ICAR AIEEA PG 2024

PLANT SCIENCES

Solved Paper

Key Answers are available at the bottom of this document

1) PLANT SCIENCES

Question No. 1 / Question ID 20033 Marks: 4.00

Fertilization is an important event in angiosperm, which involves several critical activities. Below are a few major steps of fertilization in plants. Arrange them from the beginning to the last, systematically.

(A). Pollen germination.

(B). Anthesis followed by pollination.

(C). Fertilization

(D). Penetration of the ovule

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

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

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 2 / Question ID 20107 Marks: 4.00

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

Assertion (A) : In eukaryotic cells, the newly synthesized polypeptide chain is often modified after translation.

Reason (R) : Post-translational modifications such as phosphorylation, glycosylation, and cleavage may occur to the polypeptide chain to attain its functional form.

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

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

● 1 (Chosen Option)
○ 2 3 4
○
○

Question No. 3 / Question ID 20112 Marks: 4.00

Given below are two statements:

Statement (I):Heterosis refers to the phenomenon where the hybrid offspring exhibit superior trait performance compared to their parents.

Statement (II):Heterosis is primarily attributed to the combination of favorable alleles from each parent, resulting in enhanced trait performance of the hybrid offspring.

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.

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 4 / Question ID 20027 Marks: 4.00

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

List-I: Phytochemicals	**List-II: Crops where it is found**
(A). Erusic acid	(I). *Glycine max*
(B). Kunitz trypsin inhibitor	(II). *Zea mays*
(C). BOAA	(III). *Brassica spp*
(D). Phytic acid	(IV). *Lathyrus sativus*

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

○ 1 2 3 4 (Chosen
○ Option)
○
●

Question No. 5 / Question ID 20093 Marks: 4.00

Given below are two statements:

Statement (I): Transcription is the process in which a gene's DNA sequence is transcribed to make an RNA molecule

Statement (II): For transcription, RNA polymerase binds to the promoter situated upstream of the gene to be transcribed

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

1. Both Statement (I) and Statement (II) are correct.
2. Both Statement (I) and Statement (II) are incorrect.
3. Statement (I) is correct but Statement (II) is incorrect.
4. Statement (I) is incorrect but Statement (II) is correct.

- [x] 1 (Chosen Option)
- [ ] 2 3 4
- [ ]
- [ ]

Question No. 6 / Question ID 20006 Marks: 4.00

If an individual does not show a trait even though they have the appropriate genotype, the trait is said to exhibit

1. Variable expressivity
2. Incomplete penetrance
3. Partial dominance
4. Co-dominance

- [ ] 1 2 (Chosen
- [x] Option) 3 4
- [ ]
- [ ]

Question No. 7 / Question ID 20074 Marks: 4.00

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

Assertion (A) : During DNA replication, the lagging strand is replicated in short pieces

Reason (R) : DNA polymerase can synthesize the DNA only in one direction i.e. 5' to 3'

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.

- [x] 1 (Chosen Option)
- [ ] 2 3 4
- [ ]
- [ ]

Question No. 8 / Question ID 20043 Marks: 4.00

Which of the following is NOT a feature of Oomycetes plant pathogens?

1. Motile spores
2. Coloured spores
3. Hyaline mycelium
4. Coenocytic mycelium

- [x] 1 (Chosen Option)
- [ ] 2

○ 3
○ 4

Question No. 9 / Question ID 20004 Marks: 4.00

The formula: [Sum of (Observed-Expected)^2/Expected] is also known as

1. F-test statistic
2. Chi-square statistic
3. T-test statistic
4. Variance statistic

○ 1 2 (Chosen
● Option) 3 4
○
○

Question No. 10 / Question ID 20105 Marks: 4.00

Which of the following is a term for a plant or an embryo that contains only a gametic chromosome set:

1. Monoploid
2. Aneuploid
3. Haploid
4. Gametophyte

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 11 / Question ID 20084 Marks: 4.00

Which of the following statements is NOT true for Koch's first postulate

1. The microorganism must be present in every case of the disease
2. The specific disease must be reproduced when a pure culture of the microorganism is inoculated into healthy susceptible host
3. The causative agent of the disease must be present in every diseased host
4. The microorganism must be isolated from diseased host and grown in Mixed culture

○ 1 2 3 4 (Chosen
○ Option)
○
●

Question No. 12 / Question ID 20100 Marks: 4.00

Which one of the following factor influences the determination of isolation distance requirement in cross-pollinated crops?

1. Plant height
2. Germination rate
3. Soil fertility
4. Type of pollinating agent

○ 1 2 3 4 (Chosen
○ Option)
○
●

Question No. 13 / Question ID 20025 Marks: 4.00

Which of the following statements are INCORRECT about 'Enforced seed dormancy'?

(A). Enforced seed dormancy occurs due to certain genetical and physiological factors.

(B). Enforced seed dormancy is truly a specific character of the seeds.

(C). High soil temperature and NO_3 content of the surface soil may help break the enforced seed dormancy.

(D). Cultivation practices may also break the enforced seed dormancy by exposing the seeds to better aeration.

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

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

- [x] 1 (Chosen Option)
- [ ] 2 3 4
- [ ]
- [ ]

Question No. 14 / Question ID 20116 Marks: 4.00

The primary objectives of conservation of the plant genetic resources are

(A). To conserve genetic diversity for future generations

(B). To promote monoculture farming practices

(C). To eradicate invasive plant species

(D). To ensure food security and sustainable agriculture

(E). To facilitate research and innovation in plant breeding

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

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

- [ ] 1 2 (Chosen
- [x] Option) 3 4
- [ ]
- [ ]

Question No. 15 / Question ID 20001 Marks: 4.00

Both plant and animal cells contain some small organelles called 'peroxisomes', which are dedicated to the metabolism of substances such as

1. Fibre
2. Sugar
3. Fats and amino acids
4. Starch

- [ ] 1 2 3 (Chosen
- [ ] Option) 4
- [x]
- [ ]

Question No. 16 / Question ID 20115 Marks: 4.00

Given below are two statements:

Statement (I):DNA replication proceeds in a bidirectional manner from multiple origins of replication in prokaryotic cells.

Statement (II):Okazaki fragments are short DNA fragments synthesized on the leading strand during DNA replication in both prokaryotic and eukaryotic cells.

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.

○ 1 2 (Chosen
● Option) 3 4
○
○

Question No. 17 / Question ID 20045 Marks: 4.00

Which of the following is one of the key adaptive features of fungal spores that aid them in long-distance transmission?

1. Long flagella like appendages
2. Low melanin content
3. High melanin contents
4. Short flagella like appendages

○ 1
○ 2
○ 3
○ 4

Question No. 18 / Question ID 20114 Marks: 4.00

Given below are two statements:

Statement (I): Amplified Fragment Length Polymorphism is a type of molecular marker that relies on enzymatic digestion and PCR (Polymerase Chain Reaction)

Statement (II): Restriction Fragment Length Polymorphism is a type of molecular marker that detects variations in the length of DNA fragments generated by digestion with restriction enzymes.

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.

● 1 (Chosen Option)
○ 2 3 4
○
○

Question No. 19 / Question ID 20091 Marks: 4.00

Who proposed 'Operon' model for gene regulation in bacteria

1. Sanger
2. Watson and Crick
3. James and Monad
4. Jacob and Monad

○ 1 2 3 4 (Chosen
○ Option)
○
●

Question No. 20 / Question ID 20047 Marks: 4.00

Choose the correct option about *Magnaporthe*

A. Magnaporthe affects only monocots

B. Magnaporthe affects only dicots

C. Magnaporthe is seed-borne

D. Magnaporthe is non motile

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

○ 1 2 3 4 (Chosen
○ Option)
○
●

Question No. 21 / Question ID 20104 Marks: 4.00

The chasmogamy in plants is best described as-

1. The condition in which flowers remain closed during the day and open at night.
2. The condition in which flowers open only after they have been pollinated.
3. The condition in which flowers fail to open and misses self pollination.
4. The condition in which flowers are pollinated by wind instead of insects.

○ 1 2 (Chosen
● Option) 3 4
○
○

Question No. 22 / Question ID 20048 Marks: 4.00

Choose the correct combination of statements about Whiplash and Tinsel flagellum

(A). Whiplash flagellum is directed backward

(B). Tinsel flagellum is directed forward

(C). Whiplash and Tinsel flagellum can not coexist

(D). Whiplash and Tinsel flagellum may coexist

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.

- ○ 1
- ○ 2
- ○ 3
- ○ 4

Question No. 23 / Question ID 20038 Marks: 4.00

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

Assertion (A): In nature, the tetraploid and hexaploid wheat reproduce as diploid (2n=28 or 2n = 42).

Reason (R): In the presence of the *Ph1* allele in chromosome 5B, each chromosome pairs only with its homologue from the same genome and reproduces as diploid.

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.

- ● 1 (Chosen Option)
- ○ 2 3 4
- ○
- ○

Question No. 24 / Question ID 20106 Marks: 4.00

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

Assertion (A) : During meiosis, genetic recombination occurs which leads to genetic diversity among offspring.

Reason (R) : Genetic recombination is facilitated by the crossing over of homologous chromosomes during prophase I of meiosis.

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

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

- ● 1 (Chosen Option)
- ○ 2 3 4
- ○
- ○

Question No. 25 / Question ID 20039 Marks: 4.00

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

Assertion (A): Self-incompatibility, male sterility, and pistillate condition have one effect in common i.e. they prevent self-pollination.

Reason (R): Self-incompatibility and male sterility are used in hybrid seed production while pistillate condition is used in inbred development.

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.

○ 1 2 3 (Chosen
○ Option) 4
■
○

Question No. 26 / Question ID 20052 Marks: 4.00

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

List-I	**List-II**
Biocompound	**Organism**
(A). 2, 4-diacetyl-phloroglucinol	(I). *Pseudomonas fluorescens*
(B). Herbicolin	(II). *Pantoea agglomerans*
(C). Zwittermicin A	(III). *Bacillus cereus*
(D). Xanthobaccin A	(IV). *Lysobacter sp*

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

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

○ 1 2 (Chosen
● Option) 3 4
○
○

Question No. 27 / Question ID 20087 Marks: 4.00

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

Assertion (A) : Methane is the major gas generated during anaerobic digestion of organic materials.

Reason (R) : Methanotrophs are the key players in anaerobic digestion of organic matter

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.

- [x] 1 (Chosen Option)
- [ ] 2 3 4
- [ ]
- [ ]

Question No. 28 / Question ID 20076 Marks: 4.00

Which of the following fungi form endomycorrhizal associations with the plants

1. Ascomycetes
2. Basidiomycetes
3. Chytrids
4. Glomeromycetes

- [ ] 1 2 (Chosen
- [x] Option) 3 4
- [ ]
- [ ]

Question No. 29 / Question ID 20120 Marks: 4.00

Cytoplasmic male sterility is commonly used in hybrid seed production in the following crops:

(A). Wheat

(B). Sorghum

(C). Sunflower

(D). Corn

(E). Chickpea

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

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

- [ ] 1 2 3 (Chosen
- [ ] Option) 4
- [x]
- [ ]

Question No. 30 / Question ID 20007 Marks: 4.00

In humans, _____ traits are much easier to identify than _____ traits. Choose the correct pair of words from the options given below for filling in the blanks :

1. Recessive autosomal traits; X-linked traits
2. X-linked traits; Dominant autosomal traits
3. X-linked traits; Recessive autosomal traits
4. Dominant autosomal traits; X-linked traits

○ 1 2 3 4 (Chosen
○ Option)
○
●

Question No. 31 / Question ID 20028 Marks: 4.00

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

List-I: Microorganism	**List II:** Genetic principles where the microbes were used to establish the principles
(A). *Streptococcus phenumoneae*	(I). One gene-one enzyme
(B). *Neurospora crassa*	(II). RNA is the genetic material
(C). T4 Bacteriophage (rII locus)	(III). DNA is the genetic material
(D). TMV	(IV). Fine structure of gene

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

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

● 1 (Chosen Option)
○ 2 3 4
○
○

Question No. 32 / Question ID 20065 Marks: 4.00

Given below are two statements:

Statement (I): Horizontal gene transfer among the microbes is responsible for the transmission of virulence factors

Statement (II): Horizontal gene transfer can happen between microbes and plants also

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

1. Both Statement (I) and Statement (II) are correct.
2. Both Statement (I) and Statement (II) are incorrect.
3. Statement (I) is correct but Statement (II) is incorrect.
4. Statement (I) is incorrect but Statement (II) is correct.

1 (Chosen Option)
2 3 4

Question No. 33 / Question ID 20056 Marks: 4.00

Choose the correct order of the following microbes based on their requirement of host - from dead to living

(A). Saprotrophs

(B). Biotrophs

(C). Hemibiotrophs

(D). Nectrotrophs

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

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

1 2 (Chosen Option) 3 4

Question No. 34 / Question ID 20046 Marks: 4.00

Which of the following was responsible for the extinction of the Banana Variety "Gros Michel" from the market due to its high susceptibility?

1. *Fusarium oxysporum* f. sp. *cubense* race 1
2. *Fusarium oxysporum* f. sp. *cubense* race 4 or tropical race 4
3. *Ralstonia solanacearum* race 2
4. *Ralstonia solanacearum* race 4

1
2
3
4

Question No. 35 / Question ID 20023 Marks: 4.00

Which combinations of the following statements about Abscisic Acid (ABA) in plants are correct?

(A). ABA is important for plant development and desiccation tolerance.

(B). ABA influences the expression of various genes, including the gene for Late Embryogenesis Abundant (LEA) proteins.

(C). ABA also regulates the closure of aquaporins.

(D). Like GAs, the ABA also strongly promotes early flowering in plants.

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

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

1 (Chosen Option)
2

○ 3
○ 4

Question No. 36 / Question ID 20013 Marks: 4.00

In the case of *Lac* operon, the presence of glucose in the cell/ growing media will lead to

1. Increased induction
2. Catabolite repression
3. Slow induction
4. Zero effect induction

○ 1 2 (Chosen
● Option) 3 4
○
○

Question No. 37 / Question ID 20063 Marks: 4.00

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

Assertion (A) : Phytoplasma do not have cell wall and motility

Reason (R) : Phytoplasma colonize phloem

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.

● 1 (Chosen Option)
○ 2 3 4
○
○

Question No. 38 / Question ID 20069 Marks: 4.00

Which of the following traits are observed in eukaryotes but not in prokaryotes?

(A).70S ribosomes

B). Nuclear division by Mitosis

(C). Phagocytosis

(D). Binary fission

(E). Presence of Nucleolus

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

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

○ 1 2 3 4 (Chosen
○ Option)
○
●

Question No. 39 / Question ID 20071 Marks: 4.00

Given below are two statements:

Statement (I): *Saccharomyces cerevisiae*, an yeast, is the most widely used microorganism for industrial ethanol fermentation

Statement (II): *Saccharomyces cerevisiae* produces ethanol through glycolytic (Embden Meyerhoff Parnas) Pathway

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

1. Both Statement (I) and Statement (II) are correct.
2. Both Statement (I) and Statement (II) are incorrect.
3. Statement (I) is correct but Statement (II) is incorrect.
4. Statement (I) is incorrect but Statement (II) is correct.

- [x] 1 (Chosen Option)
- [ ] 2 3 4
- [ ]
- [ ]

Question No. 40 / Question ID 20057 Marks: 4.00

Arrange the following organisams in ascending order of their genomic complexities

(A). Viroid

(B). Virus

(C). Phytoplasma

(D). Bacteria

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

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

- [x] 1 (Chosen Option)
- [ ] 2 3 4
- [ ]
- [ ]

Question No. 41 / Question ID 20073 Marks: 4.00

Cannulae and Hami are the cellular structures found in

1. Yeast
2. Archaea
3. Mycoplasma
4. Bacteria

- [ ] 1
- [ ] 2
- [ ] 3
- [ ] 4

Question No. 42 / Question ID 20019 Marks: 4.00

Male sterile cytoplasm in crop plants usually arises from-

(A). Inter-specific hybridization

(B). Self-incompatibility

(C). Spontaneous mutation

(D). Induced mutation through Ethium Bromide

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

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

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 43 / Question ID 20050 Marks: 4.00

Based on following statements,choose the correct combination.

(A). *Plasmodiophora brassicae* causes clubroot of crucifers

(B). *Spongospora subterranean* causes powdery scab of potato

(C). *Polymyxa graminis* is a vector for soilborne wheat mosaic virus

(D). *Plasmodiophoromycota* are biotrophic parasites

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.

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 44 / Question ID 20108 Marks: 4.00

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

Assertion (A) : Foundation seed is the progeny of breeder seed or the first generation of seed produced after breeder seed.

Reason (R) : Foundation seed is primarily used for research purposes only.

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

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

● 1 (Chosen Option)
○ 2 3
○

○ 4

Question No. 45 / Question ID 20064 Marks: 4.00

Given below are two statements:

Statement (I): Bacteria need pre-existing openings or wounds on plants to initiate infection

Statement (II): Bacteria do not produce specialized infective structures

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

1. Both Statement (I) and Statement (II) are correct.
2. Both Statement (I) and Statement (II) are incorrect.
3. Statement (I) is correct but Statement (II) is incorrect.
4. Statement (I) is incorrect but Statement (II) is correct.

○ 1 2 (Chosen
● Option) 3 4
○
○

Question No. 46 / Question ID 20018 Marks: 4.00

The physiological characteristics of wheat plants that adapt different wheat cultivars to different climates include-

(A). Fertilizer requirement.

(B). Vernalization requirement.

(C). Winter hardiness (cold tolerance)

(D). Photoperiod response.

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

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

○ 1 2 3 4 (Chosen
○ Option)
○
●

Question No. 47 / Question ID 20034 Marks: 4.00

The development of Synthetic Varieties is practiced commonly in some cross-pollinated crops. It involves several important steps as given below. Arrange the steps of synthetic variety development in chronological order i.e. from the beginning to the last.

(A). Evaluation of the inbreds for GCA followed by selection of the inbreds as parental lines.

(B). Multiplication in isolation for one or more generations followed by distribution as synthetic varieties for commercial cultivation.

(C). Collection of diverse inbred lines for synthetic variety development.

(D). Crossing of the inbred lines in isolation in all possible combinations followed by mixing in equal proportion of seeds from all the cross combinations.

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

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

○ 1 2 3 4 (Chosen
○ Option)
○
●

Question No. 48 / Question ID 20022 Marks: 4.00

Which of the following statements about synthetic varieties are correct?

(A). Unlike hybrids, the farmers can save the seeds of synthetic varieties.

(B). Synthetic varieties have wider adaptability.

(C). No need to make fresh crosses every year.

(D). Synthetic varieties are higher yielding than the hybrids.

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

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

● 1 (Chosen Option)
○ 2 3 4
○
○

Question No. 49 / Question ID 20072 Marks: 4.00

Match List-I with List-II

List-I	List-II
(A). Discontinuous heating	(I). UV rays
(B). Destruction of all viable forms including spores	(II). Gamma rays
(C). Ionization of biological molecules	(III). Tyndalization
(D). Pyrimidine dimerization	(IV). Steam sterilization under pressure

Choose the correct answer from the options given below:

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

○ 1 2 3 4 (Chosen
○ Option)
○
●

Question No. 50 / Question ID 20020 Marks: 4.00

Which of the following statements is NOT correct?

(A). Seeds of synthetic varieties need to be replaced every year.

(B). Hybrid crops need intensive care and more inputs.

(C). Open pollinated progeny test is used in Maize and Pearlmillet.

(D). Composite varieties exploit both GCA and SCA.

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

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

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 51 / Question ID 20037 Marks: 4.00

Arrange the following concepts/principles chronologically from the oldest to the latest.

(A). Gene-for-gene hypothesis

(B). Dominance hypothesis

(C). Transforming principles

(D). Concept of heterosis

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

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

- [x] 1 (Chosen Option)
- [ ] 2 3 4
- [ ]
- [ ]

Question No. 52 / Question ID 20009 Marks: 4.00

Aneuploidy describes a numerical change in part of the genome, usually from the dosage of a single chromosome. If a chromosome or segment is overrepresented, it is called-

1. Hypoploid
2. Alloploid
3. Polyploid
4. Hyperploid

- [ ] 1 2 3 4 (Chosen Option)
- [ ]
- [ ]
- [x]

Question No. 53 / Question ID 20053 Marks: 4.00

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

List-I	**List-II**
Plant disease	**Causal agent**
(A). Black pod	(I). *Phytophthora infestans*
(B). Buckeye rot	(II). *Phytophthora parasitica*
(C). Black shank	(III). *Phytophthora capsici*
(D). Late blight	(IV). *Phytophthora megakarya*

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

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

- [x] 1 (Chosen Option)
- [ ] 2 3 4
- [ ]
- [ ]

Question No. 54 / Question ID 20081 Marks: 4.00

Which of the following microorganisms can fix nitrogen symbiotically

(A). *Anabaena*

(B). *Azotobacter*

(C). *Frankia*

(D). *Ulothrix*

(E). *Bradyrhizobium*

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

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

- [ ] 1 2 3 (Chosen Option) 4
- [x]
- [ ]

Question No. 55 / Question ID 20075 Marks: 4.00

In a DNA molecule, if 30% of the bases are adenine, what will be the percentage of cytosine bases

1. 30
2. 25
3. 60
4. 20

○ 1 2 3 4 (Chosen
○ Option)
○
●

Question No. 56 / Question ID 20060 Marks: 4.00

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

Assertion (A) : Viruses are molecular parasites

Reason (R) : Viruses depend on host for their basic functions like replication

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.

● 1 (Chosen Option)
○ 2 3 4
○
○

Question No. 57 / Question ID 20113 Marks: 4.00

Given below are two statements:

Statement (I):Double fertilization involves the fusion of two sperm cells with two egg cells.

Statement (II):In double fertilization, one sperm cell fuses with the egg cell, while the other sperm cell fuses with the two polar nuclei.

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.

○ 1 2 3 4 (Chosen
○ Option)
○
●

Question No. 58 / Question ID 20030 Marks: 4.00

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

List-I: Seed Tests	**List-II: Purpose**
(A). Grow-out test	(I). Leachate discharge
(B). Tetrazolium test	(II). Seed coat permeability
(C). Electrical conductivity	(III). Seed purity
(D). Imbibition test	(IV). Seed viability

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

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

- [x] 1 (Chosen Option)
- [ ] 2 3 4
- [ ]
- [ ]

Question No. 59 / Question ID 20036 Marks: 4.00

Arrange the following terms/events chronologically based on their birth/discovery from the oldest to the latest.

(A). 'DNA double helix' discovery

(B). Coining of the term 'Gene'

(C). Coining of the term 'Genetics'

(D). Reporting of the 'Pure line theory'

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

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

- [ ] 1 2 3 4 (Chosen Option)
- [ ]
- [x]

Question No. 60 / Question ID 20059 Marks: 4.00

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

Assertion (A) : The secondary spread of the pathogen propagules that are identical in virulence is mostly responsible for epidemics

Reason (R) : Secondary propagules are mostly asexually produced

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.

- ○ 1
- ○ 2
- ○ 3
- ○ 4

Question No. 61 / Question ID 20015 Marks: 4.00

Which one of the following statements about the mode of reproduction is NOT correct?

1. Self-fertilization, where pollen from a plant will fertilize ovules of the same plant.
2. Cross-pollination, where pollen from one plant can only fertilize a different plant.
3. Asexual propagation, where the new plant is genetically identical to its parent.
4. Apomixis, where seeds are produced asexually and the new plant is quite improved and different from its parents.

- ○ 1 2 3 4 (Chosen Option)
- ○
- ○
- ◉

Question No. 62 / Question ID 20094 Marks: 4.00

'Ti Plasmid' is associated with which disease

1. Crown gall
2. Root Rot
3. Damping off
4. Rust

- ● 1 (Chosen Option)
- ○ 2 3 4
- ○
- ○

Question No. 63 / Question ID 20024 Marks: 4.00

The characteristic features of monocot seeds include-

(A). Seeds germinate bearing a short axis called Plumule and Radicle.

(B). Plumule and Radicle are enclosed in a sheath called Coleoptile and Coleorhiza, respectively.

(C). The radicle grows downward and develops into the root system.

(D). The cotyledon of the seeds of the monocot crop Sorghum (Jowar) is known as 'Husk'.

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

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

- [x] 1 (Chosen Option)
- [ ] 2 3 4
- [ ]
- [ ]

Question No. 64 / Question ID 20067 Marks: 4.00

Given below are two statements:

Statement (I): Viruses can insert their genes into the host genome

Statement (II): Viral gene insertion in nature may lead to major phenotypic alteration in the host

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

1. Both Statement (I) and Statement (II) are correct.
2. Both Statement (I) and Statement (II) are incorrect.
3. Statement (I) is correct but Statement (II) is incorrect.
4. Statement (I) is incorrect but Statement (II) is correct.

- [x] 1 (Chosen Option)
- [ ] 2 3 4
- [ ]
- [ ]

Question No. 65 / Question ID 20044 Marks: 4.00

Which of the following is known to cause abnormal and unlimited proliferation of plant cells?

1. *Agrobacterium*
2. *Rhizobium*
3. *Xanthomonas*
4. *Erwinina*

- [x] 1 (Chosen Option)
- [ ] 2 3 4
- [ ]
- [ ]

Question No. 66 / Question ID 20062 Marks: 4.00

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

Assertion (A): Rust is incited not only by fungi but also by other organisms

Reason (R) : Colour of rust pustule reveal its causal agent

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.

○ 1 2 3 4 (Chosen
○ Option)
○
■

Question No. 67 / Question ID 20110 Marks: 4.00

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

List-I	**List-II**
Characteristic	DNA marker
(A). Restriction digestion followed by PCR amplification of selected fragments	(I). RFLP
(B). Use of PCR to amplify repeat motifs of DNA	(II). SNP
(C). Variation in single nucleotides within a DNA sequence	(III). SSR
(D). Detection of variations in the length of DNA fragments produced by restriction enzymes.	(IV). AFLP

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

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

○ 1 2 3 (Chosen
○ Option) 4
■
○

Question No. 68 / Question ID 20096 Marks: 4.00

Which of the following organisms naturally possess CRISPR-Cas systems?

1. Plants
2. Bacteria
3. Fungi
4. Mammals

○ 1 2 (Chosen
■ Option) 3 4
○
○

Question No. 69 / Question ID 20095 Marks: 4.00

Which term is commonly used to describe the specific sequence of bases recognized by restriction enzymes?

1. Clamping sequence or anchoring sequence
2. Binding sequence
3. Recognition sequence or restriction site
4. Target sequence

○ 1 2 3 (Chosen
○ Option) 4
■
○

Question No. 70 / Question ID 20092 Marks: 4.00

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

Assertion (A) : The genetic code is degenerative

Reason (R) : The genetic code is nearly universal

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.

■ 1 (Chosen Option)
○ 2 3 4
○
○

Question No. 71 / Question ID 20012 Marks: 4.00

_____ is a second mutation that compensates for the effect of an original, first mutation. Choose the most appropriate option from the below-mentioned options to fill in the gap.

1. Forward mutation
2. Supplementary mutation
3. Suppressor mutation
4. Compensatory mutation

■ 1 (Chosen Option)
○ 2 3 4
○
○

Question No. 72 / Question ID 20097 Marks: 4.00

During which phase of the cell cycle are chromosomes most condensed and visible under a microscope?

1. G1 phase
2. S phase
3. G2 phase
4. M phase (mitosis)

○ 1 2 3 4 (Chosen
○ Option)
○
●

Question No. 73 / Question ID 20021 Marks: 4.00

Which of the following combinations of the premises of 'Gemete Selection' in plant breeding is the correct one?

(A). Multiparent crosses are required for simultaneous improvements of multiple traits.

(B). The male parents of the final crosses are heterozygous and hence heterogametic.

(C). Each zygotic seed is a product of a separate, independent fertilization event.

(D). Gametic selection is an effective method to isolate an inbred for hybrid breeding.

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

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

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 74 / Question ID 20089 Marks: 4.00

Number of National Bureaus under ICAR system at present is

1. 5
2. 6
3. 7
4. 8

○ 1 2 (Chosen
● Option) 3 4
○
○

Question No. 75 / Question ID 20029 Marks: 4.00

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

List-I: Scientist	**List-II: Discovery**
(A). T.H. Morgan	(I). Chromosomal non-disjunction
(B). Calvin B Bridges	(II). Divisibility of gene in *Drosophila*
(C). Clarance P Oliver	(III). Deletion mapping
(D). Seymour Benzer	(IV). Chromosomal theory of inheritance

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

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

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 76 / Question ID 20002 Marks: 4.00

Chemicals that store energy for the majority of work within cells are called

1. Lipid
2. Protein
3. Carbohydrate
4. Enzyme

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 77 / Question ID 20079 Marks: 4.00

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

Assertion (A): Deuteromycetes are known as 'Fungi Imperfecti'

Reason (R): In 'Deuteromycetes' only the asexual phase is known

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.

● 1 (Chosen Option)
○ 2 3 4
○
○

Question No. 78 / Question ID 20085 Marks: 4.00

Which of the following food items is not prepared by fermentation

1. Bread
2. Beer
3. Cheeze
4. Cake

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 79 / Question ID 20058 Marks: 4.00

Arrange the following events in the correct order

(A). Restoration of Effector Triggered Susceptibility by Pathogen

(B). Effector triggered susceptibility by Pathogen

(C). Effector triggered immunity by Plant

(D). PAMP triggered immunity by Plant

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

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

○ 1
○ 2
○ 3
○ 4

Question No. 80 / Question ID 20102 Marks: 4.00

In a population in Hardy-Weinberg equilibrium, if the frequency of the homozygous dominant genotype (AA) is 0.64, what is the frequency of the dominant allele (A)?

1. 0.0064
2. 0.32
3. 0.8
4. 0.4

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 81 / Question ID 20086 Marks: 4.00

Which of the following microorganisms are used in Yogurt preparation

(A). *Bacillus cereus*

(B). *Bacillus amyloliquefaciens*

(C). *Streptococcus thermophiles*

(D). *Lactobacillus bulgaricus*

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

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

○ 1 2 3 4 (Chosen
○ Option)
○
●

Question No. 82 / Question ID 20098 Marks: 4.00

Which of the following is a common strategy used by seeds to survive harsh environmental conditions?

1. Rapid germination
2. Deep burial
3. Dormancy
4. High metabolic activity

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 83 / Question ID 20101 Marks: 4.00

Which of the following organization is primarily responsible for the collection, evaluation, and conservation of plant genetic resources in India for research purposes?

1. Protection of Plant varieties & Farmers Right Authority
2. National Bureau of Plant Genetic Resources
3. Ministry of Agriculture and Farmers Welfare
4. Bioversity International

○ 1 2 (Chosen
● Option) 3 4
○
○

Question No. 84 / Question ID 20026 Marks: 4.00

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

List-I: Aneuploid	**List-II: Genomic formula**
(Types of aneuploids)	**(Genomic formula)**
(A). Nullisomic- Monosomic	(I). (2n + 1) - (2n- 1)
(B). Double Monosomic	(II). (2n -1) - (2n+ 1)
(C). Monosomic- Trisomic	(III). (2n - 2) - (2n- 1)
(D). Trisomic- Monosomic	(IV). 2n -1-1

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

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

○ 1 2 (Chosen
● Option) 3 4
○
○

Question No. 85 / Question ID 20031 Marks: 4.00

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

List-I: Seed type	**List-II: Examples**
(A). Orthodox seed	(I). Coffee
(B). Recalcitrant seed	(II). Chickpea
(C). Impermeable seed coat	(III). Capsicum
(D). Hypogeal germination	(IV). Soybean (wild type)

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

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

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 86 / Question ID 20119 Marks: 4.00

Which of the following statements truly describes self-incompatibility in plants?

(A). Self-incompatibility prevents self-fertilization in plants.

(B). Self-incompatibility promotes outcrossing and thus increases genetic diversity within plant populations.

(C). Self-incompatibility is a mechanism that allows plants to self-fertilize efficiently.

(D). Self-incompatibility is controlled by genetic mechanisms within the plant.

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

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

○ 1 2 3 4 (Chosen
○ Option)
○
■

Question No. 87 / Question ID 20054 Marks: 4.00

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

List-I	**List-II**
Component of microscope	**Description**
(A). Turret in a microscope	(I). Lever beneath the opening in the stage consists of a shutter-like group of metal leaves which regulate the amount of light coming through the slide on the stage
(B). Condenser in a microscope	(II). Revolving plate which bears the objective lens, attached at the lower end of the tube, can be turned to change the objective lens
(C). Arm of a microscope	(III). Short metal tube that contains a lens that fits into the top of the tube
(D). Ocular lens	(IV). Nearly C-shaped pillar arising from the base that supports the stage and ocular components

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

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

○ 1 2 (Chosen
● Option) 3 4
○
○

Question No. 88 / Question ID 20103 Marks: 4.00

Which of the following is NOT a serious limitation for conserving the plant genetic resources under *in-vitro* repositories?

1. Genetic stability may be compromised over time due to accumulation of *somaclonal* variations.
2. High cost associated with establishment and maintenance of *in-vitro* collections.
3. Limited capacity to conserve large collections compared to field genebanks.
4. Vulnerability to catastrophic events such as power outages or equipment failure.

- [x] 1 (Chosen Option)
- [ ] 2 3 4
- [ ]
- [ ]

Question No. 89 / Question ID 20061 Marks: 4.00

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

Assertion (A) : Biotrophs can be easily cultured in artificial medium

Reason (R) : Biotrophs lost their independent growth due to co-evolution with the host

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

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

- [ ] 1
- [ ] 2
- [ ] 3
- [ ] 4

Question No. 90 / Question ID 20083 Marks: 4.00

Given below are two statements:

Statement (I): First generation bioethanol is produced from sugar, starch and vegetable oils

Statement (II): Second generation biofuels are derived from Algae

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

1. Both Statement (I) and Statement (II) are correct.
2. Both Statement (I) and Statement (II) are incorrect.
3. Statement (I) is correct but Statement (II) is incorrect.
4. Statement (I) is incorrect but Statement (II) is correct.

- [ ] 1
- [ ] 2
- [ ] 3
- [ ] 4

Question No. 91 / Question ID 20042 Marks: 4.00

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

Assertion (A) : In a breeding program, it is relatively easy to handle the 'major genes' for resistance, but it leads to the boom and bust cycle due to the quick breakdown of resistance in the varieties.

Reason (R) : Polygenic or partial resistance is durable but breeding for this type of resistance is problematic.

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.

- [x] 1 (Chosen Option)
- [ ] 2 3 4
- [ ]
- [ ]

Question No. 92 / Question ID 20109 Marks: 4.00

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

List-I	**List-II**
Operon component	Role
(A). Promoter	(I). Produces repressor protein
(B). Operator	(II). Site where repressor binds
(C). Structural gene	(III). Code for functional proteins
(D). Regulatory gene	(IV). Binding site for RNA polymerase

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

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

- [x] 1 (Chosen Option)
- [ ] 2 3 4
- [ ]
- [ ]

Question No. 93 / Question ID 20082 Marks: 4.00

Given below are two statements:

Statement (I): Tobacco mosaic virus is a rod shaped virus that contains RNA as nucleic acid

Statement (II): RNA in the tobacco mosaic virus is double stranded

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

1. Both Statement (I) and Statement (II) are correct.
2. Both Statement (I) and Statement (II) are incorrect.
3. Statement (I) is correct but Statement (II) is incorrect.
4. Statement (I) is incorrect but Statement (II) is correct.

○ 1 2 3 (Chosen
○ Option) 4
■
○

Question No. 94 / Question ID 20005 Marks: 4.00

Human beings have a large-sized 'proteome'. The principal and more significant reason for this is-

1. Humans have an extremely large genome.
2. An individual gene of the human genome may encode many different polypeptides.
3. Humans are the most complex living organism.
4. The human genome contains millions of different genes.

○ 1 2 3 (Chosen
○ Option) 4
■
○

Question No. 95 / Question ID 20090 Marks: 4.00

Given below are two statements:

Statement (I): Non-proteinaceous molecules associated with the enzymes are called cofactors

Statement (II): The cofactors can be a metal ion or an organic molecule

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

1. Both Statement (I) and Statement (II) are correct.
2. Both Statement (I) and Statement (II) are incorrect.
3. Statement (I) is correct but Statement (II) is incorrect.
4. Statement (I) is incorrect but Statement (II) is correct.

■ 1 (Chosen Option)
○ 2 3 4
○
○

Question No. 96 / Question ID 20003 Marks: 4.00

The longest phase during the eukaryotic cell cycle is

1. G1
2. G2
3. S
4. M

○ 1
○ 2

3 (Chosen Option)
4

Question No. 97 / Question ID 20099 Marks: 4.00

Which of the following seed testing methods assesses seed viability by artificially enhancing the age of the seeds?

1. Tetrazolium test
2. Grow out test
3. Accelerated aging test
4. EC test

1 2 3 (Chosen Option) 4

Question No. 98 / Question ID 20008 Marks: 4.00

_____ can occur in either the first or second meiotic division to produce abnormal gamets. Choose the correct word from the below-given option to fill in the gap.

1. Translocation
2. Inversion
3. Non-disjunction
4. Insertions

1 2 3 (Chosen Option) 4

Question No. 99 / Question ID 20055 Marks: 4.00

Arrange the following components in chronological order of their development during infection

(A). Spore

(B). Appresorium

(C). Infection Hypha

(D). Germtube

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

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

1 (Chosen Option)
2 3 4

Question No. 100 / Question ID 20068 Marks: 4.00

Given below are two statements:

Statement (I): Anton de Bary's experiment paved the way for the modern-day plant pathology experiments

Statement (II): Anton de Bary was a medical doctor

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

1. Both Statement (I) and Statement (II) are correct.
2. Both Statement (I) and Statement (II) are incorrect.
3. Statement (I) is correct but Statement (II) is incorrect.
4. Statement (I) is incorrect but Statement (II) is correct.

- [x] 1 (Chosen Option)
- [ ] 2 3 4
- [ ]
- [ ]

Question No. 101 / Question ID 20066 Marks: 4.00

Given below are two statements:

Statement (I): Vertical resistance is exploited in agriculture by pathologists and breeders for crop improvement

Statement (II): Vertical resistance is mostly monogenic 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.

- [x] 1 (Chosen Option)
- [ ] 2 3 4
- [ ]
- [ ]

Question No. 102 / Question ID 20118 Marks: 4.00

The objectives of the International Treaty of Plant Genetic Resources for Food and Agriculture include:

(A). To promote the conservation and sustainable use of plant genetic resources for food and agriculture.

(B). To ensure the fair and equitable sharing of benefits derived from the use of plant genetic resources.

(C). To encourage genetic modification of crop plants and monoculture farming practices.

(D). Facilitate access to plant genetic resources for food and agriculture, especially for countries with limited resources and capacities.

(E). Strengthen the capacity of farmers, particularly those in developing countries, to conserve, manage, and sustainably use plant genetic resources.

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

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

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 103 / Question ID 20041 Marks: 4.00

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

Assertion (A): In field experiments, the word 'replication' means doing something again in exactly the same way or repeating the treatments.

Reason (R): The F_2 seeds can not be replicated in the field experiment as the genotype of each seed in an F_2 generation is not the same and hence can't be repeated

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.

● 1 (Chosen Option)
○ 2 3 4
○
○

Question No. 104 / Question ID 20011 Marks: 4.00

Unlike Mendel's experiments, Bateson and Punnet's experiment with sweet peas demonstrated that, in the F_2 generation, genes for flower color and pollen length:

1. Assort independently
2. Assort randomly
3. Do not assort independently
4. Showed chromosomal non-disjunction

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 105 / Question ID 20017 Marks: 4.00

Select the correct statements about origin of the tetraploid and hexaploid wheat:

A. The tetraploid species *Triticum turgidum* is an allopolyploid.

B. The hexaploid species *Triticum aestivum* is an allopolyploid.

C. *Triticum turgidum* arose from a combination of *Triticum monococcum* and *Triticum timopheevii* genomes.

D. *Triticum aestivum* arose from a combination of *Triticum turgidum* and *Aegilops tauschii* genomes.

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

○ 1 2 (Chosen
● Option) 3 4
○
○

Question No. 106 / Question ID 20111 Marks: 4.00

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

List-I	**List-II**
Deemed University	Location of HQ
(A). ICAR-Indian Agricultural Research Institute	(I). Karnal
(B). ICAR-National Dairy Research Institute	(II). New Delhi
(C). ICAR-Indian Veterinary Research Institute	(III). Mumbai
(D). ICAR-Central Institute on Fisheries Education	(IV). Izatnagar

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

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

- ○ 1 2 3 4 (Chosen Option)
- ○
- ○
- ●

Question No. 107 / Question ID 20117 Marks: 4.00

Which of the following are important varieties of sugarcane?

(A). Co 0238

(B). CoPb 94

(C). LRA 5166

(D). Co 86032

(E). Karan 9

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

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

- ● 1 (Chosen Option)
- ○ 2 3 4
- ○
- ○

Question No. 108 / Question ID 20032 Marks: 4.00

Following are the activities in the development and release of a crop variety. Arrange the activities in chronological order i.e. from start to the last.

(A). Evaluation of the collected genotypes and selection of parental genotypes.

(B). Collection of diverse genotypes of the target crop.

(C). Pair-wise cross-hybridization of the parental genotypes followed by evaluation and selection of the superior recombinants.

(D). Testing, release, and commercializing the new variety.

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

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

○ 1 2 (Chosen
● Option) 3 4
○
○

Question No. 109 / Question ID 20070 Marks: 4.00

Given below are two statements:

Statement (I): The lipids found in the inner (cell) membrane of bacteria are phospholipids

Statement (II): The lipids in the outer membrane of Gram negative bacteria contain both phospholipids and lipopolysaccharides

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

1. Both Statement (I) and Statement (II) are correct.
2. Both Statement (I) and Statement (II) are incorrect.
3. Statement (I) is correct but Statement (II) is incorrect.
4. Statement (I) is incorrect but Statement (II) is correct.

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 110 / Question ID 20016 Marks: 4.00

Which of the following groups of seeds represents the orthodox class of seeds?

1. Coconut and Mango
2. Rubber and Cocoa
3. Rice and Wheat
4. Coffee and Oilpalm

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 111 / Question ID 20014 Marks: 4.00

The process of 'turning on the expression of genes' due to environmental conditions is called

1. Constitutive expression
2. Induction
3. Repression
4. Enzymatic catabolism

○ 1 2 (Chosen
● Option) 3 4
○
○

Question No. 112 / Question ID 20040 Marks: 4.00

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

Assertion (A): Incomplete penetrance and variable expressivity confuse the relationship between the genotype and phenotype.

Reason (R): Progeny test for more than one generation may be used to study the nature of penetrance and expressivity, and to establish the genotype of a plant beyond reasonable doubt.

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.

● 1 (Chosen Option)
○ 2 3 4
○
○

Question No. 113 / Question ID 20049 Marks: 4.00

Here is combination of statements about various spores :

(A). Ascospore is an example of Meiospore

(B). Meiospores are a product of meiosis

(C). Basidiospore is an example of Meiospore

(D). Zoospores is an example of Meiospore

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

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

○ 1
○ 2
○ 3
○ 4

Question No. 114 / Question ID 20080 Marks: 4.00

Given below are two statements:

Statement (I): The first amino acid in protein synthesis is Methionine in Eubacteria.

Statement (II): The first amino acid in protein synthesis is N -formyl-methionine in Archae.

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.

○ 1 2 (Chosen
● Option) 3 4
○
○

Question No. 115 / Question ID 20077 Marks: 4.00

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

Assertion (A): Inoculated *Azospirillum* culture did not show growth in Nitrogen free malate broth incubated at 37 ^{o}C under shaking conditions

Reason (R): *Azospirillum* requires microaerophillic conditions for nitrogen fixation.Aerobic conditions inhibit nitrogen fixation.

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.

● 1 (Chosen Option)
○ 2 3 4
○
○

Question No. 116 / Question ID 20010 Marks: 4.00

The number of possible combinations in a polypeptide containing any 7 amino acids is given by the figure

1. 7^4
2. 4^7
3. 20^7
4. 7^{20}

○ 1 2 3 (Chosen
○ Option) 4
●
○

Question No. 117 / Question ID 20051 Marks: 4.00

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

List-I	**List-II**
Authors	**publication**
(A). Alexopoulos, C.J., C.W. Mims, and M. Blackwell	(I). Fungal Biology
(B). Deacon, J.	(II). Introduction to Fungi
(C). Kendrick, B	(III). Introductory Mycology
(D). Webster, J. and R.W.S. Weber	(IV). The Fifth Kingdom

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

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

- ○ 1
- ○ 2
- ○ 3
- ○ 4

Question No. 118 / Question ID 20078 Marks: 4.00

Given below are two statements:

Statement (I): *Sesbania* is used as green manure crop

Statement (II): In *Sesbania*, nodules are formed only on the roots

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

1. Both Statement (I) and Statement (II) are correct.
2. Both Statement (I) and Statement (II) are incorrect.
3. Statement (I) is correct but Statement (II) is incorrect.
4. Statement (I) is incorrect but Statement (II) is correct.

- ○ 1 2 3 (Chosen
- ○ Option) 4
- ■
- ○

Question No. 119 / Question ID 20088 Marks: 4.00

National Insect Museum (NIM) is situated in which city

1. Delhi
2. Chennai
3. Bangalore
4. Hisar

- ○ 1 2 3 (Chosen
- ○ Option) 4
- ●
- ○

Question No. 120 / Question ID 20035 Marks: 4.00

Different classes of seeds have various levels of genetic purity (%) standards. Arrange the following classes of seeds in ascending order of their genetic purity.

(A). TL Seeds

(B). Breeders seeds

(C). Foundation seeds

(D). Certified seeds

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

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

○ 1 2 3 (Chosen
○ Option) 4
●
○

NATIONAL TESTING AGENCY

Indian Council of Agricultural Research (ICAR) - PG

Final Answer Key

Exam Date: 29-06-2024 Exam Timing: 10:00 to 12:00

Subject: PLANT SCIENCES

Question ID	Correct Option ID	Question ID	Correct Option ID	Question ID	Correct Option ID
20001	3	20041	2	20081	2
20002	3	20042	2	20082	3
20003	1	20043	2	20083	3
20004	2	20044	1	20084	4
20005	2	20045	3	20085	4
20006	2	20046	1	20086	2
20007	3	20047	4	20087	3
20008	3	20048	1	20088	3
20009	4	20049	1	20089	2
20010	3	20050	3	20090	1
20011	3	20051	Dropped	20091	4
20012	3	20052	2	20092	2
20013	2	20053	1	20093	1
20014	2	20054	2	20094	1
20015	4	20055	2	20095	3
20016	3	20056	2	20096	2
20017	2	20057	1	20097	4
20018	4	20058	1	20098	3
20019	3	20059	1	20099	3
20020	3	20060	1	20100	4
20021	1	20061	4	20101	2
20022	1	20062	2	20102	3
20023	1	20063	2	20103	3
20024	1	20064	1	20104	2
20025	1	20065	1	20105	3
20026	2	20066	1	20106	1
20027	4	20067	3	20107	1
20028	1	20068	1	20108	3
20029	3	20069	4	20109	1
20030	1	20070	1	20110	3
20031	3	20071	1	20111	4
20032	2	20072	4	20112	1
20033	3	20073	2	20113	4
20034	4	20074	2	20114	1
20035	3	20075	4	20115	2
20036	Dropped	20076	4	20116	2
20037	3	20077	1	20117	1
20038	1	20078	3	20118	3
20039	3	20079	1	20119	4
20040	1	20080	2	20120	1