

PLANT SCIENCES ICAR SEPT 2022

Topic:- 02 PLANT SCIENCES_PG

1) To resolve a parental dispute, the Honourable Judge ordered for DNA-fingerprinting of the child. The probable DNA finger prints of the child would be-

[Question ID = 1561][Question Description = 101_19_PLS_AUG22_Q01]

1. 100% similar to the DNA prints of both the parents (father and mother) [Option ID = 6241]
2. 100% similar to the DNA prints of the father. [Option ID = 6242]
3. 100% similar to the DNA print of the mother [Option ID = 6243]
4. About 50% of DNA prints would match either of the parents. [Option ID = 6244]

2) The genetic codes are degenerative in nature. The degeneracy is observed primarily in the-

[Question ID = 1562][Question Description = 102_19_PLS_AUG22_Q02]

1. 1st base of the codon [Option ID = 6245]
2. 2nd base of the codon [Option ID = 6246]
3. Both 1st and the 2nd base of the codon [Option ID = 6247]
4. Both 3rd and the Wobble position base of the codon [Option ID = 6248]

3) Consider a cross where some offspring in a generation have genotype ppqrr. Which of the following genotypes CAN be a genotype of either of the parents?[Question ID = 1563][Question Description = 103_19_PLS_AUG22_Q03]

1. PPQRR [Option ID = 6249]
2. PPqRr [Option ID = 6250]
3. PpQrR [Option ID = 6251]
4. PpQRR [Option ID = 6252]

4) If Meselson and Stahl's experiment on the mode of DNA replication is continued up to the sixth generation in bacteria, the ratio of Heavy strands 15N/15N: Hybrid15N/14N: light strand 14N/14N containing DNA in the sixth generation would be-

[Question ID = 1564][Question Description = 104_19_PLS_AUG22_Q04]

1. 1:1:1 [Option ID = 6253]
2. 0:1:7 [Option ID = 6254]
3. 0:1:15 [Option ID = 6255]
4. 0:1:31 [Option ID = 6256]

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

Assertion A: Indian Council of Agricultural Research (ICAR) is an autonomous body under the Ministry of Agriculture and Farmers' Welfare, GOI.

Reason R: The Director General, ICAR is the President of the ICAR Society.

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

[Question ID = 1565][Question Description = 105_19_PLS_AUG22_Q05]

1. Both A and R are true. [Option ID = 6257]
2. Both A and R are false. [Option ID = 6258]
3. A is true but R is false. [Option ID = 6259]
4. A is false but R is true. [Option ID = 6260]

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

Assertion A: University Education Commission (1948-49) recommended the establishment of Rural Universities in India

Reason R: In 1960, the 1st Agricultural University was established in India in the pattern of the Land-Grant Universities of the USA.

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

[Question ID = 1566][Question Description = 106_19_PLS_AUG22_Q06]

1. Both A and R are true. [Option ID = 6261]
2. Both A and R are false. [Option ID = 6262]
3. A is true but R is false. [Option ID = 6263]
4. A is false but R is true. [Option ID = 6264]

7) As per the general model, the order of the activities in the DNA replication in *E coli* from the beginning to the end is:

- A. Enzyme 'primase' synthesizes the 'primer RNA'
- B. Single-strand binding (SSB) proteins bind to the separated single strands and stabilize them.
- C. DNA gyrase and DNA helicase unwind the complementary strands of DNA in the origin of replication (Ori C).
- D. After digesting the RNA primers, the 'Okazaki fragments' are joined together by the enzyme 'ligase'.
- E. Synthesis of DNA starts and goes continuously in the 'leading strand' and discontinuously in the 'lagging strand'

Choose the *correct* answer from the options given below

[Question ID = 1567][Question Description = 107_19_PLS_AUG22_Q07]

- 1. A, C, D, B, E [Option ID = 6265]
- 2. C, A, B, D, E [Option ID = 6266]
- 3. C, B, A, E, D [Option ID = 6267]
- 4. A, C, B, E, D [Option ID = 6268]

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

Assertion A: In potato cultivation, the dehauling is done to produce quality seed tubers.

Reason R: Dehauling in potato seed crop is done 10-15 days before harvesting of the crop.

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

[Question ID = 1568][Question Description = 108_19_PLS_AUG22_Q08]

- 1. Both A and R are true. [Option ID = 6269]
- 2. Both A and R are false. [Option ID = 6270]
- 3. A is true but R is false. [Option ID = 6271]
- 4. A is false but R is true. [Option ID = 6272]

9) The onion we consume is a-

[Question ID = 1569][Question Description = 109_19_PLS_AUG22_Q09]

- 1. Tuber [Option ID = 6273]
- 2. Corm [Option ID = 6274]
- 3. Bulb [Option ID = 6275]
- 4. Rhizome [Option ID = 6276]

10) For hybridization, in which of the following crops, the florets are clipped at the top to expose the anthers?[Question ID = 1570][Question Description = 110_19_PLS_AUG22_Q10]

- 1. Barley [Option ID = 6277]
- 2. Jute [Option ID = 6278]
- 3. Sunhemp [Option ID = 6279]
- 4. Sunflower [Option ID = 6280]

11) Suppose, you wish to combine the mitochondria from species A with the chloroplast and nucleus of species B. Which of the following techniques is highly suited to achieve the objective?

[Question ID = 1571][Question Description = 111_19_PLS_AUG22_Q11]

- 1. Isolation and fusion of the protoplasts of both species A and B [Option ID = 6281]
- 2. Fusion of protoplast of species A with the cytoplasm of species B [Option ID = 6282]
- 3. Fusion of protoplast of species B with the cytoplasm of species A [Option ID = 6283]
- 4. Backcrossing program using species B as recurrent parent [Option ID = 6284]

12) An 'artificial seed' consists of gel enclosing one of the following components. Which one?[Question ID = 1572][Question Description = 112_19_PLS_AUG22_Q12]

- 1. a zygotic embryo [Option ID = 6285]
- 2. an unfertilized ovule [Option ID = 6286]
- 3. a shoot bud or somatic embryo [Option ID = 6287]
- 4. a minute plantlet [Option ID = 6288]

13) The test cross ratio for a trait governed by two genes with masking gene action will be-[Question ID = 1573][Question Description = 113_19_PLS_AUG22_Q13]

- 1. 1:1:1:1 [Option ID = 6289]
- 2. 2:1:1 [Option ID = 6290]
- 3. 3:1 [Option ID = 6291]
- 4. 1:1 [Option ID = 6292]

14) Which one of the following characteristics is NOT true for 'genetic drift'? [Question ID = 1574] [Question Description = 114_19_PLS_AUG22_Q14]

1. It usually does not occur in a large random mating population [Option ID = 6293]
2. It is as like to genetic erosion [Option ID = 6294]
3. It leads to the loss of alleles [Option ID = 6295]
4. It is almost inevitable in a small population [Option ID = 6296]

15) In seed technology, the term 'dockage' is commonly used to describe- [Question ID = 1575] [Question Description = 115_19_PLS_AUG22_Q15]

1. Genetic purity of the seeds [Option ID = 6297]
2. Genetic impurity of the seeds [Option ID = 6298]
3. Physical purity of the seeds [Option ID = 6299]
4. Physical impurity of the seeds [Option ID = 6300]

16) The process of mitosis in a cell consists of a series of events as given below. Arrange the events in order from first to the last as per the time of occurrence

- A. The highly condensed chromosomes move to the equatorial plate of the spindle
- B. The centromere interacts with the spindle fiber apparatus
- C. Division of the cytoplasm
- D. Sister chromatids move apart to the opposite poles
- E. The nuclear membrane breaks down and the spindle-shaped structure of microtubules is organized

Choose the *correct* answer from the options given below

[Question ID = 1576] [Question Description = 116_19_PLS_AUG22_Q16]

1. A, B, C, D, E [Option ID = 6301]
2. E, B, A, D, C [Option ID = 6302]
3. E, A, B, D, C [Option ID = 6303]
4. D, B, A, E, C [Option ID = 6304]

17) Which of the following constitutes 'genetic emasculation'?

- A. Genetic male sterility
- B. Transgenic male sterility
- C. Cytoplasmic-genetic male sterility
- D. Chemical hybridizing agent

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

[Question ID = 1577] [Question Description = 117_19_PLS_AUG22_Q17]

1. A, B and D only [Option ID = 6305]
2. A, B, and C only [Option ID = 6306]
3. B, C, and D only [Option ID = 6307]
4. A, C, and D only [Option ID = 6308]

18) In maize, the diploid chromosome number ($2n$) is 20. The number of chromosomes in endosperm cell (EC), pollen mother cell (PMC), pollen tube nucleus (PTN), and root tip cells (RTC) will be-

- A. EC- 30, PMC- 20 , PTN- 20 , RTC- 40
- B. EC- 30, PMC- 20 , PTN- 10 , RTC- 10
- C. EC- 20, PMC- 20 , PTN- 20 , RTC- 10
- D. EC- 30, PMC- 20 , PTN- 10 , RTC- 20

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

[Question ID = 1578] [Question Description = 118_19_PLS_AUG22_Q18]

1. A, B and D only [Option ID = 6309]
2. A only [Option ID = 6310]
3. B and D only [Option ID = 6311]
4. D only [Option ID = 6312]

19) The formation of a loop during the pachytene stage of meiosis indicates occurrence of -

A: Translocation

B: Deficiency

C: Inversion

D: Duplication

[Question ID = 1579][Question Description = 119_19_PLS_AUG22_Q19]

1. A, B and D only [Option ID = 6313]
2. A, B, and C only [Option ID = 6314]
3. B, C, and D only [Option ID = 6315]
4. A, C, and D only [Option ID = 6316]

20) The use of synthetic varieties is more beneficial than single-cross or double-cross hybrids. The reasons are-

A. Yield of synthetic varieties is higher than hybrids

B. Farmers can save their own produce as seeds and no need to buy new seeds every year

C. Synthetic varieties have wider adaptability than hybrids

D. No need to make fresh crosses every year to produce seeds

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

[Question ID = 1580][Question Description = 120_19_PLS_AUG22_Q20]

1. A, B and D only [Option ID = 6317]
2. B, C, and D only [Option ID = 6318]
3. A, C, and D only [Option ID = 6319]
4. A, B, and C only [Option ID = 6320]

21) The C4 plants usually have the following features-

A. The first stable product in the system is a 4-carbon compound

B. There are two CO₂ acceptors, viz., PEP and RUBP

C. Oxygen does not have any inhibitory effect on the process.

D. RUBP carboxylase is present in the mesophyll.

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

[Question ID = 1581][Question Description = 121_19_PLS_AUG22_Q21]

1. A, B and D only [Option ID = 6321]
2. A, B, and C only [Option ID = 6322]
3. B, C, and D only [Option ID = 6323]
4. A, C, and D only [Option ID = 6324]

22) Match List I with List II

List I	List II
Micropropagation propagules	Crops
A. Protocorms	I. Oil palm
B. Bulblets	II. Orchids
C. Somatic embryos	III. Begonia
D. Adventitious shoot buds	IV. Lily

Choose the correct answer from the options given below:

[Question ID = 1582][Question Description = 122_19_PLS_AUG22_Q22]

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

[Option ID = 6325]

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

[Option ID = 6326]

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

[Option ID = 6327]

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

[Option ID = 6328]

23) Match List I with List II

List I	List II
Process	Results/ Related to
A. Anther culture	I. Virus elimination
B. Asymmetric hybrid	II. Gamatoclonal variation
C. Analytical breeding	III. Chromosome elimination
D. Actinomycin D	IV. Ploidy manipulation

Choose the correct answer from the options given below:

[Question ID = 1583][Question Description = 123_19_PLS_AUG22_Q23]

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

[Option ID = 6329]

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

[Option ID = 6330]

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

[Option ID = 6331]

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

[Option ID = 6332]

24) Match List I with List II

List I	List II
Compound	Target/Related insect-pests
A. Benzyl alcohol	I. Brown plant hopper
B. Silica content	II. Green bugs
C. Asparagine content	III. Cabbage aphid
D. Sinigrin content	IV. Rice stem borer

Choose the correct answer from the options given below:

[Question ID = 1584][Question Description = 124_19_PLS_AUG22_Q24]

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

[Option ID = 6333]

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

[Option ID = 6334]

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

[Option ID = 6335]

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

[Option ID = 6336]

25) Match List I with List II

List I	List II
Terminology	Description
A. Hybrid	I. A variety produced by mixing the seeds of several phenotypically outstanding lines not tested for GCA.
B. Pure line variety	II. A variety developed by intercrossing a number of genotypes of known superior combining ability.
C. Composite variety	III. First generation cross product has grown commercially
D. Synthetic variety	IV. Progeny of a single, self-fertilized, homozygous plant

Choose the correct answer from the options given below:

[Question ID = 1585][Question Description = 125_19_PLS_AUG22_Q25]

1. A - II, B - IV, C - I, D - III [Option ID = 6337]

2. A - III, B - IV, C - I, D - II [Option ID = 6338]

3. A - III, B - IV, C - II, D - I [Option ID = 6339]

4. A - I, B - IV, C - III, D - II [Option ID = 6340]

26) Match List I with List II

List I	List II
Phytochemical	Plant species

A. BOAA	I. <i>Brassica</i> species
B. Erusic acid	II. Flax or Linseed
C. Gossypol	III. Lathyrus
D. Linolenic acid	IV. Cotton

Choose the correct answer from the options given below:

[Question ID = 1586][Question Description = 126_19_PLS_AUG22_Q26]

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

[Option ID = 6341]

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

[Option ID = 6342]

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

[Option ID = 6343]

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

[Option ID = 6344]

27) Match List I with List II

List I	List II
Terminology	Genetical formula
A. Double monosomy	I. $2N+2+2$
B. Trisomy	II. $2N-2$
C. Nullisomy	III. $2N-1-1$
D. Double tetrasomy	IV. $2N+1$

Choose the correct answer from the options given below:

[Question ID = 1587][Question Description = 127_19_PLS_AUG22_Q27]

1. A - III, B - IV, C - II, D - I [Option ID = 6345]

2. A - III, B - IV, C - I, D - II [Option ID = 6346]

3. A - IV, B - III, C - II, D - I [Option ID = 6347]

4. A - III, B - I, C - II, D - IV [Option ID = 6348]

28) Match List I with List II

List I	List II
Parameter	Activity
A. Germplasm conservation	I. Virus infection, mutation
B. Clonal degeneration	II. Cryoprotectant
C. DMSO	III. Cryotherapy
D. Virus elimination	IV. <i>In-situ, ex-situ</i> , cryopreservation

Choose the correct answer from the options given below:

[Question ID = 1588][Question Description = 128_19_PLS_AUG22_Q28]

1. A - IV, B - II, C - I, D - III [Option ID = 6349]

2. A - I, B - IV, C - II, D - III [Option ID = 6350]

3. A - IV, B - I, C - II, D - III [Option ID = 6351]

4. A - IV, B - I, C - III, D - II [Option ID = 6352]

29) The mating schemes that increase homozygosity in the plants are-

A. Genetic assortative mating

B. Genetic disassortative mating

C. Phenotypic assortative mating

D. Phenotypic disassortative mating

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

[Question ID = 1589][Question Description = 129_19_PLS_AUG22_Q29]

1. A, B and D only [Option ID = 6353]

2. A, and C only [Option ID = 6354]

3. A, and D only [Option ID = 6355]

4. A, C, and D only [Option ID = 6356]

30) In maize, the *opaque 2* mutants are found to have some of the following quality parameters. Identify-[Question ID = 1590][Question Description = 130_19_PLS_AUG22_Q30]

1. High methionine and high lysine [Option ID = 6357]
2. High methionine and high tryptophan [Option ID = 6358]
3. High lysine and high tryptophan [Option ID = 6359]
4. High lysine and high proline [Option ID = 6360]

31) Sclerotia of *Calviceps purpurea* responsible for the infamous St. Anthony's Fire is believed to contain[Question ID = 1591][Question Description = 131_19_PLS_AUG22_Q31]

1. Ethyl Alcohol [Option ID = 6361]
2. Methyl Alcohol [Option ID = 6362]
3. Lysergic acid diethylamide [Option ID = 6363]
4. Triethylamine [Option ID = 6364]

32) In which of the following disease you will find both sign and symptoms together[Question ID = 1592][Question Description = 132_19_PLS_AUG22_Q32]

1. Southern blight incited by *Athelia rolfsii* [Option ID = 6365]
2. Wilt incited by *Fusarium* [Option ID = 6366]
3. Gall incited by *Agrobacterium* [Option ID = 6367]
4. Blight incited by *Xanthomonas* [Option ID = 6368]

33) Which of the following pathogen produces sporodochium[Question ID = 1593][Question Description = 133_19_PLS_AUG22_Q33]

1. *Graphium* [Option ID = 6369]
2. *Epicoccum* [Option ID = 6370]
3. *Phoma* [Option ID = 6371]
4. *Fusarium* [Option ID = 6372]

34) Sequence of pathogenesis events

- A. Invasion
- B. Dissemination
- C. Reproduction
- D. Infection
- E. Inoculation
- F. Penetration

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

[Question ID = 1594][Question Description = 134_19_PLS_AUG22_Q34]

1. E, F, D, A, C and B [Option ID = 6373]
2. B, F, D, A, C and E [Option ID = 6374]
3. A, B, D, C, E, and F [Option ID = 6375]
4. E, F, A, D, C and B [Option ID = 6376]

35) A. Porins allow bacteria to move nutrients and waste across the cell membrane

B. Type III Secretion System (TTSS) allows bacteria to move nucleoprotein complex across the cell membrane

C. EPS is a virulence factor in wilt-causing bacteria

D. LPS allows bacteria to bind to host lectins

E. Hydrolytic enzymes are not virulence factors for bacteria

Choose the *correct* answer from the options given below

[Question ID = 1595][Question Description = 135_19_PLS_AUG22_Q35]

1. B and E only [Option ID = 6377]
2. B only [Option ID = 6378]
3. A, C and D only [Option ID = 6379]
4. D only [Option ID = 6380]

36) A. Systemic Acquired Resistance is one of the induced nonspecific resistance systems in plants

B. Induced Systemic Resistance is one of the induced specific resistance systems in plants

- C. Hypersensitive Reaction is one of the induced nonspecific resistance systems in plants
- D. Hypersensitive Reaction is one of the induced specific resistance systems in plants
- E. Induced Systemic Resistance is one of the induced nonspecific resistance systems in plants

[Question ID = 1596][Question Description = 136_19_PLS_AUG22_Q36]

1. B and C only

[Option ID = 6381]

2. B and D only

[Option ID = 6382]

3. A, D and E only

[Option ID = 6383]

4. C only

[Option ID = 6384]

- 37) A. Necrosis manifest in the form of blotch
- B. Abnormal growth manifest in the form of warts
- C. Necrosis manifest in the form of leaf curl
- D. Abnormal growth manifest in the form of anthracnose
- E. Witche's broom is caused only by phytoplasma

[Question ID = 1597][Question Description = 137_19_PLS_AUG22_Q37]

1. A and B only [Option ID = 6385]

2. C and D only [Option ID = 6386]

3. D and E only [Option ID = 6387]

4. C and E only [Option ID = 6388]

38) Match List I with List II

List I	List II
Character	Pathogen
A. Spores/Cells with two anterior, unequal, whiplash flagella	I. Magnaporthe
B. Spores/Cells with one posterior whiplash flagellum	II. Phytophthora
C. Spores/Cells with two flagella; one anterior and one posterior	III. Synchytrium
D. Spores/Cells without any flagella	IV. Plasmodiophora

Choose the correct answer from the options given below:

[Question ID = 1598][Question Description = 138_19_PLS_AUG22_Q38]

1. A I , B II , C III , D IV [Option ID = 6389]

2. A IV , B III , C II , D I [Option ID = 6390]

3. A II , B I , C III , D IV [Option ID = 6391]

4. A III , B II , C IV , D I [Option ID = 6392]

39) Match List I with List II

List I	List II
Powdery mildew Tribe	Genera
A. Tribe Erysipheae	I. Blumeria
B. Tribe Phyllactinieae	II. Podosphaera
C. Tribe Golovinomyceteae	III. Brasiliomyces
D. Tribe Cystotheceae	IV. Leveillula
E. Tribe Blumeria	V. Neoerysipheae

Choose the correct answer from the options given below:

[Question ID = 1599][Question Description = 139_19_PLS_AUG22_Q39]

1. A - I, B - II, C - V, D - III, E - IV

[Option ID = 6393]

2. A - II, B - III, C - IV, D - V, E - I

[Option ID = 6394]

3. A - III, B - IV, C - V, D - II, E - I

[Option ID = 6395]

4. A - IV, B - II, C - V, D - III, E - I

[Option ID = 6396]

40) Match List I with List II

List I	List II
Society	Journal
A. American Phytopathological Society	I. Plant Disease Research
B. British Society for Plant Pathology	II. Molecular Plant Pathology
C. German Society of Plant Protection and Plant Health	III. Phytobiome Journal
D. Brazilian Society of Plant Pathology	IV. Tropical Plant Pathology
E. Indian Society of Plant Pathologists	V. Journal of Plant Disease and Protection

Choose the correct answer from the options given below:

[Question ID = 1600][Question Description = 140_19_PLS_AUG22_Q40]

1. A - III, B - II, C - V, D - IV, E - I [Option ID = 6397]
2. A - I, B - II, C - V, D - III, E - IV [Option ID = 6398]
3. A - II, B - I, C - V, D - III, E - IV [Option ID = 6399]
4. A - III, B - I, C - V, D - IV, E - II [Option ID = 6400]

41) Match List I with List II

List I	List II
Fungal Structure	Genera
A. Pycnidia	I. Diplodia
B. Naked Hyphae	II. Cladosporium
C. Synemata	III. Trichurus
D. Acervuli	IV. Melanconium
E. Sporodochia	V. Tubercularia

Choose the correct answer from the options given below:

[Question ID = 1601][Question Description = 141_19_PLS_AUG22_Q41]

1. A - V, B - IV, C - III, D - II, E - I

[Option ID = 6401]

2. A - I, B - II, C - III, D - IV, E - V

[Option ID = 6402]

3. A - V, B - IV, C - II, D - III, E - I

[Option ID = 6403]

4. A - IV, B - V, C - III, D - II, E - I

[Option ID = 6404]

42) Match List I with List II

List I	List II
Disease	Pathogen
A. Red Stele	I. <i>Phytophthora infestans</i>
B. Black Pod	II. <i>Phytophthora fragariae</i>
C. Black Shank	III. <i>Phytophthora palmivora</i>
D. Sudden Death	IV. <i>Phytophthora parasitica</i>
E. Late Blight	V. <i>Phytophthora ramorum</i>

Choose the correct answer from the options given below:

[Question ID = 1602][Question Description = 142_19_PLS_AUG22_Q42]

1. A - II, B - III, C - V, D - IV, E - I [Option ID = 6405]
2. A - III, B - II, C - V, D - IV, E - I [Option ID = 6406]
3. A - III, B - II, C - IV, D - V, E - I [Option ID = 6407]
4. A - II, B - III, C - IV, D - V, E - I [Option ID = 6408]

43) A. Type I Nonhost resistance does not have visible symptoms

B. Type II Nonhost resistance is always associated with hypersensitive reaction

C. Neither Type I nor Type II Nonhost resistance is useful for resistance breeding

D. Type II Nonhost resistance and Host resistance involve the same signal transduction pathway

E. Only Type I Nonhost resistance is useful for resistance breeding

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

[Question ID = 1603][Question Description = 143_19_PLS_AUG22_Q43]

1. C and E only [Option ID = 6409]
2. A and C only [Option ID = 6410]
3. D and E only [Option ID = 6411]
4. A, B and D only [Option ID = 6412]

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

Assertion A: Complete absence of false negative results would make a diagnostic kit highly successful

Reason R: False negatives are due to poor sensitivity of the phenotypic or molecular marker deployed

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

[Question ID = 1604][Question Description = 144_19_PLS_AUG22_Q44]

1. Both A and R are true and R is the correct explanation of A. [Option ID = 6413]
2. Both A and R are true but R is NOT the correct explanation of A. [Option ID = 6414]
3. A is true but R is false. [Option ID = 6415]
4. A is false but R is true. [Option ID = 6416]

45) Given below are two statements

Statement I: Explosive epidemics are caused by foliar pathogens that are clonally reproduced

Statement II: Clonal reproduction allows genetically non-identical virulent types

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

[Question ID = 1605][Question Description = 145_19_PLS_AUG22_Q45]

1. Both Statement I and Statement II are correct [Option ID = 6417]
2. Both Statement I and Statement II are incorrect [Option ID = 6418]
3. Statement I is correct but Statement II is incorrect [Option ID = 6419]
4. Statement I is incorrect but Statement II is correct [Option ID = 6420]

46) Given below are two statements

Statement I: PAMPs are coded by highly conserved genetic loci in the pathogen

Statement II: PAMPs are perceived by highly conserved plant receptors termed as PRRs

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

[Question ID = 1606][Question Description = 146_19_PLS_AUG22_Q46]

1. Both Statement I and Statement II are correct [Option ID = 6421]
2. Both Statement I and Statement II are incorrect [Option ID = 6422]
3. Statement I is correct but Statement II is incorrect [Option ID = 6423]
4. Statement I is incorrect but Statement II is correct [Option ID = 6424]

47) Given below are two statements

Statement I: Mutations in Avr-gene are beneficial for the pathogens

Statement II: Mutation in the effector coding gene would improve the perception of effectors by plant cytoplasmic receptor

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

[Question ID = 1607][Question Description = 147_19_PLS_AUG22_Q47]

1. Both Statement I and Statement II are correct [Option ID = 6425]
2. Both Statement I and Statement II are incorrect [Option ID = 6426]
3. Statement I is correct but Statement II is incorrect [Option ID = 6427]
4. Statement I is incorrect but Statement II is correct [Option ID = 6428]

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

Assertion A: Monocropping of genetically identical crop varieties would enable the pathogen to evolve

Reason R: Pathogen evolution is rapid in biotrophic interactions

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

[Question ID = 1608][Question Description = 148_19_PLS_AUG22_Q48]

1. Both A and R are true and R is the correct explanation of A. [Option ID = 6429]
2. Both A and R are true but R is NOT the correct explanation of A. [Option ID = 6430]
3. A is true but R is false. [Option ID = 6431]
4. A is false but R is true. [Option ID = 6432]

49) Given below are two statements

Statement I: Most economically important plant viruses have only ssRNA as their genetic material

Statement II: Viruses with ssDNA as their genetic material cause plant disease epidemics

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

[Question ID = 1609][Question Description = 149_19_PLS_AUG22_Q49]

1. Both Statement I and Statement II are correct
[Option ID = 6433]
2. Both Statement I and Statement II are incorrect
[Option ID = 6434]
3. Statement I is correct but Statement II is incorrect
[Option ID = 6435]
4. Statement I is incorrect but Statement II is correct
[Option ID = 6436]

50) Match List I with List II

List I	List II
Book	Author
A. <i>Basic Plant Pathology Methods</i>	I. R. E.F. Matthews
B. <i>Plant Pathology V1: The Diseased Plant</i>	II. Roger Hull
C. <i>Fundamentals of Bacterial Plant Pathology</i>	III. Masao Goto
D. <i>Plant Virology</i>	IV. James G. Horsfall
E. <i>Fundamentals of Plant Virology</i>	V. James B. Sinclair, Onkar Dev Dhingra

Choose the correct answer from the options given below:

[Question ID = 1610][Question Description = 150_19_PLS_AUG22_Q50]

1. A-I, B-II, C-III, D-IV, E-V [Option ID = 6437]
2. A-V, B-IV, C-III, D-II, E-I [Option ID = 6438]
3. A-V, B-IV, C-III, D-I, E-II [Option ID = 6439]
4. A-IV, B-V, C-III, D-II, E-I [Option ID = 6440]

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

Assertion A: Gene for gene interaction can be usually observed in the biotrophic pathosystem

Reason R: Biotrophs entirely dependent on their host plant to complete their life cycle

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

[Question ID = 1611][Question Description = 151_19_PLS_AUG22_Q51]

1. Both A and R are true and R is the correct explanation of A. [Option ID = 6441]
2. Both A and R are true but R is NOT the correct explanation of A. [Option ID = 6442]
3. A is true but R is false. [Option ID = 6443]
4. A is false but R is true. [Option ID = 6444]

52) What was the plant virus group that triggered Tulipomania in Holland during the 17th century

[Question ID = 1612][Question Description = 152_19_PLS_AUG22_Q52]

1. Luteoviridae [Option ID = 6445]
2. Potyviridae [Option ID = 6446]
3. Caulimoviridae [Option ID = 6447]
4. Closteroviridae [Option ID = 6448]

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

Assertion A: Faster global connectivity is one of the reasons for the reemergence of certain plant diseases

Reason R: The wheat blast outbreak in Bangladesh was attributed to the host jump from rice to wheat during 2016

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

[Question ID = 1613][Question Description = 153_19_PLS_AUG22_Q53]

1. Both A and R are correct and R is the correct explanation of A. [Option ID = 6449]
2. Both A and R are correct and R is the correct explanation of A. [Option ID = 6450]
3. A is correct but R is not correct. [Option ID = 6451]
4. A is not correct but R is correct. [Option ID = 6452]

54) Chloroplasts are present in the cells of

- A. Fungi
- B. Algae
- C. Plants
- D. Animals

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

[Question ID = 1614][Question Description = 154_19_PLS_AUG22_Q54]

1. A and C only [Option ID = 6453]
2. C only [Option ID = 6454]
3. B and C only [Option ID = 6455]
4. C and D only [Option ID = 6456]

55) According to latest classification, the Prokaryotes are divided into two domains

[Question ID = 1615][Question Description = 155_19_PLS_AUG22_Q55]

1. Archaea and Bacteria [Option ID = 6457]
2. Eubacteria and Bacteria [Option ID = 6458]
3. Bacteria and Fungi [Option ID = 6459]
4. Archaeobacteria and Actinobacteria [Option ID = 6460]

56) Match the following

List I	List II
A. Polymerase Chain Reaction	I. Robert Koch
B. Penicillin	II. Kary Mullis
C. <i>Bacillus anthracis</i>	III. Edward Jenner
D. Pasteurization	IV. Alexander Flemming
E. Smallpox Vaccine	V. Louis Paster

Choose the correct answer from the options given below:

[Question ID = 1616][Question Description = 156_19_PLS_AUG22_Q56]

1. A-IV, B-II, C-I, D-V, E-III [Option ID = 6461]
2. A-IV, B-II, C-III, D-V, E-I [Option ID = 6462]
3. A-II, B-IV, C-I, D-V, E-III [Option ID = 6463]
4. A-II, B-IV, C-III, D-V, E-I [Option ID = 6464]

57) Ribosomes are made up of

- A. RNA
- B. Protein
- C. Glucose
- D. DNA

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

[Question ID = 1617][Question Description = 157_19_PLS_AUG22_Q57]

1. A and C only [Option ID = 6465]
2. A and B only [Option ID = 6466]
3. A, B and D only [Option ID = 6467]
4. A, B and C only [Option ID = 6468]

58) Given below are two statements

Statement I: Diazotrophs possess Nitrogenase enzyme that helps in biological nitrogen fixation

Statement II: Both *Rhizobium* and *Azotobacter* are symbiotic nitrogen fixers

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

[Question ID = 1618][Question Description = 158_19_PLS_AUG22_Q58]

1. Both Statement I and Statement II are true [Option ID = 6469]
2. Both Statement I and Statement II are false [Option ID = 6470]
3. Statement I is true but Statement II is false [Option ID = 6471]
4. Statement I is false but Statement II is true [Option ID = 6472]

59) Bonds involved in the protein structure are

- A. Peptide bond
- B. Hydrogen bond
- C. Ionic Bond
- D. Disulfide bond
- E. Hydrophobic interactions

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

[Question ID = 1619][Question Description = 159_19_PLS_AUG22_Q59]

1. A and B only [Option ID = 6473]
2. A, B and D only [Option ID = 6474]
3. A, D and E only [Option ID = 6475]
4. A, B, C, D and E [Option ID = 6476]

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

Assertion A : Outer membrane in Gram negative bacteria is more permeable than the inner membrane

Reason R : Porin proteins are present in the outer membrane

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

[Question ID = 1620][Question Description = 160_19_PLS_AUG22_Q60]

1. Both A and R are true and R is the correct explanation of A [Option ID = 6477]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 6478]
3. A is true but R is false [Option ID = 6479]
4. A is false but R is true [Option ID = 6480]

61) Match the following

List I	List II
A. O antigens	I. Mycorrhizae
B. Techoic acid	II. Gram Negative Bacteria
C. Pseudomeurin	III. Protozoa
D. Pseudopodia	IV. Archaea
E. Arbuscules	V. Gram Positive bacteria

Choose the correct answer from the options given below:

[Question ID = 1621][Question Description = 161_19_PLS_AUG22_Q61]

1. A-II, B-III, C-IV, D-I, E-V [Option ID = 6481]
2. A-IV, B-V, C-III, D-II, E-I [Option ID = 6482]
3. A-II, B-IV, C-III, D-I, E-V [Option ID = 6483]
4. A-II, B-V, C-IV, D-III, E-I [Option ID = 6484]

62) The subunits of 80S ribosome include

[Question ID = 1622][Question Description = 162_19_PLS_AUG22_Q62]

1. 40S and 50S [Option ID = 6485]
2. 40S and 60S [Option ID = 6486]
3. 30S and 50S [Option ID = 6487]
4. 30S and 60S [Option ID = 6488]

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

Assertion A : Mycoplasmas are pleomorphic in shape

Reason R : Cell wall in Mycoplasmas is flexible

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

[Question ID = 1623][Question Description = 163_19_PLS_AUG22_Q63]

1. Both A and R are true and R is the correct explanation of A [Option ID = 6489]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 6490]
3. A is true but R is false [Option ID = 6491]
4. A is false but R is true [Option ID = 6492]

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

Assertion A : Archaea are insensitive to chloramphenicol antibiotic

Reason R : Archaea do not contain peptidoglycan in the cell wall

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

[Question ID = 1624][Question Description = 164_19_PLS_AUG22_Q64]

1. Both A and R are true and R is the correct explanation of A [Option ID = 6493]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 6494]
3. A is true but R is false [Option ID = 6495]
4. A is false but R is true [Option ID = 6496]

65) Given below are two statements

Statement I: Self-replicating, circular, extrachromosomal DNA present in bacteria is known as Plasmid

Statement II: Copy number of Plasmids is fixed in a bacterial cell

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

[Question ID = 1625][Question Description = 165_19_PLS_AUG22_Q65]

1. Both Statement I and Statement II are true [Option ID = 6497]
2. Both Statement I and Statement II are false [Option ID = 6498]
3. Statement I is true but Statement II is false [Option ID = 6499]
4. Statement I is false but Statement II is true [Option ID = 6500]

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

Assertion A: Meiosis is a reductional division

Reason R : In meiosis, the chromosome number is reduced from diploid to haploid

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

[Question ID = 1626][Question Description = 166_19_PLS_AUG22_Q66]

1. Both A and R are true and R is the correct explanation of A [Option ID = 6501]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 6502]
3. A is true but R is false [Option ID = 6503]
4. A is false but R is true [Option ID = 6504]

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

Assertion A : Viruses are termed as obligate intracellular parasites.

Reason R : Viruses cannot reproduce independently, they can grow only inside a living cell.

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

[Question ID = 1627][Question Description = 167_19_PLS_AUG22_Q67]

1. Both A and R are true and R is the correct explanation of A [Option ID = 6505]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 6506]
3. A is true but R is false [Option ID = 6507]
4. A is false but R is true [Option ID = 6508]

68) Which of the following is/are a part of SARS CoV

A. Presence of Envelope

B. Positive-sense single stranded RNA

C. Spike protein

D. Tail

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

[Question ID = 1628][Question Description = 168_19_PLS_AUG22_Q68]

1. A and B only [Option ID = 6509]
2. A and C only [Option ID = 6510]
3. A, B and C only [Option ID = 6511]
4. A, B and D only [Option ID = 6512]

69) Match the Following

List I	List II
A. Pasteurization	I. Fractional Sterilization
B. Tyndallization	II. Foul smell due to anaerobic decomposition of proteins
C. Radiation sterilization	III. Extends shelf life of Milk
D. Incineration	IV. Heat sensitive material
E. Putrefaction	V. Inoculation loops and needles

Choose the correct answer from the options given below:

[Question ID = 1629][Question Description = 169_19_PLS_AUG22_Q69]

1. A-I, B-IV, C-III, D-V, E-II [Option ID = 6513]
2. A-III, B-II, C-IV, D-V, E-I [Option ID = 6514]
3. A-III, B-I, C-IV, D-V, E-II [Option ID = 6515]
4. A-IV, B-II, C-III, D-V, E-I [Option ID = 6516]

70) A bacteriophage genome integrated into the circular bacterial chromosome is known as [Question ID = 1630][Question Description = 170_19_PLS_AUG22_Q70]

1. Prophage [Option ID = 6517]
2. Metaphage [Option ID = 6518]
3. Bacphage [Option ID = 6519]
4. Prophase [Option ID = 6520]

71) Given below are two statements

Statement I: According to Koch's Postulates, inoculation with disease causing microorganism must be able to produce disease symptoms in the susceptible host

Statement II: According to Koch's Postulates, the microorganism must be recoverable from the diseased host

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

[Question ID = 1631][Question Description = 171_19_PLS_AUG22_Q71]

1. Both Statement I and Statement II are true [Option ID = 6521]
2. Both Statement I and Statement II are false [Option ID = 6522]
3. Statement I is true but Statement II is false [Option ID = 6523]
4. Statement I is false but Statement II is true [Option ID = 6524]

72) Match the following

List I	List II
A. Central Island Agricultural Research Institute	I. Ludhiana, Punjab
B. Central Research Institute for Dryland Agriculture	II. Baramati, Maharashtra
C. Central Institute of Post-Harvest Engineering and Technology	III. Port Blair, Andaman & Nicobar
D. National Institute of Abiotic Stress Management	IV. Indore, Madhya Pradesh
E. Indian Institute of Soybean Research	V. Hyderabad, Telangana

Choose the correct answer from the options given below:

[Question ID = 1632][Question Description = 172_19_PLS_AUG22_Q72]

1. A-III, B-V, C-I, D-II, E-IV [Option ID = 6525]
2. A-II, B-IV, C-I, D-III, E-IV [Option ID = 6526]
3. A-III, B-V, C-IV, D-II, E-I [Option ID = 6527]
4. A-III, B-IV, C-II, D-I, E-V [Option ID = 6528]

73) Ukraine-Russia war has majorly impacted the price of which of the crop globally

[Question ID = 1633][Question Description = 173_19_PLS_AUG22_Q73]

1. Rice [Option ID = 6529]
2. Wheat [Option ID = 6530]
3. Cotton [Option ID = 6531]
4. Pearl millet [Option ID = 6532]

74) Given below are two statements

Statement I: In *Rhizobium*- legume symbiosis large and pink colored nodules are considered good for efficient nitrogen fixation

Statement II: Pink color of the nodules is due to the presence of leg-haemoglobin pigment

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

[Question ID = 1634][Question Description = 174_19_PLS_AUG22_Q74]

1. Both Statement I and Statement II are true [Option ID = 6533]
2. Both Statement I and Statement II are false [Option ID = 6534]
3. Statement I is true but Statement II is false [Option ID = 6535]
4. Statement I is false but Statement II is true [Option ID = 6536]

75) The year 2023 has been declared as 'International Year of

[Question ID = 1635][Question Description = 175_19_PLS_AUG22_Q75]

1. Cereals [Option ID = 6537]
2. Pulses [Option ID = 6538]
3. Millets [Option ID = 6539]
4. Oil seeds [Option ID = 6540]

76) Match the Indian Agricultural Revolutions with the related commodities

List I	List II
A. Blue revolution	I. Milk
B. White revolution	II. Egg/Poultry
C. Yellow revolution	III. Food Grains
D. Green revolution	IV. Oil Seeds
E. Silver revolution	V. Fisheries

Choose the correct answer from the options given below:

[Question ID = 1636][Question Description = 176_19_PLS_AUG22_Q76]

1. A-II, B-I, C-IV, D-III, E-V [Option ID = 6541]
2. A-V, B-I, C-IV, D-III, E-II [Option ID = 6542]
3. A-II, B-V, C-IV, D-III, E-I [Option ID = 6543]
4. A-V, B-II, C-IV, D-III, E-I [Option ID = 6544]

77) Flag leaf clipping in hybrid seed production in rice is a regular practice. It is done to achieve-[Question ID = 1637]

[Question Description = 177_19_PLS_AUG22_Q77]

1. Higher seed set due to better pollination [Option ID = 6545]
2. Synchronization of flowering [Option ID = 6546]
3. Adjustment of plant height of parental lines [Option ID = 6547]
4. Better seed quality [Option ID = 6548]

78) The maximum permissible limit of husk-less seeds in sunflowers is-[Question ID = 1638][Question Description = 178_19_PLS_AUG22_Q78]

1. 1.0% (by wt.) [Option ID = 6549]
2. 2.0% (by wt.) [Option ID = 6550]

3. 2.0% (by no.) [Option ID = 6551]
4. Two per kg [Option ID = 6552]

79) For a crop having a maximum permissible limit for off-types 0.2%, the minimum number of plants required for conducting the GOT is-[Question ID = 1639][Question Description = 179_19_PLS_AUG22_Q79]

1. 800 [Option ID = 6553]
2. 1600 [Option ID = 6554]
3. 2000 [Option ID = 6555]
4. 2400 [Option ID = 6556]

80) The recommended method for testing the seed germination in mustard is-[Question ID = 1640][Question Description = 180_19_PLS_AUG22_Q80]

1. Sand method [Option ID = 6557]
2. Top of paper method [Option ID = 6558]
3. Between paper method [Option ID = 6559]
4. Wet cloth method [Option ID = 6560]

81) For determining the seed moisture content in the pigeon pea seeds, the seed sample is dried in an oven at a temperature and for a duration of -[Question ID = 1641][Question Description = 181_19_PLS_AUG22_Q81]

1. 103°C for 7 hours [Option ID = 6561]
2. 103°C for 4 hours [Option ID = 6562]
3. 130°C for 2 hours [Option ID = 6563]
4. 130°C for 1 hour [Option ID = 6564]

82) In pea, the maximum permissible size of a seed lot is-[Question ID = 1642][Question Description = 182_19_PLS_AUG22_Q82]

1. 20,000 kg [Option ID = 6565]
2. 10,000 kg [Option ID = 6566]
3. 5,000 kg [Option ID = 6567]
4. 4,000 kg [Option ID = 6568]

83) Bengal gram is considered as an inseparable other crop plant in the seed production field of the

[Question ID = 1643][Question Description = 183_19_PLS_AUG22_Q83]

1. Green gram [Option ID = 6569]
2. Cowpea [Option ID = 6570]
3. Oat [Option ID = 6571]
4. Lentil [Option ID = 6572]

84) Preceding crop requirement is an essential consideration during seed production to minimize the chances of genetic contamination through-[Question ID = 1644][Question Description = 184_19_PLS_AUG22_Q84]

1. Pollen shedders [Option ID = 6573]
2. Volunteer plants [Option ID = 6574]
3. Objectionable weeds [Option ID = 6575]
4. Mutants [Option ID = 6576]

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

Assertion A: Minimum germination standard (%) for the seeds of maize inbred lines is 80%.

Reason R: Maize hybrid seed should have a minimum of 90% germination.

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

[Question ID = 1645][Question Description = 185_19_PLS_AUG22_Q85]

1. Both A and R are true and R is the correct explanation of A. [Option ID = 6577]
2. Both A and R are true but R is NOT the correct explanation of A. [Option ID = 6578]
3. A is true but R is false. [Option ID = 6579]
4. A is false but R is true. [Option ID = 6580]

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

Assertion A: For moisture estimation by air oven method, fine/coarse grinding of seeds, instead of using whole seeds, is obligatory in some species

Reason R: Bigger-sized seeds fail to completely expel all the moisture from the inner tissues during drying, hence grinding become necessary.

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

[Question ID = 1646][Question Description = 186_19_PLS_AUG22_Q86]

1. Both A and R are true and R is the correct explanation of A. [Option ID = 6581]
2. Both A and R are true but R is NOT the correct explanation of A. [Option ID = 6582]
3. A is true but R is false. [Option ID = 6583]
4. A is false but R is true. [Option ID = 6584]

87) Match List I with List II

List I	List II
Crop	Inflorescence
A. Rice	I. Head or Capitulate
B. Maize	II. Panicle
C. Safflower	III. Arrow
D. Sugarcane	IV. Tassel

Choose the correct answer from the options given below:

[Question ID = 1647][Question Description = 187_19_PLS_AUG22_Q87]

1. A - II, B - III, C - IV, D - I [Option ID = 6585]
2. A - II, B - I, C - III, D - IV [Option ID = 6586]
3. A - II, B - IV, C - I, D - III [Option ID = 6587]
4. A - IV, B - II, C - III, D - I [Option ID = 6588]

88) It is said that 'a clone is immortal'. It means-[Question ID = 1648][Question Description = 188_19_PLS_AUG22_Q88]

1. A clone does not die. [Option ID = 6589]
2. A clone can't be eliminated. [Option ID = 6590]
3. The genotype of a clone does not change over time. [Option ID = 6591]
4. The performance of a clone does not change with time. [Option ID = 6592]

89) For notification of variety, the essentially required information are-

- A. Identification of the candidate entry by respective coordinated project workshop.
- B. Evaluation of the candidate entry in an appropriate coordinated project.
- C. Release of the candidate entry by a variety release committee.
- D. Distribution of the candidate entry through KVKs.

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

[Question ID = 1649][Question Description = 189_19_PLS_AUG22_Q89]

1. A, B, and D only [Option ID = 6593]
2. A, B, and C only [Option ID = 6594]
3. B, C, and D only [Option ID = 6595]
4. B and D only [Option ID = 6596]

90) For the production of certified seeds of hybrid maize, which single cross hybrid seeds will be given to the growers?

[Question ID = 1650][Question Description = 190_19_PLS_AUG22_Q90]

1. Breeders seed [Option ID = 6597]
2. Foundation seed [Option ID = 6598]
3. Certified seed [Option ID = 6599]
4. Nucleus seed [Option ID = 6600]

91) 'Normal or substandard seeds' must satisfy the following requirements to be considered as certified seeds

- A. Genetic purity
- B. Physical purity
- C. Germination test
- D. Freedom from weeds and diseases

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

[Question ID = 1651][Question Description = 191_19_PLS_AUG22_Q91]

1. A, B, and D only [Option ID = 6601]
2. A, B, and C only [Option ID = 6602]
3. A, C, and, D only [Option ID = 6603]
4. B, C, and D only [Option ID = 6604]

92) In some of the following crops, the viability of the seeds is very poor, and hence minimum germination of seeds required for certification is 70% only. The crops are-

- A. Rice
- B. Hybrid maize
- C. Soybean
- D. Groundnut
- E. Sunflower

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

[Question ID = 1652][Question Description = 192_19_PLS_AUG22_Q92]

1. A, and B only [Option ID = 6605]
2. B, and C only [Option ID = 6606]
3. C, and D only [Option ID = 6607]
4. D, and E only [Option ID = 6608]

93) The steps involved in the utilization of hybrid vigor in maize include-

- A. Production of suitable inbred lines
- B. Crossing of the selected inbreds in suitable combinations to produce highly productive single cross hybrids
- C. Mixing of different single cross hybrid seeds to produce productive double cross hybrids
- D. Crossing of the single cross hybrids in suitable combinations to produce highly productive double cross hybrids

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

[Question ID = 1653][Question Description = 193_19_PLS_AUG22_Q93]

1. A, B, and D only [Option ID = 6609]
2. A, B, and C only [Option ID = 6610]
3. B, C, and D only [Option ID = 6611]
4. B, and D only [Option ID = 6612]

94) Match List I with List II

List I	List II
Crop	Objectionable weeds
A. Rice	I. Wild morning glory
B. Lucerne	II. Mexican prickly poppy
C. Wheat	III. Wild rice
D. Rapeseed and Mustard	IV. Dodder

Choose the correct answer from the options given below:

[Question ID = 1654][Question Description = 194_19_PLS_AUG22_Q94]

1. A - IV, B - III, C - I, D - II [Option ID = 6613]
2. A - II, B - IV, C - I, D - III [Option ID = 6614]
3. A - III, B - IV, C - II, D - I [Option ID = 6615]
4. A - III, B - IV, C - I, D - II [Option ID = 6616]

95) Match List I with List II

List I	List II
Physical/biochemical traits of crop	Insect pests
A. Hairy leaves	I. Cabbage aphid
B. Saponin content	II. Jassids
C. Sinigrin content	III. Stem sawfly
D. Solid stem	IV. Spotted alfalfa aphid

Choose the correct answer from the options given below:

[Question ID = 1655][Question Description = 195_19_PLS_AUG22_Q95]

1. A - II, B - IV, C - III, D - I [Option ID = 6617]
2. A - II, B - IV, C - I, D - III [Option ID = 6618]
3. A - III, B - IV, C - I, D - II [Option ID = 6619]
4. A - IV, B - II, C - I, D - III [Option ID = 6620]

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

Assertion A: Atavism refers to the reappearance of a trait after it remains hidden for several generations.

Reason R: The chance combination of genes allows long-suppressed hidden traits to reappear and express.

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

[Question ID = 1656][Question Description = 196_19_PLS_AUG22_Q96]

1. Both A and R are true and R is the correct explanation of A.

[Option ID = 6621]

2. Both A and R are true but R is NOT the correct explanation of A.

[Option ID = 6622]

3. A is true but R is false.

[Option ID = 6623]

4. A is false but R is true.

[Option ID = 6624]

97) The gene-for-gene relationship between a host and its pathogen was originally proposed by H. H. Flor on the basis of work done on-

[Question ID = 1657][Question Description = 197_19_PLS_AUG22_Q97]

1. Leaf rust of wheat [Option ID = 6625]

2. Late blight of potato [Option ID = 6626]

3. Rust of linseed [Option ID = 6627]

4. Wilt of pigeon pea [Option ID = 6628]

98) Potato belongs to the family [Question ID = 1658][Question Description = 198_19_PLS_AUG22_Q98]

1. Compositae [Option ID = 6629]

2. Leguminosae [Option ID = 6630]

3. Euphorbiaceae [Option ID = 6631]

4. Solanaceae [Option ID = 6632]

99) Which of the following crops can be inter-cropped with chickpea

A. Linseed

B. Wheat

C. Rice

D. Mustard

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

[Question ID = 1659][Question Description = 199_19_PLS_AUG22_Q99]

1. B, C and D only [Option ID = 6633]

2. A, C and D only [Option ID = 6634]

3. A, B and D only [Option ID = 6635]

4. A, B and C only [Option ID = 6636]

100) Late blight of potato is caused by [Question ID = 1660][Question Description = 200_19_PLS_AUG22_Q100]

1. *Phytophthora infestans* [Option ID = 6637]

2. *Alternaria solani*

[Option ID = 6638]

3. *Erwinia carotovora* [Option ID = 6639]

4. *Pythium aphanidermatum* [Option ID = 6640]

101) Which of the following are two cultivated species of cotton used for spinnable fibre

A. *Gossypium hirsutum*

B. *Gossypium raimondii*

C. *Gossypium barbadense*

D. *Gossypium thurberi*

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

[Question ID = 1661][Question Description = 201_19_PLS_AUG22_Q101]

1. B and D only [Option ID = 6641]
2. A and B only [Option ID = 6642]
3. B and C only [Option ID = 6643]
4. A and C only [Option ID = 6644]

102) Given below are two statements

Statement I: Traditionally Indian soils are divided into four major groups.

Statement II: The Indian land surface is predominantly covered with red soils followed by black soils.

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

[Question ID = 1662][Question Description = 202_19_PLS_AUG22_Q102]

1. Both Statement I and Statement II are true [Option ID = 6645]
2. Both Statement I and Statement II are false [Option ID = 6646]
3. Statement I is true but Statement II is false [Option ID = 6647]
4. Statement I is false but Statement II is true [Option ID = 6648]

103) Match List I with List II

List I	List II
I. National Rural Livelihoods Mission (NRLM)	A. Improving land productivity
II. Integrated Watershed Management Programme (IWMP)	B. Housing to BPL households
III. Pradhan Mantri Awaas Yojana - Grameen (PMAY-G)	C. Providing wage employment
IV. Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)	D. Self-employment and skill development

Choose the correct answer from the options given below:

[Question ID = 1663][Question Description = 203_19_PLS_AUG22_Q103]

1. I-A, II-D, III-C, IV-B [Option ID = 6649]
2. I-B, II-A, III-D, IV-C [Option ID = 6650]
3. I-D, II-A, III-B, IV-C [Option ID = 6651]
4. I-B, II-D, III-C, IV-A [Option ID = 6652]

104) Arrange the following in the order of their coming into existence

- A. Protection of Plant Varieties and Farmers; Right Act (PPV& FR Act)
- B. Convention on Biological Diversity
- C. The Indian Patents Act
- D. International Convention of the Union for Protection of New Varieties of Plants (UPOV)

Choose the *correct* answer from the options given below

[Question ID = 1664][Question Description = 204_19_PLS_AUG22_Q104]

1. D, C, B, A [Option ID = 6653]
2. B, A, D, C [Option ID = 6654]
3. C, D, B, A [Option ID = 6655]
4. A, B, C, D [Option ID = 6656]

105) Which of the following Geographical Indication is not matched correctly?[Question ID = 1665][Question Description = 205_19_PLS_AUG22_Q105]

1. Kandhamal Haladi - Odisha [Option ID = 6657]
2. Kala Zeera- Jammu & Kashmir [Option ID = 6658]
3. Darjleeling tea- West Bengal [Option ID = 6659]
4. Tezpur Litchi- Assam [Option ID = 6660]

106) Arrange in descending order the following soil types of India according to their area of predominance:

- A. Alluvial soils
- B. Red soils
- C. Laterite soils
- D. Black soils

Choose the *correct* answer from the options given below

[Question ID = 1666][Question Description = 206_19_PLS_AUG22_Q106]

1. C, A, B, D [Option ID = 6661]
2. A, C, B, D [Option ID = 6662]
3. D, B, C, A [Option ID = 6663]
4. B, D, A, C [Option ID = 6664]

107) Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R
Assertion A : Inbreeding depression is the reduced survival and fertility of offspring of related individuals.

Reason R : Inbreeding increases heterozygosity exposing harmful recessive alleles in homozygotes.

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

[Question ID = 1667][Question Description = 207_19_PLS_AUG22_Q107]

1. Both A and R are true and R is the correct explanation of A [Option ID = 6665]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 6666]
3. A is true but R is false [Option ID = 6667]
4. A is false but R is true [Option ID = 6668]

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

Assertion A : ICAR-Indian Institute of Sugarcane Research is located at Coimbatore.

Reason R : ICAR-National Bureau of Plant Genetic Resources is located at New Delhi.

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

[Question ID = 1668][Question Description = 208_19_PLS_AUG22_Q108]

1. Both A and R are true and R is the correct explanation of A [Option ID = 6669]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 6670]
3. A is true but R is false [Option ID = 6671]
4. A is false but R is true [Option ID = 6672]

109) Prime Minister of India released 35 varieties of different crops in September, 2021, which were developed by various institutes under the Indian Council of Agriculture Research, State & Central Agricultural Universities and Krishi Vigyan Kendras the main aim was to create mass awareness for the adoption of climate-resilient technologies. The list of these 35 varieties includes the following crops:

[Question ID = 1669][Question Description = 209_19_PLS_AUG22_Q109]

1. Pigeon pea and Chickpea [Option ID = 6673]
2. Sunflower and safflower [Option ID = 6674]
3. Brinjal and tomato [Option ID = 6675]
4. Black gram and green gram [Option ID = 6676]

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

Assertion A: CAM plants are present in dry and arid environments.

Reason R: The CAM pathway is adapted to minimize water loss and photorespiration.

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

[Question ID = 1670][Question Description = 210_19_PLS_AUG22_Q110]

1. Both A and R are correct and R is the correct explanation of A [Option ID = 6677]
2. Both A and R are correct but R is NOT the correct explanation of A [Option ID = 6678]
3. A is correct but R is not correct [Option ID = 6679]
4. A is not correct but R is correct [Option ID = 6680]

111) Which one is incorrect with respect to transpiration in plants [Question ID = 1671][Question Description = 211_19_PLS_AUG22_Q111]

1. Flow of mineral nutrients and water through xylem [Option ID = 6681]
2. Diffusion of carbon dioxide from the air for photosynthesis [Option ID = 6682]
3. Change in osmotic pressure of cells [Option ID = 6683]
4. Reduction of cooling effect on the leaf surface [Option ID = 6684]

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

Assertion A: Dioecy ensures that outbreeding will always occur.

Reason R: In dioecy, male and female flowers are present on different parts of the same plant.

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

[Question ID = 1672][Question Description = 212_19_PLS_AUG22_Q112]

1. Both A and R are correct and R is the correct explanation of A [Option ID = 6685]
2. Both A and R are correct but R is NOT the correct explanation of A [Option ID = 6686]
3. A is correct but R is not correct [Option ID = 6687]
4. A is not correct but R is correct [Option ID = 6688]

113) Arrange the following parts of Wheat (*Triticum aestivum* L.) in descending order with respect to their chromosome number.

- A. Endosperm
- B. Male gamete
- C. Embryo

Choose the *correct* answer from the options given below

[Question ID = 1673][Question Description = 213_19_PLS_AUG22_Q113]

1. B, A, C

[Option ID = 6689]

2. C, A, B

[Option ID = 6690]

3. A, C, B

[Option ID = 6691]

4. A, B, C

[Option ID = 6692]

114) Which of the following amino acid starts all proteins synthesis?[Question ID = 1674][Question Description = 214_19_PLS_AUG22_Q114]

1. Glycine [Option ID = 6693]
2. Methionine [Option ID = 6694]
3. Thymine [Option ID = 6695]
4. Proline [Option ID = 6696]

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

Assertion A : DNA polymerase can synthesize DNA in the 5' to 3' direction.

Reason R : DNA polymerase can synthesize DNA in the 3' to 5' direction.

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

[Question ID = 1675][Question Description = 215_19_PLS_AUG22_Q115]

1. Both A and R are true and R is the correct explanation of A [Option ID = 6697]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 6698]
3. A is true but R is false [Option ID = 6699]
4. A is false but R is true [Option ID = 6700]

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

Assertion A: The mode of DNA replication is semi-conservative in nature.

Reason R: One of the DNA strands is synthesized continuously, while the other is synthesized discontinuously.

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

[Question ID = 1676][Question Description = 216_19_PLS_AUG22_Q116]

1. Both A and R are correct and R is the correct explanation of A [Option ID = 6701]
2. Both A and R are correct but R is NOT the correct explanation of A [Option ID = 6702]
3. A is correct but R is not correct [Option ID = 6703]
4. A is not correct but R is correct [Option ID = 6704]

117) In molecular marker technologies, the acronym RFLP stands for[Question ID = 1677][Question Description = 217_19_PLS_AUG22_Q117]

1. Random Fragment Locus Polymorphism [Option ID = 6705]
2. Random Fragment Length Polymorphism [Option ID = 6706]
3. Restriction Fragment Locus Polymorphism [Option ID = 6707]
4. Restriction Fragment Length Polymorphism [Option ID = 6708]

118) The inflorescence of rice is called[Question ID = 1678][Question Description = 218_19_PLS_AUG22_Q118]

1. Ear [Option ID = 6709]
2. Panicle [Option ID = 6710]
3. Spike [Option ID = 6711]
4. Spadix [Option ID = 6712]

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

Assertion A : India is the largest producer of potato in the world.

Reason R : The states Uttar Pradesh, West Bengal and Punjab account for majority of potato production in India.

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

[Question ID = 1679][Question Description = 219_19_PLS_AUG22_Q119]

1. Both A and R are true and R is the correct explanation of A [Option ID = 6713]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 6714]
3. A is true but R is false [Option ID = 6715]
4. A is false but R is true [Option ID = 6716]

120) Arrange the following classes of seeds in ascending order of their genetic purity percentage

- A. Certified seed
- B. Breeder seed
- C. Foundation seed
- D. Nucleus seed

Choose the *correct* answer from the options given below

[Question ID = 1680][Question Description = 220_19_PLS_AUG22_Q120]

1. D, C, A, B [Option ID = 6717]
2. A, C, B, D [Option ID = 6718]
3. C, A, B, D [Option ID = 6719]
4. A, B, C, D [Option ID = 6720]