

PREVIEW QUESTION BANK

Module Name : Microbiology - 11-ENG
Exam Date : 29-Jun-2024 Batch : 14:30-16:30

Sr. No.	Client Question ID	Question Body and Alternatives	Marks	Negative Marks
Objective Question				
1	201	Movement of DNA from one bacterium to another through a tubular bridge or pilus: 1. Conjugation 2. Transposition 3. Transfection 4. Transduction A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
2	202	Which of the following is responsible for eliminating toxic oxygen by-products from cells? 1. Mitochondria 2. Golgi complex 3. Peroxisomes 4. Chloroplasts A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
3	203	A form of multiple parasitism in which a parasite preferentially attacks a host that is already parasitized by another species is known as 1. Cleptoparasitism 2. Ectoparasitoid 3. Obligate parasitism 4. Superparasitism A1 : 1	4.0	1.00

		A2 : 2		
		A3 : 3		
		A4 : 4		
Objective Question				
4	204	For mass multiplication of DD-136 nematode, the common host used is 1. Silk moth 2. Fruit sucking moth 3. Codling moth 4. Lesser wax moth A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
5	205	Chlorpyrifos methyl is effective against stored product insects except 1. <i>Rhizopertha dominica</i> 2. <i>Tribolium castaneum</i> 3. <i>Caryedon serratus</i> 4. <i>Oryzaephilus surinamensis</i> A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
6	206	Which of the following insects often cause inhalational allergies in human following large emergence of adult insects 1. Stick insects 2. May flies 3. Ear wigs 4. Preying mantis A1 : 1 A2 : 2	4.0	1.00

A3 : 3

A4 : 4

Objective Question

7	207	Given below are two statements: Statement (I): Climate is a weather condition related to smaller areas at a given place and at a given time, Statement (II): Weather is a condition of atmosphere at a given place and at a given time In light of the above statements, choose the <i>most appropriate</i> answer from the options given below. - Both Statement (I) and Statement (II) are correct. - Both Statement (I) and Statement (II) are incorrect. - Statement (I) is correct but Statement (II) is incorrect. - Statement (I) is incorrect but Statement (II) is correct. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

8	208	The local name of cyclone in Phillippines is - Hurricane - Cyclone - Baquo - Typhoon A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

9	209		4.0	1.00
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Which one of the following are secondary tillage implements?

- (A). Subsoiler
- (B). Cultivator
- (C). Disc harrow
- (D). Wetland plough

Choose the **correct** answer from the options given below:

- 1. (A), (B) and (D) only.
- 2. (B) and (C) only.
- 3. (B), (C) and (D).
- 4. (B) and (D) only.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

10 210

_____ is the most suitable, drought resistant and persistent grass?

- 1. *Alyosia sp.*
- 2. *Cenchrus ciliaris*
- 3. *Stylosanthes hamata*
- 4. *Sorghum bicolor*

A1 : 1

A2 : 2

A3 : 3

A4 : 4

4.0

1.00

Objective Question

11 211

The rainfed area in India is approximately

- 1. 30 mha
- 2. 40 mha
- 3. 57 mha
- 4. 70 mha

A1 : 1

A2 : 2

4.0

1.00

A3 : 3

A4 : 4

Objective Question

12	212	Which nutrient is often a limiting factor in agricultural production? 1. Nitrogen 2. Carbon 3. Oxygen 4. Hydrogen A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

13	213	What is a potential disadvantage of agroforestry systems? 1. Increased soil erosion 2. Decreased carbon sequestration 3. Reduced biodiversity 4. Enhanced susceptibility to pests A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

14	214	Pungency in mustard oil is due to 1. Amino acid 2. Allyl isothiocyanate 3. Erusic acid 4. Oxalic acid A1 : 1 A2 : 2	4.0	1.00
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		A3 : 3		
		A4 : 4		
Objective Question				
15	215	Sesamum belongs to the family 1. Chenopodiaceae 2. Papilionaceae 3. Leguminosae 4. Pedaliaceae A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
16	216	Dark period is critical in which type of plant? 1. Short day plant 2. Long day plant 3. Day neutral plant 4. All the options A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
17	217	Which of the following is NOT a significant contributor to greenhouse gas emissions from livestock farming? 1. Carbon dioxide 2. Methane 3. Nitrous oxide 4. Ammonia A1 : 1 A2 : 2 A3 : 3	4.0	1.00

A4 : 4

Objective Question

18	218	Fe deficiency is mostly seen in crops growing on 1. Calcareous or alkaline soils 2. Salt affected soils 3. Acidic soils 4. Neutral soils A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

19	219	EDV (Essentially Derived Varieties) are those which are derived from: 1. crossing two commercially known varieties 2. hybrid introduced from other countries 3. existing variety through genetic engineering or mutation 4. crossing commercially known variety with its wild relative A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

20	220	What is the role of "companion planting" in agriculture? 1. Enhancing soil fertility through crop rotation 2. Growing different crop species together to deter pests 3. Cultivating plants in hydroponic system 4. Increasing soil compaction through cover cropping A1 : 1 A2 : 2 A3 : 3	4.0	1.00
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A4 : 4

Objective Question

21	1301	Which of the following is the correct stereoisomer representing Aspartame, the artificial sweetener? 1. L-aspartyl-D-phenylalanine methyl ester 2. D-aspartyl-L-phenylalanine methyl ester 3. D-aspartyl-D-phenylalanine methyl ester 4. L-aspartyl-L-phenylalanine methyl ester A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

221302

4.01.00

Match **List-I** with **List-II**

List-I	List-II
(Unit prefix)	(Multiple)
(A). Peta	(I). 10^{-1}
(B). Deca	(II). 10^{-15}
(C). Femto	(III). 10^{15}
(D). Deci	(IV). 10^1

Choose the **correct** answer from the options given below:

1. (A) - (III), (B) - (I), (C) - (II), (D) - (IV)

2. (A) - (IV), (B) - (III), (C) - (I), (D) - (II)

3. (A) - (III), (B) - (IV), (C) - (II), (D) - (I)

4. (A) - (II), (B) - (IV), (C) - (I), (D) - (III)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

23	1303		4.0	1.00
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Given below are two statements:

Statement (I): Plant cells are usually smaller than animal cells.

Statement (II): Plant cells range from 10µm to 100 µm in diameter.

In light of the above statements, choose the *most appropriate* answer from the options given below.

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

24	1304	Sialic acid is also called as 1. N-Acetylgalactosamine 2. N-Acetylglucosamine 3. N-Acetylneuraminic acid 4. N-Acetylmuramic acid A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

25	1305	Which one of the following was the first amino acid to be discovered? 1. Arginine 2. Alanine 3. Glycine 4. Asparagine A1 : 1 A2 : 2 A3 : 3	4.0	1.00
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		A4 : 4		
Objective Question				
26	1306	Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R). Assertion (A) : Archaeobacteria survive on extreme conditions like high temperature and low pH. Reason (R) : Archaeobacteria have unique membrane lipids linked through ester bonds that is more stable than ether bonds found in other lipids. In light of the above statements, choose the <i>correct</i> answer from the options given below. - Both (A) and (R) are true and (R) is the correct explanation of (A). - Both (A) and (R) are true but (R) is NOT the correct explanation of (A). (A) is true but (R) is false. (A) is false but (R) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
27	1307	Given below are two statements: Statement (I): Prostaglandins are known as eicosanoids and contain 15 carbons. Statement (II): Prostaglandins E and F were first isolated from the biological fluids. In light of the above statements, choose the <i>most appropriate</i> answer from the options given below. - Both Statement (I) and Statement (II) are true. - Both Statement (I) and Statement (II) are false. - Statement (I) is true but Statement (II) is false. - Statement (I) is false but Statement (II) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
28	1308		4.0	1.00

Given below are two statements:

Statement (I): Biological nitrogen fixation is carried out by a highly conserved complex of proteins called the nitrogenase complex.

Statement (II): Nitrogen fixation requires ten electrons for the reduction of N_2 and to produce one molecule of H_2 .

In light of the above statements, choose the *most appropriate* answer from the options given below.

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

29 I309

What is the function of mitochondria?

1. Generation of ATP
2. Synthesis of nucleotides
3. Fatty acid synthesis
4. Degradation of amino acids

A1 : 1

A2 : 2

A3 : 3

A4 : 4

4.0

1.00

Objective Question

30 I310

Given below are two statements:

Statement (I): The compounds acetone, aceto-acetate and β -hydroxybutyrate are known as ketone bodies.

Statement (II): Ketone bodies are synthesized in muscles and are fat-soluble in nature.

In light of the above statements, choose the *most appropriate* answer from the options given below.

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

4.0

1.00

A2 : 2

A3 : 3

A4 : 4

Objective Question

31 1311

4.0

1.00

What are essential amino acids?

1. Proline and Glycine
2. Lysine and methionine
3. Lysine and alanine
4. Glutamic acid and Leucine

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

32 1312

4.0

1.00

Match **List-I** with **List-II**

List-I	List-II
Enzyme	Cofactor (Metal)
(A). Carbonic anhydrase	(I). Mo
(B). Hexokinase	(II). Zn^{2+}
(C). Nitrate Reductase	(III). Ni^{2+}
(D). Urease	(IV). Mg^{2+}

Choose the **correct** answer from the options given below:

1. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)
2. (A) - (II), (B) - (I), (C) - (IV), (D) - (III)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (II), (B) - (IV), (C) - (I), (D) - (III)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

33	I313	Given below are two statements: Statement (I): The active absorption of water takes place due to the activity of root and root hairs. Statement (II): The rate of absorption depends upon transpiration in active absorption of water. In light of the above statements, choose the <i>most appropriate</i> answer from the options given below. - Both Statement (I) and Statement (II) are true. - Both Statement (I) and Statement (II) are false. - Statement (I) is true but Statement (II) is false. - Statement (I) is false but Statement (II) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

34	I314	Who proposed the term isozyme? - Euler (1953) - Market and Moller (1959) - Mayrback (1952) - Thompson (1962) A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

35	I315	Which one of the following is NOT the characteristic of ephimerales? - They are short lived plants. - They are drought escaping plants. - They pass dry period in the form of seeds. - They accumulate large quantity of water and use it slowly during dry periods. A1 : 1 A2 : 2	4.0	1.00
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A3 : 3

A4 : 4

Objective Question

36 1316

4.0 1.00

Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R).

Assertion (A) : Ethylene reduces biosynthesis of auxins and inhibits its transport from the region of synthesis to the site of action.

Reason (R) : Ethylene is considered to stimulate genes and results in the inhibition of certain mRNA and enzyme.

In light of the above statements, choose the *correct* answer from the options given below.

- Both (A) and (R) are true and (R) is the correct explanation of (A).
- Both (A) and (R) are true but (R) is NOT the correct explanation of (A).
- (A) is true but (R) is false.
- (A) is false but (R) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

37 1317

4.0 1.00

Match **List-I** with **List-II**

List-I	List-II
(Trace Element)	(Concentrations for normal plant growth)
(A). Manganese	(I). 0.02 to 0.2 ppm
(B). Molybdenum	(II). 0.1 to 0.5 ppm
(C). Iron	(III). 0.01 to 0.05 ppm
(D). Zinc	(IV). 0.5 to 5.0 ppm

Choose the **correct** answer from the options given below:

- (A) - (III), (B) - (II), (C) - (IV), (D) - (I)
- (A) - (I), (B) - (IV), (C) - (III), (D) - (II)
- (A) - (II), (B) - (III), (C) - (IV), (D) - (I)
- (A) - (IV), (B) - (I), (C) - (II), (D) - (III)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

38	1318	Which one of the following statements is NOT CORRECT regarding dormancy? 1. Dormancy is not a light sensitive 2. Dormancy due to seed coat 3. Dormancy due to immature embryo 4. Dormancy requires chilling treatment A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

39	1319	Which hormone inhibits gibberellin-induced enzyme production? 1. Ethylene 2. Jasmonic acid 3. Absciscic acid 4. Cytokinins A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

40	1320	What is the function of amyloplasts? 1. Storage of proteins 2. Storage of starch 3. Storage of oil 4. Storage of carbohydrates A1 : 1 A2 : 2 A3 : 3	4.0	1.00
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A4 : 4

Objective Question

41	1321	Given below are two statements: Statement (I): In acrocentric, the centromere is situated at the center of the middle part of the chromosome. Statement (II): In the sub-metacentric, the centromere is close to the center and chromosomes have unequal arms. In light of the above statements, choose the <i>most appropriate</i> answer from the options given below. - Both Statement (I) and Statement (II) are true. - Both Statement (I) and Statement (II) are false. - Statement (I) is true but Statement (II) is false. - Statement (I) is false but Statement (II) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

42	1322	Given below are two statements: Statement (I): Leucoplasts and chromoplasts are considered active stages of plastids while chloroplasts as the degenerative ones. Statement (II): The chloroplast is also considered as a prokaryotic cell within an eukaryotic cell. In light of the above statements, choose the <i>most appropriate</i> answer from the options given below. - Both Statement (I) and Statement (II) are true. - Both Statement (I) and Statement (II) are false. - Statement (I) is true but Statement (II) is false. - Statement (I) is false but Statement (II) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

43	1323		4.0	1.00
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Which plant hormone reports the delay in senescence?

1. Auxins
2. Gibberellins
3. Cytokinins
4. Auxins and Gibberellins

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

44 1324

4.0 1.00

Given below are two statements:

Statement (I): Long-short day plants flower only if a certain number of short days are preceded by a number of long days.

Statement (II): Ambi-photoperiodic plants can flower in short days or long days but never in intermediate daylengths.

In light of the above statements, choose the *most appropriate* answer from the options given below.

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

45 1325

4.0 1.00

Which seed layer is differentiated into palisade cells?

1. Epidermal layer
2. Cell wall layer
3. Subepidermal layer
4. Pigmented layer

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

46	1326	Which of the following restriction endonuclease pairs are isochizomers? 1. EcoRI and HindIII 2. HpaII and MspI 3. HpaI and MspII 4. EcoRI and EcoRII A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

47	1327	Which of the following genes are genetically engineered in biofortified GOLDEN RICE? 1. ACC synthase and ACC oxidase 2. ACC synthase and ACP desaturase 3. Phytoene synthase and Phytoene Desaturase 4. ACC synthase and Phytoene Desaturase A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

48	1328		4.0	1.00
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Match **List-I** with **List-II**

List-I	List-II
(Strategy)	(Mode of Action)
(A). Ribozyme/RNaseP	(I). Interferes with replication
(B). Coat Protein	(II). Binds to RNA preventing function
(C). cDNA of RNA satellite	(III). Interferes with uncoating
(D). Antisense RNA	(IV). Cleavage of RNA genome

Choose the **correct** answer from the options given below:

1. (A) - (IV), (B) - (II), (C) - (I), (D) - (III)
2. (A) - (III), (B) - (IV), (C) - (II), (D) - (I)
3. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)
4. (A) - (IV), (B) - (III), (C) - (I), (D) - (II)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

49 1329

The genome edited GABA tomato is enriched in

1. Gibberlin aniline butyric acid
2. Gamma amino butyric acid
3. Glycine Alanine butyric acid
4. Gammone Butyric acid

A1 : 1

A2 : 2

A3 : 3

A4 : 4

4.0 1.00

Objective Question

50 1330

4.0 1.00

Which of the following are multi-parent population designs in plants?

1. RIL and NIL
2. BC and TC
3. NAM and MAGIC
4. SNP and KASP

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

51 1331

Which of the following is not a diazotroph?

1. Pseudomonas
2. Xanthomonas
3. Nitrospira
4. Escherichia

A1 : 1

A2 : 2

A3 : 3

A4 : 4

4.0

1.00

Objective Question

52 1332

Which of the following pollen types respond best during anther culture?

1. S-grains
2. R-grains
3. T-grains
4. A-grains

A1 : 1

A2 : 2

A3 : 3

A4 : 4

4.0

1.00

Objective Question

53 1333

4.0

1.00

Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R).

Assertion (A): Hybrid Embryo rescue is important for the development of interspecific hybrids.

Reason (R) : Embryo fails to develop due to endosperm degeneration in interspecific hybrids.

In light of the above statements, choose the *correct* answer from the options given below.

1. Both (A) and (R) are true and (R) is the correct explanation of (A).
2. Both (A) and (R) are true but (R) is NOT the correct explanation of (A).
3. (A) is true but (R) is false.
4. (A) is false but (R) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

54	1334	How many sister chromatids are in the rice (<i>Oryza sativa</i>) plant cell entering the first meiotic division?	4.0	1.00
		1. 24 2. 12 3. 48 4. 6		
		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

55	1335	The hammerhead ribozyme is one of the most commonly used ribozymes in technology. Which of the following statements is true about its function and structure?	4.0	1.00
		1. It has a simple structure consisting of only two stem-loop structures. 2. It cleaves RNA sequences using a water molecule in a mechanism similar to protein enzymes. 3. It can cleave any RNA sequence without needing a specific target sequence. 4. It requires a protein cofactor to function.		
		A1 : 1		
		A2 : 2		
		A3 : 3		

		A4 : 4		
Objective Question				
56	1336	Given below are two statements: Statement (I): Diethylpyrocarbonate (DEPC) is used to inactivate RNases in buffers and on glassware. Statement (II): Diethylpyrocarbonate (DEPC) is a transition state analog that binds to active sites of RNases. In light of the above statements, choose the <i>most appropriate</i> answer from the options given below. - Both Statement (I) and Statement (II) are true. - Both Statement (I) and Statement (II) are false. - Statement (I) is true but Statement (II) is false. - Statement (I) is false but Statement (II) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
57	1337	Repressor molecules bind to - Operator - Promoter - Enhancer - Hormone response element A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
58	1338		4.0	1.00

Which of the following are features of Ti-plasmid?

- (A). They contain one (or more) T-DNA region.
- (B). They contain a region enabling antibiotic resistance.
- (C). They contain a *vir* region.
- (D). They contain a region enabling conjugative transfer.

Choose the **correct** answer from the options given below:

- 1. (A), (B) and (D) only.
- 2. (A), (C) and (D) only.
- 3. (A), (B), (C) and (D).
- 4. (B), (C) and (D) only.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

59 1339

4.0 1.00

Match **List-I** with **List-II**

List-I	List-II
(Genes)	(Functions)
(A). <i>nif K</i>	(I). FeMo cofactor biosynthesis
(B). <i>nif A</i>	(II). β -subunit of MoFe protein of nitrogenase
(C). <i>nif S</i>	(III). Fe protein of nitrogenase
(D). <i>nif B</i>	(IV). Positive regulator of <i>nif</i> and <i>fix</i> genes
(E). <i>nif H</i>	(V). Cysteine desulfurase

Choose the **correct** answer from the options given below:

- 1. (A) – (V), (B) – (IV), (C) – (II), (D) – (III), (E) – (I)
- 2. (A) – (III), (B) – (I), (C) – (IV), (D) – (V), (E) – (II)
- 3. (A) – (III), (B) – (V), (C) – (IV), (D) – (I), (E) – (II)
- 4. (A) – (II), (B) – (IV), (C) – (V), (D) – (I), (E) – (III)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

60 1340

4.0 1.00

Match **List-I** with **List-II**

List-I	List-II
(Organism)	(Toxin produced)
(A). <i>Clostridium botulinum</i>	(I). Patulin
(B). <i>Staphylococcus aureus</i>	(II). Aflatoxin
(C). <i>Aspergillus parasiticus</i>	(III). Enterotoxin
(D). <i>Aspergillus ostianus</i>	(IV). Neurotoxin
(E). <i>Penicillium expansum</i>	(V). Ochratoxin A

Choose the **correct** answer from the options given below:

- (A) – (V), (B) – (IV), (C) – (I), (D) – (II), (E) – (III)
- (A) – (II), (B) – (V), (C) – (IV), (D) – (III), (E) – (I)
- (A) – (IV), (B) – (III), (C) – (II), (D) – (V), (E) – (I)
- (A) – (III), (B) – (I), (C) – (II), (D) – (V), (E) – (IV)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

61 1341

4.0 1.00

Which one of the following is NOT an assumption of ANOVA?

- The data are normally distributed
- Blocks
- Same variance
- The data are independent

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

62 1342

4.0

1.00

Match **List-I** with **List-II**

List-I	List-II
(Enzymes produced industrially)	(Microbial source)
(A). Diastase	(I). <i>Saccharomyces cerevisiae</i>
(B). Invertase	(II). <i>Trichoderma konigi</i>
(C). Collagenase	(III). <i>Rhizopus</i> sp.
(D). Lipase	(IV). <i>Clostridium histolyticum</i>
(E). Cellulase	(V). <i>Aspergillus oryzae</i>

Choose the **correct** answer from the options given below:

- (A) – (V), (B) – (IV), (C) – (I), (D) – (II), (E) – (III)
- (A) – (II), (B) – (V), (C) – (IV), (D) – (III), (E) – (I)
- (A) – (IV), (B) – (III), (C) – (II), (D) – (V), (E) – (I)
- (A) – (V), (B) – (I), (C) – (IV), (D) – (III), (E) – (II)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

63 1343

4.0

1.00

Match **List-I** with **List-II**

List-I	List-II
(Generation of DNA sequencing)	(Method)
(A). First generation	(I). HeliScope single molecule sequencer
(B). Second generation	(II). Sanger method
(C). Third generation	(III). Oxford Nanopore method
(D). Fourth generation	(IV). Illumina sequencing

Choose the **correct** answer from the options given below:

1. (A) – (IV), (B) – (II), (C) – (III), (D) – (I)
2. (A) – (II), (B) – (IV), (C) – (I), (D) – (III)
3. (A) – (III), (B) – (I), (C) – (IV), (D) – (II)
4. (A) – (II), (B) – (III), (C) – (IV), (D) – (I)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

64 1344

4.0 1.00

Read the following statements regarding bioremediation

(A). Aerobic biodegradation of PCBs is mainly carried out by the white rot fungus, *Phanerochaete* and by *Acinetobacter* and *Alcaligenes*.

(B). *Methylococcus capsulatus* can convert chloro- and bromo methane to formaldehyde, dichloro- and trichloro methane to CO₂ while growing on methane.

(C). In most cases, pesticides that are cometabolized are completely degraded, hence cometabolism of a pesticide is always good from an environmental standpoint.

(D). *Burkholderia* dechlorinates the pesticide 2, 4, 5-T aerobically by using oxygenase enzymes and release chloride ion (Cl⁻).

(E). Reductive dechlorination is less important than oxidative dechlorination from ecological standpoint.

Choose the **correct** answer from the options given below:

1. (A), (B) and (C) only.
2. (A), (B) and (D) only.
3. (B), (D) and (E) only.
4. (B), (C) and (E) only.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

65	1345	Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R). Assertion (A) : β-lactam antibiotics are given in combination with clavulanic acid. Reason (R) : Clavulanic acid binds with β-lactamase with a high affinity, inhibits it and prevents it to act on the β-lactam antibiotics. In light of the above statements, choose the <i>correct</i> answer from the options given below. - Both (A) and (R) are true and (R) is the correct explanation of (A). - Both (A) and (R) are true but (R) is NOT the correct explanation of (A). (A) is true but (R) is false. (A) is false but (R) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

66	1346	Which of the following technique is most frequently used for culture preservation in microbial culture collection centers? - Mineral oil layering - Soil stocks - Lyophilization - Paraffin method A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

67	1347		4.0	1.00
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Given below are two statements:

Statement (I): During feedback inhibition of enzyme, the activity of an enzyme already present in the cell and it is inhibited by the end product of the reaction.

Statement (II): During repression of enzyme, the synthesis of an enzyme is inhibited by the end product of the reaction.

In light of the above statements, choose the *most appropriate* answer from the options given below.

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

68 1348

4.0 1.00

Read the following statements regarding inhibition of oxidative phosphorylation :

- (A). Cyanide binds tightly with cytochromes and prevents their functioning.
- (B). The antibiotic antimycin A inhibits electron transport chain (ETC) by competing with coenzyme Q.
- (C). The antibiotic piericidin blocks ETC between cytochrome b and c.
- (D). Carbon monoxide binds tightly with cytochromes and prevents their functioning.
- (E). The uncouplers prevent ATP synthesis without affecting ETC itself.

Choose the **correct** answer from the options given below:

1. (B), (C) and (D) only.
2. (A), (B) and (E) only.
3. (B), (C) and (E) only.
4. (A), (D) and (E) only.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

69 1349

4.0 1.00

Microorganisms transform mercury (Hg) by the process of methylation yielding methylmercury (CH_3Hg^+). Which of the following is correct regarding toxicity of methylmercury?

1. Less toxic over Hg
2. Extremely toxic over Hg
3. Equal toxic to Hg
4. Non-toxic over Hg

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

70 1350

4.0

1.00

The use of computers to store and analyze the sequences and structures of nucleic acids and proteins, is referred as

1. Metagenomics
2. Metatranscriptomics
3. Bioinformatics
4. Biostatistics

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

71 1000601

4.0

1.00

Read the following statements regarding protein folding

- (A). Some proteins require assistance from other proteins for proper folding or for assembly into larger complexes
- (B). Chaperonins assist in protein folding by becoming part of the assembly
- (C). Chaperonins are one type of heat shock proteins
- (D). *DnaK* and *DnaJ* bind to newly formed polypeptides and help reducing improper folding
- (E). GroEL – GroES complex increases improper folding protein in *E. coli*

Choose the **correct** answer from the options given below:

1. (B), (C) and (D) only.
2. (C), (D) and (E) only.
3. (A), (C) and (D) only.
4. (A), (C) and (E) only.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

72 1000602

4.0 1.00

Match **List-I** with **List-II**

List-I	List-II
(Mutagen)	(Results in)
(A). Nitrous acid	(I). Both point mutation and deletion
(B). 2-amino purine	(II). GC → AT
(C). Nitrosoguanidine	(III). Microinsertion and microdeletion
(D). EMS	(IV). AT → GC and GC → AT
(E). Ethidium bromide	(V). AT → GC and occasionally GC → AT

Choose the **correct** answer from the options given below:

1. (A) – (V), (B) - (IV), (C) - (I), (D) – (III), (E) – (II)
2. (A) – (II), (B) - (IV), (C) - (V), (D) – (I), (E) – (III)
3. (A) – (III), (B) - (I), (C) - (II), (D) – (V), (E) – (IV)
4. (A) – (IV), (B) - (V), (C) - (I), (D) – (II), (E) – (III)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

73 1000603

4.0 1.00

Given below are two statements:

Statement (I): Shuttle vectors for eukaryotes must contain a segment of DNA from the centromere in order to be properly distributed at cell division

Statement (II): DNA sequence of replication origins are dissimilar in different eukaryotes, hence yeast origin does not function in higher eukaryotes

In light of the above statements, choose the *most appropriate* answer from the options given below.

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

74	1000604	A temperate, dsDNA bacteriophage which replicates by transposition is 1. Lambda phage 2. T7 3. Mu 4. M13 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

75	1000605		4.0	1.00
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Read the following statements regarding gene regulation

- (A). Two component systems regulate large number of genes in archaea and bacterial parasites of higher organisms
- (B). *Ntr* regulatory system regulates nitrogen assimilation in many bacteria
- (C). *Nar* regulatory system controls the genes that allow the use of nitrate or nitrite (or both) as alternative electron acceptors during anaerobic respiration
- (D). Most eukaryotic signal transduction pathways rely on phosphorylation of histidine residues of proteins
- (E). The osmolarity of the environment controls the relative levels of the proteins *OmpC* and *OmpF* in the *E. coli* outer membrane

Choose the **correct** answer from the options given below:

1. (A), (B) and (C) only.
2. (B), (C) and (D) only.
3. (A), (D) and (E) only.
4. (B), (C) and (E) only.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

76	1000606	Given below are two statements: Statement (I): Anthropogenic N deposition decreases fungal diversity, biomass and respiration Statement (II): Increase in N deposition leads to increased carbon sequestration In light of the above statements, choose the <i>most appropriate</i> answer from the options given below. 1. Both Statement (I) and Statement (II) are true. 2. Both Statement (I) and Statement (II) are false. 3. Statement (I) is true but Statement (II) is false. 4. Statement (I) is false but Statement (II) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

77	1000607		4.0	1.00
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The 15th most abundant element in the Earth's crust and the 4th most abundant element in the universe is

1. Oxygen
2. Nitrogen
3. Carbon
4. Hydrogen

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

78 1000608

4.0 1.00

Read the following statements regarding lignin decomposition

- (A). Lignin is a complex, dense, amorphous, secondary cell wall polymer found in trachea and sclerenchyma of terrestrial plants
- (B). Basic structure of lignin is based on the phenyl propanoid unit, consisting of an aromatic ring and a 2-C side chain
- (C). White rot fungi are the most effective lignin degraders among all microbes
- (D). Lignin peroxidase can oxidize both phenolic and non-phenolic lignin structures
- (E). Bacteria do not have the ability to degrade lignin

Choose the **correct** answer from the options given below:

1. (A), (B) and (C) only.
2. (A), (C) and (D) only.
3. (B), (C) and (D) only.
4. (C), (D) and (E) only.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

79 1000609

4.0 1.00

Match **List-I** with **List-II**

List-I	List-II
(Relationship between)	(Interaction)
(A). <i>Tetrahymena</i> and <i>Klebsiella</i>	(I). Parasitism
(B). <i>Desulfovibrio</i> and <i>Methanobacterium</i>	(II). Predation
(C). <i>Enterococcus faecalis</i> and <i>E. coli</i>	(III). Mutualism
(D). <i>Bdellovibrio</i> and <i>E. coli</i>	(IV). Syntrophism
(E). <i>Paramecium</i> and <i>Chlorella</i>	(V). Commensalism

Choose the **correct** answer from the options given below:

- (A) – (V), (B) – (IV), (C) – (I), (D) – (III), (E) – (II)
- (A) – (III), (B) – (IV), (C) – (V), (D) – (I), (E) – (II)
- (A) – (II), (B) – (V), (C) – (IV), (D) – (I), (E) – (III)
- (A) – (III), (B) – (I), (C) – (V), (D) – (II), (E) – (IV)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

80 1000610

4.0 1.00

Read the following statements regarding S transformation

- (A). The most abundant organic sulphur compound in nature is carbon disulfide
- (B). In agricultural soils, heterotrophic S oxidation is more important than chemoautotrophic S oxidation
- (C). Molecular analysis of *aprA* gene diversity yields detailed information on the activity of both S oxidizing and reducing pathways in any given environment
- (D). Sulphate reducing bacteria can adapt to wide range of anaerobic environments because they have flexible energy metabolism and readily form syntrophic association with other microbes
- (E). Heterotrophic S-oxidizing bacteria are capable of completely oxidizing inorganic S compounds

Choose the **correct** answer from the options given below:

- (A), (B) and (C) only.
- (B), (C) and (D) only.
- (C), (D) and (E) only.
- (B), (C) and (E) only.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

81	1000611	Read the following statements regarding mycorrhizal links with plants (A). Ectomycorrhizae are mainly found on the roots of forest trees especially in tropical forests (B). Most mycorrhizal fungi catabolise cellulose and other leaf litter polymers (C). Single species of tree can form multiple mycorrhizal associations (D). Inorganic N and P are mined from the soil by the fungi, converted to arginine and polyphosphate, and translocated through the hyphae to the plant (E). There are also parasitic mycorrhizae available in association with plant roots Choose the correct answer from the options given below: 1. (A), (B) and (C) only. 2. (B), (C) and (D) only. 3. (C), (D) and (E) only. 4. (A), (C) and (D) only.	4.0	1.00
		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

82	1000612	The organism which contains genes encoding Mo and V nitrogenases as well as Fe-only nitrogenase is 1. <i>Azospirillum brasilense</i> 2. <i>Methanosarcina barkeri</i> 3. <i>Trichodesmium</i> sp. 4. <i>Clostridium pasteurianum</i>	4.0	1.00
		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

83	1000613		4.0	1.00
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The first isolation of nitrogen-fixing bacterium, *Clostridium pasteurianum* was performed by

1. Louis Pasteur
2. Martinus Beijerinck
3. Sergei Winogradsky
4. Selman Waksman

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

84 1000614

4.0 1.00

Read the following statements regarding cell surface structures

- (A). Pili are filamentous proteins that extend from surface of cell and are shorter than fimbriae and flagella
- (B). Type IV pili allow for an unusual form of cell motility called twitching motility
- (C). Type IV pili are present around the cell surface of cocci-shaped cells that contain them
- (D). Type IV pili do function as key colonization factors for certain human pathogens
- (E). Type IV pili mediate genetic transfer by the process of transformation in some bacteria

Choose the **correct** answer from the options given below:

1. (A), (B) and (C) only.
2. (B), (C) and (D) only.
3. (B), (D) and (E) only.
4. (C), (D) and (E) only.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

85 1000615

4.0 1.00

Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R).

Assertion (A) : Lysosomes are membrane enclosed compartments that contain digestive enzymes that hydrolyse proteins, fats and polysaccharides and hydrolyze damaged cellular components and recycling these materials for new biosynthesis

Reason (R) : Lysosomes allow the cell's lytic activities to be partitioned away from the cytoplasm proper and resulting nutrients pass from the lysosome into the cytoplasm for use by cytoplasmic enzymes

In light of the above statements, choose the *correct* answer from the options given below.

1. Both (A) and (R) are true and (R) is the correct explanation of (A).
2. Both (A) and (R) are true but (R) is NOT the correct explanation of (A).
3. (A) is true but (R) is false.
4. (A) is false but (R) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

86 1000616

4.0 1.00

Match **List-I** with **List-II**

List-I	List-II
(Streptomyces and related actinobacteria)	(Antibiotic produced)
(A). <i>Streptomyces fradiae</i>	(I). Amphotericin B
(B). <i>Streptomyces noursei</i>	(II). Chloramphenicol
(C). <i>Streptomyces nodosus</i>	(III). Streptomycin
(D). <i>Streptomyces griseus</i>	(IV). Neomycin
(E). <i>Streptomyces venezuelae</i>	(V). Nystatin

Choose the **correct** answer from the options given below:

1. (A) – (V), (B) – (IV), (C) – (II), (D) – (III), (E) – (I)
2. (A) – (III), (B) – (I), (C) – (V), (D) – (II), (E) – (IV)
3. (A) – (II), (B) – (V), (C) – (IV), (D) – (I), (E) – (III)
4. (A) – (IV), (B) – (V), (C) – (I), (D) – (III), (E) – (II)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

87	1000617	Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R). Assertion (A) : Studies of chromosome replication in <i>E. coli</i> have shown that about 40 minutes is the minimum time required for genome replication and that is independent of generation time (~20 minutes under optimal conditions) Reason (R) : In <i>E. coli</i> cells growing under optimal condition, a new round of DNA replication begins before the last round has been completed, and therefore some genes are present in more than one copy In light of the above statements, choose the <i>correct</i> answer from the options given below. - Both (A) and (R) are true and (R) is the correct explanation of (A). - Both (A) and (R) are true but (R) is NOT the correct explanation of (A). (A) is true but (R) is false. (A) is false but (R) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

88	1000618	Given below are two statements: Statement (I): Halorhodopsin is a light-driven chloride (Cl^-) pump that brings Cl^- into the cell with the help of retinal Statement (II): Through the interaction of a cascade of proteins, proteorhodopsins affect flagellar rotations, moving cells of <i>Halobacterium salinarum</i> toward light where bacteriorhodopsin can function to make ATP In light of the above statements, choose the <i>most appropriate</i> answer from the options given below. - Both Statement (I) and Statement (II) are true. - Both Statement (I) and Statement (II) are false. - Statement (I) is true but Statement (II) is false. - Statement (I) is false but Statement (II) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

89	1000619		4.0	1.00
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Match **List-I** with **List-II**

List-I	List-II
(Group characteristics)	(Genus representing the group)
(A). Baeocytes	(I). <i>Nodularia</i>
(B). Filamentous, binary fission in single plane	(II). <i>Gloeotheca</i>
(C). Filamentous, produce heterocysts	(III). <i>Fischerella</i>
(D). Cells divide in multiple planes, form branching filaments	(IV). <i>Pleurocapsa</i>
(E). Unicellular or cellular aggregates	(V). <i>Lyngbya</i>

Choose the **correct** answer from the options given below:

- (A) – (III), (B) – (I), (C) – (II), (D) – (V), (E) – (IV)
- (A) – (IV), (B) – (V), (C) – (I), (D) – (III), (E) – (II)
- (A) – (II), (B) – (III), (C) – (IV), (D) – (V), (E) – (I)
- (A) – (V), (B) – (IV), (C) – (II), (D) – (I), (E) – (III)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

90	1000620	An eukaryote which can denitrify, employs this metabolism in its habitat, i.e. anoxic marine sediments is	4.0	1.00
		<i>Dictyostelium discoideum</i> <i>Batrachochytrium dendrobatidis</i> <i>Ornithocercus magnificus</i> <i>Globobulimina pseudospinescens</i>		
		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

91	1000621		4.0	1.00
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Pyrimidine biosynthesis in microorganisms is initiated by the formation of which of the following compound ?

1. Phosphoribosylamine
2. Carbamoyl phosphate
3. Aminoimidazole carboxamide
4. Glycinamide ribonucleotide

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

92	1000622	Read the following statements regarding antibiotic sensitivity of bacteria (A). Kirby-Bauer test or disc diffusion test is the standard method used for testing antibiotic sensitivity of bacteria (B). During incubation, the antimicrobial agent diffuses from disc into agar during a specified period of incubation, establishing a gradient; the farther the chemical diffuses away from the filter paper, the higher the concentration of the agent (C). The minimum inhibitory concentration is constant for a given antimicrobial agent, hence different antimicrobial agents can be compared to determine which is most effective against the target organism (D). Hospital infection-control microbiologists generate and examine susceptibility data to generate periodic reports called antibiogram (E). Antibiograms are used to monitor control of known pathogens, to track the emergence of new pathogens and to identify the emergence of antibiotic resistance at the local level Choose the correct answer from the options given below: 1. (A), (B) and (C) only. 2. (A), (C) and (D) only. 3. (A), (D) and (E) only. 4. (C), (D) and (E) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

93	1000623		4.0	1.00
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Read the following statements regarding Bergey's manual

- (A). Since the creation of the Bergey's Trust, two editions of *Bergey's Manual of Systematic Bacteriology* have been published and Bergey's Manual is considered as the most complete and authoritative description of bacterial diversity available.
- (B). First edition comprised five volumes, published 1984-1989. The second edition comprised nine volumes, published 2001-2012.
- (C). *Bergey's Manual of Determinative Bacteriology* (ninth edition) is a departure from past editions that attempted, to combine systematic and determinative information, which is serving as a reference to aid in the identification of unknown bacteria.
- (D). In *Bergey's Manual of Determinative Bacteriology*, the bacteria are divided based strictly on phenotypic characteristics into 35 groups, which are comparable to the "Parts" in the eighth edition and the "Sections" in the Systematic volumes.
- (E). Upon completion of the second edition, publication of the online *Bergey's Manual of Systematics of Bacteria and Fungi* (first edition) was initiated in 2021 and has been updated continuously since then.

Choose the **correct** answer from the options given below:

- 1. (B), (C) and (D) only.
- 2. (A), (B) and (E) only.
- 3. (B), (D) and (E) only.
- 4. (A), (C) and (D) only.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

94

1000624

4.0

1.00

Read the following statements regarding preservation of microorganisms

(A). For preservation of microorganisms cryopreservation and lyophilization are highly utilized for culture collections and industry.

(B). In cryopreservation and lyophilization, cells are subjected to cryogenic temperatures which promote ice crystal formation in the suspension medium and within the cell interior, and resulting osmotic imbalance induces biophysical and biochemical changes and causes cryo-injuries and cell death, which can be prevented by use of cryo or lyo protectants.

(C). Propanol (10–15%) and proline (5%) are frequently used in cryopreservation of microorganisms, and they do not penetrate cell.

(D). Preservation of cells at -20 °C is recommended for long-term preservation and it is considered ideal because the chances of DNA mutations are almost zero at that temperature.

(E). Lyophilization is the preferred long-term preservation method in most microbial resource centers due to the low cost of maintenance and ease of transportation of lyophilized cultures.

Choose the **correct** answer from the options given below:

1. (A), (B) and (C) only.
2. (A), (C) and (D) only.
3. (A), (B) and (E) only.
4. (B), (D) and (E) only.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

95	1000625	After performing Schaeffer-Fulton method of differential staining, the vegetative cells of <i>Bacillus subtilis</i> will appear as 1. Green and rod shaped 2. Blue and rod shaped 3. Pink-red and rod shaped 4. Green and spherical shaped A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

96	1000626		4.0	1.00
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Which one of the following bacteria form stem nodule in tropical legume *Sesbania rostrata* for symbiotic nitrogen fixation?

1. *Rhizobium leguminosarum*
2. *Azorhizobium caulinodans*
3. *Sinorhizobium meliloti*
4. *Bradyrhizobium japonicum*

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

97	1000627	Read the following statements regarding arbuscular mycorrhizal fungal (AMF) fatty acids: (A). It can be used for identification but not for quantification purpose. (B). Provide useful indication of an infection index for plant root. (C). Useful to differentiate AMF and non-AMF. (D). 16:1ω5 is found in the AMF genus <i>Glomus</i>. (E). 18:1ω11 is found in the genus <i>Gigaspora</i>. Choose the correct answer from the options given below: 1. (B), (D) and (E) only. 2. (A), (D) and (E) only. 3. (B), (C) and (D) only. 4. (A) and (D) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

98	1000628		4.0	1.00
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Given below are two statements:

Statement (I): *Agrobacterium tumefaciens* transfer entire Ti plasmid to the plant cell soon after the infection.

Statement (II): The *onc* genes of Ti plasmid are responsible for opine synthesis and its catabolism.

In light of the above statements, choose the *most appropriate* answer from the options given below.

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

99	1000629	Given below are two statements: Statement (I): Bardenpho process of waste water treatment consists of one aerobic and one anoxic tank with two sludge settling tanks. Statement (II): Bardenpho process helps to remove nitrogen and phosphorus from waste water. In light of the above statements, choose the <i>most appropriate</i> answer from the options given below. 1. Both Statement (I) and Statement (II) are true. 2. Both Statement (I) and Statement (II) are false. 3. Statement (I) is true but Statement (II) is false. 4. Statement (I) is false but Statement (II) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

100	1000630	Which one of the following is NOT true for botulin toxin? 1. Four types (A, B, C and D) of toxins are known, C and D are extremely toxic over A and B type to humans 2. Extremely potent neurotoxin 3. The toxin absorbed from the intestine 4. Spread to the peripheral nerves, and block the transmission of impulse	4.0	1.00
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		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

101	1000631	Read the following statements regarding Hazard analysis and critical control points (HACCP): (A). Originally developed jointly by the National Aeronautics and Space Administration (NASA), and the U.S. Food and Drug Administration (USFDA). (B). Developed to produce foods with high assurance of safety for use in the space program. (C). HACCP helps to produce safe food only for astronauts and not practicable for other consumers. (D). Only suitable for fruit and vegetable products and not for others, including meat and poultry products. (E). It has two components: 1). To find hazards associated with production and processing. 2). To find critical control points (CCP). Choose the correct answer from the options given below: 1. (B), (C) and (E) only. 2. (B) and (E) only. 3. (A), (C) and (D) only. 4. (A) and (C) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

102	1000632	Which one of the following is a fermented soya bean cake that forms an important part of the diet of many Indonesians? 1. Miso 2. Kefir 3. Pepperoni 4. Tempeh A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

103	1000633	The growth of microorganisms can be adversely affected by several components/systems that are naturally present or entered in the milk as contaminants. The natural antimicrobials in the milk are 1. Agglutinins and Lysozyme-peroxidase system 2. Eugenol and Lysozyme-peroxidase system 3. Agglutinins and Lactoperoxidase-isothiocyanate system 4. Eugenol and Methylphenyl-isothiocyanate system A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

104	1000634	Read the following statements regarding vitamin B₁₂ and its fermentation: (A). Vitamin B₁₂ is also known as cyanocobalamine. (B). Can be recovered as by-product of streptomycin fermentation. (C). Cadmium and nitrite salts are added to the medium as a precursor of vitamin B₁₂. (D). <i>Propionibacterium shermanii</i> and <i>Pseudomonas denitrificans</i> are commercially employed for the production of vitamin B₁₂. (E). As the vitamin B₁₂ is extracellular product, spontaneously excreted into production medium. Choose the correct answer from the options given below: 1. (A), (B) and (D) only. 2. (B) and (E) only. 3. (A), (C) and (E) only. 4. (A) and (D) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

105	1000635		4.0	1.00
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Match **List-I** with **List-II**

List-I	List-II
(Type of wine)	(Example)
(A). Red wine	(I). Sherries
(B). Dry wine	(II). Claret wine
(C). Sparkling wine	(III). Takay wine
(D). Still wine	(IV). Champagne

Choose the **correct** answer from the options given below:

- (A) - (III), (B) - (IV), (C) - (II), (D) - (I)
- (A) - (II), (B) - (I), (C) - (IV), (D) - (III)
- (A) - (II), (B) - (III), (C) - (IV), (D) - (I)
- (A) - (IV), (B) - (III), (C) - (I), (D) - (II)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

106 1000636

4.0 1.00

Which one of the following is used as a precursor for carotenoids fermentation ?

- β - Ionones
- p-Hydroxycinnamate
- Anthranilic acid
- Dihydronovobionic

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

107 1000637

4.0 1.00

Salk poliomyelitis is what type of vaccine?

1. Live attenuated virus
2. Killed virus
3. Messenger RNA (mRNA)
4. Recombinant viral vector

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

108	1000638		4.0	1.00
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Given below are two statements:

Statement (I): Human DNase I is used for the treatment of cystic fibrosis.

Statement (II): Alginate lyase is used for the treatment of cystic fibrosis.

In light of the above statements, choose the *most appropriate* answer from the options given below.

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

109	1000639		4.0	1.00
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Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R).

Assertion (A) : Sulphur-oxidising bacteria also have a role to play in the coal mining industry.

Reason (R) : These microbes carry out biodesulphurisation of coal to remove the sulphur before combustion.

In light of the above statements, choose the *correct* answer from the options given below.

1. Both (A) and (R) are true and (R) is the correct explanation of (A).
2. Both (A) and (R) are true but (R) is NOT the correct explanation of (A).
3. (A) is true but (R) is false.
4. (A) is false but (R) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

110	1000640	Which one of the following is an endophytic diazotroph of sugarcane? 1. <i>Azospirillum lipoferum</i> 2. <i>Azotobacter chroococcum</i> 3. <i>Klebsiella oxytoca</i> 4. <i>Acetobacter diazotrophicus</i> A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

111	1000641	Read the following statements regarding gold biomining : (A). Gold is typically present in nature in deposits associated with minerals containing arsenic (As) and FeS₂. (B). <i>Acidithiobacillus ferrooxidans</i> and related bacteria can leach the arsenopyrite minerals, releasing the trapped Au. (C). Gold leaching is done by the huge dump method, with about 90% gold recovery. (D). The potentially toxic Arsenic and Cyanide residues from the mining process are removed in the gold-leaching bioreactor. Choose the correct answer from the options given below: 1. (A), (B) and (C) only. 2. (B) and (D) only. 3. (A), (B) and (D) only. 4. (A) and (D) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

112	1000642		4.0	1.00
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Given below are two statements:

Statement (I): The bacterium *Burkholderia* dechlorinates the pesticide 2,4,5-T under anoxic conditions, releasing chloride ion (Cl⁻). The reaction is catalyzed by reductase enzymes.

Statement (II): Following dechlorination, a dioxygenase enzyme breaks the aromatic ring to yield compounds that can enter the citric acid cycle and yield energy.

In light of the above statements, choose the *most appropriate* answer from the options given below.

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

113 1000643

4.0

1.00

Read the following statements regarding use of microarrays for the analysis of microbial diversity :

- (A). It can be used for phylogenetic and gene expression analysis.
- (B). Phylochips, a microarray designed for biodiversity studies, can be used for screening of microbial communities for specific groups of prokaryotes.
- (C). For phylochips microarray analysis, genes encoding small subunit of rRNA need to be amplified by PCR followed by cloning and sequencing of the targeted gene.
- (D). Microarray can also detect genes encoding functions of biogeochemical significance.
- (E). Totally unrelated genes may yield false positive results if they are sufficiently complementary to the probe to cause hybridization.

Choose the **correct** answer from the options given below:

1. (A), (B) and (C) only.
2. (A), (B) and (E) only.
3. (B), (C) and (D) only.
4. (A), (B), (D) and (E) only.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

114 1000644

4.0

1.00

Given below are two statements:

Statement (I): Genes such as those encoding rRNAs that have changed in sequence over time as species have diverged are called orthologs.

Statement (II): Organisms that share the same or very closely related orthologous genes are called a phylotype.

In light of the above statements, choose the *most appropriate* answer from the options given below.

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

115	1000645	Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R). Assertion (A) : Green fluorescent protein (gfp) gene based tracking is not suitable for methanogenic bacteria. Reason (R) : Methanogens are strictly anaerobic in nature and can't produce sufficient energy for fluorescent production at the detectable level. In light of the above statements, choose the <i>correct</i> answer from the options given below. 1. Both (A) and (R) are true and (R) is the correct explanation of (A). 2. Both (A) and (R) are true but (R) is NOT the correct explanation of (A). 3. (A) is true but (R) is false. 4. (A) is false but (R) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

116	1000646	Which one of the following tools reveals that which genes in the community are actually being expressed, and the relative level of that expression, at a specific time and place? 1. Metagenomics 2. Metatranscriptomics 3. Metaproteomics 4. Metadynamics	4.0	1.00
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A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

117 1000647

4.0 1.00

Given below are two statements:

Statement (I): In split plot design, the experimental units would be further sub-divided into sub units so that more treatments could be tested within each main treatment.

Statement (II): The sub plots in split plot design can further be divided into sub plots to accommodate one more factor in case of split-split plot design.

In light of the above statements, choose the *most appropriate* answer from the options given below.

1. Both Statement (I) and Statement (II) are true.
2. Both Statement (I) and Statement (II) are false.
3. Statement (I) is true but Statement (II) is false.
4. Statement (I) is false but Statement (II) is true.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

118 1000648

4.0 1.00

Read the following statements regarding Correlation and Regression:

(A). Correlation is a two-way relation whereas regression is a one-way relation.

(B). Correlation coefficient is dependent of units whereas regression coefficient is in the units of independent variate.

(C). The value of regression coefficient lies between -1 and +1.

(D). In the case of correlation one need to identify cause and effect. Whereas, in regression one need to know the cause but not the effect.

(E). In the case of regression, one can predict the value of dependent variate for a given value of independent variate.

Choose the **correct** answer from the options given below:

1. (B), (C) and (D) only.
2. (A), (B) and (E) only.
3. (A) and (E) only.
4. (A), (B), (C) and (E) only.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

119	1000649	Consider there are two variates: yield and rainfall. Rainfall has direct effect on the yield as rainfall goes on increasing, yield also increases upto certain point and then declines due to excess rainfall. If we plot the relation on a graph with scattered diagram, what will be the regression line between these two variables? 1. Linear 2. Zigzag 3. Imperfect 4. Curve linear A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

120	1000650	Type II error arises during statistical analysis when an investigator does 1. Accept null hypothesis when it is true 2. Reject null hypothesis when it is true 3. Accept null hypothesis when it is false 4. Reject null hypothesis when it is false A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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