

TELANGANA RESIDENTIAL EDUCATIONAL INSTITUTIONS RECRUITMENT BOARD TREI-RB

Notations :

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

Question Paper Name :	Microbiology 16th Aug 2023 Shift 2
Subject Name :	Microbiology
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Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No
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Microbiology

Group Number :	1
Group Id :	59425398
Group Maximum Duration :	0
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Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	100

Is this Group for Examiner? :	No
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Microbiology

Section Id :	594253114
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	100
Number of Questions to be attempted :	100
Section Marks :	100
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	594253145
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 1 Question Id : 5942539724 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Bacterial cells population in human body compared to the number of non-bacterial cells estimated is

Options :

1. ✘ less than the number of non-bacterial cells of human body
2. ✘ equal number bacterial cell population to that of non-bacterial cells
3. ✔ ten times more bacterial cells population to that of non-bacterial cells

4. ✘ Bacterial cells are not present in human body unless the person is infected by the pathogenic bacteria

Question Number : 2 Question Id : 5942539725 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Peptic ulcer is proved to be associated with causative agent which was not understood for long

Options :

1. ✘ *Entamoeba histolytica*

2. ✔ *Helicobacter pylori*

3. ✘ *Giardia intestinalis*

4. ✘ Both *Entamoeba histolytica* and *Giardia intestinalis*

Question Number : 3 Question Id : 5942539726 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Match the following

A) Hans and Zacharias

i) Discovery of microscopic life

B) Robert Hooke

ii) Discovered oil immersion lenses

C) Antony van Leeuwenhoek

iii) Electron microscope

D) Ernst Abbe

iv) Cells under microscope

E) Ernst Ruska and Max Knoll

v) Magnifying lenses

Options :

1. ✔ A - v, B - iv, C - i, D - ii, E - iii

2. ✘ A - iv, B - i, C - v, D - ii, E - iii

3. ✘ A - ii, B - iii, C - iv, D - v, E - i

4. ✘ A - iii, B - v, C - i, D - ii, E - iv

Question Number : 4 Question Id : 5942539727 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Axenic culture and pure culture denote similar common meaning but differ in their scientific understanding because

Options :

1. ✘ Axenic culture is auxotrophic population however pure culture is autotrophic population
2. ✘ Axenic culture is anaerobic however pure culture is aerobic
3. ✘ Axenic culture indicates genetic purity however pure culture does not
4. ✔ Axenic culture does not indicate genetic purity however pure culture indicates genetic purity

Question Number : 5 Question Id : 5942539728 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Arrange the following in chronological order

- A) Poul Ehrlich developed the drug 'salvarsan' to treat syphilis
- B) Edward Jenner introduced vaccination procedure for small pox disease
- C) Antony van Leeuwenhoek discovered microscopic life
- D) Christian Gram published a paper describing differential staining
- E) Robert Koch demonstrated that anthrax disease is caused by a bacterial pathogen

Options :

1. ✘ B, E, C, D, A
2. ✔ C, B, E, D, A
3. ✘ C, D, E, B, A

4. ✘ D, C, B, E, A

Question Number : 6 Question Id : 5942539729 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

What are the devices and methods of sterilization by physical agents/devices and importance of such methods?

Options :

1. ✘ Steam sterilization and hot air oven are used for removal of microbes in liquid pharmaceuticals of injectable nature

2. ✘ Filtration methods are used for sterilization of liquid oral pharmaceuticals to make them as sterile final products

3. ✔ Filtration methods are used for sterilization of liquid injectable pharmaceuticals

4. ✘ Fractional sterilization and pasteurization methods are used for making sterile serum injectables

Question Number : 7 Question Id : 5942539730 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Design of laminar air flow cabinet used for sterilization is such that air passes through filters arranged in the following order to get sterilized

Options :

1. ✘ Metal mesh, bacteriological filter followed by pre-filters to give more life to the device for its function

2. ✘ Bacteriological filter, Pre-filter followed by metal mesh to get particle free sterile air

3. ✘ Perforated asbestos sheet, bacteriological filter followed by pre-filter to get particle free sterile air
4. ✔ Metal mesh, pre-filter followed by bacteriological filter to give more life to devise and get sterile air

Question Number : 8 Question Id : 5942539731 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Heat labile liquid solution prepared in glass container needs to be sterilized for therapeutic use. Which of the following methods is preferably used?

Options :

1. ✔ Bacteriological filtration to make it particle free material
2. ✘ Directly by putting the closed container with liquid close to UV light to get quick sterile liquid
3. ✘ Subjecting the liquid solution to fractional sterilization under controlled conditions
4. ✘ Addition of 0.5 percent formaldehyde and incubation overnight in dark

Question Number : 9 Question Id : 5942539732 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Identify the **INCORRECT** statement from the following

Options :

1. ✘ GC content of DNA can be measured by determining the temperature at which double stranded DNA melts
2. ✘ Sequence differences between organisms can be used to assess their relatedness

3. ✘ Based on DNA homology studies, members of the genus *Shigella* should be in the same species as *Escherichia coli*

4. ✔ Pulsed-field gel electrophoresis is used to determine the serotype of an organism

Question Number : 10 Question Id : 5942539733 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If the GC content of two organisms is 70%, which of the following is correct statement?

Options :

1. ✘ The organisms are definitely not related

2. ✔ The AT content is 30%

3. ✘ The organisms likely have extensive DNA homology

4. ✘ The organism likely have many characteristics in common

Question Number : 11 Question Id : 5942539734 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Match the following

- | | |
|------------------------------------|-------------------------|
| A) Diazotroph | i) <i>Ehrlichia</i> |
| B) Coliform | ii) <i>Nitrosomonas</i> |
| C) Spirochetes | iii) <i>Frankia</i> |
| D) Chemolithotroph | iv) <i>Borrelia</i> |
| E) Obligate intracellular parasite | v) <i>Escherichia</i> |

Options :

1. ✘ A – iii, B – v, C – iv, D – i, E – ii

2. ✘ A – iii, B – v, C – ii, D – i, E – iv

3. ✔ A – iii, B – v, C – iv, D – ii, E – i

4. ✘ A – ii, B – i, C – iv, D – v, E – iii

Question Number : 12 Question Id : 5942539735 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

If 10 percent of the population of cells is killed by an antimicrobial chemical in the first minute of exposure, during the second minute the percentage killed will be

Options :

1. ✔ 10%

2. ✘ 20%

3. ✘ 40%

4. ✘ 50%

Question Number : 13 Question Id : 5942539736 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which one of the following is **NOT** a characteristic of glycan molecule present in cells?

Options :

1. ✘ A heteropolysaccharide present in structural organization of bacterial cell

2. ✔ A homopolysaccharide present in peptidoglycan structure of bacterial cell wall

3. ✘ Polysaccharide polymer linked by β -1, 4 glycosidic bonds

4. ✘ Structural part of peptidoglycan to make cell wall of bacteria

Question Number : 14 Question Id : 5942539737 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which of the following is NOT composed of tubulin?

Options :

1. ✘ Flagella

2. ✘ Cilia

3. ✔ Actin

4. ✘ Microtubules

Question Number : 15 Question Id : 5942539738 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

In an actively growing population of bacteria in its mid log phase, its initial population is 1×10^2 per mL and after two hours it increased to 10^6 per mL. What is its generation time?

Options :

1. ✔ 18 min

2. ✘ 24 min

3. ✘ 28 min

4. ✘ 32 min

Question Number : 16 Question Id : 5942539739 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

In a purpose to develop spheroplasts, the following efforts are made. Which of them gives successful outcome?

- A) Growing *Staph aureus* in sub-lethal concentrations of penicillin
- B) Growing *E.coli* in sub-lethal concentrations of penicillin
- C) Treating *Staph aureus* with sub-lethal concentrations of lysozyme
- D) Treating *E.coli* with sub-lethal concentrations of lysozyme
- E) Treating *E.coli* with sub-lethal concentrations of penicillin and lysozyme
- F) Treating *Staph aureus* with sub-lethal concentrations of penicillin and lysozyme

Options :

- 1. ✘ A, B, D & E only
- 2. ✘ A, C, D & F only
- 3. ✘ B, D & F only
- 4. ✔ B, D & E only

Question Number : 17 Question Id : 5942539740 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Uniform suspension of soil sample is prepared and used for determining the number of bacteria in it by two methods: (1) By colony count and (2) By counting the cells in counting chamber (on slide). How would the results be compared?

Options :

- 1. ✘ More number of bacteria would be estimated by method 1
- 2. ✔ More number of bacteria would be estimated by method 2
- 3. ✘ Methods 1 and 2 would give same number of bacteria

- Depending on the soil sample, some times method 1 would be higher and some times method 2 would be higher
4. ✘

Question Number : 18 Question Id : 5942539741 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Biological enrichment method is best used for selective isolation of

Options :

1. ✘ *Salmonella*
2. ✘ *Azotobacter*
3. ✔ *Rhizobium*
4. ✘ *Nitrosomonas*

Question Number : 19 Question Id : 5942539742 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Chemical agent that is most reliably used to sterilize inanimate objects

Options :

1. ✘ Alcohol
2. ✘ Phenolic compounds
3. ✘ Iodine
4. ✔ Ethylene oxide gas

Question Number : 20 Question Id : 5942539743 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Perithecium is a structure found in

Options :

1. ✓ *Neurospora*
2. ✗ *Nostoc*
3. ✗ *Chaetomium*
4. ✗ *Chlamydomonas*

Question Number : 21 Question Id : 5942539744 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Choose correct statements from the following

- A) Chlamydospores are resistant structures of vegetative mycelium
- B) Ascospores are diploid spores
- C) Basidiospores are haploid spores
- D) Hyphae are structures of vegetative reproduction
- E) Pycnidium is a sexual reproductive structure
- F) Mycophages are obligate parasites on fungi

Options :

1. ✓ A, C, D & F
2. ✗ A, B, C & D
3. ✗ B, C, E & F
4. ✗ C, D, E & F

Question Number : 22 Question Id : 5942539745 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Red tides or blooms are caused by

Options :

1. ✘ Diatoms
2. ✘ *Chlorella*
3. ✘ Red algae
4. ✔ Dinoflagellates

Question Number : 23 Question Id : 5942539746 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

A characteristic that is **NOT** used for classification of algae

Options :

1. ✘ Properties of pigments
2. ✘ Nature of reserve food and storage products
3. ✔ Parasitism and host range
4. ✘ Thallus organization and its characteristics

Question Number : 24 Question Id : 5942539747 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Basidiospores are the resultant products of

Options :

1. ✘ Asexual reproduction

2. ✓ Meiosis

3. ✗ Mitosis

4. ✗ Structures of vegetative reproduction

Question Number : 25 Question Id : 5942539748 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which of the following equation states the relationship between pH and pKa of buffer

Options :

1. ✗ Michel and Menton Equation

2. ✗ Nernst equation

3. ✓ Henderson and Hasselbach Equation

4. ✗ Line wave berg Equation

Question Number : 26 Question Id : 5942539749 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Transport of electrons in mitochondria is based on

Options :

1. ✗ Free energy difference between electron donar and acceptor

2. ✓ Redox potential difference of electron donar and electron acceptor

3. ✗ Concentration gradient of H^+

4. ✗ Charge separation across the membrane

Question Number : 27 Question Id : 5942539750 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Match the following inhibitors with the electron transport complexes present in mitochondria

Inhibitor	Electron transport complex
A) Rotenone	i) Cytochrome (a.a3) or complex IV
B) Antimycin	ii) Cytochrome c1b complex or Complex III
C) Carbon monoxide	iii) NADH: Ubiquinone dehydrogenase complex or Complex I
D) Oligomycin	iv) ATP synthase complex or Complex V

Options :

1. ✓ A –iii; B- ii; C- i; D- iv

2. ✗ A-i; B-ii; C-iii; D- iv

3. ✗ A-ii; B- iii; C-iv; D- i

4. ✗ A-iv; B-i; C-ii; D- iii

Question Number : 28 Question Id : 5942539751 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Cellobiose is a disaccharide formed from two units of glucose joined with

Options :

1. ✗ $\alpha(1 \rightarrow 4)$ linkage

2. ✗ $\beta(1 \rightarrow 6)$ linkage

3. ✗ $\alpha(1 \rightarrow 6)$ linkage

4. ✓ $\beta(1\rightarrow4)$ linkage

Question Number : 29 Question Id : 5942539752 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Match the following

- | | |
|---|--------------------------------|
| A) An individual unit of capsid | i) Pental/Hexagonal capsomeres |
| B) Peplomers in animal viruses | ii) TMV |
| C) Helical Symmetry | iii) Capsomeres |
| D) Antigenic variation is noted mostly in | iv) Glycoproteins |
| E) Icosahedral capsid consists of | v) Influenza virus |

Options :

1. ✓ A - iii; B - iv; C - ii; D - v; E - i

2. ✗ A - ii; B - v; C - i; D - iii; E - iv

3. ✗ A - iii; B - v; C - iv; D - ii; E - i

4. ✗ A - ii; B - iv; C - v; D - i; E - iii

Question Number : 30 Question Id : 5942539753 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

dsRNA viruses replicate by using

Options :

1. ✗ DNA dependent RNA polymerase

2. ✓ RNA dependent RNA polymerase

3. ✘ RNA dependent DNA polymerase

4. ✘ DNA dependent RNA polymerase

Question Number : 31 Question Id : 5942539754 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

One of the following statements is correct for positive sense ssRNA genomes of viruses because

Options :

1. ✘ Genome is segmented

2. ✘ Genome is circular

3. ✔ The genomic RNA is directly translated to produce proteins

4. ✘ The genome has to copy the mirror image to get translated

Question Number : 32 Question Id : 5942539755 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Assembly of a virus is accomplished by

Options :

1. ✘ Snatching cellular lipids and membranes

2. ✘ Random interactions between cellular and virus proteins

3. ✘ Termination of host translation process

4. ✔ Use of cellular scaffolding in cytoplasm and nucleus

Question Number : 33 Question Id : 5942539756 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

β - Interferons are produced by

Options :

1. ✘ Leucocytes
2. ✔ Fibroblasts
3. ✘ Lymphocytes
4. ✘ Erythrocytes

Question Number : 34 Question Id : 5942539757 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Interferon is a very effective and potential antiviral agents and inhibit wide range of viruses. However its commercial production is relatively limited because

Options :

1. ✘ it is antigen specific
2. ✘ it is required in high concentrations to be effective in human body
3. ✔ it is species specific
4. ✘ it is a high molecular weight protein and antibody specific

Question Number : 35 Question Id : 5942539758 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Choose the correct information from the following related to Covid-19 pandemic

- A) B.1.351: South African Variant
- B) B.1.1.7: UK Variant
- C) P.1: Brazilian variant
- D) I.5.B: Indian variant
- E) Whole viral inactivated vaccine is prepared in India
- F) Polysaccharide coat protein vaccine is very effective to control Covid-19

Options :

- 1. ✘ A, B, C & D
- 2. ✘ B, C, E & F
- 3. ✘ C, D, E & F
- 4. ✔ A, B, C & E

Question Number : 36 Question Id : 5942539759 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Receptors that play important role in innate immunity by recognizing PAMP's

Options :

- 1. ✔ Toll like receptor
- 2. ✘ Neuraminidase receptor
- 3. ✘ Heamagglutin receptor
- 4. ✘ G-Protein receptor

Question Number : 37 Question Id : 5942539760 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum

Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Zidovudine is used as an antiviral drug because

Options :

1. ✘ It interferes with viral DNA synthesis
2. ✘ It is inhibitory to un-coating of virus
3. ✘ It inhibits viral maturation
4. ✔ It inhibits reverse transcription

Question Number : 38 Question Id : 5942539761 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Match the following amino acids with their functional role in metabolic pathways

Amino Acid	Functional role in metabolic pathway
A) Methionine	i) Amino group donor
B) Cysteine	ii) Hydroxyl group donor
C) Serine	iii) Sulphur group donor
D) Glutamine	iv) Methyl group donor

Options :

1. ✘ A - i; B - ii; C - iii; D - iv
2. ✔ A - iv; B - iii; C - ii; D - i
3. ✘ A - iii; B - iv; C - i; D - ii
4. ✘ A - ii; B - iii; C - iv; D - i

Question Number : 39 Question Id : 5942539762 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which of the following is correct about the binding energy derived from enzyme-substrate interactions?

Options :

1. ✘ Most of it is used for simply binding the substrate to the enzyme
2. ✘ Most of it is derived from covalent bonds between enzyme and substrate
3. ✔ It is sometimes used to hold two substrates in the optimal orientation for reaction
4. ✘ It cannot provide enough energy to explain the large rate accelerations brought about by enzymes

Question Number : 40 Question Id : 5942539763 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Earlier IR spectra had to be acquired one wavelength at a time, however now quick spectra is possible because of

Options :

1. ✔ fourier Transfer Algorithm that allows us to scan all frequencies at once
2. ✘ speed of the light used
3. ✘ absence of broad spectrum of wave length
4. ✘ detector improvement

Question Number : 41 Question Id : 5942539764 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which graph is used for the conversion between relative centrifugal force and speed of the centrifuge at different radii of the centrifugation.

Options :

1. ✘ Zymogram
2. ✘ Chromatogram
3. ✔ Nomograph
4. ✘ Electrograph

Question Number : 42 Question Id : 5942539765 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Identify the correct sequence of events in mass spectrometer?

Options :

1. ✘ Acceleration, deflection, detection, ionization
2. ✔ Ionization, acceleration, deflection, detection
3. ✘ Acceleration, deflection, ionization, detection
4. ✘ Acceleration, ionization, deflection, detection

Question Number : 43 Question Id : 5942539766 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

NMR spectroscopy is used to determine the structure in

Options :

1. ✔ Liquids

2. ✘ Insoluble chemical compounds
3. ✘ Gases
4. ✘ Radioactive material

Question Number : 44 Question Id : 5942539767 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which of the following groups does NOT contain aromatic amino acid(s)?

Options :

1. ✘ Phenyl alanine, Lysine, Cysteine and Tryptophan
2. ✘ Glycine, Tyrosine, Tryptophan and Serine
3. ✘ Methionine, Tryptophan, Aspartic acid and Phenyl alanine
4. ✔ Proline, Methionine, Glutamic acid and Histidine

Question Number : 45 Question Id : 5942539768 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The fermentor best suited for gaseous carbon substrates is

Options :

1. ✔ Bubble cap fermentor
2. ✘ Tubular fermentor
3. ✘ Air lift fermentor
4. ✘ Wooden tanks

Question Number : 46 Question Id : 5942539769 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

What is the number of moles and maximum yield of ethanol obtained by employing *Saccharomyces cerevisiae* with ~50 % efficiency from 1 mole of glucose?

Options :

1. ✘ One mole and ~50 %
2. ✘ Two moles and ~50 %
3. ✔ Two moles and ~25 %
4. ✘ One mole and ~25 %

Question Number : 47 Question Id : 5942539770 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Indicator organism used in the bioassay of vitamin B₁₂

Options :

1. ✘ *Saccharomyces cerevisiae*
2. ✘ *E. coli*
3. ✘ *Propionibacterium freudenreichii shermanii*
4. ✔ *Euglena gracilis*

Question Number : 48 Question Id : 5942539771 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Identify the correct statements regarding the commercial production of lysine?

- A) It is a dual fermentation process involving two different microorganisms
- B) Diaminopimelic acid (DAP) is the substrate for *E. coli*
- C) DAP results into formation of lysine.
- D) DAP decarboxylase is obtained from *Enterobacter aerogenes*

Options :

- 1. ✘ A & D only
- 2. ✔ A, C & D only
- 3. ✘ B & C only
- 4. ✘ A, B & D only

Question Number : 49 Question Id : 5942539772 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which of the following directed evolution techniques can be employed for the development of production strain?

- A) Genome based strain reconstruction
- B) Metabolic pathway engineering
- C) Protoplast fusion
- D) Random mutagenesis
- E) Site directed mutagenesis

Options :

- 1. ✔ A, B & E only
- 2. ✘ A, C & E only
- 3. ✘ C & D only

4. ✘ A, B, C & D only

Question Number : 50 Question Id : 5942539773 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

“Lactic acid bacteria are used as Test microorganisms for the assay of vitamins and amino acids”- Which of the following are correct to justify the statement?

- A) They are better lactic acid producers
- B) They possess uniform biochemical characteristics
- C) Majority of them are non-pathogenic
- D) They have relatively complex and exact nutritional requirements

Options :

1. ✘ A, C & D only

2. ✘ B, C & D only

3. ✘ A, B & C only

4. ✔ A, B, C & D

Question Number : 51 Question Id : 5942539774 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which of the following statements are correct about vaccines?

- A) Recombinant vaccines are made of live viral or bacterial vectors that are expressed as DNA, mRNA and proteins.
- B) Hepatitis B Vaccine is the first Recombinant vaccine produced in *E.coli* based on HBsAg.
- C) Pfizer-BioNTech Covid-19 vaccine is m-RNA vaccine that is directed against SARS-CoV-2 spike protein.
- D) Indigenously developed Covid-19 vaccine (Covaxin) is a subunit vaccine prepared from spike protein.

Options :

- 1. ✘ A & B only
- 2. ✔ A & C only
- 3. ✘ B & D only
- 4. ✘ A, B & C only

Question Number : 52 Question Id : 5942539775 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Identify the correct statements from the following.

- A) Acetone-butanol is a strict anaerobic fermentation.
- B) Acetone, butanol and ethanol are the principal products amongst many others in fermentation.
- C) Riboflavin is the by-product of acetone-butanol fermentation.
- D) Commercial production of acetone-butanol employs *Clostridium saccharoacetobutylicum* on molasses media.

Options :

- 1. ✘ A & B only
- 2. ✘ A & C only

3. ✓ A, B, C & D

4. ✗ A, B & C only

Question Number : 53 Question Id : 5942539776 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Match the following Penicillins with their structures.

<u>Penicillin</u>	<u>Structure</u>
A) Penicillin X	i) Benzyl penicillin
B) Penicillin G	ii) 2-Pentenyl penicillin
C) Penicillin F	iii) Hydroxy benzyl penicillin
D) Penicillin K	iv) N-Heptyl penicillin
E) Penicillin V	v) Phenoxy methyl penicillin

Options :

1. ✗ A - ii, B - i, C - iii, D - iv, E - v

2. ✓ A - iii, B - i, C - ii, D - iv, E - v

3. ✗ A - ii, B - i, C - iv, D - v, E - iii

4. ✗ A - v, B - i, C - iii, D - iv, E - ii

Question Number : 54 Question Id : 5942539777 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Read the following pairs related to glutamic acid production and choose the correct pair/s

- A) The sugars are metabolized in *Corynebacterium glutamicum* via glycolysis: formation of glutamate does not occur if fluoride and iodoacetate are present.
- B) *Corynebacterium glutamicum* accumulates glutamate in the medium: due to the absence of Succinate dehydrogenase.
- C) The energy is provided by glyoxylate pathway: due to the incomplete citric acid cycle.
- D) Accumulation of glutamate continues until saturation level: subsequent excretion of glutamate occurs in the presence of biotin.

Options :

- 1. ✘ B & D only
- 2. ✘ A, B & D only
- 3. ✔ A & C only
- 4. ✘ A, B, C & D

Question Number : 55 Question Id : 5942539778 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Arrange the following steps of downstream processing in a chronological order.

- A) Homogenization
- B) Precipitation
- C) Ultrafiltration
- D) Gel filtration
- E) Ion exchange chromatography
- F) Lyophilization

Options :

- 1. ✘ A, B, C, D, E, F

2. ✘ B, A, D, C, E, F

3. ✘ B, A, C, D, F, E

4. ✔ A, C, B, E, D, F

Question Number : 56 Question Id : 5942539779 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Choose the group/s which has penicillin binding proteins from the following

- A) Peptidoglycan
- B) Transpeptidase
- C) Peptidyl transferase
- D) Carboxy peptidase
- E) Transmembrane translocase
- F) Amino acyl transferase

Options :

1. ✔ B & D only

2. ✘ A, C & F only

3. ✘ C & F only

4. ✘ A, C & E only

Question Number : 57 Question Id : 5942539780 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which of the following statements is correct for bacterial glycocalyx?

Options :

1. ✓ It is an extracellular product responsible to protect the pathogen from host defense
2. ✘ An extracellular cell wall component which becomes endotoxin to make bacteria virulent
3. ✘ Exotoxin produced by pathogenic bacteria
4. ✘ Membranous material excreted by Gram negative pathogens causing pyrogenic diseases

Question Number : 58 Question Id : 5942539781 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Decreased accumulation of phagocytes in bacteremia disease caused by Streptococcus pyogenes is due to

Options :

1. ✘ Lack of opsonization of Streptococcus cells
2. ✓ Breaking down of C5a by C5a peptidase enzyme produced by the pathogen
3. ✘ Lysozyme enzyme produced by the pathogen which inhibits phagocytosis phenomenon
4. ✘ Endocardin produced by the pathogen which inhibits phagocytosis

Question Number : 59 Question Id : 5942539782 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Match the following

- | | |
|----------------------------|------------------------------------|
| A) Endocarditis | i) Syphilis |
| B) Proteinaceous capsule | ii) <i>Mycoplasma</i> |
| C) Pleuropneumonia | iii) <i>Streptococcus pyogenes</i> |
| D) Obligate parasite | iv) <i>M. tuberculosis</i> |
| E) Live attenuated vaccine | v) Anthrax bacillus |

Options :

1. ✘ A – ii, B – iii, C – i, D – v, E - iv

1. ✘

2. ✘ A – iii, B – iv, C – ii, D – v, E - i

2. ✘

3. ✘ A – iv, B – v, C – ii, D – iii, E - i

3. ✘

4. ✔ A – iii, B – v, C – ii, D – i, E – iv

4. ✔

Question Number : 60 Question Id : 5942539783 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The concentration at which ethyl alcohol is used as most effective germicide

Options :

1. ✘ 50 %

2. ✘ 60 %

3. ✔ 75 %

4. ✘ 95 %

Question Number : 61 Question Id : 5942539784 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Escherichia coli is not a pathogen but taken as an indicator organism for testing sanitary quality of potable water because

Options :

1. ✓ It is more in number in polluted water and its presence indicates possible presence of gastro intestinal pathogens

2. ✘ It can be an opportunistic pathogen that causes dehydration and potable water needs to be sterile from any bacterial contamination

3. ✘ Its presence indicates its pathogenicity therefore needs to be tested

4. ✘ It requires simple nutrients and can be easily identified by coliform tests

Question Number : 62 Question Id : 5942539785 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Arrange the following in correct order based on their nutritional complexity

A) *Streptococcus pneumoniae*

B) *Caulobacter crescentus*

C) *Escherichia coli*

D) *Treponema pallidum*

Options :

1. ✘ C, A, B & D

2. ✓ B, C, A & D

3. ✘ A, C, D & B

4. ✘ B, A, C & D

Question Number : 63 Question Id : 5942539786 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Choose the correct pair/s given below

- A) *Vibrio cholera*, pyogenic diseases
- B) Pyrogenic disease, bacteremia
- C) *Chlamydia*, obligate parasitic pathogen
- D) Gastroenteritis, *Streptococcus pyogenes*
- E) Alkaline peptone water, *Vibrio cholera*
- F) Widal test, *Treponema pallidum*

Options :

- 1. ✘ A, C, D & E only
- 2. ✘ A, D, E & F only
- 3. ✔ B, C & E only
- 4. ✘ A, D & E only

Question Number : 64 Question Id : 5942539787 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Match the following

- | | |
|----------------------------|-------------------------------|
| A) Dermatophytosis | i) Q fever |
| B) <i>Candida albicans</i> | ii) German measles |
| C) Peptic ulcers | iii) Diaper rash |
| D) Rubella virus | iv) <i>Microsporium</i> |
| E) Common cold | v) <i>Helicobacter pylori</i> |
| F) <i>Rickettsia</i> | vi) Rhino virus |

Options :

- 1. ✘ A – ii, B – iv, C – i, D – vi, E – iii, F - v

2. ✘ A – iv, B – iii, C – ii, D – vi, E – i, F - v

3. ✘ A – iii, B – iv, C – v, D – ii, E – vi, F - i

4. ✔ A – iv, B – iii, C – v, D – ii, E – vi, F - i

Question Number : 65 Question Id : 5942539788 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which amino acid resembles 3' end of an amino acylated tRNA molecule?

Options :

1. ✘ Streptomycin

2. ✔ Puromycin

3. ✘ Tetracycline

4. ✘ Erythromycin

Question Number : 66 Question Id : 5942539789 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

By an accidental incorrect blood transfusion, type B donor blood is given to a recipient having type A blood, the RBC of donor blood would agglutinate but the recipient's RBC do not agglutinate.

This can be explained by which of the following statements?

- A) Agglutinins in recipient's plasma caused agglutination by binding with type B agglutinogens
- B) The agglutinins of donor blood got diluted in recipient's plasma resulting in low agglutination
- C) Low titre of anti-B agglutinins is the cause of low agglutination of recipient's RBC
- D) High agglutination of donor RBC is the outcome of high titre of anti-Aagglutinins.

Options :

- 1. ✘ Only A
- 2. ✘ Only B
- 3. ✔ A & B only
- 4. ✘ C & D only

Question Number : 67 Question Id : 5942539790 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

The common equation used to calculate melting temperature of DNA follows _____ rule

Options :

- 1. ✔ Wallace rule
- 2. ✘ Watson rule

3. ✘ Priming rule

4. ✘ Duplex rule

Question Number : 68 Question Id : 5942539791 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Taq DNA polymerase lacks

Options :

1. ✘ 5'-3' endonuclease activity

2. ✘ 5'-3' exonuclease activity

3. ✘ 3'-5' endonuclease activity

4. ✔ 3'-5' exonuclease activity

Question Number : 69 Question Id : 5942539792 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

During an experiment, a student observed that the activity of a protein is increased, which could be explained by three scenarios- the protein expression increased, the phosphorylation of the protein increased or the interaction of the protein with other effector proteins might have increased. With further experimentation, it was observed that it was actually due to increased phosphorylation of the protein. Which of the following will **NOT** provide correct explanation for these findings?

Options :

1. ✘ Phospho amino acid analysis

2. ✘ Immunoblotting

3. ✓ Analysis of gene transcription rate

4. ✗ Mass Spectrometry

Question Number : 70 Question Id : 5942539793 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Choose the correct statement with respect to the selfpriming method of cDNA synthesis.

Options :

1. ✗ It is less preferred than RNaseH method

2. ✗ A hairpin structure is formed with guarantee

3. ✗ Reverse transcriptase is not used

4. ✓ The sequence corresponding to the 5' end is lost

Question Number : 71 Question Id : 5942539794 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Among viral vectors used for gene therapy, Lentivirus can infect _____ and retrovirus can only infect mitotically actively dividing cells.

Options :

1. ✓ Both non-dividing and actively dividing cells

2. ✗ Only Actively dividing cells

3. ✗ Only non-dividing cells

4. ✗ Non-dividing mitotic cells

Question Number : 72 Question Id : 5942539795 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Since DNA is a highly charged polyanion, its stability during denaturation at high temperatures

Options :

1. ✘ decreases with increasing salt
2. ✔ increases with increasing salt
3. ✘ is independent of G-C content
4. ✘ does not depend on hydrophobic interactions

Question Number : 73 Question Id : 5942539796 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Match the correct set of scientists in relation to cell cycle

Scientist	Cell cycle
A) Robert Remak	i) Meiosis
B) H. Howard & S.R.Plec	ii) Mitosis
C) W. Fleming	iii) Amitosis
D) Farmer and Moore	iv) G1, S, G2 phase

Options :

1. ✘ A-i, B-iv, C-iii, D-ii
2. ✘ A-ii, B-iii, C-i, D-iv
3. ✔ A-iii, B-iv, C-ii, D-i
4. ✘ A-ii, B-iii, C-iv, D-i

Question Number : 74 Question Id : 5942539797 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Telomerase is different from DNA polymerase because

Options :

1. ✘ It cannot extend 3'-OH end of DNA
2. ✘ It cannot add nucleotides without a template
3. ✘ It does not have its own primer
4. ✔ It cannot carry out lagging strand synthesis

Question Number : 75 Question Id : 5942539798 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Ras oncogene contributes to cancers because

Options :

1. ✘ it codes for an anti-apoptotic protein, produced in abnormally large amounts
2. ✔ it codes for a GTPase switch protein, which in its mutated form cannot be switched off
3. ✘ it codes for a transcription factor produced abnormally in large amounts
4. ✘ a growth factor that is continually active is encoded in its truncated form

Question Number : 76 Question Id : 5942539799 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which of the following statements regarding the regulation of *trp* operon expression by attenuation is correct?

Options :

1. ✓ Rapid translation of the leader peptide prevents completion of mRNA transcript
2. ✗ Rapid translation of the leader peptide allows completion of mRNA transcript
3. ✗ The leader peptide sequence encodes enzymes required for tryptophan synthesis
4. ✗ The leader peptide sequence contains no tryptophan residues

Question Number : 77 Question Id : 5942539800 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which of the following antibodies may be co-expressed by resting B-cells

Options :

1. ✗ IgM and IgA
2. ✓ IgM and IgD
3. ✗ IgG and IgD
4. ✗ IgG and IgE

Question Number : 78 Question Id : 5942539801 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

T cells express a transmembrane protein that recognizes the peptide-loaded MHC (pMHC) to activate T cell-mediated immune response. The T-cell receptor belongs to

Options :

1. ✓ Immunoglobulin superfamily
2. ✗ Seven-transmembrane G protein family
3. ✗ Tyrosine kinase superfamily
4. ✗ FADD family

Question Number : 79 Question Id : 5942539802 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Receptor tyrosine kinase falls under which of the following category of receptors?

Options :

1. ✗ GPCR
2. ✗ Ion channel
3. ✗ Enzyme linked receptors
4. ✓ Second messengers

Question Number : 80 Question Id : 5942539803 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Apoptosis in the nematode *C.elegans* is mediated by *ced-3* and *ced-4* genes, which are negatively regulated by *ced-9* and *EGL-1*. Mammalian homologs have been identified with similar functions. Which of the following is NOT correct in the above context?

Options :

1. ✗ CED-3 function is similar to caspase-3
2. ✗ CED-4 function is similar to Apaf-1

3. ✓ CED-4 function is similar to caspase-9

4. ✗ CED-9 function is similar to Bcl-XL

Question Number : 81 Question Id : 5942539804 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Match the following

- | | |
|---------|-------------------------------------|
| A) CDK4 | i) Differential phase |
| B) S | ii) Molecule active during G1 phase |
| C) G0 | iii) Synthesis of tubulin |
| D) G2 | iv) Replication of DNA |

Options :

1. ✗ A-i, B-iv, C-iii, D-ii

2. ✓ A-ii, B-iv, C-i, D-iii

3. ✗ A-iii, B-iv, C-ii, D-i

4. ✗ A-iv, B-iii, C-i, D-ii

Question Number : 82 Question Id : 5942539805 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Choose the correct from the following statements that list the characteristics of Type II restriction endonucleases

- A) Form homodimers
- B) Require ATP and Mg⁺
- C) Cleave near or at restriction site
- D) Have both endonuclease and methylase activity

Options :

1. ✘ A & B only
2. ✘ B & C only
3. ✔ A & C only
4. ✘ C & D only

Question Number : 83 Question Id : 5942539806 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which of the following vaccine delivery systems is NOT lipid based?

Options :

1. ✘ Freund's adjuvant
2. ✘ ISCOMS
3. ✘ Antigen - Co-chelate
4. ✔ Microencapsulation delivery system

Question Number : 84 Question Id : 5942539807 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Match the following

- | | |
|------------------|-----------------------------|
| A) Apoptosis | i) Self mutilation |
| B) Non-enzymatic | ii) Regeneration of tissues |
| C) Epimorphosis | iii) Programmed cell death |
| D) Autotomy | iv) Regeneration blastema |
| E) Morphallaxis | v) Cross linking theory |

Options :

1. ✓ A-iii, B-v, C-iv, D-i, E-ii
2. ✗ A-ii, B-iv, C-iii, D-v, E-i
3. ✗ A-v, B-iii, C-ii, D-i, E-iv
4. ✗ A-iv, B-iii, C-ii, D-v, E-i

Question Number : 85 Question Id : 5942539808 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Match the following

- | | | |
|-------------------|------|---|
| A) Fragmentation | i) | Degradation of humus into inorganic nutrients |
| B) Leaching | ii) | Breakdown of detritus into small particle |
| C) Humification | iii) | Precipitation of inorganic nutrients |
| D) Mineralization | iv) | Accumulation of dark colored substance |
| | v) | Precipitation of organic materials |

Options :

1. ✗ A-i, B-ii, C-iv, D-iii
2. ✓ A-ii, B-iii, C-iv, D-i
3. ✗ A-iii, B-iv, C-ii, D-i
4. ✗ A-ii, B-v, C-iii, D-iv

Question Number : 86 Question Id : 5942539809 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Shawarma is a meat-based dish and has become a popular food item across many countries including India. Non-typhoidal Salmonellae (NTS) are known to contaminate meat and poultry products resulting in foodborne disease outbreaks. There have been a few recent reports of foodborne disease outbreaks related to NTS contamination of chicken shawarma. Species of Salmonella are rod shaped aerobic and non-spore formers. After infection with Salmonella they cause illness when ingested in large numbers. Which of the following is/are correct?

- A) *Salmonella* spp. infect chicken shawarma
- B) *Salmonella* is Gram positive bacteria
- C) *Salmonella* is anaerobic bacteria
- D) *Salmonella* causes foodborne disease outbreaks

Options :

- 1. ✘ A & B only
- 2. ✘ B & C only
- 3. ✔ A & D only
- 4. ✘ B & D only

Question Number : 87 Question Id : 5942539810 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Read the following statement of assertion followed by a statement of reason and mark the correct option as:

Assertion : Nitrogen-fixing bacteria in legume root nodules survive in oxygen-depleted cells of nodules

Reason : Leghaemoglobin completely removes oxygen from the cells of the nodules

Options :

If both Assertion and Reason are correct and Reason is the correct explanation of

- 1. ✘ Assertion

- If both Assertion and Reason are correct but Reason is an incorrect explanation of Assertion.
2. ✘
3. ✘ If both Assertion and Reason are incorrect
4. ✔ If Assertion is correct but Reason is incorrect

Question Number : 88 Question Id : 5942539811 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Arrange the principled protocol for HACCP analysis in ascending order

Options :

1. ✔ Hazard analysis, CCP identification to establish critical limits, Monitoring procedure for corrective action, Record keeping along with documentation
2. ✘ CCP identification to establish critical limits, Monitoring procedure for corrective action Record keeping along with documentation, Hazard analysis
3. ✘ Record keeping along with documentation, Hazard analysis, CCP identification to establish critical limits, Monitoring procedure for corrective action
4. ✘ Monitoring procedure for corrective action, Record keeping along with documentation, Hazard analysis, CCP identification to establish critical limits

Question Number : 89 Question Id : 5942539812 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which of the following factors are correct regarding mineral phosphate solubilization by bacteria?

- A) Production of GA
- B) Co-factor PQQ
- C) PPA activity
- D) Enzyme GCD

Options :

- 1. ✓ A, B & D only
- 2. ✗ A, B & C only
- 3. ✗ B, C & D only
- 4. ✗ A, C & D only

Question Number : 90 Question Id : 5942539813 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which of the following belong to Annamox group?

- A) *Bacillus, Pirellula*
- B) *Planctomyces, Pirellula*
- C) *Gemmata* and *Isosphaera*
- D) *Pseudomonas* and *Maritimia*

Options :

- 1. ✗ A & B only
- 2. ✓ B & C only
- 3. ✗ C & D only
- 4. ✗ B & D only

Question Number : 91 Question Id : 5942539814 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which of the following is/are **INCORRECT** regarding ruminant methanogens?

- A) Methanogenesis is performed by methanogenic archaea.
- B) They synthesize most of the vitamins needed for the animal
- C) They are inactive compared to other members of the ruminant microbial community
- D) They predominantly use H₂ and CO₂ as substrates to produce methane

Options :

- 1. ✘ A & B only
- 2. ✘ A & C only
- 3. ✔ A & D only
- 4. ✘ B & C only

Question Number : 92 Question Id : 5942539815 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Read the following statement of assertion followed by a statement of reason and mark the correct option as:

Assertion : Boiling milk is a method of preservation

Reason : Probiotics is a method of preserving milk

Options :

- 1. ✘ If both Assertion and Reason are correct and Reason is the correct explanation of Assertion
- 2. ✘ If both Assertion and Reason are correct but Reason is an incorrect explanation of Assertion.

3. ✘ If both Assertion and Reason are incorrect
4. ✔ If Assertion is correct but Reason is incorrect

Question Number : 93 Question Id : 5942539816 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which of the following orders of food chain is correct

Options :

1. ✘ Herbivorous, Omnivorous, Carnivorous, Detrivorous
2. ✘ Omnivorous, Herbivorous, Carnivorous, Detrivorous
3. ✘ Herbivorous, Omnivorous, Detrivorous, Carnivorous
4. ✔ Herbivorous, Carnivorous, Omnivorous, Detrivorous

Question Number : 94 Question Id : 5942539817 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which of the following is/are correct for *Brochothrix thermosphacta*?

- A) Spoilage bacterium of meat
- B) Pathogen of meat
- C) Grows anaerobically and is motile
- D) Not a pathogen of meat

Options :

1. ✘ B & C only
2. ✔ A & D only

3. ✘ C & D only

4. ✘ A & B only

Question Number : 95 Question Id : 5942539818 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which one of the following plant derived signaling molecule induces hyphal branching of arbuscular mycorrhizal fungi, a phenomenon that is observed at the initial stages of colonization of these fungi?

Options :

1. ✘ Salicylic acid

2. ✘ Abscisic acid

3. ✔ Strigolactones

4. ✘ Systemin

Question Number : 96 Question Id : 5942539819 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Match the following

- | | |
|------------------------|--|
| A) Elie Metchnikoff | i) Discovery of Transposons (jumping genes) |
| B) Martinus Beijerinck | ii) Discovery of Arsphenamine (salvarsan) against syphilis |
| C) Barbara Mc. Clinton | iii) Cellular immunity (phagocytes) |
| D) Paul Ehrlich | iv) Discovered virus |
| | v) Discovered mineral phosphate genes |

Options :

1. ✔ A - iii, B - iv, C - i, D - ii

2. ✘ A - ii, B - v, C - iv, D - iii

3. ✘ A - v, B - ii, C - i, D - iv

4. ✘ A - i, B - ii, C - iii, B - iv

Question Number : 97 Question Id : 5942539820 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Match the following

A) Hydroxyl tyrosine	i) Guanidine
B) Histidine	ii) Sulfur
C) Arginine	iii) Branched chain
D) Proline	iv) Imidazole
E) Methionine	v) Imino acid
F) Valine	vi) Hormone

Options :

1. ✔ A - vi, B - iv, C - i, D - v, E - ii, F - iii

2. ✘ A - iv, B - iii, C - v, D - i, E - vi, F - ii

3. ✘ A - vi, B - iv, C - i, D - ii, E - v, F - iii

4. ✘ A - v, B - iv, C - i, D - ii, E - vi, F - iii

Question Number : 98 Question Id : 5942539821 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Synergism in multi-species biofilm under nutrient limited conditions is because of

Options :

1. ✘ Genes encoding for vitamin K27 and zinc uptake
2. ✔ Genes encoding for vitamin B6 synthesis and iron uptake
3. ✘ Genes encoding peptides
4. ✘ Genes encoding polymers

Question Number : 99 Question Id : 5942539822 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Which of the following statements given below is correct about Rotavirus which causes Gastroenteritis?

Options :

1. ✘ Rotaviruses belong to the family Alloviridae, 50 nm in diameter, enveloped and contain ssRNA
2. ✘ Rotaviruses belong to the family Adenoviridae, 30nm in diameter, non-enveloped and contain ds-DNA
3. ✔ Rotaviruses belong to the family Reoviridae, 70 nm in diameter, non-enveloped, and contain double-stranded RNA
4. ✘ Rotaviruses belong to the family Retroviridae, 70 nm in diameter, are non-enveloped and contain ds RNA

Question Number : 100 Question Id : 5942539823 Question Type : MCQ Option Shuffling : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Wrong Marks : 0.25

Identify the **INCORRECT** one regarding primary treatment of waste-water

Options :

1. ✘ Supernatant forms the effluent
2. ✘ Grit and pebbles are removed by sedimentation
3. ✘ Solids that settle form the primary sludge
4. ✔ Initially floating debris is removed by distillation