

## Question Paper Preview

**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>	Bio Technology 30th May 2018 Shift1
<b>Subject Name:</b>	Bio Technology
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<b>Display Marks:</b>	No
<b>Calculator:</b>	None
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<b>Scratch Pad Required?:</b>	No
<b>Rough Sketch/Notepad Required?:</b>	No
<b>Protractor Required?:</b>	No

<b>Display Number Panel:</b>	Yes
<b>Group All Questions:</b>	No

Question Number : 1 Question Id : 5113467801 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
 Single Line Question Option : No Option Orientation : Vertical

The Eigen values of the matrix  $A = \begin{bmatrix} 3 & 1 \\ 1 & 3 \end{bmatrix}$  are

**Options :**

1. ✗ - 2, 4
2. ✗ - 3, 3
3. ✗ 3, 4
4. ✓ 2, 4

Question Number : 2 Question Id : 5113467802 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

If the matrix  $A = \begin{bmatrix} 1 & 2 & 3 \\ 1 & 3 & 4 \\ 1 & 4 & k \end{bmatrix}$  is Singular then the value of k is

Options :

1. ✓ 5

2. ✗ - 5

3. ✗ 6

4. ✗ 7

Question Number : 3 Question Id : 5113467803 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The value of  $\lim_{x \rightarrow \infty} \frac{x - \sin x}{x + \cos x} =$

Options :

1. ✗ 0(zero )

2. ✓ 1

3. ✗ -1

4. ✗  $\infty$

Question Number : 4 Question Id : 5113467804 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

If  $x = a(\theta - \sin \theta)$ ,  $y = a(1 + \cos \theta)$ , then  $\frac{dy}{dx}$  at  $\theta = \frac{\pi}{4}$  is

Options :

1. ✗  $1 + \sqrt{2}$

2. ✗  $1 - \sqrt{2}$

3. ✓  $-\sqrt{2} - 1$

4. ✗  $\sqrt{2} - 1$

Question Number : 5 Question Id : 5113467805 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

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

Options :

1. ✗ 0(zero)

2. ✓ 1

3. ✗ 2

4. ✗ 3

Question Number : 6 Question Id : 5113467806 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The solution of the differential equation  $x \frac{dy}{dx} + 2y - x^2 = 0$  is

Options :

1. ✗  $x^2 y = x + c$

2. ✗  $x^2 y = \frac{x^3}{3} + c$

3. ✗  $x^3 y = x + c$

4. ✓  $x^2 y = \frac{x^4}{4} + c$

Question Number : 7 Question Id : 5113467807 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The particular solution of  $(D^2 - 5D + 6)y = e^{4x}$  where  $D = \frac{d}{dx}$  is

Options :

1. ✘  $e^{4x}$

2. ✘  $-e^{4x}$

3. ✔  $\frac{1}{2}e^{4x}$

4. ✘  $\frac{1}{4}e^{4x}$

Question Number : 8 Question Id : 5113467808 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

If  $u = \tan^{-1} \frac{x}{y}$  then  $\frac{\partial u}{\partial x} =$

Options :

1. ✔  $\frac{y}{x^2+y^2}$

2. ✘  $\frac{x}{x^2+y^2}$

3. ✘  $\frac{xy}{x^2+y^2}$

4. ✘  $\frac{1}{x^2+y^2}$

Question Number : 9 Question Id : 5113467809 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The series  $\sum \frac{1}{n^p}$  converges when

Options :

1. ✘ 0(zero)

2. ✘  $p=1$

3. ✓  $p > 1$

4. ✗  $p \leq 1$

Question Number : 10 Question Id : 5113467810 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

If  $L[f(t)]$  denotes the Laplace transform of  $f(t)$ , then  $L[t^2 e^{-3t}]$  is

Options :

1. ✗  $\frac{2}{(s+3)^4}$

2. ✗  $\frac{2}{(s-3)^4}$

3. ✓  $\frac{2}{(s+2)^3}$

4. ✗  $\frac{2}{(s+3)^3}$

Display Number Panel:

Yes

Group All Questions:

No

Question Number : 11 Question Id : 5113467811 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a distinguishing characteristic of prokaryotic cells

Options :

1. ✗ they lack membrane enclosed organelles

2. ✗ they have cell walls containing peptidoglycan

3. ✓ their DNA is associated with histones

4. ✘ they have a single circular chromosome

Question Number : 12 Question Id : 5113467812 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which of the following bacteria become spheroplasts, if the cell wall is digested away

Options :

1. ✘ Gram positive
2. ✔ Gram negative
3. ✘ Acid-fast
4. ✘ Bacterial spores

Question Number : 13 Question Id : 5113467813 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Peptidoglycan polymer contains

Options :

1. ✔ D & L - alanine, glutamic acid, diaminopimelic acid
2. ✘ L-alanine, glutamic acid, diaminopimelic acid
3. ✘ D - alanine, glutamic acid, diaminopimelic acid
4. ✘ asparagine, glutamic acid, diaminopimelic acid

Question Number : 14 Question Id : 5113467814 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

One of the products of the light reaction in photosynthesis is

Options :

1. ✔ NADPH
2. ✘ NADP
3. ✘ Glucose

4. ✘ Water

Question Number : 15 Question Id : 5113467815 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Allosteric site means

Options :

1. ✔ noncompetitive inhibitor binding site
2. ✘ competitive inhibitor binding site
3. ✘ cofactor binding site
4. ✘ coenzyme binding site

Question Number : 16 Question Id : 5113467816 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The following medium contains a constituent that causes an observable change in the medium when a particular biochemical reaction occurs.

Options :

1. ✘ Selective medium
2. ✔ Differential medium
3. ✘ Assay medium
4. ✘ Enrichment medium

Question Number : 17 Question Id : 5113467817 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The following is taking place in gene transfer method by transformation

Options :

1. ✘ virus involved
2. ✘ pilus involved

3. ✘ competence factor

4. ✔ uptake of naked DNA

Question Number : 18 Question Id : 5113467818 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Abazymes are

Options :

1. ✔ catalytic antibodies

2. ✘ immunoglobulins

3. ✘ similar to ribozymes

4. ✘ similar to ribosomes

Question Number : 19 Question Id : 5113467819 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The viral DNA within the bacterial chromosome is called

Options :

1. ✘ capsid

2. ✘ lytic phage

3. ✔ prophage

4. ✘ virion

Question Number : 20 Question Id : 5113467820 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Secondary structure of protein means

Options :

1. ✔ folding or coiling of amino acid chains into particular pattern

2. ✘ specific sequence of amino acids

3. ✘ irregular spherical shapes or fibrous thread like strands
4. ✘ association of several polypeptide chains

Question Number : 21 Question Id : 5113467821 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which of the following statement is correct with respect to DNA structure

Options :

1. ✘ The number of hydrogen bonds between adenine and uracil is two
2. ✘ The number of hydrogen bonds between adenine and thymine is three
3. ✔ The number of hydrogen bonds between guanine and cytosine is three
4. ✘ The number of hydrogen bonds between guanine and cytosine is two

Question Number : 22 Question Id : 5113467822 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

A nonsense mutation may result into

Options :

1. ✘ an abnormal elongation of a polypeptide
2. ✘ a large deletion within the reading frame of a gene
3. ✔ a premature termination of the synthesis of a polypeptide
4. ✘ modification of mRNA

Question Number : 23 Question Id : 5113467823 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which of the following is required for cutting of DNA

Options :

1. ✘ DNase
2. ✘ DNA ligase
3. ✘ DNA polymerase

4.  restriction endonuclease

Question Number : 24 Question Id : 5113467824 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

In protein synthesis, which of the following is a termination codon

Options :

1.  UGA
2.  UGG
3.  UAU
4.  UAC

Question Number : 25 Question Id : 5113467825 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

A codon is

Options :

1.  A group of 4 different bases in the mRNA
2.  A group of 3 nucleotides that codes for one amino acid
3.  one of the 20 amino acids in protein
4.  the cells machinery for making proteins

Question Number : 26 Question Id : 5113467826 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

If the sequence for the codon for an amino acid is 3'-UCG-5', what is the sequence of the anticodon found in the corresponding tRNA.

Options :

1.  3'-UCG-5'
2.  5'-AGC-3'
3.  5'-UCG-3'

4. ✘ 3'- AGC – 5'

Question Number : 27 Question Id : 5113467827 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The type of restriction endonuclease used in rDNA technology is

Options :

1. ✘ type I
2. ✔ type II
3. ✘ type III
4. ✘ type IV

Question Number : 28 Question Id : 5113467828 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

If a gene is switched off in the presence of a regulator

Options :

1. ✘ The gene is subjected to positive regulation
2. ✘ The gene is subject to induction
3. ✔ The gene is subject to negative regulation
4. ✘ The gene is subject to auto regulation

Question Number : 29 Question Id : 5113467829 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

If IPTG binds to the repressor of the \_\_\_\_\_, it will cause \_\_\_\_\_

Options :

1. ✘ lac operon , repression
2. ✘ CRP operon, repression
3. ✔ lac operon, induction

## 4. ✘ CRP operon, induction

Question Number : 30 Question Id : 5113467830 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Gene expression in eukaryotic cells is most often regulated by controlling

Options :

1. ✘ Translational repression
2. ✔ Transcriptional initiation
3. ✘ Degeneration of mRNA
4. ✘ Inversion of DNA segments

Question Number : 31 Question Id : 5113467831 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

During transcription initiation, RNA polymerase recognizes and binds to a specific site called

Options :

1. ✘ initiator
2. ✔ promoter
3. ✘ activator
4. ✘ transcription factor

Question Number : 32 Question Id : 5113467832 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

A gene library consists of

Options :

1. ✘ A list of the genes in a genome
2. ✘ Members of a gene super family
3. ✔ A collection of cloned DNA fragments
4. ✘ Purified mRNA

Question Number : 33 Question Id : 5113467833 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

DNA is replicated by a

Options :

1. ✘ Conservative mechanism
2. ✔ Semi conservative mechanism
3. ✘ Tandem repetitive mechanism
4. ✘ diploid mechanism

Question Number : 34 Question Id : 5113467834 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The cell cultures for the production of interferon is commonly infected with the following virus

Options :

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

Question Number : 35 Question Id : 5113467835 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

In SDS polyacrylamide gel electrophoresis, what for SDS is used?

Options :

1. ✘ to abolish hydrogen bonding
2. ✘ to break disulphide bonds
3. ✘ to cleave protein molecules
4. ✔ to denature protein molecules

Question Number : 36 Question Id : 5113467836 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

During Kreb's cycle number of CO<sub>2</sub> molecules released is

Options :

1. ✘ 1
2. ✔ 2
3. ✘ 3
4. ✘ 0

Question Number : 37 Question Id : 5113467837 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The first reactant in Kreb's cycle is

Options :

1. ✘ citric acid
2. ✘ isocitricacid
3. ✘ malic acid
4. ✔ oxaloacetic acid

Question Number : 38 Question Id : 5113467838 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which of the following plant cell will show totipotency?

Options :

1. ✘ pith
2. ✘ sieve tube
3. ✔ meristem
4. ✘ xylem vessels

Question Number : 39 Question Id : 5113467839 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

capnophiles means

Options :

1. ✘ organisms need small amount of oxygen
2. ✘ carbon monoxide loving organisms
3. ✘ organisms need large amount of oxygen
4. ✔ carbon dioxide loving organisms

Question Number : 40 Question Id : 5113467840 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which of the following is best suited method for production of virus free plants?

Options :

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

Question Number : 41 Question Id : 5113467841 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The following techniques used to obtain information on the folded structure of proteins except

Options :

1. ✘ Circular dichroism
2. ✘ FTIR spectroscopy
3. ✔ Western blotting
4. ✘ Fluorescence spectroscopy

Question Number : 42 Question Id : 5113467842 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The BLAST program used for comparison of

Options :

1. ✘ protein 3D structures
2. ✔ nucleotide sequences
3. ✘ biological activities
4. ✘ amino acid sequences

Question Number : 43 Question Id : 5113467843 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

auxin is synthesized in which part of the plant

Options :

1. ✔ apical
2. ✘ nodal
3. ✘ intermodal
4. ✘ axillary

Question Number : 44 Question Id : 5113467844 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

All are plant derived alkaloids except

Options :

1. ✘ codeine
2. ✘ quinine
3. ✔ menthol
4. ✘ nicotine

Question Number : 45 Question Id : 5113467845 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which breeding method uses a chemical to strip the cell wall of plant cells of two sexually incompatible species?

Options :

1. ✘ Mass selection
2. ✔ Protoplast fusion
3. ✘ Transformation
4. ✘ Transpiration

Question Number : 46 Question Id : 5113467846 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

*Agrobacterium* based gene transfer is efficient

Options :

1. ✔ only with dicots
2. ✘ only with monocots
3. ✘ with both monocots and dicots
4. ✘ with majority monocots and few dicots

Question Number : 47 Question Id : 5113467847 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Hairy root cultures for secondary metabolite production are induced by transforming plant cells with

Options :

1. ✘ *Bacillus thuringiensis*
2. ✘ virus
3. ✘ *Agrobacterium tumefaciens*
4. ✔ *Agrobacterium rhizogenes*

Question Number : 48 Question Id : 5113467848 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The most common form of gene expression regulation in both bacteria and eukaryotes is

Options :

1. ✘ translational control
2. ✔ transcriptional control
3. ✘ post-transcriptional control
4. ✘ post-translational control

Question Number : 49 Question Id : 5113467849 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which is not part of the lac operon?

Options :

1. ✘ repressor
2. ✔ activator protein
3. ✘ operator
4. ✘ promoter

Question Number : 50 Question Id : 5113467850 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The commonest indicator in animal cell culture medium is

Options :

1. ✘ rosebengal
2. ✔ phenol red
3. ✘ crimson orange
4. ✘ bromocresol purple

Question Number : 51 Question Id : 5113467851 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The world's first transgenic primate is known as

Options :

1. ✘ UTDi
2. ✘ GENi
3. ✘ CLONi
4. ✔ ANDi

Question Number : 52 Question Id : 5113467852 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Gene knock-out means \_\_\_\_\_ of specific gene

Options :

1. ✔ inactivating
2. ✘ removal
3. ✘ purification
4. ✘ multiplication

Question Number : 53 Question Id : 5113467853 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The suffix "S" in ribosome unit indicates

Options :

1. ✘ solubility
2. ✘ size
3. ✘ surface area
4. ✔ sedimentation coefficient

Question Number : 54 Question Id : 5113467854 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The total number of cells in a culture is counted using the trypan blue exclusion assay and is found to be  $2.7 \times 10^6$  cells/ml. The culture is diluted 1:27 and then 100 $\mu$ l seeded per well into a 96 well plate. What is the final cell density per well?

Options :

1. ✘  $1 \times 10^5$
2. ✔  $1 \times 10^4$
3. ✘  $2.7 \times 10^5$
4. ✘  $2.7 \times 10^4$

Question Number : 55 Question Id : 5113467855 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The first vaccine developed from animal cellculture was

Options :

1. ✘ Hepatitis B
2. ✘ Influenza
3. ✔ Polio
4. ✘ Small pox

Question Number : 56 Question Id : 5113467856 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

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

Options :

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

4. ✘ Glycolysis is being inhibited

Question Number : 57 Question Id : 5113467857 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Cells which have undergone transformation frequently become

Options :

1. ✘ stable
2. ✘ unstable
3. ✘ anchorage dependent
4. ✔ anchorage independent

Question Number : 58 Question Id : 5113467858 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

In animal cell medium, the following are the nutritional medium supplements except

Options :

1. ✘ selenium
2. ✔ polyglycol
3. ✘ ethanolamine
4. ✘ insulin

Question Number : 59 Question Id : 5113467859 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The newly formed mRNA after leaving from the nucleus in eukaryotic transformation process contains

Options :

1. ✘ introns
2. ✔ exons
3. ✘ introns and exons
4. ✘ introns, exons and ribosomes

Question Number : 60 Question Id : 5113467860 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

DNA synthesis takes place in which phase of the cell cycle

Options :

1. ✘ G1 phase
2. ✘ G2 phase
3. ✔ S phase
4. ✘ prophase

Question Number : 61 Question Id : 5113467861 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which of the following is a protein sequence database

Options :

1. ✘ GenBank
2. ✘ EMBL
3. ✔ PIR
4. ✘ DDBJ

Question Number : 62 Question Id : 5113467862 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

BLAST X program is used to

Options :

1. ✘ translate protein sequence
2. ✘ translate DNA database
3. ✔ translate input sequence
4. ✘ transcribe protein information

Question Number : 63 Question Id : 5113467863 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Proteomics research can be categorized as

Options :

1. ✓ structural proteomics and functional proteomics
2. ✗ structural, functional and comparative proteomics
3. ✗ functional and comparative proteomics
4. ✗ structural and comparative proteomics

Question Number : 64 Question Id : 5113467864 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Clustal W

Options :

1. ✓ multiple sequence alignment
2. ✗ data retrieving tool
3. ✗ protein secondary structure predicting tool
4. ✗ nucleic acid sequence analysis tool

Question Number : 65 Question Id : 5113467865 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

BLAT is used to find

Options :

1. ✗ regions of higher differences within genomic assemblies
2. ✓ regions of higher identity within genomic assemblies
3. ✗ folds in a RNA sequence
4. ✗ secondary structures in a given protein

Question Number : 66 Question Id : 5113467866 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which is the best annotated database

Options :

1. ✘ Genbank
2. ✘ PDB
3. ✘ Prodom
4. ✔ SwissProt

Question Number : 67 Question Id : 5113467867 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

In molecular dynamics simulation, the dependence is on

Options :

1. ✘ position only
2. ✘ momentum only
3. ✔ both position and momentum
4. ✘ either position or momentum

Question Number : 68 Question Id : 5113467868 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Quantitative Structure Activity Relationship (QSAR) is used for

Options :

1. ✘ protein modelling
2. ✔ drug design
3. ✘ aligning two sequences
4. ✘ molecular dynamics simulation

Question Number : 69 Question Id : 5113467869 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which of the following methods used to predict 3D structures of protein when it has < 20% sequence similarity with available templates?

Options :

1. ✘ homology modelling
2. ✘ dynamic programming
3. ✔ fold recognition
4. ✘ progressive protein programming

Question Number : 70 Question Id : 5113467870 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Ramachandran map of a protein representation allows you to identify

Options :

1. ✘ the most stable structure
2. ✘ the tertiary allowed structure
3. ✔ the sterically disallowed conformations
4. ✘ the secondary structure elements

Question Number : 71 Question Id : 5113467871 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

NCBI was established in 1988 as a division of the

Options :

1. ✔ National Library of Medicine
2. ✘ National Institute of Health
3. ✘ ExPASy
4. ✘ European Bioinformatics Institute

Question Number : 72 Question Id : 5113467872 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

All are sequence alignment tools except

Options :

1. ✔ Rasmol

2. ✘ BLAST
3. ✘ FASTA
4. ✘ ClustalW

Question Number : 73 Question Id : 5113467873 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

'Containment' in the fermentation industry means

Options :

1. ✘ Protection against contamination in a fermenter
2. ✘ Protection for the operating person in the area
3. ✔ Prevention of escape of viable cells from a fermenter
4. ✘ Container used for removal of sample

Question Number : 74 Question Id : 5113467874 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The  $X_{90}$  value for a filtration system is

Options :

1. ✘ the time required to reduce the microbial population by 90%
2. ✘ the time required to traverse survival curve by one log cycle
3. ✔ the depth of the filter required to reduce the population by 90%
4. ✘ the diameter of the filter required to reduce the population by 90%

Question Number : 75 Question Id : 5113467875 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The following methods are used for cell disruption except

Options :

1. ✔ mixing

2. ✘ homogenization
3. ✘ enzymatic digestion
4. ✘ ultrasonification

Question Number : 76 Question Id : 5113467876 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

For scaling up of a bioreactor, the following parameters are varying except

Options :

1. ✘ air flow rate
2. ✘ diameter of the impeller
3. ✔ agitator speed
4. ✘ volumetric mass transfer coefficient

Question Number : 77 Question Id : 5113467877 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

In a Lineweaver – Burk plot, the intercept on  $1/v$  axis is increased and the intercept on  $1/s$  axis is unchanged by the addition of the inhibitor, belongs to the following type of inhibition

Options :

1. ✘ Competitive
2. ✔ Noncompetitive
3. ✘ Partially noncompetitive
4. ✘ Mixed

Question Number : 78 Question Id : 5113467878 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The most widely used method for primary stock culture preservation is

Options :

1. ✘ by keeping in the refrigerator at  $2^0 - 8^0$  C

2. ✘ on agar slant with an overlay of sterile mineral oil
3. ✘ as sterile soil stocks
4. ✔ by freeze-drying method

Question Number : 79 Question Id : 5113467879 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

An encapsulated bacterium can be virulent because the capsule

Options :

1. ✘ is an endotoxin
2. ✘ destroys host tissues
3. ✘ has no effect, as capsules do not contribute to virulence
4. ✔ resists phagocytosis

Question Number : 80 Question Id : 5113467880 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a portal of entry for pathogens?

Options :

1. ✘ skin
2. ✘ parenteral route
3. ✔ blood
4. ✘ mucous membranes of the gastrointestinal tract.

Question Number : 81 Question Id : 5113467881 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Cytotoxic autoimmunity differs from immune complex autoimmunity in that cytotoxic reaction

Options :

1. ✘ involve antibodies
2. ✔ do not involve complement

3. ✘ are caused by T cells
4. ✘ do not involve IgE antibodies

Question Number : 82 Question Id : 5113467882 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Fusion between a plasma cell and a tumor cell creates a

Options :

1. ✘ Myeloma
2. ✘ Natural killer cell
3. ✘ Lymphoblast
4. ✔ Hybridoma

Question Number : 83 Question Id : 5113467883 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

A molecule that reacts with specific antibody but it is not immunogenic by itself is called

Options :

1. ✘ carrier
2. ✘ antigen
3. ✔ hapten
4. ✘ immunogen

Question Number : 84 Question Id : 5113467884 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The antibody that is present in secretions like saliva, tears, colusturm

Options :

1. ✔ Ig A
2. ✘ Ig D
3. ✘ Ig E

4. ✘ Ig M

Question Number : 85 Question Id : 5113467885 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which of the following IgG is targeted against polysaccharides of encapsulated bacteria

Options :

1. ✘ IgG1

2. ✔ IgG2

3. ✘ IgG3

4. ✘ IgG4

Question Number : 86 Question Id : 5113467886 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Pus formed at the site of infection is largely composed of dead

Options :

1. ✘ macrophages

2. ✘ eosinophils

3. ✔ neutrophils

4. ✘ basophils

Question Number : 87 Question Id : 5113467887 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Where does a mature T cell encounter antigen for the first time?

Options :

1. ✘ freely in primary lymphoid organ

2. ✘ freely in secondary lymphoid organ

3. ✘ on an antigen presenting cell in a primary lymphoid organ

4. ✔ on an antigen presenting cell in a secondary lymphoid organ

Question Number : 88 Question Id : 5113467888 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Regarding mucosa associated lymphoid tissue, which of the following is secreted by the B-cells across the epithelium.

Options :

1. ✓ IgA
2. ✗ IgD
3. ✗ IgG
4. ✗ IgM

Question Number : 89 Question Id : 5113467889 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which of the following is **not** involved in antigen-antibody reactions?

Options :

1. ✗ electrostatic interactions between charged side-chains
2. ✗ hydrophilic interactions
3. ✗ van der Waals forces
4. ✓ peptide bonds

Question Number : 90 Question Id : 5113467890 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which of the following differentiates an antigen from immunogen?

Options :

1. ✗ an antigen is a foreign molecule
2. ✗ an antigen can cause production of antibodies
3. ✓ an antigen does not always elicit an immuneresponse
4. ✗ antigens are capable of being bound by immunological receptors

Question Number : 91 Question Id : 5113467891 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

What is the function of major histocompatibility complex (MHC) molecules?

Options :

1. ✘ present sugars to T cells
2. ✔ present peptides to T cells
3. ✘ lyse foreign antigens
4. ✘ create holes in the membranes of bacteria

Question Number : 92 Question Id : 5113467892 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

What is the optimal temperature for Taq polymerase to activate in PCR?

Options :

1. ✔ 70<sup>0</sup>C
2. ✘ 50<sup>0</sup>C
3. ✘ 37<sup>0</sup>C
4. ✘ 20<sup>0</sup>C

Question Number : 93 Question Id : 5113467893 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

RFLP analysis is a technique that

Options :

1. ✘ is used to detect genetic variation at protein level
2. ✘ measures the transfer frequency of genes during conjugation
3. ✔ uses hybridization to detect specific DNA restriction fragments in genomic DNA
4. ✘ used to determine whether a gene is transcribed in specific cells

Question Number : 94 Question Id : 5113467894 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which of the following statement is correct with respect to genomic DNA and cDNA.

Options :

1. ✘ genomic DNA has only exons, but cDNA has both exons and introns
2. ✔ c DNA has only exons, but genomic DNA has both exons and introns
3. ✘ genomic DNA has only introns, and cDNA has only exons
4. ✘ genomic DNA and cDNA have both exons and introns

Question Number : 95 Question Id : 5113467895 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

DNA finger printing was developed by

Options :

1. ✘ Francis Crick
2. ✔ Alec Jeffrey
3. ✘ James Watson
4. ✘ Khorana

Question Number : 96 Question Id : 5113467896 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which of the following technique is suited for separation of large DNA fragments?

Options :

1. ✘ agarose gel electrophoresis
2. ✘ polyacrylamide gel electrophoresis
3. ✘ SDS polyacrylamide gel electrophoresis
4. ✔ pulse field gel electrophoresis

Question Number : 97 Question Id : 5113467897 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Retrotransposons differ from DNA transposons in

Options :

1. ✘ The ability to transpose
2. ✘ Having no RNA intermediate
3. ✔ Having an RNA intermediate
4. ✘ Inability to show transposition

Question Number : 98 Question Id : 5113467898 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which deficiency of the immune system was the first disorder, researchers treated with gene therapy?

Options :

1. ✔ adenosine deaminase deficiency (ADA)
2. ✘ ornithine transcarbamylase (OTC)
3. ✘ duchenne muscular dystrophy (DMD)
4. ✘ sickle cell anaemia (SCA)

Question Number : 99 Question Id : 5113467899 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which of the following approach in gene therapy is disagreeable to the public?

Options :

1. ✘ somatic therapy
2. ✘ *ex vivo* therapy
3. ✘ antisense therapy
4. ✔ germ line therapy

Question Number : 100 Question Id : 5113467900 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Formation of what type of chemical bond is catalyzed by DNA ligase?

Options :

1. ✘ glycosidic
2. ✘ hydrogen
3. ✔ phosphoester
4. ✘ ester

Question Number : 101 Question Id : 5113467901 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Primary lymphoid organs include

Options :

1. ✘ thymus and spleen
2. ✔ thymus and bone marrow
3. ✘ thymus, bone marrow and spleen
4. ✘ thymus, bone marrow, spleen and lymph nodes

Question Number : 102 Question Id : 5113467902 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Immunoaffinity chromatography can be used in biochemical applications to

Options :

1. ✘ break down antibody structure
2. ✘ break down antigen and analyze quantitatively
3. ✔ purify protein antigen
4. ✘ identify the protein

Question Number : 103 Question Id : 5113467903 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Match the following columns X with Y

X

Y

a) replication

p) Okazaki fragments

b) translation

q) r RNA

c) transcription

r) RNA polymerase binds to one strand of DNA

d) reverse transcription

s) retrovirus enzyme

Options :

1. ✘ a- q, b - p, c - s, d - r

2. ✔ a- p, b - q, c - r, d - s

3. ✘ a- r, b - s, c - p, d - q

4. ✘ a- s, b - r, c - q, d - p

Question Number : 104 Question Id : 5113467904 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

During meiosis chiasmata are observed at

Options :

1. ✘ leptotene

2. ✘ diakinesis

3. ✘ diplotene

4. ✔ pachytene

Question Number : 105 Question Id : 5113467905 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

All of the following are proteins within the core nucleosome particle except

Options :

1. ✔ H1

2. ✘ H2A
3. ✘ H2B
4. ✘ H3

Question Number : 106 Question Id : 5113467906 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

All of the following statements are true about damage by UV light to DNA in living cell except

Options :

1. ✘ the most cells can synthesize proteins capable of repairing UV damage
2. ✘ covalent bonds are formed that join neighboring pyrimidines
3. ✔ neighboring phosphodiester bonds are cleaved
4. ✘ the damage blocks normal DNA replication

Question Number : 107 Question Id : 5113467907 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

When enzyme activity is calculated on the basis of reactor volume, the following bioreactor is preferred

Options :

1. ✘ stirred tank bioreactor
2. ✘ fluidized bed bioreactor
3. ✔ packed bed bioreactor
4. ✘ airlift bioreactor

Question Number : 108 Question Id : 5113467908 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Diauxic growth means, in the growth curve

Options :

1. ✘ no lag phase
2. ✔ multiple lag phases

3. ✘ two types of microorganisms are growing
4. ✘ directly starts from exponential phase

Question Number : 109 Question Id : 5113467909 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

In citric acid recovery process, from the harvested fermentation broth, addition of sulphuric acid is

Options :

1. ✘ To reduce the pH
2. ✘ To increase the yield of the citric acid
3. ✘ As stabilizing agent
4. ✔ To remove the calcium as calcium sulphate

Question Number : 110 Question Id : 5113467910 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Antisense technology is

Options :

1. ✔ selectively blocks expression of a gene
2. ✘ alters or transfers cells
3. ✘ combines organelles and cells
4. ✘ combines genetic material from different species

Question Number : 111 Question Id : 5113467911 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

During the biosynthesis of urea in urea cycle, the two nitrogen atoms derived from

Options :

1. ✘ both are derived from arginine
2. ✘ two free ammonium groups

3. ✘ one from citrulline and one from glutamate
4. ✔ free ammonium group and aspartate

Question Number : 112 Question Id : 5113467912 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

In order for biotechnology methods to produce human proteins from bacterial cells in culture, all the following must occur EXCEPT

Options :

1. ✔ Human DNA must be removed from the nucleus
2. ✘ mRNA must be isolated
3. ✘ a cDNA copy must be made
4. ✘ polymerase makes the DNA double stranded

Question Number : 113 Question Id : 5113467913 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

When a restriction enzyme makes a staggered cut across a strand of DNA, this is known as

Options :

1. ✘ blunt end
2. ✔ sticky end
3. ✘ genetic finger print
4. ✘ ligase

Question Number : 114 Question Id : 5113467914 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

The macrolide antibiotic producing microorganism is

Options :

1. ✘ *Streptomyces griseus*
2. ✔ *Streptomyces erythreus*

3. ✘ *Streptomyces fradiae*

4. ✘ *Streptomyces humidus*

Question Number : 115 Question Id : 5113467915 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

An extracellular polysaccharide produced by *Leuconostoc mesenteroides* is

Options :

1. ✘ Xanthan

2. ✘ Pullulan

3. ✘ Polylactate

4. ✔ Dextran

Question Number : 116 Question Id : 5113467916 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

A humanized antibody is one in which the

Options :

1. ✘ Heavy and light chains are from human

2. ✘ Heavy chain is from human and light chain is from mouse

3. ✔ CDRs are from mouse, and the rest is from human

4. ✘ Light chain is from human and heavy chain is from mouse

Question Number : 117 Question Id : 5113467917 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Synteny refers to

Options :

1. ✘ Local conservation of gene order

2. ✘ A tree representation of related sequences

3. ✘ The extent of similarity between two sequences
4. ✔ Gene duplication from a common ancestor

Question Number : 118 Question Id : 5113467918 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

In a batch culture of *Streptomyces griseus*, the maximum streptomycin synthesis occurs during the

Options :

1. ✘ lag phase
2. ✘ exponenetial phase
3. ✔ stationary phase
4. ✘ death phase

Question Number : 119 Question Id : 5113467919 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Which of the following is employed for the repeated use of enzymes in bioprocesses?

Options :

1. ✔ immobilization
2. ✘ polymerization
3. ✘ ligation
4. ✘ isomerization

Question Number : 120 Question Id : 5113467920 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Cholera toxin increases cAMP levels by

Options :

1. ✘ modifying Gi protein
2. ✔ modifying Gs protein

3. ✘ binding to adenylate cyclase
4. ✘ activating cAMP phosphodiesterase