

# Andhra Pradesh State Council of Higher Education

## Notations :

- 1.Options shown in green color and with ✓ icon are correct.
- 2.Options shown in red color and with ✗ icon are incorrect.

<b>Question Paper Name :</b>	BioTechnology 08th May 2024 Shift 1
<b>Duration :</b>	180
<b>Total Marks :</b>	200
<b>Display Marks:</b>	No
<b>Share Answer Key With Delivery Engine :</b>	Yes
<b>Calculator :</b>	None
<b>Magnifying Glass Required? :</b>	No
<b>Ruler Required? :</b>	No
<b>Eraser Required? :</b>	No
<b>Scratch Pad Required? :</b>	No
<b>Rough Sketch/Notepad Required? :</b>	No
<b>Protractor Required? :</b>	No
<b>Show Watermark on Console? :</b>	Yes
<b>Highlighter :</b>	No
<b>Auto Save on Console?</b>	Yes
<b>Change Font Color :</b>	No
<b>Change Background Color :</b>	No
<b>Change Theme :</b>	No
<b>Help Button :</b>	No
<b>Show Reports :</b>	No

Show Progress Bar :	No
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

## Mathematics

Section Id :	210688143
Section Number :	1
Mandatory or Optional :	Mandatory
Number of Questions :	50
Section Marks :	50
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 1 Question Id : 2106887205 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If each element of a row or column of a determinant is multiplied by a constant  $K$  then the value of the determinant is

Options :

1. ✘ Added by  $k$

2. ✔ Multiplied by  $k$

3. ✘ Subtracted by  $k$

4. ✘ Divided by k.

Question Number : 2 Question Id : 2106887206 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If  $A = \begin{bmatrix} 1 & 2 & 3 \\ -2 & 1 & 4 \end{bmatrix}$  and  $B = \begin{bmatrix} 2 & 3 & 1 \\ 5 & 4 & 2 \\ 1 & 5 & 3 \end{bmatrix}$  then  $AB =$

Options :

1. ✘  $\begin{bmatrix} 15 & 26 & 4 \end{bmatrix}$

2. ✔  $\begin{bmatrix} 15 & 26 & 14 \\ 5 & 18 & 12 \end{bmatrix}$

3. ✘  $\begin{bmatrix} 15 & 5 \\ 26 & 18 \\ 14 & 12 \end{bmatrix}$

4. ✘ BA

Question Number : 3 Question Id : 2106887207 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The elements on the main diagonal of a skew symmetric matrix are all

**Options :**

1. ✓ zeros

2. ✗ One's

3. ✗ Unequal

4. ✗  $>1$

**Question Number : 4 Question Id : 2106887208 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If  $\omega$  is one of the imaginary cube roots of unity, find the value of the determinant

$$\begin{vmatrix} 1 & \omega & \omega^2 \\ \omega & \omega^2 & 1 \\ \omega^2 & 1 & \omega \end{vmatrix} =$$

**Options :**

1. ✓ zero

2. ✗ one

3. ✗  $\omega^2$

4. ✗  $\omega$

Question Number : 5 Question Id : 2106887209 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Every square matrix can be written as the sum of

Options :

1. ✘ Diagonal matrix & square matrix
2. ✘ Two rectangular matrices
3. ✘ Square and non-square matrices
4. ✔ Symmetric and skew symmetric matrix

Question Number : 6 Question Id : 2106887210 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An improper fraction can be reduced to proper fraction by

Options :

1. ✘ Multiplication
2. ✔ Division

3. ✖ subtraction

4. ✖ Addition

Question Number : 7 Question Id : 2106887211 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✖  $\frac{2}{5(x+2)} + \frac{3}{5(x-2)}$

2. ✖  $\frac{2}{5(x+2)} - \frac{3}{5(x-3)}$

3. ✔  $\frac{2}{5(x+2)} + \frac{3}{5(x-3)}$

4. ✖  $\frac{2}{5(x-3)} + \frac{3}{5(x+2)}$

Question Number : 8 Question Id : 2106887212 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of  $\sin 210^\circ$

Options :

1. ✘  $\frac{1}{2}$

2. ✔  $-\frac{1}{2}$

3. ✘  $\frac{1}{\sqrt{2}}$

4. ✘  $-\frac{1}{\sqrt{2}}$

Question Number : 9 Question Id : 2106887213 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\cos n\pi =$$

Options :

1. ✘  $-1$

2. ✘  $-n$

3. ✔  $(-1)^n$

4. ✘  $(n)^{-1}$

Question Number : 10 Question Id : 2106887214 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$a \neq 0 \neq b, \sin x + \sin y = a, \cos x + \cos y = b$  then  $\tan \frac{x+y}{2} =$

Options :

1. ✘  $\frac{b}{a}$

2. ✔  $\frac{a}{b}$

3. ✘  $\frac{a+b}{2}$

4. ✘  $\frac{a-b}{2}$

Question Number : 11 Question Id : 2106887215 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$f(x)$  is a periodic function of period  $k$  then the period of periodic function  $f(ax+b)$  is

Options :



1. ✘  $\frac{k}{a}, a \neq 0$

2. ✘  $\frac{ak}{|b|}, b \neq 0$

3. ✘  $\frac{k+b}{a}, a \neq 0$

4. ✔  $\frac{k}{|a|}, a \neq 0$

Question Number : 12 Question Id : 2106887216 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If  $7\sin^2\theta + 3\cos^2\theta = 4$ , then  $\theta =$

Options :

1. ✘  $\pm \frac{\pi}{3}$

2. ✔  $\pm \frac{\pi}{6}$

3. ✘  $\pm \frac{\pi}{4}$

4. ✘  $\pm \frac{\pi}{2}$

Question Number : 13 Question Id : 2106887217 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The range of  $\cos^{-1}x$  is

Options :

1. ✓  $[0, \pi]$

2. ✗  $[-\pi, \pi]$

3. ✗  $[0, -\pi]$

4. ✗  $(0, \pi)$

Question Number : 14 Question Id : 2106887218 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Assume  $x > 0, y > 0$ . Then which one of the following is true ?

Options :

1. ✓ If  $xy < 1$  then  $\tan^{-1}x + \tan^{-1}y = \tan^{-1}\left(\frac{x+y}{1-xy}\right)$

2. ✗ If  $xy > 1$  then  $\tan^{-1}x + \tan^{-1}y = \tan^{-1}\left(\frac{x+y}{1-xy}\right)$

3. ✘ If  $xy = 1$  then  $\tan^{-1}x + \tan^{-1}y = \tan^{-1}\left(\frac{x+y}{1-xy}\right)$

4. ✘ If  $xy = 1$  then  $\tan^{-1}x - \tan^{-1}y = \tan^{-1}\left(\frac{x+y}{1-xy}\right)$

Question Number : 15 Question Id : 2106887219 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In  $\Delta ABC$   $(a+b+c)(b+c-a) = 3bc$ , then angle A =

Options :

1. ✘  $90^0$

2. ✘  $120^0$

3. ✔  $60^0$

4. ✘  $45^0$

Question Number : 16 Question Id : 2106887220 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In  $\Delta ABC$ ,  $\tan \frac{A}{2} = \frac{5}{6}$ ,  $\tan \frac{C}{2} = \frac{2}{5}$  then a,b,c are in

Options :

1. ✘ Geometric progression
2. ✔ Arithmetic progression
3. ✘ Harmonic progression
4. ✘ Arithmetico – Geometric progression

Question Number : 17 Question Id : 2106887221 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In any  $\Delta ABC$ ,  $\tan \frac{B-C}{2} =$

Options :

1. ✘  $b \pm c \cot \frac{A}{2}$

2. ✔  $\frac{b-c}{b+c} \cot \frac{A}{2}$

3. ✘  $(b - c) \tan \frac{A}{2}$

4. ✘  $\tan \frac{C}{2}$

Question Number : 18 Question Id : 2106887222 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Conjugate of  $\frac{1-i}{1+i}$  is

Options :

1. ✘  $-3i$

2. ✘  $-i$

3. ✔  $i$

4. ✘  $6i$

Question Number : 19 Question Id : 2106887223 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Standard form of  $(-1 + 2i) + \left(\frac{1}{2} - i\right)$  is

Options :

1. ✘  $\frac{1}{2} - i$

2. ✔  $-\frac{1}{2} + i$

3. ✘  $-\frac{1}{2} - i$

4. ✘  $\frac{1}{2} \pm i$

**Question Number : 20 Question Id : 2106887224 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If the circle is  $x^2 + y^2 + 6x - 8y + c = 0$  has radius 6 units, Then value of c is

**Options :**

1. ✔  $-11$

2. ✘  $11$

3. ✘  $25$

4. ✘  $6$

**Question Number : 21 Question Id : 2106887225 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The equation of the parabola whose focus is (8,0) and the vertex is (0,0) is

**Options :**

1. ✘  $y^2 = 12x$

2. ✘  $y^2 = x$

3. ✔  $y^2 = 32x$

4. ✘  $y^2 = 16x$

Question Number : 22 Question Id : 2106887226 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The eccentricity of the ellipse  $x^2 + 2y^2 = 3$  is

Options :

1. ✘  $e = \frac{3}{\sqrt{2}}$

2. ✘  $e = \frac{1}{\sqrt{3}}$

3. ✘  $e = -\frac{1}{\sqrt{2}}$

4. ✔  $e = \frac{1}{\sqrt{2}}$

Question Number : 23 Question Id : 2106887227 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In the Ellipse  $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1, a > b$  the length of the latus rectum is \_\_\_\_\_

Options :

1. ✘  $\frac{2a^2}{b}$

2. ✔  $\frac{2b^2}{a}$

3. ✘  $\frac{2a^2}{b^2}$

4. ✘  $2ab$

Question Number : 24 Question Id : 2106887228 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The equation of the Hyperbola with foci  $(\pm 2, 0)$  and eccentricity  $3/2$  is

Options :

1. ✘  $\frac{9x^2}{16^2} + \frac{9y^2}{10^2} = 1$

2. ✔



$$\frac{x^2}{16/9} - \frac{y^2}{20/9} = 1$$

3. ✘  $\frac{x^2}{16^2} - \frac{y^2}{20^2} = 1$

4. ✘  $\frac{x^2}{2^2} - \frac{y^2}{20^2} = 1$

**Question Number : 25 Question Id : 2106887229 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If the coordinates at one end of a diameter of the circle  $x^2 + y^2 - 8x - 4y + c = 0$  are  $(-3, 2)$  then the coordinates at the other end are

**Options :**

1. ✘  $(5, 11)$

2. ✘  $(6, 2)$

3. ✘  $(2, 11)$

4. ✔  $(11, 2)$

**Question Number : 26 Question Id : 2106887230 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction**

Time : 0

If  $a > 0$ , then  $\lim_{x \rightarrow 0} \frac{a^x - 1}{x} =$

Options :

1. ✘  $\log x$

2. ✘ 1

3. ✔  $\log a$

4. ✘  $\log\left(\frac{a}{x}\right)$

Question Number : 27 Question Id : 2106887231 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Differentiation of  $\sin x^n$  with respect to  $x$ .

Options :

1. ✔  $nx^{n-1} \cos x^n$

2. ✘  $x^{n-1} \cos x^n$

3. ✘  $\cos x^n$

4. ✘

$$n \cos x^n$$

Question Number : 28 Question Id : 2106887232 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\frac{d}{dx} \left( \sin^{-1} \frac{x}{a} \right) =$$

Options :

1. ✓  $\frac{1}{\sqrt{a^2 - x^2}}$

2. ✗  $\frac{1}{\sqrt{a^2 + x^2}}$

3. ✗  $\frac{1}{\sqrt{x^2 - a^2}}$

4. ✗  $\frac{-1}{\sqrt{a^2 - x^2}}$

Question Number : 29 Question Id : 2106887233 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\frac{d}{dx} (e^{3 \log x}) =$$

Options :

1. ✘  $3x$

2. ✘  $3\log x$

3. ✘  $\log 3$

4. ✔  $3x^2$

Question Number : 30 Question Id : 2106887234 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\frac{d}{dx}[\log|x|] =$$

Options :

1. ✘  $\frac{1}{|x|}$

2. ✔  $\frac{1}{x}$

3. ✘  $|x|$

4. ✘  $x$

Question Number : 31 Question Id : 2106887235 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$y = \cos x$  then  $\frac{d^2y}{dx^2}$  is

Options :

1. ✘  $\cos x$

2. ✘  $\sin x$

3. ✔  $-\cos x$

4. ✘  $-\sin x$

Question Number : 32 Question Id : 2106887236 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The angle between the curves  $x^2 + 4y = 0, xy = 2$  is

Options :

1. ✔  $\tan^{-1} 3$

2. ✘  $\cot^{-1} 1$

3. ✘  $\tan^{-1} 4$

4. ✘  $\cot^{-1} 3$

Question Number : 33 Question Id : 2106887237 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The slope of the tangent to the curve  $y = \frac{x-1}{x+1}$  at (0,1)

Options :

1. ✘ 4

2. ✘ -2

3. ✘ 5

4. ✔ 2

Question Number : 34 Question Id : 2106887238 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If  $z = x^2 + y^2$  then  $x \frac{\partial z}{\partial y} - y \frac{\partial z}{\partial x} =$

Options :

1. ✘  $2y-2x$

2. ✘  $2x+2y$

3. ✔ 0

4. ✘  $4xy$

Question Number : 35 Question Id : 2106887239 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$z = \frac{x^3+y^3}{x+y}$ , is a homogeneous function of degree \_\_\_\_\_

Options :

1. ✔ 2

2. ✘ 3

3. ✘ 0

4. ✘ 1

Question Number : 36 Question Id : 2106887240 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\int (x^{2/3} + 1) dx =$$

Options :

1. ✓  $\frac{3}{5}x^{5/3} + x + c$

2. ✗  $\frac{5}{3}x^{5/3} + x + c$

3. ✗  $\frac{3}{5}x^{5/3} + c$

4. ✗  $\frac{3}{5}x^{3/5} + x + c$

Question Number : 37 Question Id : 2106887241 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\int \frac{dx}{x^2-16} =$$

Options :

1. ✗  $\frac{1}{16} \log \left| \frac{x-8}{x+4} \right| + c$

2. ✗  $\frac{1}{4} \log \left| \frac{x-4}{x+4} \right| + c$



3. ✓  $\frac{1}{8} \log \left| \frac{x-4}{x+4} \right| + c$

4. ✗  $\frac{1}{16} \log \left| \frac{x-4}{x+4} \right| + c$

Question Number : 38 Question Id : 2106887242 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

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

Options :

1. ✗  $-\cos x + c$

2. ✓  $-\cos (\tan^{-1}x) + c$

3. ✗  $-\sin (\tan^{-1}x) + c$

4. ✗  $(\tan^{-1}x) + c$

Question Number : 39 Question Id : 2106887243 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\int \cos \frac{x}{2} dx =$$

Options :

1. ✘  $2 \cos \frac{x}{2} + c$

2. ✔  $2 \sin \frac{x}{2} + c$

3. ✘  $2 \sin 2x + c$

4. ✘  $-2 \sin \frac{x}{2} + c$

Question Number : 40 Question Id : 2106887244 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$$\int e^x \cos x dx =$$

Options :

1. ✔  $\frac{1}{2} e^x (\cos x + \sin x) + c$

2. ✘  $\frac{1}{2} e^x (\cos x - \sin x) + c$

3. ✘  $\frac{1}{2}e^x \sin x + c$

4. ✘  $\frac{1}{2}(\cos x + \sin x) + c$

**Question Number : 41 Question Id : 2106887245 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The area of the region bounded by the curve  $y = f(x)$ ,  $x$  - axis and the lines  $x = a$  and  $x = b$  ( $b > a$ ) is given by

**Options :**

1. ✘  $\int_b^a y dx$

2. ✘  $-\int_a^b y dx$

3. ✘  $\int_a^b x dy$

4. ✔  $\int_a^b y dx$

**Question Number : 42 Question Id : 2106887246 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If  $f(x)$  is an even function, then  $\int_{-a}^a f(x)dx =$

Options :

1. ✘  $-\int_{-a}^a f(x)dx$

2. ✘  $2\int_{-a}^a f(x)dx$

3. ✔  $2\int_0^a f(x)dx$

4. ✘  $\int_0^a f(x)dx$

Question Number : 43 Question Id : 2106887247 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Find maxima (or) minima for the curve  $y = 2x^4 - x^2$

Options :

1. ✔ 'y' is minimum at  $x = \pm\frac{1}{2}$

2. ✘ 'y' is maximum for  $x = -\frac{1}{4}$

3. ✘ 'y' is maximum for  $x = \pm \frac{1}{2}$

4. ✘ 'y' is maximum for  $x = +\frac{1}{4}$

Question Number : 44 Question Id : 2106887248 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Order of the differential equation  $\left[ \frac{d^2y}{dx^2} + \left( \frac{dy}{dx} \right)^3 \right]^{6/5} = 6y$  is

Options :

1. ✘ 3

2. ✔ 2

3. ✘ 5

4. ✘ 1

Question Number : 45 Question Id : 2106887249 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The general solution of the differential equation  $\frac{dy}{dx} = \frac{1+y^2}{1+x^2}$  is

Options :

1. ✓  $\tan^{-1}y - \tan^{-1}x = c$

2. ✘  $\tan^{-1}y + \tan^{-1}x = c$

3. ✘  $\tan^{-1}y = c$

4. ✘  $\tan^{-1}y/x = c$

Question Number : 46 Question Id : 2106887250 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The differential equation representing the family of curves  $y = mx$  where,  $m$  is arbitrary Constant is

Options :

1. ✘  $\frac{dy}{dx} - y = 0$

2. ✘  $\frac{dy}{dx} + y = 0$

3. ✓  $x \frac{dy}{dx} - y = 0$

4. ✘  $x dx - y dy = y$

**Question Number : 47 Question Id : 2106887251 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which one of the statement is true?

**Options :**

1. ✘ Order of differential equation is the order of the lowest order derivative occurring in the differential equation.

2. ✘ A function which satisfies the given differential equation is not its solution .

3. ✘ An equation involving derivatives of the dependent variable with respect to dependent variable is known as a differential equation.

4. ✔ Degree of a differential equation is defined if it is a polynomial equation in its Derivatives.

**Question Number : 48 Question Id : 2106887252 Display Question Number : Yes Is Question**

**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The Integrating factor of the differential equation  $x \frac{dy}{dx} + 2y = x^2 (x \neq 0)$  is

**Options :**

1. ✘  $x$

2. ✘  $\log x$

3. ✘  $x \log x$

4. ✔  $x^2$

**Question Number : 49 Question Id : 2106887253 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The linear form of  $x \log x \frac{dy}{dx} + y = 2 \log x$  is

**Options :**

1. ✘  $\frac{dy}{dx} - \frac{y}{x \log x} = \frac{1}{x}$

2. ✔  $\frac{dy}{dx} + \frac{y}{x \log x} = \frac{2}{x}$



3. ✘  $\frac{dy}{dx} + \frac{y}{x \log x} = \frac{1}{x}$

4. ✘  $\frac{dy}{dx} + \frac{y}{x \log x} = 1$

Question Number : 50 Question Id : 2106887254 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The particular integral of  $\frac{d^2y}{dx^2} - 4y = e^{2x}$  is

Options :

1. ✘  $\frac{1}{4} e^{2x}$

2. ✘  $\frac{1}{4x} e^{2x}$

3. ✔  $\frac{1}{4} x e^{2x}$

4. ✘ 0

## Physics

Section Number :	2
Mandatory or Optional :	Mandatory
Number of Questions :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 51 Question Id : 2106887255 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$\text{N Kg}^{-1}$  is the unit of

Options :

1. ✘ Velocity
2. ✔ Acceleration
3. ✘ Force
4. ✘ Momentum

Question Number : 52 Question Id : 2106887256 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A system has basic dimensions as density 'D', velocity 'V' and area 'A'. The dimensional representation of force in this system is

**Options :**

1. ✓  $A V^2 D$

2. ✗  $A V D^2$

3. ✗  $A^2 V D$

4. ✗  $A^0 V^2 D$

**Question Number : 53 Question Id : 2106887257 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If The magnitude of vectors **A**, **B** and **C** are 5, 4 and 3 units respectively and  $\mathbf{A} = \mathbf{B} + \mathbf{C}$ , then the angle between vectors **A** and **C** is

**Options :**

1. ✗  $\text{Cos}^{-1}(4/5)$

2. ✗  $\Pi$

3. ✓  $\text{Cos}^{-1}(3/5)$

4. ✗  $\text{Sin}^{-1}(3/4)$

**Question Number : 54 Question Id : 2106887258 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If the sum of two unit vectors is also a unit vector, then the magnitude of their difference is

**Options :**

1. ✘ 1

2. ✘  $\frac{1}{2}$

3. ✘  $\frac{1}{\sqrt{2}}$

4. ✔  $\sqrt{3}$

**Question Number : 55 Question Id : 2106887259 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A particle starting from rest moves in a straight line with uniform acceleration  $a$ . The average velocity of the particle in first 's' distance is

**Options :**

1. ✔  $\sqrt{\frac{as}{2}}$

2. ✘  $\sqrt{\frac{3as}{2}}$

3. ✘  $\sqrt{2as}$

4. ✘ *as*

**Question Number : 56 Question Id : 2106887260 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A projectile is thrown with speed  $u$  making angle  $\theta$  with the horizontal at  $t = 0$ . It just crosses two points of equal height at time  $t = 1\text{ s}$  and  $t = 3\text{ s}$  respectively. The maximum height attained by the projectile is (take  $g = 10\text{ ms}^{-2}$ )

**Options :**

1. ✘ 10m

2. ✔ 20m

3. ✘ 15m

4. ✘ 22m

**Question Number : 57 Question Id : 2106887261 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A body is falling from height 'H' takes time 'T' seconds to reach the ground. The time taken to cover the first half of height is

**Options :**

1. ✔

$$\frac{T}{\sqrt{2}}$$

2. ✘  $\sqrt{2} T$

3. ✘  $\sqrt{3} T$

4. ✘  $\frac{T}{\sqrt{3}}$

**Question Number : 58 Question Id : 2106887262 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A body sliding on ice with a velocity  $8 \text{ ms}^{-1}$  comes to rest after travelling 40 m. The coefficient of friction between the body and ice is ( $g = 10 \text{ ms}^{-2}$ )

**Options :**

1. ✘ 0.02

2. ✘ 0.05

3. ✔ 0.08

4. ✘ 0.2

**Question Number : 59 Question Id : 2106887263 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If a body placed on a rough inclined plane of gradient 1 in 4, just begins to slide, then coefficient of friction between the plane and body is

**Options :**

1. ✘  $\frac{2}{\sqrt{15}}$

2. ✘  $\frac{1}{\sqrt{2}}$

3. ✘  $\frac{1}{\sqrt{5}}$

4. ✔  $\frac{1}{\sqrt{15}}$

**Question Number : 60 Question Id : 2106887264 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A cube of 10 N weight rests on a rough inclined plane of slope 3 in 5. If the coefficient of friction between plane and cube is 0.6, then minimum force required to start the cube moving up the plane is

**Options :**

1. ✘ 2N

2.

✘ 6N

3. ✔ 10.8N

4. ✘ 4.5N

**Question Number : 61 Question Id : 2106887265 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A pump can take out 7200 Kg of water per hour from a 100 m deep well. If the efficiency of the pump is 50% then power of the pump is ( $g = 10 \text{ ms}^{-2}$ )

**Options :**

1. ✘ 2 KW

2. ✔ 4 KW

3. ✘ 7.2 KW

4. ✘ 3.6 KW

**Question Number : 62 Question Id : 2106887266 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**



When a force  $\mathbf{F} = \mathbf{i} + 2\mathbf{j} + 3\mathbf{k}$  acts on a body to move it from  $\mathbf{r}_1 = \mathbf{i} + \mathbf{j} + \mathbf{k}$  to  $\mathbf{r}_2 = \mathbf{i} - \mathbf{j} + 2\mathbf{k}$ , then the work done by the force is

**Options :**

1. ✘ -3 J

2. ✔ -1 J

3. ✘ 2 J

4. ✘ 3 J

**Question Number : 63 Question Id : 2106887267 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The K.E. of a body moving with a speed of 10 m/s is 30 J. If its speed becomes 30 m/s, then its K.E. will be

**Options :**

1. ✘ 10 J

2. ✘ 90 J

3. ✘ 180 J

4. ✔ 270 J

**Question Number : 64 Question Id : 2106887268 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The maximum speed of a particle executing SHM is 1 m/s and maximum acceleration is  $1.57 \text{ m/s}^2$ . Its time period is

**Options :**

1. ✓ 4 sec

2. ✗ 1.57 sec

3. ✗ 2 sec

4. ✗  $\frac{1}{1.57}$

**Question Number : 65 Question Id : 2106887269 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A girl is swinging on a swing in the sitting position. If the girl stands up, the time period of the string will

**Options :**

1. ✗ Increase

2. ✓

Decrease

- 3. ✘ Remains same
- 4. ✘ Becomes erratic

**Question Number : 66 Question Id : 2106887270 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A light spring supports 200 gm weight at its lower end; it oscillates with a period of 1 sec.  
How much weight must be removed from the lower end to reduce the period to 0.5 sec?

**Options :**

- 1. ✘ 100 gm.
- 2. ✘ 50 gm.
- 3. ✔ 150 gm.
- 4. ✘ 200 gm.

**Question Number : 67 Question Id : 2106887271 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The velocity of sound in any medium depends upon

**Options :**

1. ✘ Intensity and elasticity
2. ✘ Amplitude and density
3. ✔ elasticity and density
4. ✘ Amplitude and elasticity

**Question Number : 68 Question Id : 2106887272 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The beat frequency produced by the vibrations of  $x_1 = A \sin (320\pi t)$  and  $x_2 = A \sin (326\pi t)$  is

**Options :**

1. ✘ 6
2. ✘ 4
3. ✘ 2
4. ✔ 3

Question Number : 69 Question Id : 2106887273 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Boyle's law is stated by  $PV = C$ , C depends on

Options :

1. ✘ Nature of gas
2. ✘ Atomic weight of gas
3. ✘ Temperature of gas
4. ✔ Quantity and temperature of gas

Question Number : 70 Question Id : 2106887274 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The equation of state for 5g of oxygen( $O_2$ ) at pressure P and temperature T, when occupying a volume V, will be (R is universal gas constant)

Options :

1. ✘  $PV = 5RT$
2. ✘  $PV = \frac{5}{2} RT$
3. ✘

$$PV = \frac{5}{16} RT$$

4. ✓  $PV = \frac{5}{32} RT$

**Question Number : 71 Question Id : 2106887275 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The volume of a gas at constant pressure of  $10^3 \text{ N/m}^2$  expands by  $0.25\text{m}^3$ . The work done in this process is

**Options :**

1. ✗ 25J

2. ✗ 50J

3. ✓ 250J

4. ✗ 5J

**Question Number : 72 Question Id : 2106887276 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

For an adiabatic expansion of a perfect gas the value of  $\frac{\Delta P}{P}$  is equal to

**Options :**

1. ✗

$$\frac{\Delta V}{V}$$

2. ✘  $\gamma \frac{\Delta V}{V}$

3. ✔  $-\gamma \frac{\Delta V}{V}$

4. ✘  $\gamma - \frac{\Delta V}{V}$

Question Number : 73 Question Id : 2106887277 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

First law of Thermodynamics is a special case of

Options :

1. ✘ Boyle's law

2. ✘ Charles law

3. ✘ Law of conservation of mass

4. ✔ Law of conservation of energy

**Question Number : 74 Question Id : 2106887278 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If the critical angle for total internal reflection from a medium to vacuum is  $30^\circ$ , the velocity of light in the medium is

**Options :**

1. ✘  $3 \times 10^8 \text{ m/s}$
2. ✔  $1.5 \times 10^8 \text{ m/s}$
3. ✘  $\sqrt{3} \times 10^8 \text{ m/s}$
4. ✘  $2 \times 10^8 \text{ m/s}$

**Question Number : 75 Question Id : 2106887279 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Light rays of wave length  $4.36 \times 10^{-7} \text{ m}$  incident on a metal surface of work function 1.24 eV. The stopping potential required to stop the emission of photoelectrons is

**Options :**

1. ✔ 1.6 eV
2. ✘ 1.24 eV



3. ✖ 3.2 eV

4. ✖ 4.8 eV

## Chemistry

Section Id :	210688145
Section Number :	3
Mandatory or Optional :	Mandatory
Number of Questions :	25
Section Marks :	25
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 76 Question Id : 2106887280 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

According to Bohr's theory of hydrogen atom, the angular momentum of electron in fourth orbit of H-atom is equal to

Options :

1. ✖  $\frac{h}{2\pi}$

2. ✓  $\frac{2h}{\pi}$

3. ✗  $\frac{3h}{2\pi}$

4. ✗  $\frac{4h}{\pi}$

Question Number : 77 Question Id : 2106887281 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The quantum number which describes the shape of an atomic orbital is

Options :

1. ✓ Azimuthal Quantum Number

2. ✗ Principal Quantum Number

3. ✗ Spin Quantum Number

4. ✗ Magnetic Quantum Number

Question Number : 78 Question Id : 2106887282 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the element in which the ratio of s-electrons to p-electrons is 3:5

Options :

1. ✘ P

2. ✘ Al

3. ✔ S

4. ✘ K

Question Number : 79 Question Id : 2106887283 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The pair of molecules in which the central atom has octet of electrons is

Options :

1. ✘  $\text{BeCl}_2, \text{BF}_3$

2. ✘  $\text{H}_2\text{O}, \text{BeCl}_2$

3. ✓  $\text{H}_2\text{O}, \text{NH}_3$

4. ✗  $\text{NH}_3, \text{BF}_3$

**Question Number : 80 Question Id : 2106887284 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The electronic configuration of an element M is  $[\text{Ne}]3\text{S}^1$  and that of element X is  $[\text{He}]2\text{S}^22\text{P}^5$ . The type of bond present between M and X is

**Options :**

1. ✗ Covalent Bond

2. ✓ Electrovalent Bond

3. ✗ Co-ordinate Covalent Bond

4. ✗ Hydrogen Bond

**Question Number : 81 Question Id : 2106887285 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The absolute weight of one molecule of water (in g) is ( $N_A=6 \times 10^{23} \text{ mol}^{-1}$ )

**Options :**

1. ✘  $1.5 \times 10^{-23}$

2. ✔  $3.0 \times 10^{-23}$

3. ✘  $4.5 \times 10^{-23}$

4. ✘  $2.0 \times 10^{-23}$

**Question Number : 82 Question Id : 2106887286 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The weight of sodium sulphate (molar mass  $142 \text{ g mol}^{-1}$ ) required to prepare 500 ml of 0.03 M solution is

**Options :**

1. ✔ 2.13 g

2. ✘ 4.26 g

3. ✘ 1.065 g

4. ✘ 3.195 g

Question Number : 83 Question Id : 2106887287 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The number of  $H^+$  ions present in 100 ml of 0.05 M  $H_2SO_4$  solution is ( $N_A=6 \times 10^{23} \text{ mol}^{-1}$ )

Options :

1. ✘  $6.0 \times 10^{24}$

2. ✘  $6.0 \times 10^{22}$

3. ✔  $6.0 \times 10^{21}$

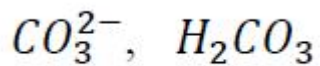
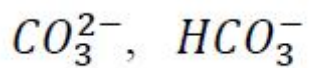
4. ✘  $3.0 \times 10^{23}$

Question Number : 84 Question Id : 2106887288 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

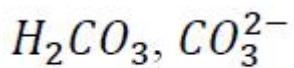
The conjugate acid and conjugate base of  $HCO_3^-$  are respectively

Options :

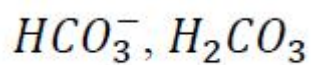
1. ✘



2. ✖



3. ✔



4. ✖

Question Number : 85 Question Id : 2106887289 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The pH of 0.005 M  $H_2SO_4$  solution will be;

Options :

5

1. ✖

2

2. ✔

3

3. ✖

4

4. ✖

Question Number : 86 Question Id : 2106887290 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In an electrochemical cell, the electrons flow from

Options :

Cathode to Anode

1. ✘

Anode to Cathode

2. ✔

Anode to Solution

3. ✘

Solution to Cathode

4. ✘

Question Number : 87 Question Id : 2106887291 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How many faradays are required to reduce 1 mole of  $MnO_4^-$  ions to  $Mn^{2+}$  ions?

Options :

1. ✔ 5

2. ✘



2

3. ✘ 4

4. ✘ 3

**Question Number : 88 Question Id : 2106887292 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

At 298 K, the emf of the cell,  $M|M^{2+}(1M) || Cu^{2+}(1M) | Cu$  is 'x' V. If  $E_{Cu^{2+}|Cu}^0 = +0.34V$ ,

then  $E_{M^{2+}|M}^0$  (in V) is

**Options :**

1. ✘  $(x - 0.34)$

2. ✔  $(0.34 - x)$

3. ✘  $(0.34 + x)$

4. ✘  $\frac{0.34}{x}$

Question Number : 89 Question Id : 2106887293 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the strongest reducing agent from the following:

Options :

1. ✓  $E_{K^+|K}^0 = -2.93 \text{ v}$

2. ✗  $E_{Al^{3+}|Al}^0 = -1.66 \text{ v}$

3. ✗  $E_{Zn^{2+}|Zn}^0 = -0.76 \text{ v}$

4. ✗  $E_{Ag^+|Ag}^0 = +0.34 \text{ v}$

Question Number : 90 Question Id : 2106887294 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The formula of Zeolite can be represented as  $Na_2Z$ . The metal atom present in Z is

Options :



3. ✘ Mg

4. ✔ Al

**Question Number : 91 Question Id : 2106887295 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of the following salts causes maximum hardness to water sample, when they are in equal amounts?

**Options :**

1. ✘ MgSO<sub>4</sub> (Molecular Weight = 120u)

2. ✔ MgCl<sub>2</sub> (Molecular Weight = 95u)

3. ✘ CaCl<sub>2</sub> (Molecular Weight = 111u)

4. ✘ Ca(HCO<sub>3</sub>)<sub>2</sub> (Molecular Weight = 162u)

**Question Number : 92 Question Id : 2106887296 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Permanent hardness of water cannot be removed by

Options :

1. ✓ Boiling the hard water
2. ✗ Treatment with washing soda
3. ✗ Passing through Zeolite
4. ✗ Passing through ion exchange resins

Question Number : 93 Question Id : 2106887297 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following statements is not correct about stress cells?

Options :

1. ✗ They are formed between different parts of the same metal
2. ✓ Stressed part of the metal acts as cathode
3. ✗ Stressed part of the metal acts as anode

4. ✘ Anodic part undergoes corrosion

Question Number : 94 Question Id : 2106887298 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Tarnishing of silver is due to the formation of

Options :

1. ✘  $\text{AgCl}$

2. ✘  $\text{Ag}_2\text{CO}_3$

3. ✘  $\text{Ag}_2\text{O}$

4. ✔  $\text{Ag}_2\text{S}$

Question Number : 95 Question Id : 2106887299 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a natural polymer?

Options :

1. ✘ Wool

2. ✘ Cellulose

3. ✘ Strach

4. ✔ Rayon

Question Number : 96 Question Id : 2106887300 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Neoprene is an example of

Options :

1. ✔ Elastomer

2. ✘ Thermoplastic Polymer

3. ✘ Thermosetting Polymer

4. ✘ Co-Polymer

Question Number : 97 Question Id : 2106887301 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

The element that is added to raw rubber vulcanization is

Options :

1. ✓ S

2. ✗ Se

3. ✗ C

4. ✗ B

Question Number : 98 Question Id : 2106887302 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

The major components of water gas are

Options :

1. ✓  $H_2, CO$

2. ✗  $H_2, CO_2$

3. ✗  $CO, N_2$

CO<sub>2</sub>, N<sub>2</sub>

4. ✘

Question Number : 99 Question Id : 2106887303 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a greenhouse gas?

Options :

1. ✘ O<sub>3</sub>

2. ✘ CO<sub>2</sub>

3. ✘ CH<sub>4</sub>

4. ✔ N<sub>2</sub>

Question Number : 100 Question Id : 2106887304 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The acid that is believed to be mainly responsible for the damage of Taj mahal is

Options :

1. ✔ H<sub>2</sub>SO<sub>4</sub>



2. ✘ HF

3. ✘ H<sub>3</sub>PO<sub>4</sub>

4. ✘ HCl

## BioTechnology

Section Id :	210688146
Section Number :	4
Mandatory or Optional :	Mandatory
Number of Questions :	100
Section Marks :	100
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Is Section Default? :	null

Question Number : 101 Question Id : 2106887305 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The replica plate technique is used for the isolation of

Options :

1. ✘ Auxotrophs

2. ✓ Revertants

3. ✗ Analog-resistant mutants

4. ✗ Prototrophs

**Question Number : 102 Question Id : 2106887306 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of the following organism strain is improved by using parasexual cycle ?

**Options :**

1. ✓ *Aspergillus niger*

2. ✗ *Pencillium notatum*

3. ✗ *Brevibacterium flavum*

4. ✗ *Saccharomyces cerevisiae*

**Question Number : 103 Question Id : 2106887307 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The number of neutrons, protons and electrons of  ${}_{17}\text{Cl}^{37}$  are

**Options :**

1. ✘ 20, 20, 17

2. ✘ 17,17,20

3. ✔ 20, 17,17

4. ✘ 17,17,17

**Question Number : 104 Question Id : 2106887308 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The cell organelle involved in the synthesis of phospholipids is

**Options :**

1. ✘ Golgi

2. ✘ Chloroplast

3. ✘ Lysosomes

4. ✔ Endoplasmic reticulum

**Question Number : 105 Question Id : 2106887309 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction**

**Time : 0**

The biocontrol agent used against caterpillars is

**Options :**

1. ✘ *Trichoderma viridae*
2. ✘ *Streptococcus polymixia*
3. ✔ *Bacillus Thuringiensis*
4. ✘ *Saccharomyces cerevisiae*

**Question Number : 106 Question Id : 2106887310 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Media that forms foam is

**Options :**

1. ✘ Natural Media
2. ✘ Synthetic Media
3. ✔ Complex Media
4. ✘ Defined Media

**Question Number : 107 Question Id : 2106887311 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The role of calcium in a media is

**Options :**

1. ✘ Synthesis of phospholipids
2. ✘ Synthesis of Vitamins
3. ✔ Stabilization of cell wall
4. ✘ Stabilization of nucleic acids

**Question Number : 108 Question Id : 2106887312 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

In pyrethroids, which channel is targeted for imposing the toxicity in pests

**Options :**

1. ✘ Potassium
2. ✔ Sodium
3. ✘ Calcium

4. ✘ Iron

Question Number : 109 Question Id : 2106887313 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

----- is a major component of a Bordeaux Mixture

Options :

1. ✘ Sodium Chloride

2. ✘ Calcium Chloride

3. ✔ Copper Sulphate

4. ✘ Magnesium Sulphate

Question Number : 110 Question Id : 2106887314 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

----- is a nitrogen fixer in paddy fields

Options :

1. ✘ *Frankia*

2. ✘ *Oscillatoria*

3. ✓ *Azospirillum*

4. ✗ *Rhizobium*

**Question Number : 111 Question Id : 2106887315 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The focal lengths of the objective and the eye piece of a compound microscope are 0.95 cm and 5 cm respectively. They are kept at a distance of 20 cm. A large image is formed at a distance of 25 cm. The total magnification is

**Options :**

1. ✗ 84

2. ✗ 80

3. ✓ 94

4. ✗ 90

**Question Number : 112 Question Id : 2106887316 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Resolving power of a microscope can be enhanced by

**Options :**

1. ✗

Illumination of longer wave length and decreased numerical aperture

2. ✘ Illumination of longer wave length and increased numerical aperture

3. ✘ Illumination of shorter wave length and decreased numerical aperture

4. ✔ Illumination of shorter wave length and increased numerical aperture

**Question Number : 113 Question Id : 2106887317 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A plasma membrane is composed of

**Options :**

1. ✘ A protein, lipid and a cellulose layer

2. ✔ Bimolecular lipid layer surrounded by protein layer

3. ✘ A protein layer between two lipid layers

4. ✘ A lipid layer between two protein layers

**Question Number : 114 Question Id : 2106887318 Display Question Number : Yes Is Question**



**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The cross of F1 to either of its parents is known as

**Options :**

1. ✘ Back cross
2. ✔ Test cross
3. ✘ F1 cross
4. ✘ F2 cross

**Question Number : 115 Question Id : 2106887319 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Prokaryote and eukaryote cells have a common

**Options :**

1. ✘ Histone
2. ✘ Cell Division Apparatus
3. ✔ Mitochondria
4. ✘ Genetic code

Question Number : 116 Question Id : 2106887320 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The hydrophobic ends of a phospholipid are

Options :

1. ✘ Polar
2. ✔ Non-Polar
3. ✘ Bi-polar
4. ✘ Neutral

Question Number : 117 Question Id : 2106887321 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An example of a peripheral membrane protein is

Options :

1. ✘ Insulin receptor
2. ✘ Glycophorin
3. ✘ Integrins

Glycolipid transfer proteins

4. ✓

**Question Number : 118 Question Id : 2106887322 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The maximum mass of an atom is concentrated in

**Options :**

1. ✓ Nucleus

2. ✗ Protons

3. ✗ Neutrons

4. ✗ Electrons

**Question Number : 119 Question Id : 2106887323 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Major interactions that stabilize a plasma membrane are

**Options :**

1. ✗ Hydrophilic interactions

2. ✓

Hydrophobic interactions

3. ✘ Covalent interactions

4. ✘ Ionic interactions

**Question Number : 120 Question Id : 2106887324 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Ion carriers are located on

**Options :**

1. ✘ Nucleus

2. ✘ Cytoplasm

3. ✔ Plasma membrane

4. ✘ Cell wall

**Question Number : 121 Question Id : 2106887325 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A cross in which parents differ in a single pair of contrasting character are called

**Options :**

1. ✓ Monohybrid Cross

2. ✗ Dihybrid Cross

3. ✗ Trihybrid Cross

4. ✗ Tetrahybrid Cross

**Question Number : 122 Question Id : 2106887326 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Linkage results in the formation of more

**Options :**

1. ✗ Dominant phenotype

2. ✗ Wild phenotype

3. ✓ Parental phenotype

4. ✗ Recombinant phenotype

Question Number : 123 Question Id : 2106887327 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

F3 Generation is obtained by

Options :

1. ✘ Selfing of F1
2. ✔ Selfing of F2
3. ✘ Crossing of F1 with F2
4. ✘ Crossing F1 with any one parent

Question Number : 124 Question Id : 2106887328 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In a linear chromosome map, if the distance between four loci are: a-b is 10%, a-d is 3%, b-c is 4%, and a-c is 6%, the frequency of crossover between c and d is

Options :

1. ✔ 3%
2. ✘ 6%

3. ✘ 9%

4. ✘ 12%

**Question Number : 125 Question Id : 2106887329 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

As the distance between two genes decreases, linkage will

**Options :**

1. ✔ Increase

2. ✘ Decrease

3. ✘ Unaffected

4. ✘ Complete

**Question Number : 126 Question Id : 2106887330 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Recombination nodules appear in ----- of meiosis

**Options :**

1. ✘

Leptotene

2. ✘ Zygotene

3. ✔ Pachytene

Diakinesis

4. ✘

**Question Number : 127 Question Id : 2106887331 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Spindle fibers are formed and get attached to the chromosomes during

**Options :**

1. ✘ Prophase

2. ✔ Metaphase

3. ✘ Anaphase

4. ✘ Telophase

**Question Number : 128 Question Id : 2106887332 Display Question Number : Yes Is Question**



**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Lysosome is formed from which of these cell organelles ?

**Options :**

1. ✘ Nucleus

2. ✘ Endoplasmic Reticulum

3. ✔ Golgi bodies

4. ✘ Ribosomes

**Question Number : 129 Question Id : 2106887333 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Daughter cells receive an exact copy of chromosomes from parent cells in

**Options :**

1. ✘ Meiosis I

2. ✘ Meiosis II

3. ✔ Mitosis

4. ✘ Interphase

Question Number : 130 Question Id : 2106887334 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Microtubule that pulls the chromosomes towards poles during mitosis is

Options :

1. ✔ Kinetochores

2. ✘ Centrioles

3. ✘ Polar

4. ✘ Astral

Question Number : 131 Question Id : 2106887335 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The DNA filaments that are developed inside the nucleus during cell division are

Options :

1. ✘ Spindle Fibers

2. ✔ Chromosomes

3. ✘ Centrioles

4. ✘ Kinetochore

**Question Number : 132 Question Id : 2106887336 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

----- is required for the chromosomal condensation while the cell enters mitosis

**Options :**

1. ✘ Condensin

2. ✘ Histone

3. ✔ Cohesin

4. ✘ Topoisomerase

**Question Number : 133 Question Id : 2106887337 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of these histones binds to a linker DNA

**Options :**

1. ✔

H1

2. ✘ H2A

3. ✘ H2B

4. ✘ H3

**Question Number : 134 Question Id : 2106887338 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The DNA in a cell remains uncondensed throughout

**Options :**

1. ✔ Interphase

2. ✘ Prophase

3. ✘ Metaphase

4. ✘ Telophase

**Question Number : 135 Question Id : 2106887339 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction**

**Time : 0**

In male humans, the gene for colour blindness is located on

**Options :**

1. ✓ X-Chromosome

2. ✗ Y-Chromosome

3. ✗ chromosome 12

4. ✗ Chromosome 14

**Question Number : 136 Question Id : 2106887340 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction**

**Time : 0**

A completely expressed allele is known as

**Options :**

1. ✓ Dominant

2. ✗ Recessive

3. ✗ Homozygous

4.

✘ Heterozygous

Question Number : 137 Question Id : 2106887341 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The genotype of a person suffering from Klinefelter's syndrome is

Options :

1. ✘ 44+XXX

2. ✘ 42+XXX

3. ✔ 44+XXY

4. ✘ 42+XYY

Question Number : 138 Question Id : 2106887342 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A female with XXXX chromosome will have ----- number of Barr bodies

Options :

1. ✘ One

2. ✘ Two

3. ✔ Three

4. ✘ Four

**Question Number : 139 Question Id : 2106887343 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Sex determination in *Drosophila* is by

**Options :**

1. ✘ Autosomes

2. ✔ X Chromosome and Autosomes

3. ✘ Y Chromosomes

4. ✘ Y Chromosome and Autosomes

**Question Number : 140 Question Id : 2106887344 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Genes that are present in the homologous region of X and Y chromosomes are known as

**Options :**

1. ✘ Autosomal
2. ✘ Sex-linked
3. ✔ Partially Sex linked
4. ✘ Unlinked

**Question Number : 141 Question Id : 2106887345 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If a person is colour blind, the probability of his son getting colour blindness is

**Options :**

1. ✔ 0
2. ✘  $1/4$
3. ✘  $1/2$
4. ✘ 1



Question Number : 142 Question Id : 2106887346 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A Y-linked inheritance is

Options :

1. ✘ Criss-Cross

2. ✘ Loop

3. ✔ Straight

4. ✘ Jumping

Question Number : 143 Question Id : 2106887347 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Genes that are located only on Y-chromosome are known as

Options :

1. ✘ Lethal Genes

2. ✘ Duplicate genes

3. ✘ Plasma genes

4. ✓ Holandric genes

**Question Number : 144 Question Id : 2106887348 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The condition in which a single gene controls more than one completely un-related phenotypic trait is known as

**Options :**

1. ✗ Polygenes

2. ✗ Multiple allelism

3. ✗ Multiple genes

4. ✓ Pleotropism

**Question Number : 145 Question Id : 2106887349 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Down's syndrome is an example of

**Options :**

1. ✗ Monosomy

2. ✓ Trisomy

3. ✘ Triploidy

4. ✘ Eupolypolidy

**Question Number : 146 Question Id : 2106887350 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

% similarity of each strain to every other strain is calculated by

**Options :**

1. ✘ DNA homology

2. ✘ Genetic relatedness

3. ✔ Numerical Taxonomy

4. ✘ Intuitive method

**Question Number : 147 Question Id : 2106887351 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

According to Bergey's Manual of Systematic Bacteriology, prokaryotes that lack a cell wall belong to

**Options :**

1. ✘

Gracilicutes

2. ✘ Firmicutes

3. ✔ Tenericutes

4. ✘ Mendosicutes

**Question Number : 148 Question Id : 2106887352 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The type of bacteria that uses carbon dioxide as a sole source for their growth are

**Options :**

1. ✘ Lithotrophs

2. ✔ Autotrophs

3. ✘ Heterotrophs

4. ✘ Organotrophs

**Question Number : 149 Question Id : 2106887353 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction**

**Time : 0**

The generation time of *E. coli* is

**Options :**

1. ✘ 13 minutes
2. ✔ 20 minutes
3. ✘ 45 Minutes
4. ✘ 3 minutes

**Question Number : 150 Question Id : 2106887354 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

During exponential phase the microbial growth rate is

**Options :**

1. ✘ Similar to generation time
2. ✔ Reciprocal of generation time
3. ✘ Double the generation time
4. ✘ Double the population

Question Number : 151 Question Id : 2106887355 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Roll tube technique is used for the isolation of

Options :

1. ✘ Aerobes
2. ✘ Anaerobes
3. ✘ Facultatives
4. ✔ Stringent anaerobes

Question Number : 152 Question Id : 2106887356 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The unit of influent flow rate is

Options :

1. ✘ md
2. ✘ m/d
3. ✘ m<sup>2</sup>/d

4. ✓  $\text{m}^3/\text{d}$

Question Number : 153 Question Id : 2106887357 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The reverse of hydraulic retention time is

Options :

1. ✗ Chemical rate

2. ✓ Dilution rate

3. ✗ Filtration rate

4. ✗ Sedimentation rate

Question Number : 154 Question Id : 2106887358 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In which of the bioreactors particles are not immersed in liquid

Options :

1. ✗ Air-lift

2. ✘ Stirred vessel
3. ✘ Packed-bed
4. ✔ Trickle –bed

**Question Number : 155 Question Id : 2106887359 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

An agent that prevent the growth of bacteria is known as

**Options :**

1. ✘ Antibiotic
2. ✘ Bactericide
3. ✔ Bacteriostatic
4. ✘ Antimicrobial

**Question Number : 156 Question Id : 2106887360 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The pressure at which the autoclave operated is



**Options :**

1. ✘ 5 Psi

2. ✘ 10 Psi

3. ✔ 15 Psi

4. ✘ 20 Psi

**Question Number : 157 Question Id : 2106887361 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If the reactions  $A \rightarrow B$  and  $A \rightarrow C$  are represented as  $(-r_A) = k_1 C_A^3$  and  $(-r_A) = k_2 C_A^6$  of activation energies 130 and 150 J/ mol, then which of the following is the right selection of process parameters to increase selectivity of B?

**Options :**

1. ✘ CSTR, High temperature

2. ✘ PFR, High temperature

3. ✔ CSTR, Low temperature

4. ✘ PFR, Low temperature

Question Number : 158 Question Id : 2106887362 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which form of DNA structure is described by Watson-Crick model

Options :

1. ✓ B Form

2. ✗ Z form

3. ✗ A-Form

4. ✗ D- Form

Question Number : 159 Question Id : 2106887363 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The stability and the formation of a G-quadruplex depends on

Options :

1. ✓ Monovalent cation

2. ✗ Bivalent cation

3. ✗ Divalent cation

4. ✘ Pentavalent cation

Question Number : 160 Question Id : 2106887364 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which form of structure is adapted by RNA

Options :

1. ✔ B Form

2. ✘ Z form

3. ✘ A-Form

4. ✘ D- Form

Question Number : 161 Question Id : 2106887365 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

RNA molecules that carry the genetic information copied from DNA are

Options :

1. ✘ miRNA

2. ✘

rRNA

3. ✘ tRNA

4. ✔ mRNA

**Question Number : 162 Question Id : 2106887366 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of the following is not a base of RNA ?

**Options :**

1. ✘ Adenine

2. ✘ Guanine

3. ✔ Thymine

4. ✘ Cytosine

**Question Number : 163 Question Id : 2106887367 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which enzyme will remove the supercoiling in DNA ahead of the replication fork?

**Options :**

1. ✘ DNA Polymerase
2. ✘ DNA gyrase
3. ✔ Topoisomerase
4. ✘ Helicase

**Question Number : 164 Question Id : 2106887368 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of the following is the principal replication enzyme of *E coli* ?

**Options :**

1. ✘ DNA Polymerase I
2. ✘ DNA Polymerase II
3. ✔ DNA Polymerase III
4. ✘ DNA polymerase IV

Question Number : 165 Question Id : 2106887369 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Association of DNA and histone protein is mediated by

Options :

1. ✘ Covalent bonding
2. ✔ Hydrogen bonding
3. ✘ Ionic bonding
4. ✘ Vander Waals interactions

Question Number : 166 Question Id : 2106887370 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The equation demonstrating a DNA renaturation reaction is

Options :

1. ✘ Sec 60
2. ✔ Cot1/2
3. ✘ Tan 30

4. ✘ Cot 40

Question Number : 167 Question Id : 2106887371 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The location of microsatellite repeats on a chromosome is

Options :

1. ✘ Centromere

2. ✘ Telomere

3. ✘ Acromere

4. ✔ Dispersed throughout the chromosome

Question Number : 168 Question Id : 2106887372 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A nucleosome is composed of

Options :

1. ✘ DNA and Histone protein

2. ✓ DNA, Histone protein and linker H1

3. ✘ RNA and Histone protein

4. ✘ RNA, Histone protein and linker H1

**Question Number : 169 Question Id : 2106887373 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The number of stop codons in a genetic code is

**Options :**

1. ✘ 1

2. ✘ 2

3. ✓ 3

4. ✘ 4

**Question Number : 170 Question Id : 2106887374 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Loops in lampbrush chromosomes represent the sites of



**Options :**

1. ✘ Replication
2. ✔ Transcription
3. ✘ Linkage
4. ✘ Crossingover

**Question Number : 171 Question Id : 2106887375 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Human ABO blood group is an example of

**Options :**

1. ✘ Dominance
2. ✘ Recessiveness
3. ✔ Co-dominance
4. ✘ Segregation

**Question Number : 172 Question Id : 2106887376 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

If the percentage of adenine is 30 in a DNA molecule, then what would be the guanine, thymine and cytosine

**Options :**

1. ✘ T:20 C:25 G: 25
2. ✘ T:25 C:20 G:25
3. ✘ T:20 C:20 G:30
4. ✔ T:30 C:20 G:20

**Question Number : 173 Question Id : 2106887377 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Alkaptonuria and Albinism occurs through

**Options :**

1. ✘ Autosomal Dominant inheritance
2. ✔ Autosomal Recessive inheritance
3. ✘ X-Chromosome Inheritance

4. ✘ Y-Chromosome inheritance

Question Number : 174 Question Id : 2106887378 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which among the following is correct ?

Options :

- 1. ✘ Down syndrome: 44 Autosomes + XO
- 2. ✔ Klinefelter's syndrome :44 Autosomes + XXY
- 3. ✘ Erythroblastosis fetalis: X linked
- 4. ✘ Colour blindness: Y linked

Question Number : 175 Question Id : 2106887379 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following RNAs are not required for the protein synthesis ?

Options :

- 1. ✔ siRNA

2. ✘ mRNA

3. ✘ tRNA

4. ✘ rRNA

**Question Number : 176 Question Id : 2106887380 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

What is the size of a prokaryote ribosome ?

**Options :**

1. ✘ 40S

2. ✘ 60S

3. ✔ 70S

4. ✘ 80S

**Question Number : 177 Question Id : 2106887381 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of these is a start codon in prokaryotes ?

**Options :**

1. ✘ AUG

2. ✔ GUG

3. ✘ UAA

4. ✘ UAG

**Question Number : 178 Question Id : 2106887382 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Viruses that infect bacteria are known as

**Options :**

1. ✘ Archaea

2. ✔ Phages

3. ✘ phases

4. ✘ pUC

**Question Number : 179 Question Id : 2106887383 Display Question Number : Yes Is Question**

**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The process by which a foreign DNA is introduced into a bacterial cell is Known as

**Options :**

1. ✓ Transformation
2. ✗ Transduction
3. ✗ Digestion
4. ✗ Amplification

**Question Number : 180 Question Id : 2106887384 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The organism that can transfer t-DNA into the plants is

**Options :**

1. ✗ *E.coli*
2. ✓ *Agrobacterium tumifaciens*
3. ✗ *Aspergillus niger*

*Trichoderma viridae*

4. ✘

**Question Number : 181 Question Id : 2106887385 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Expression vectors differ from a cloning vector in

**Options :**

1. ✘ Origin of replication

2. ✘ Suitable marker genes

3. ✘ Restriction site

4. ✔ regulatory elements

**Question Number : 182 Question Id : 2106887386 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

cDNA libraries are produced from

**Options :**

1. ✔ mRNA

2. ✘ tRNA

3. ✘ rRNA

4. ✘ miRNA

**Question Number : 183 Question Id : 2106887387 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which enzyme is used in the PCR amplification of DNA

**Options :**

1. ✔ DNA polymerase

2. ✘ Hexonuclease

3. ✘ RNA Polymerase

4. ✘ Endonuclease

**Question Number : 184 Question Id : 2106887388 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which tissue culture technique is applied for producing virus free plants ?



**Options :**

1. ✘ Embryo culture
2. ✘ Ovule culture
3. ✔ Meristem culture
4. ✘ Anther culture

**Question Number : 185 Question Id : 2106887389 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

What is protoplast ?

**Options :**

1. ✘ Cell wall and Plasma membrane of a cell
2. ✘ Cytoplasm with cell wall
3. ✔ Cell without a cell wall
4. ✘ cytoplasm without plasma membrane

Question Number : 186 Question Id : 2106887390 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The function of cytokines in plant tissue culture is

Options :

1. ✓ Adventitious shoot formation
2. ✗ Somatic embryo induction
3. ✗ Adventitious root formation
4. ✗ Shoot elongation

Question Number : 187 Question Id : 2106887391 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Callus formation is induced by

Options :

1. ✓ Auxins
2. ✗ Cytokines
3. ✗

Gibberellin

4. ✘ Ethylene

**Question Number : 188 Question Id : 2106887392 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Fusogenic agent used for the protoplast culture is

**Options :**

1. ✔ PEG

2. ✘ SDS

3. ✘ PUC

4. ✘ Salicylic acid

**Question Number : 189 Question Id : 2106887393 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The culture prepared by inoculating from the tissue of an organism to the culture media is

**Options :**

1. ✔ Primary cell culture

Secondary culture

2. ✘

Cell lines

3. ✘

Transformed cell culture

4. ✘

**Question Number : 190 Question Id : 2106887394 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The ratio of CO<sub>2</sub>: O<sub>2</sub> used in the cell culture system is

**Options :**

1:5

1. ✘

1:13

2. ✘

1:19

3. ✔

1:23

4. ✘

**Question Number : 191 Question Id : 2106887395 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction**

**Time : 0**

Protein produced from transgenic sheep used in the replacement therapy for individuals suffering with emphysema is

**Options :**

1. ✘ Plasminogen activator
2. ✔  $\alpha$ -antitrypsin
3. ✘ Casein
4. ✘ Amyloid precursor proteins

**Question Number : 192 Question Id : 2106887396 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Which of the following is a biological method for gene transfer ?

**Options :**

1. ✘ Microinjection
2. ✘ Electroporation
3. ✘ Particle bombardment
4. ✔

## Baculoviral vector system

**Question Number : 193 Question Id : 2106887397 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

A cell line is a

**Options :**

1. ✘ multilayer culture
2. ✘ Transformed cells
3. ✘ Multiple growth of cells
4. ✔ Sub-culture of a primary culture

**Question Number : 194 Question Id : 2106887398 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Under favourable conditions and chemically defined growth media, protoplasts can grow into

**Options :**

1. ✘ Organ
2. ✔

✓ Callus

3. ✘ Root

4. ✘ Shoot

**Question Number : 195 Question Id : 2106887399 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The process of de-differentiation in a cell culture can give rise to

**Options :**

1. ✘ Carcinoma cells

2. ✘ Single protoplasts

3. ✓ Induced-pluripotent stem cells

4. ✘ Fused protoplasts

**Question Number : 196 Question Id : 2106887400 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

Metabolites that are formed during growth phase as an outcome of energy metabolism are known as

**Options :**

1. ✓ Primary metabolites
2. ✗ Secondary metabolites
3. ✗ Tertiary metabolites
4. ✗ Quaternary metabolites

**Question Number : 197 Question Id : 2106887401 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

The primary storage of food in animals is through

**Options :**

1. ✗ Glucose
2. ✗ Galactose
3. ✗ Glycogen
4. ✓ Fats



Question Number : 198 Question Id : 2106887402 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Apoenzyme is a

Options :

1. ✓ protein portion of an enzyme
2. ✗ Non-protein portion of an enzyme
3. ✗ complete biologically active conjugated enzyme
4. ✗ prosthetic group

Question Number : 199 Question Id : 2106887403 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

$A-X + H_2O \xrightarrow{\text{Enzyme Y}} X-OH + AH$ . In this equation, Enzyme Y belongs to which class?

Options :

1. ✓ Hydrolases
2. ✗ Aldolase

3. ✘ Peroxidases

4. ✘ Pectinases

Question Number : 200 Question Id : 2106887404 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Enzymes catalyse biochemical reactions by altering the following

Options :

The enthalpy of formation  $\Delta H$

1. ✘

The equilibrium constant  $K_e$

2. ✘

Change in the Gibb's free energy  $\Delta G$

3. ✘

The activation energy  $E_a$

4. ✔