$

2. 1

3. 0

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

Correct Answer :-

• $\frac{2}{\pi}$

50)

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

[Question ID = 23979]

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

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

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

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

Correct Answer :-

• $e^{-3t} \cos 4t$

Topic:- Physics_set2

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

[Question ID = 34198]

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

Correct Answer :-

- power

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

[Question ID = 34199]

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

Correct Answer :-

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

3)

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

1. 30°
2. 45°
3. 60°
4. 0°

Correct Answer :-

- 60°

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

[Question ID = 34201]

1. 0°
2. 20°
3. 45°
4. 90°

Correct Answer :-

- 90°

5)

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

[Question ID = 34202]

1. 30°
2. 45°

3. 60°

4. 90°

Correct Answer :-

• 30°

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

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

Correct Answer :-

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

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

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

Correct Answer :-

- frequencies are equal

8)

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

[Question ID = 34205]

1. -9.8 ms^{-1}

2. -58.8 ms^{-1}

3. -4.9 ms^{-1}

4. -29.4 ms^{-1}

Correct Answer :-

• $- 29.4 \text{ ms}^{-1}$

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

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

Correct Answer :-

- absorb sound

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

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

Correct Answer :-

- blue end

11)

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

[Question ID = 34208]

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

Correct Answer :-

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

12)

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

[Question ID = 34209]

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

Correct Answer :-

- 19.6 ms^{-1}
-

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

[Question ID = 34210]

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

Correct Answer :-

- 3:2
-

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

[Question ID = 34211]

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

Correct Answer :-

- remain constant
-

15)

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

[Question ID = 34212]

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

Correct Answer :-

- 0.01 s
-

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

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

Correct Answer :-

- kinetic energy is maximum, potential energy is minimum
-

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

[Question ID = 34214]

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

Correct Answer :-

- 110 dB
-

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⁻¹K⁻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, BeCl₂, BCl₃ and CCl₄, the covalent character follows the order:

[Question ID = 24000]

1. LiCl > BeCl₂ > BCl₃ > CCl₄
2. LiCl < BeCl₂ < BCl₃ < CCl₄
3. LiCl > BeCl₂ < BCl₃ > CCl₄
4. LiCl < BeCl₂ < BCl₃ > CCl₄

Correct Answer :-

- LiCl < BeCl₂ < BCl₃ < CCl₄

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. NH₄Cl
2. K₃[Fe(CN)₆]
3. CuSO₄
4. NH₄Cl, CuSO₄ and K₃[Fe(CN)₆]

Correct Answer :-

- NH_4Cl , CuSO_4 and $\text{K}_3[\text{Fe}(\text{CN})_6]$
-

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 $\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$ 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 1×10^5 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. $\text{Na}_2\text{B}_4\text{O}_7$
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]

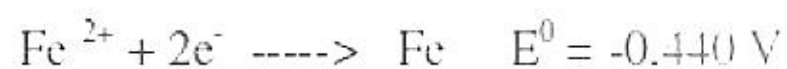
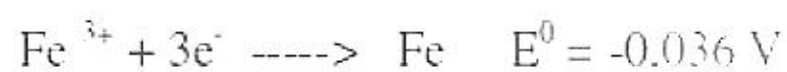
1. 0.25 mole of Ag
2. 16 gms of Cu

3. 2gms of O₂ (g)
4. 2.8 lit of H₂ at STP

Correct Answer :-

- 16 gms of Cu
-

13) . Given standard electrode potentials



The standard electrode potential E° for $\text{Fe}^{3+} + \text{e}^{-} \longrightarrow \text{Fe}^{2+}$ 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 Enthalpy of formation
3. High dielectric constant
4. High density

Correct Answer :-

- High dielectric constant
-

15) A sample of water has Mg(HCO₃)₂ = 73 mg/L, Ca(HCO₃)₂ = 162 mg/L, MgCl₂ = 95 mg/L and CaSO₄ = 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. SiO₂
3. Sulphur
4. Zinc stearate

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]

- Photochemical oxidants like O_3 and CO_2
- 1.
 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. $\text{CO} + \text{CO}_2$

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:- Biotech_Set2

1) Which type of press produces the most high quality juice or wine? [Question ID = 13393]

1. Membrane press
2. Continuous press
3. Vertical basket press
4. Horizontal basket press

Correct Answer :-

- Membrane press
-

2) Bacterial strains which produce acid can be detected by using a pH indicator, which shows by the change in [Question ID = 13394]

1. Turbidity
2. Ionic strength
3. Colour
4. Morphology

Correct Answer :-

- Colour

3) Which among the following is not a part of fermentation process [Question ID = 13395]

1. Propagation step
2. Downstream processing
3. Pilot scale fermentation
4. Main production fermentation

Correct Answer :-

- Downstream processing
-

4) After storage and recarbonation, left over yeast is separated by [Question ID = 13396]

1. Centrifugation
2. Filtration
3. Cell disruption
4. need not to be separated

Correct Answer :-

- Filtration
-

5) The term Racking refers to [Question ID = 13397]

1. Stacking unlabeled wine in bins for aging
2. Adding yeast to initiate fermentation
3. Storing hoses to drain on a slanted board
4. Removing clear liquid from sediment

Correct Answer :-

- Removing clear liquid from sediment

6) Which among the following is a biopesticide [Question ID = 13398]

1. Azolla

2. Agrobacterium
3. Bt toxin
4. Rhizobium

Correct Answer :-

- Bt toxin

7) Which among the following is not used for strain improvement [Question ID = 13399]

1. Chemical mutagens
2. Radiations
3. rDNA technology
4. DMSO

Correct Answer :-

- DMSO

8) Media composition for the production of streptomycin is [Question ID = 13400]

1. Soybean meal, glucose, peptone, malt extract, ammonium chloride
2. Soybean meal, glucose, peptone, malt extract, sodium chloride
3. Soybean meal, glucose, peptone, malt extract, calcium carbonate
4. Soybean meal, glucose, peptone, malt extract, ammonium sulphate

Correct Answer :-

- Soybean meal, glucose, peptone, malt extract, sodium chloride

9) What is the pH of the medium when molasses is used as substrate for the production of citric acid? [Question ID = 13401]

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

Correct Answer :-

- 5

10) The movement of ions across the membrane with aid of energy is [Question ID = 13402]

1. Diffusion
2. Osmosis
3. Active transport
4. Facilitated diffusion

Correct Answer :-

- Active transport

11) Which among the following correctly describes of atomic theory [Question ID = 13403]

1. It is the characteristics and properties of atoms that make up matter
2. Matter is made up of protons

3. Cells are basic unit of life
4. Matter is made up of neutrons

Correct Answer :-

- It is the characteristics and properties of atoms that make up matter
-

12) Manufacturing recombinant DNA molecules involves cutting a gene from its normal location, inserting it into a circular piece of DNA from a bacterial cell, and then transferring the circle of DNA to cells of another species. Which of the tools below is used to cut the gene from its normal location?

[Question ID = 13404]

1. Restriction enzyme
2. Plasmid
3. Bacteriophage
4. Vector

Correct Answer :-

- Restriction enzyme

13) Which is the most common carbon source used in the plant cell culture media? [Question ID = 13405]

1. Sucrose
2. Glucose
3. Fructose
4. Maltose

Correct Answer :-

- Sucrose
-

14) Which of the following is an ethylene biosynthesis inhibitor? [Question ID = 13406]

1. Citric acid
2. Succinic acid
3. Activated charcoal
4. Silver thiosulphate

Correct Answer :-

- Silver thiosulphate

15) Which of the following growth regulator is added for shoot initiation during plant regeneration from callus? [Question ID = 13407]

1. Auxins
2. Cytokinins
3. Gibberellins
4. Brassinosteroids

Correct Answer :-

- Cytokinins

16) The biological membranes are made up of [Question ID = 13408]

1. Lipoproteins
2. Lipids
3. Proteins
4. Carbohydrates

Correct Answer :-

- Lipoproteins
-

17) A biological membrane containing true pores is [Question ID = 13409]

1. Nuclear envelope
2. Plasma membrane
3. Vitelline membrane
4. Plastid envelope

Correct Answer :-

- Nuclear envelope
-

18) Who proposed the first lamellar model of biomembranes? [Question ID = 13410]

1. Danielli and Davson
2. Robertson
3. Helleir and Hoffmann
4. Singer and Nicolson

Correct Answer :-

- Danielli and Davson

19) For visualization of internal structure by projection of an electron beam on to the sample which of the following microscope is used [Question ID = 13411]

1. Stereo microscope
2. SEM
3. TEM
4. Compound microscope

Correct Answer :-

- TEM
-

20) For the recovery of citric acid after fermentation, $\text{Ca}(\text{OH})_2$ is added to the slurry to

[Question ID = 13412]

1. precipitate calcium carbonate
2. precipitate calcium citrate
3. precipitate calcium phosphate

4. precipitate calcium sulphate

Correct Answer :-

- precipitate calcium citrate

21) Sugar content of the fermentation medium for citric acid is maintained at [Question ID = 13413]

1. 10-15%
2. 15-20%
3. 20-25 %
4. 25-30 %

Correct Answer :-

- 20-25 %

22) Dual Polarization Interferometry (DPI) is a quantitative analytical technique used for measuring the dimension of proteins is based on [Question ID = 13414]

1. pH
2. Mass
3. Size
4. Shape

Correct Answer :-

- Mass

23) Which of the following organelles would only be found within a cell that was both eukaryotic and autotrophic? [Question ID = 13415]

1. Mitochondria
2. Ribosomes
3. Rough endoplasmic reticulum
4. Chloroplast

Correct Answer :-

- Chloroplast

24) After being formed by the ribosomes located on the endoplasmic reticulum, what is the next organelle to which a protein could be transported? [Question ID = 13416]

1. Mitochondria
2. Smooth endoplasmic reticulum
3. Golgi apparatus
4. Nucleus

Correct Answer :-

- Golgi apparatus

25) Which of the statement is true for continuous reactor at steady state? [Question ID = 13417]

1. The rates of biomass, substrate and product concentrations are zero

2. Biomass, substrate and product concentrations are zero
3. Biomass, substrate and product concentrations do not change with time
4. Biomass, substrate and product concentrations change with time

Correct Answer :-

- Biomass, substrate and product concentrations do not change with time

26) A continuous bioreactor in which only the flow rate is used to control the rate of cell or product productivity is called [Question ID = 13418]

1. Turbidostat
2. Chemostat
3. Level stat
4. pH

Correct Answer :-

- Chemostat

27) *Saccharomyces cerevisiae* is being grown in a chemostat converts glucose to biomass, ethanol, glycerol and carbon dioxide. At steady state, the concentration of glucose, biomass, ethanol and glycerol will [Question ID = 13419]

1. decrease with time
2. increase with time
3. be constant
4. change randomly with time

Correct Answer :-

- be constant

28) In a batch culture of *Penicillium chrysogenum*, the maximum penicillin synthesis occurs during the [Question ID = 13420]

1. Lag phase
2. Exponential phase
3. Stationary phase
4. Death phase

Correct Answer :-

- Stationary phase

29) The del factor (Δ) increases as the final number of viable cells

[Question ID = 13421]

1. Decreases
2. Increases
3. Zero
4. Constant

Correct Answer :-

- Decreases

30) The microscope which is utilized for observing Motile bacterium is [Question ID = 13422]

1. Bright field microscope
2. Electron microscopy
3. Darkfield microscopy
4. Fluorescence microscopy

Correct Answer :-

- Darkfield microscopy

31) In a bioreactor, baffles are incorporate to [Question ID = 13423]

1. prevent vortex and to improve aeration efficiency
2. maintain uniform suspension of cells
3. minimize the size of air bubble for greater aeration
4. maintain uniform nutrient medium

Correct Answer :-

- prevent vortex and to improve aeration efficiency

32) Who proposed cell theory [Question ID = 13424]

1. Morgan
2. Robert koch
3. Nitch
4. Schleiden and schwain

Correct Answer :-

- Schleiden and schwain

33) Since mammalian cells are sensitive to shear, scale-up of a mammalian cell process must consider, among other parameters, the following are given as N = rotations/time, D=diameter of impeller. [Question ID = 13425]

1. πND
2. $\pi N^2 D$
3. πND^2
4. Isomerization

Correct Answer :-

- πND

34) In which of the following bioreactors, the higher level of foaming is possible? [Question ID = 13426]

1. Continuous stirred tank bioreactor
2. Air lift bioreactor
3. Fluidized bioreactor
4. Packed bed bioreactor

Correct Answer :-

- Air lift bioreactor
-

35) In chemostat, when cells are in exponential growth period and there is no cell death rate, the relation between the specific growth rate and the dilution rate is [Question ID = 13427]

1. $\mu > D$
2. $\mu < D$
3. $\mu = D^{1/2}$
4. $\mu = D$

Correct Answer :-

- $\mu = D$
-

36) For scaling-up of bioreactors, which of the following parameters is assumed constant? [Question ID = 13428]

1. Air flow
2. Diameter of the impeller
3. Speed of the agitator
4. Volumetric mass transfer coefficient

Correct Answer :-

- Volumetric mass transfer coefficient
-

37) Which among the following is an area of biophysics. [Question ID = 13429]

1. Medical Imaging
2. Botany
3. Microbiology
4. Genetics

Correct Answer :-

- Medical Imaging
-

38) Which of the following is incorrect about the nature of biological membranes being selectively permeable [Question ID = 13430]

1. Hydrophilic heads are not immersed in water
2. It permits selective uptake of nutrients and elimination of waste
3. Allows cells to concentrate particular ions on either side of the membrane
4. Prevents toxic material from entering the cells

Correct Answer :-

- Hydrophilic heads are not immersed in water
-

39) The transcriptionally active region of the chromosome is called [Question ID = 13431]

1. Euchromatin
2. Centromere
3. Heterochromatin
4. Kinetochore

Correct Answer :-

- Euchromatin
-

40) The percentage of crossing over is indicated by the frequency of [Question ID = 13432]

1. Chiasma formation
2. Test cross
3. Spindle formation
4. Interference

Correct Answer :-

- Chiasma formation
-

41) Homologous pairing of chromosomes is observed in which phase of cell division [Question ID = 13433]

1. Metaphase
2. Anaphase
3. Zygotene
4. Pachytene

Correct Answer :-

- Pachytene
-

42) Nucleosome consists of [Question ID = 13434]

1. A segment of DNA wound in sequence around eight histone protein cores
2. A segment of DNA wound in sequence around ten histone protein cores
3. Only DNA
4. Only Histones

Correct Answer :-

- A segment of DNA wound in sequence around eight histone protein cores
-

43) Which is not a Sex linked disorder [Question ID = 13435]

1. Albinism
2. Hemophilia
3. Colour blindness
4. Muscular dystrophy

Correct Answer :-

- Albinism

44) Which is the correct order of organisation of genetic material from smallest to largest [Question ID = 13436]

1. Nucleotide, gene, chromosome, Genome
2. Gene , chromosome , nucleotide, genome
3. Chromosome , gene ,genome, nucleotide
4. Chromosome, genome, nucleotide , gene

Correct Answer :-

- Nucleotide, gene, chromosome, Genome

45) Microarray analysis involves biological assays based on [Question ID = 13437]

1. Gels
2. Filters
3. Purification columns
4. Small glass chips

Correct Answer :-

- Small glass chips

46) Two different genes that are not alleles, but both affect the same character in such a way that, the expression of one is masked by the other. This phenomenon is called [Question ID = 13438]

1. Codominance
2. Test cross
3. Epistasis
4. Incomplete dominance

Correct Answer :-

- Epistasis

47) Global alignment of biological sequences (example - genes) follow which algorithm [Question ID = 13439]

1. Smith Waterman algorithm
2. Needleman Wunsch algorithm
3. DOT PLOT matrix
4. Progressive alignment

Correct Answer :-

- Needleman Wunsch algorithm

48) PHYLOGENETIC analysis deals with [Question ID = 13440]

1. Finding out repetitive DNA
2. Finding out evolutionary relationship among biomolecules (DNA, Proteins)
3. Sorting out structural and non-structural genes
4. Finding out promoter regions

Correct Answer :-

- Finding out evolutionary relationship among biomolecules (DNA, Proteins)
-

49) The parameters maintained in CO₂ incubator used in animal cell culture laboratory are

[Question ID = 13441]

1. 5%CO₂, 37⁰C, 100% humidity
2. 100%CO₂, 37⁰C, 5% humidity
3. 0%CO₂, 37⁰C, 5% humidity
4. 0%CO₂, 37⁰C, 100% humidity

Correct Answer :-

- 5%CO₂, 37⁰C, 100% humidity
-

50) Advantage of using animal cells rather than microbial cells for the production of recombinant proteins is [Question ID = 13442]

1. Post transcriptional modification
2. DNA replication
3. Transcription
4. Post translational modification

Correct Answer :-

- Post translational modification
-

51) Which among the following is a limitation of of animal cell culture [Question ID = 13443]

1. Cultured cells are used for reconstruction of damaged tissue or replacement of non- functional cells or tissues.
2. Easy growing of cells invitro has led to a spurt in the activity to apply cell culture technology to synthesize or produce a variety of biomolecules at an industrial scale.
3. To study the processes taking place in animal cells, e.g., metabolic regulations, cell physiology.
4. Cell lines may not reflect the actual condition in vivo and results may not be reproducible in the living animals.

Correct Answer :-

- Cell lines may not reflect the actual condition in vivo and results may not be reproducible in the living animals.
-

52) Which among the following is not an application of plant tissue culture [Question ID = 13444]

1. Haploid production
2. Protoplast fusion
3. Hybrid seed production by normal crossing
4. Micropropagation

Correct Answer :-

- Hybrid seed production by normal crossing
-

53) Somatic hybridization refers to [Question ID = 13445]

1. Single cell culture
2. Protoplast fusion
3. Somatic embryogenesis
4. Cell fusion

Correct Answer :-

- Protoplast fusion

54) During the growth of animal cells in culture, it is noticed that the cells do not look very healthy. After an investigation, this is found that there is a lot of lactic acid in the culture fluid. What is probably wrong with this culture? [Question ID = 13446]

1. Ethyl alcohol is being produced in excess
2. The cells have too much oxygen
3. Glycolysis is being inhibited
4. The cells do not have enough oxygen

Correct Answer :-

- The cells do not have enough oxygen
-

55) An established cell line can be called where it has been subcultured at least [Question ID = 13447]

1. 70 times at an interval of 3 days between subcultures
2. 40 times at an interval of 3 days between subcultures
3. 70 times at an interval of 1 day between subcultures
4. 50 times at an interval of 3 days between subcultures

Correct Answer :-

- 70 times at an interval of 3 days between subcultures

56) Enzymes used in protoplast isolation are [Question ID = 13448]

1. Cellulases, Hemicellulases and pectinases
2. Proteases
3. Polymerases
4. Restriction enzymes

Correct Answer :-

- Cellulases, Hemicellulases and pectinases

57) Sometimes cell lines can be cultured for such a long time that they apparently develop the potential to be subcultured indefinitely in vitro. Such cells lines are called [Question ID = 13449]

1. Established cell lines
2. Primary cell lines
3. Secondary cell lines
4. Propagated cell lines

Correct Answer :-

- Established cell lines

58) Genetic transformation of plants is done by the plasmids from [Question ID = 13450]

1. Bacillus
2. Rhizobium
3. Pseudomonas
4. Agrobacterium

Correct Answer :-

- Agrobacterium

59) Which of the following is not true about the optimum conditions for maintenance of plant cell cultures are [Question ID = 13451]

1. Temp- 22⁰C
2. pH- 5.8
3. Light-3000 lux
4. Relative humidity-50%

Correct Answer :-

- Relative humidity-50%

60) Which among the following is the most commonly used high salt concentration media for plant tissue culture [Question ID = 13452]

1. MS Media
2. Gamborg media
3. White's media
4. LS media

Correct Answer :-

- MS Media

61) Which among the following is not a direct gene transfer approach [Question ID = 13453]

1. Agrobacterium mediated transfer
2. Microinjection
3. Gene gun
4. Electroporation

Correct Answer :-

- Agrobacterium mediated transfer
-

62) Which gene combination is a part of nitrogen fixation [Question ID = 13454]

1. Nod gene , rol gene
2. Nod gene, Nif gene and Hup gene
3. Vir gene , rol gene
4. Nif gene, rol gene

Correct Answer :-

- Nod gene, Nif gene and Hup gene
-

63) Which of the following is not applied for sustained crop protection by pests and diseases [Question ID = 13455]

1. Insecticide act
2. Integrated pest management
3. Cryopreservation
4. Plant quarantine

Correct Answer :-

- Cryopreservation
-

64) Binomial classification of organisms was introduced by [Question ID = 13456]

1. Linnaeus
2. Heckel
3. Whittaker
4. Chatton

Correct Answer :-

- Linnaeus
-

65) Media which favours the growth of particular microbe and inhibits others is known as [Question ID = 13457]

1. Enriched media
2. Selective media
3. Differential media
4. Complex media

Correct Answer :-

- Selective media

66) Closely related micro-organisms have similar % of [Question ID = 13458]

1. A + T content
2. A + C content
3. G + C content
4. G + T content

Correct Answer :-

- G + C content
-

67) Microorganisms that can tolerate low concentrations of Oxygen are termed [Question ID = 13459]

1. Aerobic
2. Anaerobic
3. Microaerophiles
4. Obligate aerobes

Correct Answer :-

- Microaerophiles
-

68) The universal genetic code was discovered in [Question ID = 13460]

1. 1953
2. 1966
3. 1991
4. 1997

Correct Answer :-

- 1966
-

69) The first protein to be sequenced is [Question ID = 13461]

1. Insulin
2. Tannin
3. Myosin
4. Haemoglobin

Correct Answer :-

- Insulin
-

70) URL for NCBI is [Question ID = 13462]

1. www.ncbi.gov
2. www.ncbi.nic.in
3. www.ncbi.nlm.nih.gov
4. www.ncbi.nlm.gov

Correct Answer :-

- www.ncbi.nlm.nih.gov
-

71) Uniprot stands for [Question ID = 13463]

1. Uniform protein database
2. Universal protein database
3. Universal polypeptide database
4. Unique protein database

Correct Answer :-

- Universal protein database
-

72) How would you preserve a culture by desiccation [Question ID = 13464]

1. Sterilization
2. Lyophilisation
3. Liquid nitrogen storage
4. Tyndallisation

Correct Answer :-

- Lyophilisation

73) The rough draft of human genome was announced on [Question ID = 13465]

1. May 26, 2001
2. June 26, 2001
3. June 26, 2002
4. July 26, 2001

Correct Answer :-

- June 26, 2001
-

74) India has initiated genome sequencing project of [Question ID = 13466]

1. Rice
2. Pigeon
3. Human
4. Tomato

Correct Answer :-

- Rice
-

75) Sequencing of 24 human chromosome was completed in which year? [Question ID = 13467]

1. 2000
2. 2010
3. 2006
4. 2004

Correct Answer :-

- 2006

76) The sequencing data is recorded in the form of [Question ID = 13468]

1. PDF
2. RTF
3. DOC
4. SCF

Correct Answer :-

- SCF

77) Which of these is not a protein sequence database? [Question ID = 13469]

1. PDB
2. PIR
3. Gene bank
4. Swiss

Correct Answer :-

- Gene bank

78) Which is not a quality of a disinfectant [Question ID = 13470]

1. Broad spectrum
2. Non toxic
3. Non irritating
4. Corrosive

Correct Answer :-

- Corrosive

79) Which of the following pair is incorrect regarding the mode of action of disinfectants [Question ID = 13471]

1. Damage to cell wall- Penicillin
2. Injury to cell membrane- Surfactants
3. Effect on proteins-Ionizing radiations
4. Effect on nucleic acid- Formaldehyde

Correct Answer :-

- Effect on proteins-Ionizing radiations

80) Heat sensitive chemicals are sterilized by [Question ID = 13472]

1. Filter sterilization
2. Autoclaving
3. Dry heat
4. Flaming

Correct Answer :-

- Filter sterilization

81) Germicidal lamps contain _____ vapour [Question ID = 13473]

1. Mercury
2. Ethylene oxide
3. Formaldehyde
4. Chloride

Correct Answer :-

- Mercury

82) Germicides are tested by comparing their effectiveness to _____ [Question ID = 13474]

1. Cresol
2. Hydrogen peroxide
3. Phenol
4. Formaldehyde

Correct Answer :-

- Phenol

83) Which statement is false about enzymes [Question ID = 13475]

1. Enzymes are made up of Amino acids
2. Amino acids are linked via peptide bonds
3. Amino acid chain is called polypeptide
4. Specific order of amino acids is coded by proteins

Correct Answer :-

- Specific order of amino acids is coded by proteins

84) Which of the following enzyme helps in tenderization of meat [Question ID = 13476]

1. Papain
2. Amylase
3. Fumerase
4. Esperase

Correct Answer :-

- Papain

85) Which enzyme is used for inversion of sucrose to a glucose and fructose in confectionaries [Question ID = 13477]

1. Cellulase
2. Carboxylase
3. Invertase
4. Alcalase

Correct Answer :-

- Invertase

86) Which is an incorrect statement about advantages of enzyme immobilization [Question ID = 13478]

1. Increased functional efficiency
2. Enhanced reproducibility
3. Catalytic property reduction
4. Continuous use of enzymes for a few cycles

Correct Answer :-

- Catalytic property reduction

87) Which of the following is incorrect about allosteric enzymes [Question ID = 13479]

1. They have one or more allosteric sites
2. They do not obey michalis menten kinetics
3. Allosteric enzyme kinetics is hyperbola
4. Allosteric enzyme kinetics is sigmoid

Correct Answer :-

- Allosteric enzyme kinetics is hyperbola

88) The undue tendency for closely linked genes on a chromosome to remain associated rather than undergo genetic randomisation, is termed as [Question ID = 13480]

1. Tandem duplication
2. Meiotic crossover
3. Linkage disequilibrium
4. Gene conversion

Correct Answer :-

- Linkage disequilibrium

89) During the unfolding reaction of a helix, breakage of each hydrogen bond requires about 2kJ/mol. This implies hydrogen bonds are [Question ID = 13481]

1. much stronger in proteins than in water
2. not reformed with water
3. slightly weaker in proteins than in water
4. slightly stronger in proteins than in water

Correct Answer :-

- slightly stronger in proteins than in water

90) The Standard Gibb's free energy, ΔG° , is

[Question ID = 13482]

1. The residual energy present in the reactants at equilibrium
2. The residual energy present in the products at equilibrium
3. The difference in the residual energy of reactants and products at equilibrium
4. The energy required to convert one mole of reactants to one mole of products

Correct Answer :-

- The energy required to convert one mole of reactants to one mole of products

91) The unfolding of regular secondary structure causes [Question ID = 13483]

1. Little increase in the entropy of protein
2. Large decrease in the entropy of the protein
3. No change in the entropy of the protein
4. Large increase in the entropy of the protein

Correct Answer :-

- Large increase in the entropy of the protein
-

92) Type I proteins (plasma membrane) have a [Question ID = 13484]

1. Cleavage N- terminal signal sequence and a hydrophobic stop transfer sequence
2. Cleaved N- terminal signal sequence that doubles as the membrane anchoring sequence
3. Multiple signal sequence and a hydrophobic stop transfer sequence
4. Multiple signal sequence that doubles as the membrane anchoring sequence

Correct Answer :-

- Cleavage N- terminal signal sequence and a hydrophobic stop transfer sequence
-

93) Protein synthesis rates in prokaryotes are limited by the rate of mRNA synthesis. If RNA synthesis occurs at the rate of 50 nucleotides/sec, then rate of protein synthesis occurs at [Question ID = 13485]

1. 10 amino acids/sec
2. 17 amino acids/sec
3. 3.25 amino acids/sec
4. 50 amino acids/sec

Correct Answer :-

- 17 amino acids/sec

94) The direction of amino acid transfer to the growing polypeptide chain is [Question ID = 13486]

1. from the A (aminoacyl tRNA site) site to the P (peptidyl tRNA site) site on the ribosome
2. from the P site to the A site on the ribosome
3. from the A site to the E (exit tRNA site) site on the ribosome
4. from the P site to the E site on the ribosome

Correct Answer :-

- from the P site to the A site on the ribosome
-

95) A physical technique for enzyme immobilization is [Question ID = 13487]

1. Covalent binding
2. Cross linkage
3. Co-polymerization
4. Entrapment

Correct Answer :-

- Entrapment
-

96) Which among the following is false about the limitations of enzyme immobilization [Question ID = 13488]

1. Reuse of enzyme
2. High cost of isolation and purification
3. Limited industrial applications
4. Some enzymes become unstable

Correct Answer :-

- Reuse of enzyme
-

97) The protein component of an enzyme is called [Question ID = 13489]

1. Co-factor
2. Apoenzyme
3. Holoenzyme
4. Co-enzyme

Correct Answer :-

- Apoenzyme
-

98) A complete catalytically active enzyme together with its bound co-enzyme and/or metal ions for activity is known as [Question ID = 13490]

1. Cofactor
2. Apoprotein
3. Holoenzyme
4. Apoenzyme

Correct Answer :-

- Holoenzyme
-

99) Which enzyme is required in peptide bond formation [Question ID = 13491]

1. Amylase
2. Protease
3. Peptidyl transferase
4. Peroxidase

Correct Answer :-

- Peptidyl transferase
-

100) Which of the following is not a vector [Question ID = 13492]

1. Plasmid
2. Cosmid
3. YAC
4. Mycoplasma

Correct Answer :-

- Mycoplasma
-

