

# Andhra Pradesh State Council of Higher Education

<b>Question Paper Name :</b>	BioTechnology BT 29th Sep 2020 Shift 1
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<b>Share Answer Key With Delivery Engine :</b>	Yes
<b>Actual Answer Key :</b>	Yes

## BioTechnology (BT)

<b>Group Number :</b>	1
<b>Group Id :</b>	29996532
<b>Group Maximum Duration :</b>	0
<b>Group Minimum Duration :</b>	120
<b>Show Attended Group? :</b>	No
<b>Edit Attended Group? :</b>	No
<b>Break time :</b>	0
<b>Group Marks :</b>	120
<b>Is this Group for Examiner? :</b>	No
<b>Revisit allowed for group Instructions? :</b>	Yes
<b>Maximum Instruction Time :</b>	0
<b>Minimum Instruction Time :</b>	0

## BioTechnology (BT)

<b>Section Id :</b>	29996532
<b>Section Number :</b>	1
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	120
<b>Section Marks :</b>	120
<b>Display Number Panel :</b>	Yes
<b>Group All Questions :</b>	Yes
<b>Mark As Answered Required? :</b>	Yes
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	29996532
<b>Question Shuffling Allowed :</b>	Yes

**Question Number : 1 Question Id : 2999653721 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Suppose  $A$  is a  $3 \times 3$  unitary matrix and  $a + i$  is an eigenvalue of  $A$ , where  $a$  is a real number. Then

Options :

1.  $a = 1$
2.  $a = -1$
3.  $a = 0$
4.  $a = 2$

Question Number : 2 Question Id : 2999653722 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The eigen values of the matrix  $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 2 & 0 \\ 1 & 0 & 3 \end{bmatrix}$  are \_\_\_\_.

Options :

1. 1, 2, 3
2. -1, 0, 7
3. 0, 0, 7
4. 1, 0, 6

Question Number : 3 Question Id : 2999653723 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

If  $f(x) = |x|$  defined in  $[-1, 1]$  then at  $x = 0$ ,  $f(x)$  is \_\_\_\_.

Options :

1. continuous and differentiable

2. continuous but not differentiable
3. not continuous but differentiable
4. neither continuous nor differentiable

**Question Number : 4 Question Id : 2999653724 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The maximum value of  $3x^4 - 2x^3 - 6x^2 + 6x + 1$  in the interval  $(0, 2)$  is

**Options :**

1.  $2\frac{1}{2}$
2.  $2\frac{7}{16}$
3.  $2\frac{5}{16}$
4.  $2\frac{3}{16}$

**Question Number : 5 Question Id : 2999653725 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

What is the differential equation of all parabolas with x-axis as axis and  $(a, 0)$  as focus?

**Options :**

1.  $y \frac{dy}{dx} = a$
2.  $x \frac{dy}{dx} = 2a$



3.  $y \frac{dy}{dx} = 2a$

4.  $x \frac{dy}{dx} = a$

**Question Number : 6 Question Id : 2999653726 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The partial differential equation  $\Delta f_{xx} + f_{yy} = 0$  is hyperbolic if \_\_\_\_\_.

**Options :**

1.  $x < 0$

2.  $x = 0$

3.  $x > 0$

4.  $x = 1$

**Question Number : 7 Question Id : 2999653727 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The function  $f(x) = Kx(1-x)$  in  $0 < x < 1$  is a valid probability density function if  $K =$  \_\_\_\_\_.

**Options :**

1. 4

2. 3

3. 1

4. 6

**Question Number : 8 Question Id : 2999653728 Question Type : MCQ Display Question Number : Yes Is**

**Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A pair of dice is tossed twice. The probability  $p$  of scoring 7 points at least once is

**Options :**

1.  $25/36$

2.  $11/36$

3.  $7/36$

4.  $21/36$

**Question Number : 9 Question Id : 2999653729 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Find the value of  $\int_0^2 f(x) dx$  by Trapezoidal rule from the given table.

x	0	0.5	1	1.5	2
f(x)	1	3	5	7	4

**Options :**

1.  $39/4$

2.  $35/4$

3.  $37/4$

4.  $33/4$

**Question Number : 10 Question Id : 2999653730 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Find the numerical value of  $y(0.2)$  by solving the differential equation

$$\frac{dy}{dx} = x + y^2, \quad y(1) = 1, \quad h = 0.2$$

using the 2<sup>nd</sup> order Runge-Kutta method.

Options :

1. 1.516
2. 1.526
3. 1.616
4. 1.626

Question Number : 11 Question Id : 2999653731 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Which one of the following technologies can be used to investigate DNA-protein interactions?

Options :

1. Yeast two hybrid system
2. Northern Blotting Assay
3. Gel shift assay
4. Southern Blotting Assay

Question Number : 12 Question Id : 2999653732 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The most abundant lipid in plasma membrane is \_\_\_\_\_.

Options :

1. Cholesterol



2. Glycolipid
3. Phospholipid
4. Sterol

**Question Number : 13 Question Id : 2999653733 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The group of antibiotics that inhibit protein synthesis by acting on 30S ribosome is

**Options :**

1. Aminoglycosides
2. Tetracyclines
3. Glycopeptides
4. Polymixins

**Question Number : 14 Question Id : 2999653734 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The mole fraction-wise composition of the Watson strand of a given duplex DNA is  $[A] = 0.30$  &  $[G] = 0.25$ . What will be the  $[A]$ ,  $[G]$ ,  $[C]$  &  $[T]$  for the Crick strand for this DNA?

**Options :**

1. 0.30, 0.25, 0.25, 0.30
2. 0.30, 0.25, 0.30, 0.25
3. 25, 0.30, 0.25, 0.30
4. 0.30, 0.30, 0.25, 0.25

**Question Number : 15 Question Id : 2999653735 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Bacterial lipopolysaccharide is characterized by \_\_\_\_\_.

**Options :**

1. Phospholipid
2. Ribitol teichoic acid
3. Glycolipids
4. Ketodeoxyoctonate

**Question Number : 16 Question Id : 2999653736 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Patients should be vaccinated annually for influenza with which of the following vaccines?

**Options :**

1. immune serum globulin
2. killed virus vaccine
3. inactivated virus vaccine
4. live virus vaccine

**Question Number : 17 Question Id : 2999653737 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Penicillin-resistant bacteria produce lactamase, which inactivates penicillin by

**Options :**

1. esterifying the carboxyl group
2. oxidizing S atom



3. hydrolyzing the side chain
4. hydrolyzing the C-N bonds

**Question Number : 18 Question Id : 2999653738 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Barrel-shaped *arthroconidia* are characteristic of which one of the following fungi?

**Options :**

1. *E.floccosum*
2. *C.immitis*
3. *P.verrucosa*
4. *M.canis*

**Question Number : 19 Question Id : 2999653739 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

*Tinea versicolor* is caused by which of the following?

**Options :**

1. *E.floccosum*
2. *M.furfur*
3. *M.canis*
4. *E.werneckii*

**Question Number : 20 Question Id : 2999653740 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

If overall Del factor for a microbial spore is 32.2 and specific death rate is 2.54/min, then holding time is \_\_\_\_\_.

**Options :**

1. 81.79 min
2. 12.68 min
3. 0.079 min
4. 1.268 min

**Question Number : 21 Question Id : 2999653741 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Biogas is a mixture of \_\_\_\_\_.

**Options :**

1.  $H_2 + CO_2$
2.  $CH_4 + CO_2$
3.  $N_2 + CO_2$
4.  $N_2 + CO_2 + H_2$

**Question Number : 22 Question Id : 2999653742 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

BLOSUM matrices are used for \_\_\_\_\_.

**Options :**

1. Multiple sequence alignment
2. Pairwise sequence alignment
3. Phylogenetic analysis
4. Domain and motif analysis



**Question Number : 23 Question Id : 2999653743 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Cardiolipin is a major component of \_\_\_\_\_.

**Options :**

1. Plasma Membrane
2. Nuclear Membrane
3. Inner Mitochondrial Membrane
4. Golgi Membrane

**Question Number : 24 Question Id : 2999653744 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following reaction does not consume or produce NADPH?

**Options :**

1. Reduction of oxidized glutathione
2. Oxidative phosphorylation
3. Synthesis of steroids
4. Conversion of glucose-6-PO<sub>4</sub> to 6-phosphogluconolactone

**Question Number : 25 Question Id : 2999653745 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Enzyme catalyzed hydrolysis of proteins produces amino acid of the form

**Options :**

1. D
2. DL
3. L



4. Racemic

**Question Number : 26 Question Id : 2999653746 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In the flagellar membrane which enzyme catalyses ATP?

**Options :**

1. Cytoplasmic dyenin
2. Ascomic dyenin
3. Kinesis
4. Myosin

**Question Number : 27 Question Id : 2999653747 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following reagents would be most useful in determining the N-terminal amino acid of a polypeptide?

**Options :**

1. trypsin
2. carboxypeptidase
3. phenylisothiocyanate
4. cyanogen bromide

**Question Number : 28 Question Id : 2999653748 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A competitive inhibitor \_\_\_\_\_.

**Options :**

1. increases the  $K_m$  of an enzyme

2. decreases the  $K_m$  of an enzyme
3. increases both  $V_{max}$  and  $K_m$  of enzyme
4. decreases the  $K_m$  but increases the  $V_m$  of enzyme

**Question Number : 29 Question Id : 2999653749 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The mirror image of right handed  $\alpha$ -helix with all L-amino acids will appear as

**Options :**

1. left handed  $\alpha$ -helix with all L-amino acids
2. left handed  $\alpha$ -helix with all D-amino acids
3. right handed  $\alpha$ -helix with all L-amino acids
4. right handed  $\alpha$ -helix with all D-amino acids

**Question Number : 30 Question Id : 2999653750 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Vitamin-D is derived from which of the following precursors by the action of UV light?

**Options :**

1. 7-dehydrocholesterol
2. lanosterol
3. glycocholate
4. squalene epoxide



**Question Number : 31 Question Id : 2999653751 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The effect of reversible competitive inhibitor can be nullified by \_\_\_\_\_.

**Options :**

1. increasing the product concentration
2. increasing the substrate concentration
3. increasing the temperature
4. decreasing the substrate concentration

**Question Number : 32 Question Id : 2999653752 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Plastome is \_\_\_\_\_.

**Options :**

1. Plasmalemma protein
2. Plasmid
3. An organellar genome
4. Phagemid

**Question Number : 33 Question Id : 2999653753 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

About what proportion of mitochondrial proteins are encoded by nuclear DNA?

**Options :**

1. More than 95%
2. 50%
3. 1%



4. 1.5%

**Question Number : 34 Question Id : 2999653754 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The largest class of introns which are found in nuclear mRNA primary transcript is

**Options :**

1. Spliceosomal introns
2. Group I introns
3. Group II introns
4. Group IV introns

**Question Number : 35 Question Id : 2999653755 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following processes require energy?

**Options :**

1. Ligation
2. Transformation
3. Restriction digestion
4. Hybridization

**Question Number : 36 Question Id : 2999653756 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A test cross to determine the genotype of smooth yellow seed (both dominant characters) has to be performed. The required phenotype of seed to be used should be

**Options :**

1. smooth yellow

2. wrinkled green
3. smooth green
4. wrinkled yellow

**Question Number : 37 Question Id : 2999653757 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which application of genetics has the greatest impact on the wellbeing of humans to date?

**Options :**

1. plant breeding
2. animal breeding
3. genetic engineering
4. *In vitro* fertilization

**Question Number : 38 Question Id : 2999653758 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Human DNA ( $3 \times 10^6$ ) is replicated in 5 hr at a rate of 1 kb/min. The number of origin of replications utilized are \_\_\_\_\_.

**Options :**

1. 1
2. 3
3. 300
4. 10000



**Question Number : 39 Question Id : 2999653759 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following is a set of discontinuous variations?

**Options :**

1. blood groups, sex
2. hair colour, intelligence
3. height, excellence in mathematics
4. skin colour, mechanical skills

**Question Number : 40 Question Id : 2999653760 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

DnaB protein helps in \_\_\_\_\_.

**Options :**

1. Recognizing ori sequence
2. Unwinding DNA helix
3. Synthesizing primers
4. Relieving torsional strain generated by DNA unwinding

**Question Number : 41 Question Id : 2999653761 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The adapters that allow translation of the four letter nucleic acid language into the 20 letter protein language are called

**Options :**

1. Aminoacyl tRNA synthetases
2. Transfer RNAs



3. Ribosomal RNAs

4. Messenger RNAs

**Question Number : 42 Question Id : 2999653762 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following is not a second messenger for signal transduction?

**Options :**

1. Calcium ions

2. Nitric oxide gas

3. ATP

4. Cyclic AMP

**Question Number : 43 Question Id : 2999653763 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The equation for the elution volume of a solute in an effluent can be written as (where  $V$  is the elution volume of a substance,  $V_0$  void volume,  $k_D$  distribution constant and  $V_i$  internal water volume)

**Options :**

1.  $V = V_0 + k_D V_i$

2.  $V = V_0 / V_i$

3.  $V = V_0 - k_D V_i$

4.  $V / V_0 = k_D V_i$

**Question Number : 44 Question Id : 2999653764 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Penicillin –G antibiotic act up on \_\_\_\_\_.

Options :

1. Cell wall of Gram-positive bacteria
2. Cell wall of Gram-negative bacteria
3. Cell wall of both Gram positive & Gram-negative bacteria
4. Cell wall of *Mycobacterium*

**Question Number : 45 Question Id : 2999653765 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following vectors does not contain an origin of replication from a yeast chromosome?

Options :

1. yCp
2. YAC
3. Yep
4. YRp

**Question Number : 46 Question Id : 2999653766 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the pigments give tomato and carrots their colour?

Options :

1. Chlorophyll
2. Lycopene and lutein
3. Carotene and lycopene



4. Carotene and lutein

**Question Number : 47 Question Id : 2999653767 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

What is the length of a motif, in terms of amino acids residue?

**Options :**

1. 30-60
2. 10-20
3. 70-90
4. 1-10

**Question Number : 48 Question Id : 2999653768 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Cellulase enzyme is used in \_\_\_\_\_.

**Options :**

1. Pulp and paper industry
2. Dairy industry
3. Plastic industry
4. Leather industry

**Question Number : 49 Question Id : 2999653769 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Recombinant Chymosin is used in \_\_\_\_\_.

**Options :**

1. Bread making



2. Cheese manufacturing
3. Curdling process
4. Jam making

**Question Number : 50 Question Id : 2999653770 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Carbenicillin is effective against

**Options :**

1. *Pseudomonas aeruginosa*
2. *E.coli*
3. *Arthobacter sp.*
4. *Xanthomonas sp.*

**Question Number : 51 Question Id : 2999653771 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In encapsulation method, microcapsules are mainly made up of \_\_\_\_\_.

**Options :**

1. nylon
2. cellulose
3. glass
4. fiber

**Question Number : 52 Question Id : 2999653772 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The recovery of petroleum is facilitated by \_\_\_\_\_.

**Options :**

1. aliginate
2. xanthan gum
3. pollulan
4. gellan

**Question Number : 53 Question Id : 2999653773 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In secondary metabolism two distinct phases-trophophase and idiophase refer respectively to \_\_\_\_\_.

**Options :**

1. growth and production phase
2. early and late phase
3. primary and secondary metabolism
4. lag phase and log phase

**Question Number : 54 Question Id : 2999653774 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Enzyme papain is used with success to \_\_\_\_\_.

**Options :**

1. increase meat production
2. leaven bread
3. ripen papaya fruit
4. tenderize meat



**Question Number : 55 Question Id : 2999653775 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The principle of Chromatography is based on the \_\_\_\_\_.

**Options :**

1. different rate of movement of the solute in a column
2. separation of one solute from other constituents by being captured on the adsorbent
3. different rate of movement of the solvent in the column
4. density of the particles

**Question Number : 56 Question Id : 2999653776 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which RNA polymerase has single sub-unit?

**Options :**

1. *E. coli*
2. T7
3.  $\lambda$  phage
4. *Bacillus subtilis*

**Question Number : 57 Question Id : 2999653777 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Co-immuno-precipitation (Co-IP) is routinely performed to detect \_\_\_\_\_.

**Options :**

1. RNA-DNA interaction
2. RNA-RNA interaction



3. DNA-DNA interaction
4. Protein-protein interaction

**Question Number : 58 Question Id : 2999653778 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The virus commonly used to infect cell culture for the production of interferon is:

**Options :**

1. Corona virus
2. Sendai virus
3. Polio virus
4. Small pox virus

**Question Number : 59 Question Id : 2999653779 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following is not a component of structured model?

**Options :**

1. Genetic compartment
2. synthetic compartment
3. external substrate
4. Internal compartment

**Question Number : 60 Question Id : 2999653780 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

During 1953, Sanger determined the amino acid sequence for which of the following proteins?

**Options :**

1. casein

2. insulin
3. hemoglobin
4. heat shock protein

**Question Number : 61 Question Id : 2999653781 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In a single step, which of the following technique yields highly purified enzymes?

**Options :**

1. gel filtration
2. affinity chromatography
3. ion exchange chromatography
4. thin layer chromatography

**Question Number : 62 Question Id : 2999653782 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

During T-DNA transfer, the 5' end of the T-DNA is attached to \_\_\_\_\_.

**Options :**

1. VirD2
2. VirD1
3. Vir E1
4. VirE2

**Question Number : 63 Question Id : 2999653783 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**



The protein structural motif domain- helix loop helix are contained by all of the following except\_\_\_\_\_.

Options :

1. Scleraxis
2. Neurogenins
3. Transcription Factor 4
4. Leucine zipper

Question Number : 64 Question Id : 2999653784 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The biological material which is most commonly used in biosensors is \_\_\_\_\_.

Options :

1. antibodies
2. nucleic acids
3. enzymes
4. lectins

Question Number : 65 Question Id : 2999653785 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The factors affecting  $K_L a$  values in fermentation vessels are the following except

Options :

1. The air flow rate employed
2. The degree of agitation
3. The rheology properties of the medium



4. The presence of chelating agents

**Question Number : 66 Question Id : 2999653786 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In fed batch culture, catabolite repression can be overcome by \_\_\_\_\_.

**Options :**

1. removal of waste material
2. addition of nutrients in small interval
3. addition of nutrients only in the beginning
4. removal of culture fluid

**Question Number : 67 Question Id : 2999653787 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

An immobilized enzyme being used in a continuous Plug Flow Reactor exhibits an effectiveness factor ( $\eta$ ) of 1.2. The value of  $\eta$  being greater than one could be apparently due to one of the following reasons. Identify the correct reason.

**Options :**

1. The enzyme follows substrate inhibited kinetics with internal pore diffusion limitation
2. The enzyme experiences external film diffusion limitation
3. The enzyme follows sigmoidal kinetics
4. The immobilized enzyme is operationally unstable

**Question Number : 68 Question Id : 2999653788 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

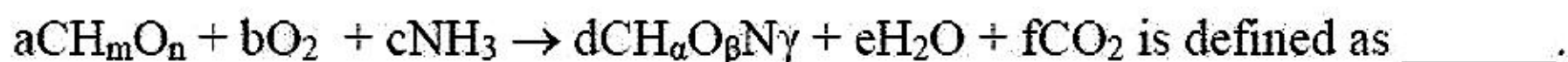
In the growth curve graph, in which the biomass is plotted against time the slope represents \_\_\_\_\_.

Options :

1. Specific growth rate
2. Specific death rate
3. Substrate concentration
4. Biomass concentration

Question Number : 69 Question Id : 2999653789 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

The respiratory coefficient for the following reaction



Options :

1.  $f/a$
2.  $e/b$
3.  $b/f$
4.  $f/b$

Question Number : 70 Question Id : 2999653790 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

In which of the following cases of microbial growth lag phase usually does not occur?

Options :

1. if inoculum is taken from stationary phase culture and inoculated into same medium.
2. inoculum consists of damaged cells, inoculated into the same medium



3. inoculum is transferred from a rich culture medium to a poor one
4. if an exponentially growing culture is inoculated into the same medium under the same conditions of growth

**Question Number : 71 Question Id : 2999653791 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In SDS electrophoresis, proteins are separated on basis of \_\_\_\_\_.

**Options :**

1. Charge
2. Mass
3. 3D structure
4. Isoelectric point

**Question Number : 72 Question Id : 2999653792 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The intraparticle mass transfer resistance can affect the rate of enzyme reaction, if enzymes are immobilized by

**Options :**

1. Crosslinking using multifunctional reagents
2. Copolymerization or microencapsulation
3. Adsorption
4. Covalent interaction

**Question Number : 73 Question Id : 2999653793 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**



What is the disadvantage of amplification of using PCR over natural cloning?

Options :

1. In PCR, there is no proof reading activity
2. In PCR, small fragments can't be amplified
3. There is an A incorporated in PCR products, which makes cloning difficult
4. PCR takes more time as compared to natural cloning

**Question Number : 74 Question Id : 2999653794 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Transgenic cattle milk containing human proteins which may help in the treatment of

Options :

1. Rheumatoid arthritis
2. Huntington's disease
3. Emphysema
4. Polio

**Question Number : 75 Question Id : 2999653795 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Bacterial genes cys E and cys M are used in \_\_\_\_\_.

Options :

1. Gene farming
2. increase of body growth
3. improving wool production

4. disease diagnosis

**Question Number : 76 Question Id : 2999653796 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The production of Synthetic seeds is done by encapsulating somatic embryo with

**Options :**

1. Sodium alginate
2. Sodium nitrate
3. Sodium acetate
4. Sodium sulphate

**Question Number : 77 Question Id : 2999653797 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In vitro fusion of isolated protoplasts to form a hybrid cell is commonly referred to

**Options :**

1. cell hybridization
2. plant cell hybridization
3. somatic hybridization
4. cybridization

**Question Number : 78 Question Id : 2999653798 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Stable transformation of plants is reliably obtained by \_\_\_\_\_.

**Options :**

1. silicon carbide whisker
2. electroporation



3. agrobacterium plasmid integration
4. microinjection

**Question Number : 79 Question Id : 2999653799 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

To obtain virus free plants which among the following is preferred?

**Options :**

1. Micro propagation
2. Shoot tip culture
3. Root tip culture
4. Grafting

**Question Number : 80 Question Id : 2999653800 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Multiplication of genetically identical copies of a cultivar by asexual reproduction is known as \_\_\_\_\_.

**Options :**

1. aclonal propagation
2. clonal propagation
3. vegetative propagation
4. polyclonal propagation

**Question Number : 81 Question Id : 2999653801 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The function of Interference RNA to prevent a gene from functioning is also known as

**Options :**

1. Reverse transcription
2. Epigenetics
3. PTGS (Post Transcriptional Gene Silencing)
4. RNA splicing

**Question Number : 82 Question Id : 2999653802 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Choose the incorrect statement for the method homopolymer tailing.

**Options :**

1. The first step is the RNA: DNA hybrid synthesis
2. Terminal transferase is used for addition of nucleotides on 3' end
3. Terminal transferase adds only at DNA strands
4. The DNA strand is now having known sequence at 3' end

**Question Number : 83 Question Id : 2999653803 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Epithelial tissue is characterized by each of these traits, except that

**Options :**

1. It lacks blood vessels
2. It functions in secretion, absorption and excretion
3. Epithelial cells are loosely packed and have much intercellular material
4. It is anchored to a basement membrane

**Question Number : 84 Question Id : 2999653804 Question Type : MCQ Display Question Number : Yes Is**



**Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The loop region is single stranded while synthesizing cDNA. It can be cleaved by using which enzyme?

**Options :**

1. Exonuclease
2. S1 nuclease
3. RNaseH
4. DNase

**Question Number : 85 Question Id : 2999653805 Question Type : MCQ Display Question Number : Yes Is**

**Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

What is the name of the cell line of the human embryonic lung?

**Options :**

1. HeLa
2. MDA MB 231
3. HCT 116
4. MRC-5

**Question Number : 86 Question Id : 2999653806 Question Type : MCQ Display Question Number : Yes Is**

**Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which cloning technique is used to clone the whole organism?

**Options :**

1. DNA cloning
2. Reproductive cloning
3. Gene cloning

4. Therapeutic cloning

**Question Number : 87 Question Id : 2999653807 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Vaccines prepared from toxins and chemicals are \_\_\_\_\_.

**Options :**

1. Cellular vaccines
2. Sub-cellular vaccines
3. Attenuated vaccines
4. Heterologous vaccines

**Question Number : 88 Question Id : 2999653808 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Sendai virus enter host cell by \_\_\_\_\_.

**Options :**

1. Phagocytosis
2. receptor mediated endocytosis
3. cell fusion
4. endocytosis

**Question Number : 89 Question Id : 2999653809 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following organs is used for IFN production?

**Options :**

1. lymph nodes
2. kidney



3. spleen

4. thymus

**Question Number : 90 Question Id : 2999653810 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Multiple Ovulation and Embryo Transfer (MOET) is a method of \_\_\_\_\_.

**Options :**

1. birth control in humans

2. cloning in sheep

3. hybridization in cattle

4. fish cultivation

**Question Number : 91 Question Id : 2999653811 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Often PCR can be performed in order to confirm whether an insert is present in the plasmid. Cells are taken directly and PCR is performed, this type of PCR is known as:

**Options :**

1. direct PCR

2. colony PCR

3. quantitative PCR

4. in-situ PCR

**Question Number : 92 Question Id : 2999653812 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

When linkers are combined with other features such as a selectable marker and antibiotic resistance, it is called as \_\_\_\_\_.

Options :

1. Cassette
2. Modified linker
3. Adaptors
4. Induced linker

**Question Number : 93 Question Id : 2999653813 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The particle gun method consists of which of the following steps?

Options :

1. The DNA of interest is absorbed onto micro projectile beads
2. These beads are often made of aluminum
3. The explosion in a gun propels a macro projectile forward which in turn propels micro projectile beads
4. The macro projectiles and micro projectiles both cross the perforated plate and hit the target tissue behind it

**Question Number : 94 Question Id : 2999653814 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The primary purpose of the adaptive immune system is to \_\_\_\_\_.

Options :

1. block all pathogens from entering the body
2. cure allergic reactions



3. kill tumor cells
4. protect from disease upon reinfection with a specific pathogen

**Question Number : 95 Question Id : 2999653815 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The membrane attack complex consists of \_\_\_\_\_.

**Options :**

1. OH
2. Colicins
3. C3, b3b, Bb
4. C5b,6,7,8,9

**Question Number : 96 Question Id : 2999653816 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Restriction enzymes

**Options :**

1. Play no role in bacteria
2. Cleave DNA at highly specific recognition sequences
3. Are made only by eukaryotic cells
4. Add methyl groups to specific DNA sequences

**Question Number : 97 Question Id : 2999653817 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

When the B-cell fails in the maturation process, it will die by what mechanism?

**Options :**

1. Senescence
2. Phagocytosis
3. Pinocytosis
4. Apoptosis

**Question Number : 98 Question Id : 2999653818 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

One of the principal functions of the complement is to \_\_\_\_\_.

**Options :**

1. cross link allergens
2. binding of antibodies attached to the cell surfaces leading to cell lysis
3. release histamine
4. help phagocytosis

**Question Number : 99 Question Id : 2999653819 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In the normal human being the concentration(s) of various antibodies in the serum is (are) in the order

**Options :**

1. IgA > IgM > IgE > IgG
2. IgM > IgA > IgG > IgE
3. IgE > IgG > IgM > IgA
4. IgG > IgA > IgM > IgE



**Question Number : 100 Question Id : 2999653820 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

TH2 response result in the production of \_\_\_\_\_.

**Options :**

1. phagocytes
2. TC cells
3. inflammatory cytokines
4. antibodies

**Question Number : 101 Question Id : 2999653821 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following does not protect body surfaces?

**Options :**

1. Skin
2. Mucus
3. Gut microflora
4. Salivary amylase

**Question Number : 102 Question Id : 2999653822 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The mononuclear phagocyte system does not include \_\_\_\_\_.

**Options :**

1. Endothelial cells
2. Kidney mesangial cells
3. Kupffer cells

4. Lymph node medullary macrophages

**Question Number : 103 Question Id : 2999653823 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Neutrophil defensins are \_\_\_\_\_.

**Options :**

1. Anti-toxins
2. Peptide antibiotics
3. Enzymes
4. Glycolipids

**Question Number : 104 Question Id : 2999653824 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The principle of Sanger's method relies on \_\_\_\_\_.

**Options :**

1. use of chemicals for base specific cleavage
2. use of dNTPs for chain termination
3. use of ddNTPs for chain termination
4. use of  $^{32}\text{P}$  chain termination

**Question Number : 105 Question Id : 2999653825 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The restriction – modification system of bacteria exists to

**Options :**

1. protect bacteria from invading foreign DNA



2. help bacterial chromosome to replicate
3. encourage recombination of new genetic material
4. promote conjugation

**Question Number : 106 Question Id : 2999653826 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

A plasmid cloning vector should contain all of the following sequences except

**Options :**

1. Origin of replication
2. Inducible promoter
3. Selectable marker gene
4. Multiple cloning site

**Question Number : 107 Question Id : 2999653827 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Genetically engineered bovine (bST), sometimes called rbST (recombinant bovine somatotropin) or rbGH (recombinant bovine growth hormone) are used in the

**Options :**

1. Therapeutic drugs
2. Agriculture
3. Dairy industry
4. DNA fingerprinting

**Question Number : 108 Question Id : 2999653828 Question Type : MCQ Display Question Number : Yes Is**

**Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Positional cloning approach exploits information

**Options :**

1. About the position of the restriction sites
2. On the status of its expression
3. On the location of the gene in the genome
4. About the position of promoter relative to MCS

**Question Number : 109 Question Id : 2999653829 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Highest capacity vector is

**Options :**

1. Cosmid
2. Yeast artificial chromosome
3. Bacteriophage vector
4. Yeast integrative vector

**Question Number : 110 Question Id : 2999653830 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The First recombinant drug produced is \_\_\_\_\_.

**Options :**

1. Insulin
2. tPA
3. Tetracycline



4. Penicillin

**Question Number : 111 Question Id : 2999653831 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following is a sequence alignment tool?

**Options :**

1. BLAST
2. PRINT
3. PROSITE
4. PIR

**Question Number : 112 Question Id : 2999653832 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Proteomics is the study of \_\_\_\_\_.

**Options :**

1. set of proteins
2. set of proteins in a specific region of the cell
3. entire set of expressed proteins in a cell
4. set of genes

**Question Number : 113 Question Id : 2999653833 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

In India, for which of the following, the genome sequencing program is initiated?

**Options :**

1. Pigeon pea

2. Humans
3. Rice
4. Tomato

**Question Number : 114 Question Id : 2999653834 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following organisms has similar number of operons to that of a bacteria?

**Options :**

1. *Arabidopsis*
2. *Drosophila*
3. *C. Elegans*
4. Mouse

**Question Number : 115 Question Id : 2999653835 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

What is PROSITE?

**Options :**

1. A database of protein structures
2. A database of protein motifs
3. A database of interacting proteins
4. A search tool

**Question Number : 116 Question Id : 2999653836 Question Type : MCQ Display Question Number : Yes Is**



**Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which of the following is a retrieval system?

**Options :**

1. PyMol
2. Mfold
3. Entrez
4. DALI

**Question Number : 117 Question Id : 2999653837 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The Needleman-Wunsch algorithm is developed for \_\_\_\_\_.

**Options :**

1. Local pairwise sequence alignment
2. Global pairwise sequence alignment
3. Multiple sequence alignment
4. Structural alignment

**Question Number : 118 Question Id : 2999653838 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The collaboration between EBI and SIB results in which of the complementary databases?

**Options :**

1. TrEMBL
2. SWISS-PROT
3. PIR

4. PROSITE

**Question Number : 119 Question Id : 2999653839 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Which among the following is a compiled programming language?

**Options :**

1. AWK
2. PERL
3. Bash Script
4. FORTAN

**Question Number : 120 Question Id : 2999653840 Question Type : MCQ Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

The goal of \_\_\_\_\_ is to determine the location of specific genes within the genome.

**Options :**

1. cloning
2. annotation
3. proteomics
4. mapping