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1.Options shown in green color and with ✔ icon are correct.

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Question Paper Name :	BT2
Subject Name :	Bio Technology
Creation Date :	2025-06-07 14:29:24
Duration :	120
Total Marks :	120
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No

Bio Technology

Group Number :	1
Group Id :	83189665
Group Maximum Duration :	0
Group Minimum Duration :	120
Show Attended Group? :	No
Edit Attended Group? :	No

Break time :	0
Group Marks :	120

Bio Technology

Section Id :	83189665
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	120
Number of Questions to be attempted :	120
Section Marks :	120
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	83189665
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 8318967681 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following methods is most accurate for determining bacterial cell viability?

Options :

1. ✖ Gram staining

Colony-forming unit (CFU) count

2. ✖

Optical density

3. ✔

Total cell count using a hemocytometer

4. ✖

Question Number : 2 Question Id : 8318967682 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The most common mode of transmission for diphtheria, pneumonia and tuberculosis is through:

Options :

Direct contact

1. ✖

Aerosols

2. ✔

Contaminated water

3. ✖

Insect vectors

4. ✖

Question Number : 3 Question Id : 8318967683 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which enzyme allows retroviruses to transcribe RNA into DNA?

Options :

DNA polymerase

1. ✖

Reverse transcriptase

2. ✔

RNA polymerase

3. ✖

Ligase

4. ✖

Question Number : 4 Question Id : 8318967684 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which growth phase is characterized by the most rapid increase in cell number and maximal metabolic activity?

Options :

1. ✖ Lag phase

2. ✔ Log (exponential) phase

3. ✖ Stationary phase

4. ✖ Death phase

Question Number : 5 Question Id : 8318967685 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The prominent group of microorganisms involved in marine biocorrosion is:

Options :

1. ✖ Sulphur oxidizing bacteria

2. ✖ Iron oxidizing bacteria

3. ✖ Sulphide oxidizing bacteria

4. ✔ Sulphate reducing bacteria

Question Number : 6 Question Id : 8318967686 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following is not a characteristic of anaerobic respiration in bacteria?

Options :

1. ✖ Use of oxygen as final electron acceptor

Generation of ATP via electron transport chain

2. ✖

Use of inorganic molecules like nitrate or sulfate

3. ✖

Less energy yield compared to aerobic respiration

4. ✔

Question Number : 7 Question Id : 8318967687 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Photosynthesis is a:

Options :

Reductive, endergonic, anabolic process

1. ✔

Reductive, exergonic, catabolic process

2. ✖

Reductive, exergonic, anabolic process

3. ✖

Reductive, endergonic, catabolic process

4. ✖

Question Number : 8 Question Id : 8318967688 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following is a selective medium for Gram-negative bacteria?

Options :

MacConkey agar

1. ✔

Chocolate agar

2. ✖

Blood agar

3. ✖

Nutrient agar

4. ✖

Question Number : 9 Question Id : 8318967689 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A transducing phage differs from a regular bacteriophage in that it:

Options :

Carries plasmid DNA

1. ✖

Forms lysogens in all hosts

2. ✖

Transfers bacterial DNA from one cell to another

3. ✔

Lyses host cells more rapidly

4. ✖

Question Number : 10 Question Id : 8318967690 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following statements about prions is true?

Options :

1. ✖ They are viruses with no envelope

2. ✖ They contain RNA

3. ✔ They replicate without nucleic acids

4. ✖ They are bacteria with unusual morphology

Question Number : 11 Question Id : 8318967691 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Agar-agar is a polymer of:

Options :

1. ✖ Glucose

Sulphated sugar

2. ✔

Pectin

3. ✖

Protein

4. ✖

Question Number : 12 Question Id : 8318967692 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following enzymes is responsible for converting glucose-6-phosphate to fructose-6-phosphate in glycolysis?

Options :

Hexokinase

1. ✖

Phosphoglucose isomerase

2. ✔

Aldolase

3. ✖

Phosphofructokinase-1

4. ✖

Question Number : 13 Question Id : 8318967693 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Porins:

Options :

are cytoskeletal proteins

1. ✖

form channels which allow passage of hydrophilic molecules

2. ✔

are fatty acids

3. ✖

are pores in the stem of a plant

4. ✖

Question Number : 14 Question Id : 8318967694 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which vitamin is a precursor for the coenzyme NAD+?

Options :

1. ✖ Vitamin B1 (Thiamine)

2. ✖ Vitamin B2 (Riboflavin)

3. ✔ Vitamin B3 (Niacin)

4. ✖ Vitamin B6 (Pyridoxine)

Question Number : 15 Question Id : 8318967695 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A prominent prebiotic substance is:

Options :

1. ✖ Starch

2. ✖ Pectin

Fructo oligosaccharide

3. ✔

Cellulose

4. ✖

Question Number : 16 Question Id : 8318967696 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

During the TCA cycle, which step results in substrate-level phosphorylation?

Options :

Isocitrate to α-ketoglutarate

1. ✖

α-ketoglutarate to Succinyl-CoA

2. ✖

Succinyl-CoA to Succinate

3. ✔

Malate to Oxaloacetate

4. ✖

Question Number : 17 Question Id : 8318967697 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following antibiotics is produced by chemical synthesis?

Options :

1. ✖ Penicillin

2. ✖ Streptomycin

3. ✖ Tetracycline

4. ✔ Chloramphenicol

Question Number : 18 Question Id : 8318967698 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In oxidative phosphorylation, inhibition of complex III would most directly lead to accumulation of which of the following?

Options :

1. ✖ NAD+

2. ✖ NADH

3. ✔ Reduced Ubiquinol (QH_2)

4. ✖ Cytochrome c in oxidized form

Question Number : 19 Question Id : 8318967699 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The Bohr effect describes:

Options :

1. ✖ Increased O_2 affinity of hemoglobin at low pH

2. ✔ Decreased O_2 affinity of hemoglobin at low pH

3. ✖ Cooperative binding of O_2 to hemoglobin

4. ✖ Allosteric inhibition of hemoglobin by CO_2

Question Number : 20 Question Id : 8318967700 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The pentose phosphate pathway produces:

Options :

1. ✖ NADH and ribose-5-phosphate

2. ✔ NADPH and ribose-5-phosphate

3. ✖ $FADH_2$ and glyceraldehyde-3-phosphate

4. ✖ ATP and pyruvate

Question Number : 21 Question Id : 8318967701 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following would be most affected in a cell lacking functional phosphatidylinositol-4,5- bisphosphate (PIP2)?

Options :

1. ✖ Activation of protein kinase A

2. ✔ Activation of phospholipase C

3. ✖ DNA replication

4. ✖ Protein synthesis

Question Number : 22 Question Id : 8318967702 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The parts of proteins having the highest flexibility are:

Options :

1. ✖ α-helices

2. ✖ β-sheets

3. ✖ peptide bonds

4. ✔ surface side chains

Question Number : 23 Question Id : 8318967703 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The chemiosmotic hypothesis explains ATP synthesis by:

Options :

1. ✖ Substrate-level phosphorylation

2. ✔ Proton gradient-driven ATP synthase

Direct transfer of electrons to ADP

3. ✖

Hydrolysis of GTP

4. ✖

Question Number : 24 Question Id : 8318967704 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In bacterial operons, which mutation would prevent transcription of downstream structural genes but not affect the promoter region?

Options :

Mutation in the operator

1. ✔

Mutation in the promoter

2. ✖

Mutation in the repressor gene

3. ✖

Mutation in the Shine-Dalgarno sequence

4. ✖

Question Number : 25 Question Id : 8318967705 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In DNA replication, the leading strand is synthesized:

Options :

Discontinuously in Okazaki fragments

1. ✖

By reverse transcriptase

2. ✖

Only during mitosis

3. ✖

Continuously in the 5'→3' direction

4. ✔

Question Number : 26 Question Id : 8318967706 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Major gluconeogenesis occurs in:

Options :

1. Liver and kidney ✔

2. Liver and heart ✖

3. Liver and skeletal muscle ✖

4. Liver and adrenal gland ✖

Question Number : 27 Question Id : 8318967707 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The central dogma of molecular biology describes:

Options :

1. DNA → RNA → Protein ✔

RNA → DNA → Protein

2. ✖

Protein → RNA → DNA

3. ✖

DNA → Protein → RNA

4. ✖

Question Number : 28 Question Id : 8318967708 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A karyotype is used to visualize:

Options :

Protein structure

1. ✖

RNA sequences

2. ✖

Chromosome number and structure

3. ✔

Metabolic pathways

4. ✖

Question Number : 29 Question Id : 8318967709 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If side chains of amino acids interact with each other, which of the following would be termed as a salt bridge?

Options :

1. ✖ Tyr- Phe

2. ✖ Cys- Cys

3. ✔ Lys- Glu

4. ✖ Ala- Val

Question Number : 30 Question Id : 8318967710 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In eukaryotic transcription, the carboxy-terminal domain (CTD) of RNA polymerase II is essential for:

Options :

1. ✖ DNA binding specificity

2. ✖ Sigma factor recruitment

3. ✔ RNA splicing, capping, and polyadenylation coordination

4. ✖ Enhancer binding

Question Number : 31 Question Id : 8318967711 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following organisms typically get their carbon for biosynthesis from carbon dioxide?

Options :

Glucose fermenting bacteria

1. ✖

Anaerobic glucose respiring bacteria

2. ✖

Aerobic glucose respiring bacteria

3. ✔

Ammonia oxidizing bacteria

4. ✖

Question Number : 32 Question Id : 8318967712 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The Ti plasmid, used in plant genetic engineering, is naturally found in:

Options :

Agrobacterium tumefaciens

1. ✔

Escherichia coli

2. ✖

Bacillus thuringiensis

3. ✖

Saccharomyces cerevisiae

4. ✖

Question Number : 33 Question Id : 8318967713 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A child inherits two different mutant alleles for a recessive disease gene from each parent. This condition is known as:

Options :

Compound heterozygosity

1. ✔

Homozygosity

2. ✖

Dominant negative mutation

3. ✖

Heteroplasmy

4. ✖

Question Number : 34 Question Id : 8318967714 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following are components of a phospholipid?

Options :

1. ✖ cholesterol, glycerol, fatty acids

2. ✔ fatty acids, phosphate group, glycerol

3. ✖ glycerol, amino acids, phosphate group

4. ✖ phosphate group, cholesterol, monosaccharides

Question Number : 35 Question Id : 8318967715 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which enzyme is crucial for the cleavage of DNA at specific sites in genetic engineering?

Options :

1. ✖ DNA ligase

2. ✔ Restriction endonuclease

3. ✖ DNA polymerase

4. ✖ Reverse transcriptase

Question Number : 36 Question Id : 8318967716 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In the production of citric acid by Aspergillus niger, the accumulation of citric acid is primarily due to:

Options :

1. ✔ Inhibition of the TCA cycle enzyme isocitrate dehydrogenase by Mn^{2+} deficiency

Increased expression of citrate synthase

2. ✖

Enhanced glycolytic flux

3. ✖

Addition of iron salts

4. ✖

Question Number : 37 Question Id : 8318967717 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The net charge of a protein may not be sufficient to determine whether a protein will bind to an ion exchanger. This is due to:

Options :

The presence of hydrophobic patches on the protein surface

1. ✖

Heterogeneous spatial distribution of charged amino acids

2. ✔

3. ✖ The presence of repeating motifs in some proteins

4. ✖ The strong hydration potential of protein

Question Number : 38 Question Id : 8318967718 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

What is the primary role of calcium alginate in enzyme immobilization?

Options :

1. ✖ Provides covalent attachment to enzymes

2. ✖ Maintains high substrate concentration

3. ✔ Forms a gel matrix for entrapment

4. ✖ Increases enzyme turnover number

Question Number : 39 Question Id : 8318967719 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which plant hormone is most commonly used to induce shoot formation in tissue culture?

Options :

1. Auxin ✖

2. Gibberellin ✖

3. Abscisic acid ✖

4. Cytokinin ✔

Question Number : 40 Question Id : 8318967720 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which microorganism is most commonly used for large-scale industrial production of L-glutamic acid?

Options :

Bacillus subtilis

1. ✖

Escherichia coli

2. ✖

Corynebacterium glutamicum

3. ✔

Pseudomonas aeruginosa

4. ✖

Question Number : 41 Question Id : 8318967721 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In aerobic solid waste stabilization, oxygen transfer limitation primarily affects:

Options :

Nitrate reduction

1. ✖

2. ✖ Fungal colonization

3. ✔ Thermophilic bacterial activity

4. ✖ Anaerobic methanogenesis

Question Number : 42 Question Id : 8318967722 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Knockout mice are primarily used to study:

Options :

1. ✔ Gene function

2. ✖ Protein purification

3. ✖ Viral replication

Antibody production

4. ✖

Question Number : 43 Question Id : 8318967723 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which one of the following tools of recombinant DNA technology is INCORRECTLY paired with its applications?

Options :

restriction endonuclease - production of DNA fragments for gene cloning.

1. ✖

DNA ligase - enzyme that cuts DNA, creating sticky ends

2. ✔

DNA polymerase - copies DNA sequences in the polymerase chain reaction

3. ✖

reverse transcriptase - production of cDNA from mRNA

4. ✖

Question Number : 44 Question Id : 8318967724 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The main purpose of using reporter genes in transgenic animals is to:

Options :

1. Track gene expression ✔

2. Increase growth rate ✖

3. Enhance disease resistance ✖

4. Improve reproductive capacity ✖

Question Number : 45 Question Id : 8318967725 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following is a common consequence of improper pH control in citric acid fermentation?

Options :

Inactivation of citrate synthase

1. ✖

Accumulation of oxalic acid

2. ✔

Enhanced ethanol production

3. ✖

Increased biomass yield

4. ✖

Question Number : 46 Question Id : 8318967726 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which one of the following amino acids is optically inactive?

Options :

Glycine

1. ✔

Methionine

2. ✖

3. ✖ Phenylalanine

4. ✖ Glutamine

Question Number : 47 Question Id : 8318967727 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The chemical nature of covalent linkage in a disaccharide is known as:

Options :

1. ✖ Ester

2. ✔ Ether

3. ✖ Amide

4. ✖ Diester

Question Number : 48 Question Id : 8318967728 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which technique is used to produce identical copies of a particular gene?

Options :

1. ✖ Gene therapy

2. ✖ Gene knockout

3. ✖ Gene silencing

4. ✔ Gene cloning

Question Number : 49 Question Id : 8318967729 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Under steady-state conditions, the average specific growth rate of the culture is:

Options :

Zero

1. ✖

Equal to maximum growth rate

2. ✖

Equal to dilution rate

3. ✔

Less than dilution rate

4. ✖

Question Number : 50 Question Id : 8318967730 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following receptors is not a signalling receptor?

Options :

Cytokine receptor

1. ✖

Chemokine receptor

2. ✖

T-cell receptor

3. ✖

Mannose receptor

4. ✔

Question Number : 51 Question Id : 8318967731 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which one of the following phytohormones is produced under water-deficit and plays an important role in tolerance against drought?

Options :

Abscisic acid

1. ✔

Cytokinin

2. ✖

Ethylene

3. ✖

Gibberellin

4. ✖

Question Number : 52 Question Id : 8318967732 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In non-Newtonian fermentation broths,

the flow behavior index (n) < 1 indicates:

Options :

1. ✖ Newtonian fluid

2. ✔ Pseudoplastic fluid

3. ✖ Dilatant fluid

4. ✖ Bingham plastic fluid

Question Number : 53 Question Id : 8318967733 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which immunodeficiency is X-linked and affects BTK kinase?

Options :

1. ✖ SCID

2. ✖ CGD

3. ✖ Wiskott-Aldrich syndrome

4. ✔ Bruton's agammaglobulinemia

Question Number : 54 Question Id : 8318967734 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Exact mass and sequence of proteins and peptides can be measured by:

Options :

1. ✖ CD Spectroscopy

2. ✖ Proton NMR

X-Ray

3. ✖

Mass spectroscopy

4. ✔

Question Number : 55 Question Id : 8318967735 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A chemostat operating with two substrates exhibits diauxic growth if:

Options :

Both substrates are utilized simultaneously

1. ✖

One substrate represses the other's uptake

2. ✔

They have the same saturation constants

3. ✖

Substrate concentrations are equal

4. ✖

Question Number : 56 Question Id : 8318967736 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

A patient with hyper-IgM syndrome likely has a defect in:

Options :

RAG-1/2

1. ✖

CD40 ligand

2. ✔

IL-2 receptor

3. ✖

NADPH oxidase

4. ✖

Question Number : 57 Question Id : 8318967737 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following complementarity determining regions (CDRs) of antibodies is sequentially and conformationally the most variable?

Options :

1. ✖ CDR1 of Light chain

2. ✖ CDR3 of Light chain

3. ✖ CDR1 of Heavy chain

4. ✔ CDR3 of Heavy chain

Question Number : 58 Question Id : 8318967738 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following factors most strongly influences the expression of totipotency in plant tissue culture?

Options :

Light intensity

1. ✖

Carbon dioxide levels

2. ✖

Hormonal balance in media

3. ✔

Temperature variation

4. ✖

Question Number : 59 Question Id : 8318967739 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The plasmid pBR322 contains two antibiotic resistance genes:

Options :

ampR and tetR

1. ✔

kanR and catR

2. ✖

3. ✖ neoR and hygR

4. ✖ bla and specR

Question Number : 60 Question Id : 8318967740 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which one of the following matrices can be used to identify distantly related homologs?

Options :

1. ✖ BLOSUM90

2. ✖ BLOSUM62

3. ✔ BLOSUM45

4. ✖ BLOSUM80

Question Number : 61 Question Id : 8318967741 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Vortexing in a stirred tank reactor can be prevented by using:

Options :

1. ✖ axial flow impeller

2. ✖ a turbine impeller

3. ✔ baffles in the reactor

4. ✖ multiple impellers

Question Number : 62 Question Id : 8318967742 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following is a plant growth inhibitor rather than a promoter?

Options :

1. ✖ Cytokinin

2. ✖ Gibberellin

3. ✔ Abscisic acid

4. ✖ Auxin

Question Number : 63 Question Id : 8318967743 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Polymerases are available with proof reading activity. Which of the following are the characteristics of these types of polymerases?

Options :

1. ✖ They add A residue at 3' end

2. ✔ They are obtained from Thermococcus litoralis

They can't be obtained from archaebacteria

3. ✖

The marine bacteria from which they are obtained grow at temperatures lower than that of Thermus aquatics

4. ✖

Question Number : 64 Question Id : 8318967744 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which one of the following is a signaling receptor?

Options :

mannose receptor

1. ✖

toll-like receptor

2. ✔

scavenger receptor

3. ✖

LPS receptor

4. ✖

Question Number : 65 Question Id : 8318967745 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Optimization of which of the following nutrients is most critical for anthocyanin production in plant suspension cultures?

Options :

1. ✔ Nitrogen

2. ✖ Magnesium

3. ✖ Iron

4. ✖ Phosphate

Question Number : 66 Question Id : 8318967746 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which one of the following is the most suitable type of impeller for mixing high viscosity (viscosity > 10^5 cP) fluids?

Options :

1. ✖ Propeller

2. ✖ Flat blade turbine

3. ✖ Paddle

4. ✔ Helical ribbon

Question Number : 67 Question Id : 8318967747 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Cell suspension cultures are usually derived from:

Options :

1. ✖ Leaf discs

2. ✖ Root tips

3. ✔ Callus tissue

4. ✖ Zygotic embryos

Question Number : 68 Question Id : 8318967748 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

What is the pH of the medium when sucrose is used as substrate for the production of citric acid?

Options :

1. ✔ 3

2. ✖ 4

3. ✖ 5

4. ✖ 6

Question Number : 69 Question Id : 8318967749 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Innate immunity is mediated by:

Options :

1. Toll like receptors ✔

2. G protein coupled receptors ✖

3. Integrins ✖

4. FGF receptor ✖

Question Number : 70 Question Id : 8318967750 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which factor most critically determines the attachment efficiency of animal cells on microcarriers?

Options :

Oxygen concentration

1. ✖

Surface charge and coating of the microcarrier

2. ✔

Agitation speed

3. ✖

pH of the medium

4. ✖

Question Number : 71 Question Id : 8318967751 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

What is the primary disadvantage of using spinner flasks for hybridoma culture?

Options :

Low oxygen transfer rate

1. ✖

Non-uniform pH

2. ✖

High shear stress

3. ✔

Inability to scale-up

4. ✖

Question Number : 72 Question Id : 8318967752 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

An operon is a:

Options :

regulatory molecule that turns genes on and off

1. ✖

cluster of regulatory sequences controlling transcription of protein coding genes.

2. ✖

cluster of genes that are co-ordinately regulated

3. ✔

promoter, an operator, and a group of linked structural genes

4. ✖

Question Number : 73 Question Id : 8318967753 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following precursors is added to the medium to get penicillin G?

Options :

Phenyl carbamic acid

1. ✖

Phenyl acetic acid

2. ✔

Ammonium sulphate

3. ✖

Ammonium chloride

4. ✖

Question Number : 74 Question Id : 8318967754 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The Cytokinin receptor is

Options :

A G-protein coupled receptor

1. ✖

A tyrosine kinase

2. ✖

An acidic cytosolic protein

3. ✖

A two-component histidine kinase

4. ✔

Question Number : 75 Question Id : 8318967755 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which strategy can be used to minimize the shear damage in bioreactors used for animal cell culture?

Options :

Using spargers

1. ✖

Increasing agitation rate

2. ✖

Adding Pluronic F-68

3. ✔

Increasing temperature

4. ✖

Question Number : 76 Question Id : 8318967756 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which one of the following is not a deficiency disorder?

Options :

Beriberi

1. ✖

Night Blindness

2. ✖

Poliomyelitis

3. ✔

Pernicious Anemia

4. ✖

Question Number : 77 Question Id : 8318967757 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The overall stoichiometry for aerobic cell growth is

$3C_6H_{12}O_6 + 2.5NH_3 + O_2 \rightarrow 1.5C_aH_bO_cN_d + 3CO_2 + 5H_2O.$

The elemental composition formula of the biomass is:

Options :

1. ✖ $C_5H_{22.33}O_6N_{2.667}$

2. ✖ $C_{10}H_{12.33}O_6N_{2.667}$

3. ✖ $C_5H_{12.33}O_6N_{1.667}$

4. ✔ $C_{10}H_{22.33}O_6N_{1.667}$

Question Number : 78 Question Id : 8318967758 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Inosine in the tRNA anticodon will base pair with all except which one of the following bases in the codon of mRNA?

Options :

1. ✖ adenine

2. ✖ uracil

3. ✔ cytosine

4. ✖ guanine

Question Number : 79 Question Id : 8318967759 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following best explains the absence of immune response to self-antigens under normal physiological conditions?

Options :

1. ✖ Clonal expansion

2. ✔ Clonal deletion

3. ✖ Somatic recombination

4. ✖ Affinity maturation

Question Number : 80 Question Id : 8318967760 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which gene is typically inserted into host cells to facilitate monoclonal antibody production using hybridoma technology?

Options :

1. ✖ IgG heavy chain

2. ✖ Myc oncogene

3. ✔ HAT resistance gene

4. ✖ DHFR gene

Question Number : 81 Question Id : 8318967761 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The primary function of MHC class I molecules is to present:

Options :

1. ✖ Bacterial polysaccharides to B cells

2. ✔ Viral peptides to CD8+ T cells

3. ✖ Self-antigens to NK cells

4. ✖ Peptides to CD4+ T cells

Question Number : 82 Question Id : 8318967762 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which algorithm is most commonly used for pairwise sequence alignment?

Options :

1. ✖ BLAST

2. ✖ Smith-Waterman

3. ✔ Needleman-Wunsch

Hidden Markov Model

4. ✖

Question Number : 83 Question Id : 8318967763 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Mixing time increases with the volume of the reactor because of increase in the:

Options :

1. ✔ circulation time

2. ✖ shear

3. ✖ turbulence

4. ✖ flow rate

Question Number : 84 Question Id : 8318967764 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In the thymus, positive selection of T cells ensures:

Options :

1. ✖ T cells do not recognize self-antigens

2. ✔ T cells recognize antigens presented by MHC molecules

3. ✖ Elimination of self-reactive clones

4. ✖ Clonal anergy

Question Number : 85 Question Id : 8318967765 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which tool would you use to predict transmembrane helices in a protein?

Options :

1. ✔ TMHMM

2. ✖ PSIPRED

3. ✖ CLUSTAL OMEGA

4. ✖ MUSCLE

Question Number : 86 Question Id : 8318967766 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In Graft-Versus-Host-Disease (GVHD), the immunocompetent donor T cells:

Options :

1. ✖ Attack the host's transplanted organ

2. ✖ Are attacked by the host immune system

3. ✔ Attack the host's tissues

4. ✖ Tolerate the host's tissues

Question Number : 87 Question Id : 8318967767 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Genome-Wide Association Studies primarily identifies:

Options :

1. Protein-protein interactions ✖

2. SNPs linked to phenotypes ✔

3. Alternative splicing events ✖

4. Horizontal gene transfer ✖

Question Number : 88 Question Id : 8318967768 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Amphotericin B is clinically used against which one of the following pathogens?

Options :

Herpes simplex virus I

1. ✖

M. tuberculosis

2. ✖

Candida spp.

3. ✔

P. vivax

4. ✖

Question Number : 89 Question Id : 8318967769 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The ENCODE project aims to:

Options :

Annotate all functional elements in the human genome

1. ✔

Sequence all prokaryotic genomes

2. ✖

Develop new sequencing technologies

3. ✖

Catalog protein structures

4. ✖

Question Number : 90 Question Id : 8318967770 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Match the items in Group 1 with an appropriate description in Group 2.

Group I	Group 2
P. UPGMA	1. Protein sequence database
Q. CLUSTALW	2. Phylogenetic Analysis
R. SWISS-PROT	3. 3-D structure visualization
S. RasMol	4. Multiple sequence alignment

Options :

P-4, Q-1, R-2, S-3

1. ✖

P-2, Q-4, R-1, S-3

2. ✔

P-2, Q-3, R-1, S-4

3. ✖

4. ✖ P-2, Q-1, R-4, S-3

Question Number : 91 Question Id : 8318967771 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following vectors can accommodate the largest foreign DNA insert?

Options :

1. ✖ Plasmid

2. ✖ Cosmid

3. ✖ Bacteriophage lambda

4. ✔ Yeast artificial chromosome (YAC)

Question Number : 92 Question Id : 8318967772 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which one of the following hormones promote production of seedless grapes?

Options :

1. ✖ IAA

2. ✖ IBA

3. ✖ BAP

4. ✔ GA3

Question Number : 93 Question Id : 8318967773 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The term “washout” in continuous culture refers to:

Options :

1. ✖ Cell death due to high pH

2. ✖ Removal of dead cells only

3. ✔ Cell loss exceeding growth rate

4. ✖ Incomplete mixing

Question Number : 94 Question Id : 8318967774 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which transposable element uses a "copy-and-paste" mechanism to move within the genome?

Options :

1. ✖ DNA transposon

2. ✔ Retrotransposon

3. ✖ Ac-Ds element

Insertion sequence

4. ✖

Question Number : 95 Question Id : 8318967775 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Seedless fruits may arise as a result of:

Options :

Parthenocarpy

1. ✔

Sexual reproduction

2. ✖

Autogamy

3. ✖

Allogamy

4. ✖

Question Number : 96 Question Id : 8318967776 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

In downstream processing, chromatography is primarily used for:

Options :

1. ✖ Cell harvesting

2. ✖ Cell lysis

3. ✖ Product concentration

4. ✔ Product purification

Question Number : 97 Question Id : 8318967777 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which of the following techniques uses temperature cycling for DNA amplification?

Options :

1. ✖ DNA fingerprinting

2. ✔ PCR

3. ✖ RAPD

4. ✖ Northern blotting

Question Number : 98 Question Id : 8318967778 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

High frequency heterokaryon formation is observed during protoplast fusion by the addition of:

Options :

1. ✖ Glycerol

2. ✔ PEG

3. ✖ $NaNO_3$

4. ✖ DMSO

Question Number : 99 Question Id : 8318967779 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The Monod equation relates microbial growth rate to:

Options :

1. ✖ Oxygen concentration

2. ✖ Enzyme activity

3. ✔ Substrate concentration

4. ✖ Biomass concentration

Question Number : 100 Question Id : 8318967780 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Site-directed mutagenesis is commonly used to:

Options :

1. ✖ Increase plasmid yield

2. ✖ Knock out specific genes in yeast

3. ✔ Introduce specific point mutations in DNA

4. ✖ Identify transposable elements

Question Number : 101 Question Id : 8318967781 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

What type of sequence alignment does BLAST primarily perform?

Options :

1. ✖ Pairwise

2. ✖ Multiple sequence

Global

3. ✖

Local

4. ✔

Question Number : 102 Question Id : 8318967782 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The oxygen uptake rate (OUR) in a bioprocess is dependent on:

Options :

Substrate concentration only

1. ✖

Cell density and metabolic activity

2. ✔

Agitation rate only

3. ✖

Temperature alone

4. ✖

Question Number : 103 Question Id : 8318967783 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

What region of an mRNA is most commonly associated with transcript destabilization?

Options :

1. The 5’ untranslated region ✖

2. The 3’ untranslated region ✔

3. The exonic coding regions ✖

4. The intronic regions ✖

Question Number : 104 Question Id : 8318967784 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which scoring matrix is primarily used in amino acid sequence alignment?

Options :

1. PAM ✔

2. BLAST ✖

3. T-Coffee ✖

4. GFF ✖

Question Number : 105 Question Id : 8318967785 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

High cell density fermentations often exhibit:

Options :

1. Newtonian behavior ✖

2. ✔ Pseudoplastic (shear-thinning) behavior

3. ✖ Dilatant (shear-thickening) behavior

4. ✖ Rheopectic behavior

Question Number : 106 Question Id : 8318967786 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which one of the following is the causative agent of Typhoid fever?

Options :

1. ✖ V. cholera

2. ✖ P. multocida

3. ✔ S. Typhi

4. ✖ E. coli

Question Number : 107 Question Id : 8318967787 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

What is the main purpose of DNA microarrays in genomics?

Options :

1. To identify protein-protein interactions ✖

2. To study gene expression levels across different conditions ✔

3. To sequence the entire genome ✖

4. To determine protein structures ✖

Question Number : 108 Question Id : 8318967788 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Dissolved oxygen (DO) in a bioreactor is typically measured using a:

Options :

Thermocouple

1. ✖

pH electrode

2. ✖

Polarographic electrode

3. ✔

Conductivity meter

4. ✖

Question Number : 109 Question Id : 8318967789 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Which one of the following is the causative agent of fowl cholera?

Options :

V. cholera

1. ✖

P. multocida

2. ✔

E. coli

3. ✖

S. Pullorum

4. ✖

Question Number : 110 Question Id : 8318967790 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The main end products of anaerobic digestion of organic waste are:

Options :

CO_2 and H_2O

1. ✖

Methane (CH_4) and CO_2

2. ✔

Nitrates and sulfates

3. ✖

Oxygen and biomass

4. ✖

Question Number : 111 Question Id : 8318967791 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If the determinant of the 3×3 matrix $A = \begin{pmatrix} a & 1 & 2 \\ b & 0 & -2 \\ 1 & -3 & 1 \end{pmatrix}$ is zero,

then the values of a and b are ___

Options :

1. ✖ $a = 0, b = 0$

2. ✖ $a = \frac{3}{2}, b = 1$

3. ✖ $a = \frac{1}{3}, b = 0$

4. ✔ $a = \frac{-1}{6}, b = \frac{-1}{7}$

Question Number : 112 Question Id : 8318967792 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Let $A = \begin{pmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{pmatrix}$ be a 3×3 matrix. If α and β are the largest and smallest eigenvalues of A, respectively, then $\alpha - \beta =$ _____

Options :

1. ✖ 0

2. ✖ 1

3. ✖ 2

4. ✔ 3

Question Number : 113 Question Id : 8318967793 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The value of the real variable $x > 0$ that minimizes the function $f(x) = x^{-e}e^{x}$ is_____

Options :

1. ✔ e

2. ✖ $1/e$

3. ✖ $\sqrt{e}$

4. ✖ 1

Question Number : 114 Question Id : 8318967794 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If $f(x) = |x - 1|$, then

Options :

1. ✖ $f(x)$ is differentiable at $x = 1$

2. ✔ $f(x)$ is not differentiable at $x = 1$

3. ✖ $f(x)$ is not differentiable at $x = 0$

4. ✖ $f(x)$ is not continuous at $x = 0$

Question Number : 115 Question Id : 8318967795 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The solution of the differential equation $\frac{d^2y}{dx^2} - 3\frac{dy}{dx} + 2y = 0$ satisfying $y(0) = 0, y'(0) = 1$, is _____

Options :

1. ✖ $y(x) = e^x - e^{2x}$

2. ✖ $y(x) = e^x + e^{2x}$

3. ✖ $y(x) = -e^x - e^{2x}$

4. ✔ $y(x) = -e^x + e^{2x}$

Question Number : 116 Question Id : 8318967796 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The inverse Laplace transformation of $\frac{s+5}{s^2+4s+4}$ for $t \geq 0$, is _____

Options :

1. ✖ $4e^{2t}$

2. ✖ $4e^{-2t}$

3. ✖ $(1+3t)e^{2t}$

4. ✔ $(1+3t)e^{-2t}$

Question Number : 117 Question Id : 8318967797 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

The probability distribution of a random variable X is

$X = x$	10	20	30	40	50
$P(X = x)$	k	$2k$	$3k$	$4k$	$5k$

Then, $P(X=50) - \frac{P(X<30)}{P(X>20)} =$ _____

Options :

1. ✖ $\frac{2}{3}$

2. ✖ $\frac{5}{6}$

3. ✔ $\frac{1}{12}$

4. ✖ 0

Question Number : 118 Question Id : 8318967798 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Simpson's $\frac{1}{3}$ rule is applied when

Options :

1. ✖ the number of intervals is divisible by 3

2. ✔ the number of intervals is divisible by 2

3. ✖ the number of intervals is divisible by 5

4. ✖ the number of intervals is divisible by 7

Question Number : 119 Question Id : 8318967799 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

Let a random variable X follow Poisson distribution such that

P(X=0) = 2P(X=1). Then P(X = 3) =__

Options :

1. ✖ $\frac{1}{6e}$

2. ✔ $\frac{1}{48\sqrt{e}}$

3. ✖ $\frac{4}{3e^2}$

4. ✖ $\frac{1}{2}$

Question Number : 120 Question Id : 8318967800 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Correct Marks : 1 Wrong Marks : 0

If A and B are two events having probabilities, $P(A) = 0.6$, $P(B) = 0.3$ and $P(A \cap B) = 0.2$, then the probability that neither A nor B occurs is _____

Options :

1. ✖ 0

2. ✔ 0.3

3. ✖ 0.7

4. ✖ 0.8