

10 Molecular Biology N Biotech ICAR SEPT 2022

Topic:- GEN KNOW COMMON PHD

1) Colour of the tag used on certified seed bags is[Question ID = 16958][Question Description = 101_221_GKD_SEP22_Q01]

1. Blue [Option ID = 37829]
2. Purple [Option ID = 37830]
3. White [Option ID = 37831]
4. Golden Yellow [Option ID = 37832]

2) Following are the statements regarding the Usar soil -

- A. It is reclaimed by adding lime.
- B. This soil has pH more than seven.
- C. Paddy crop can be grown in this soil.

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

[Question ID = 16959][Question Description = 102_221_GKD_SEP22_Q02]

1. A and B only [Option ID = 37833]
2. B and C only [Option ID = 37834]
3. C only [Option ID = 37835]
4. A only [Option ID = 37836]

3) When total utility of a commodity increases, marginal utility will be

[Question ID = 16960][Question Description = 103_221_GKD_SEP22_Q03]

1. Negative but increasing
[Option ID = 37837]
2. Positive but decreasing
[Option ID = 37838]
3. Constant
[Option ID = 37839]
4. Either positive or negative
[Option ID = 37840]

4) Where is the headquarter of International Fund for Agriculture Development located?

[Question ID = 16961][Question Description = 104_221_GKD_SEP22_Q04]

1. Vienna, Austria
[Option ID = 37841]
2. Rome, Italy
[Option ID = 37842]
3. New York, USA
[Option ID = 37843]
4. Berlin, Germany
[Option ID = 37844]

5) Mid-Oceanic Ridges are one of the important divisions of the ocean floor. In this respect, point out the incorrect statement regarding the 'Mid-Oceanic Ridges'. [Question ID = 16962][Question Description = 105_221_GKD_SEP22_Q05]

1. It is the largest mountain chain on the surface of the earth [Option ID = 37845]
2. It is a series of interconnected chain within the ocean. [Option ID = 37846]
3. It is characterised by a central rift system [Option ID = 37847]
4. The rift system at the crest is the zone of very low volcanic activity. [Option ID = 37848]

6) Consider the following facts about the union territory of India and point out the one which is incorrect in relation to union territory.[Question ID = 16963][Question Description = 106_221_GKD_SEP22_Q06]

1. These are the areas under the direct control of central government. [Option ID = 37849]
2. Also known as the 'centrally administered territories. [Option ID = 37850]

3. These territories constitute a conspicuous departure from the unitary feature of India. [Option ID = 37851]
4. There is no uniformity in their administrative systems. [Option ID = 37852]

7) Variety of flora and fauna are found in the different types of forest in India. In this regard, species of trees like teak, *sal shisham*, *sandalwood*, etc. are found in which of the following type of forests in India?[Question ID = 16964][Question Description = 107_221_GKD_SEP22_Q07]

1. Tropical evergreen forests [Option ID = 37853]
2. Tropical thorn forests [Option ID = 37854]
3. Tropical deciduous forests [Option ID = 37855]
4. Montane forests [Option ID = 37856]

8) The Marginal Preference Theory of consumption behaviour was proposed by

[Question ID = 16965][Question Description = 108_221_GKD_SEP22_Q08]

1. Armstrong
[Option ID = 37857]
2. J.K.Hicks
[Option ID = 37858]
3. Neumann
[Option ID = 37859]
4. Edmund Cannon
[Option ID = 37860]

9) Point out the incorrect statements regarding the service sector in India.[Question ID = 16966][Question Description = 109_221_GKD_SEP22_Q09]

1. It is the highest contributor to GDP [Option ID = 37861]
2. It requires skilled labour [Option ID = 37862]
3. It is the fastest growing sector [Option ID = 37863]
4. It is restricted to very few sectors. [Option ID = 37864]

10) Consider the statements regarding the agriculture sector in India and point out the incorrect statement.[Question ID = 16967][Question Description = 110_221_GKD_SEP22_Q10]

1. Agriculture sector is the largest employer of workforce [Option ID = 37865]
2. It has contributed to the Gross Value Added (GVA) [Option ID = 37866]
3. Growth in allied sectors is the major drivers of overall growth in the sector. [Option ID = 37867]
4. Minimum Support Price (MSP) policy is used as to promote crop uniformity. [Option ID = 37868]

11) In case of related goods, the cross elasticity of demand is[Question ID = 16968][Question Description = 111_221_GKD_SEP22_Q11]

1. Low [Option ID = 37869]
2. High [Option ID = 37870]
3. Zero [Option ID = 37871]
4. Unity [Option ID = 37872]

12) With reference to organic farming in India, consider the following statements :

- A. The National Programme for Organic Production' (NPOP) is operated under the guidelines and directions of the Union Ministry of Rural Development.
- B. The Agricultural and Processed Food Products Export Development Authority' (APEDA) functions as the Secretariat for the implementation of NPOP.
- C. Sikkim has become India's first fully organic state.

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

[Question ID = 16969][Question Description = 112_221_GKD_SEP22_Q12]

1. A and B only
[Option ID = 37873]
2. B and C only
[Option ID = 37874]
3. C only
[Option ID = 37875]
4. A, B and C

[Option ID = 37876]

13) With reference to the circumstances in Indian agriculture, the concept of "Conservation Agriculture" assumes significance. Which of the following falls under the Conservation Agriculture ?

- A. Avoiding the monoculture practices.
- B. Adopting minimum tillage.
- C. Avoiding the cultivation of plantation crops.
- D. Using crop residues to cover soil surface.
- E. Adopting spatial and temporal crop sequencing/ crop rotations.

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

[Question ID = 16970][Question Description = 113_221_GKD_SEP22_Q13]

- 1. A, C and D only [Option ID = 37877]
- 2. B, C, D and E only [Option ID = 37878]
- 3. B, D and E only [Option ID = 37879]
- 4. A, B, C and E only [Option ID = 37880]

14) Consumers are likely to get a variety of goods in which kind of market competition[Question ID = 16971][Question Description = 114_221_GKD_SEP22_Q14]

- 1. Monopoly [Option ID = 37881]
- 2. Duopoly [Option ID = 37882]
- 3. Oligopoly [Option ID = 37883]
- 4. Monopolistic [Option ID = 37884]

15) What is the correct chronological order of the following laws enacted for the conservation and protection of environment ?

- A. Environment (Protection) Act.
- B. Water (Prevention & Control of Pollution) Act.
- C. Air (Prevention & Control of pollution) Act.
- D. National Green Tribunal Act.

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

[Question ID = 16972][Question Description = 115_221_GKD_SEP22_Q15]

- 1. B, C, A, D [Option ID = 37885]
- 2. A, B, C, D [Option ID = 37886]
- 3. C, B, A, D [Option ID = 37887]
- 4. D, C, B, A [Option ID = 37888]

16) The scientific study of soil is[Question ID = 16973][Question Description = 116_221_GKD_SEP22_Q16]

- 1. Earth Study [Option ID = 37889]
- 2. Soil Science [Option ID = 37890]
- 3. Pedology [Option ID = 37891]
- 4. Soil Chemistry [Option ID = 37892]

17) *Triticum aestivum*, the common bread wheat is -

[Question ID = 16974][Question Description = 117_221_GKD_SEP22_Q17]

- 1. Tetraploid
[Option ID = 37893]
- 2. Hexaploid
[Option ID = 37894]
- 3. Haploid
[Option ID = 37895]
- 4. Diploid
[Option ID = 37896]

18) Sectoral inflation refers to[Question ID = 16975][Question Description = 118_221_GKD_SEP22_Q18]

- 1. Running inflation [Option ID = 37897]

2. Comprehensive inflation [Option ID = 37898]
3. Sporadic inflation [Option ID = 37899]
4. Creeping inflation [Option ID = 37900]

19) Keynes Liquidity trap refers to[Question ID = 16976][Question Description = 119_221_GKD_SEP22_Q19]

1. Speculative demand for money [Option ID = 37901]
2. Transactions motive of money is inelastic [Option ID = 37902]
3. Precautionary motive of money is inelastic [Option ID = 37903]
4. Transactions motive of money is constant [Option ID = 37904]

20) A business is solvent if[Question ID = 16977][Question Description = 120_221_GKD_SEP22_Q20]

1. Total receipts exceed total expenditures [Option ID = 37905]
2. Total debt exceeds total equity [Option ID = 37906]
3. Total sales exceed total cash expense [Option ID = 37907]
4. Total assets exceed total liabilities [Option ID = 37908]

Topic:- Crop Sc 3_PHD

1) Which of the following statement is NOT true about telomerase?

[Question ID = 2851][Question Description = 101_54_CRP_SEP22_Q01]

1. Telomerase contains a ribozyme. [Option ID = 11401]
2. Telomerase activity decreases as the cell ages. [Option ID = 11402]
3. Telomere synthesis requires the 3' end of the chromosome as primer and proceeds in usual 5'→3' direction. [Option ID = 11403]
4. Telomere synthesis requires the 5' end of the chromosome as primer and proceeds in usual 3'→5' direction. [Option ID = 11404]

2) Read the following statements-

- A. Peptide bond of the protein is formed by the enzyme peptidase.
- B. The primary structure of a protein is a sequence of amino acids joined by a peptide bond.
- C. Tertiary structure of a protein is stabilized by ionic, hydrogen, and covalent bonds.
- D. The hydrophilic/hydrophobic character of amino acid residues is important to the tertiary structure of a protein.
- E. The ability of peptide bonds to form intramolecular hydrogen bonds is important to secondary structure.

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

[Question ID = 2852][Question Description = 102_54_CRP_SEP22_Q02]

1. A, B and D only [Option ID = 11405]
2. B, C and D only [Option ID = 11406]
3. B, D and E only [Option ID = 11407]
4. C, D and E only [Option ID = 11408]

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

Assertion A: Enzyme becomes inactive at below minimum temperature.

Reason R: The inactivity of the enzymes is due to denaturation.

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

[Question ID = 2853][Question Description = 103_54_CRP_SEP22_Q03]

1. Both A and R are correct and R is the correct explanation of A. [Option ID = 11409]
2. Both A and R are correct but R is **NOT** the correct explanation of A. [Option ID = 11410]
3. A is correct but R is not correct. [Option ID = 11411]
4. A is not correct but R is correct. [Option ID = 11412]

4) Who discovered the enzyme reverse transcriptase?[Question ID = 2854][Question Description = 104_54_CRP_SEP22_Q04]

1. Temin and Kornburg [Option ID = 11413]
2. Kornburg and Baltimore [Option ID = 11414]
3. Grunberg and Ochoa [Option ID = 11415]
4. Temin and Baltimore [Option ID = 11416]

5) Which of the following mechanisms will remove uracil and incorporate the correct base?

[Question ID = 2855][Question Description = 105_54_CRP_SEP22_Q05]

1. Nucleotide excision repair [Option ID = 11417]

2. Double-strand break repair [Option ID = 11418]
3. Mismatch repair [Option ID = 11419]
4. Base excision repair [Option ID = 11420]

6) Which of the following statement is NOT correct about genetic codons?

[Question ID = 2856][Question Description = 106_54_CRP_SEP22_Q06]

1. An amino acid may be specified by more than one codon. [Option ID = 11421]
2. AUG is the most common signal for the beginning of a polypeptide in all cells. [Option ID = 11422]
3. Genetic codons are triplet of nucleotide that codes for a specific amino acid. [Option ID = 11423]
4. Genetic codons are read in successive and overlapping fashion. [Option ID = 11424]

7) What are the smallest terpenes, containing a single isoprene unit named?[Question ID = 2857][Question Description = 107_54_CRP_SEP22_Q07]

1. Hemiterpenes [Option ID = 11425]
2. Monoterpenes [Option ID = 11426]
3. Sesquiterpenes [Option ID = 11427]
4. Diterpenes [Option ID = 11428]

8) Given below are two statements-

Statement I: Compatible solutes/osmolytes are the organic compounds that are osmotically inactive in the cell and do not destabilize the membrane, when plants are under stress.

Statement II: Plant cells can tolerate high concentration of these compounds without any detrimental effect on metabolism.

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

[Question ID = 2858][Question Description = 108_54_CRP_SEP22_Q08]

1. Both Statement I and Statement II are true [Option ID = 11429]
2. Both Statement I and Statement II are false [Option ID = 11430]
3. Statement I is true but Statement II is false [Option ID = 11431]
4. Statement I is false but Statement II is true [Option ID = 11432]

9) The molarity of a solution of substance express the number of moles of the substance in _____[Question ID = 2859]
[Question Description = 109_54_CRP_SEP22_Q09]

1. One cubic centimeter of solution [Option ID = 11433]
2. One cubic decimeter of solution [Option ID = 11434]
3. One cubic millimeter of solution [Option ID = 11435]
4. One milliliter of solution [Option ID = 11436]

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

Assertion A : Most of the wood fungi grow well on barks/logs/woods.

Reason R : Wood fungi have the enzyme cellulase which breaks the β (1 $\rightarrow$ 4) glycosidic bond in cellulose and get the metabolized sugar for themselves.

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

[Question ID = 2860][Question Description = 110_54_CRP_SEP22_Q10]

1. Both A and R are true and R is the correct explanation of A [Option ID = 11437]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 11438]
3. A is true but R is false [Option ID = 11439]
4. A is false but R is true [Option ID = 11440]

11) Which of the following enzyme is responsible for hydrolysis of stored triacylglycerols to release fatty acids in germinating seeds?

[Question ID = 2861][Question Description = 111_54_CRP_SEP22_Q11]

1. Laccases [Option ID = 11441]
2. Lipxygenases [Option ID = 11442]
3. Co-Lipases [Option ID = 11443]
4. Lipases [Option ID = 11444]

12) Which of the following is the only vitamin containing a trace element, cobalt (Co)?

[Question ID = 2862][Question Description = 112_54_CRP_SEP22_Q12]

1. Vitamin B₂ [Option ID = 11445]
2. Vitamin B₁₂ [Option ID = 11446]
3. Vitamin B₇ [Option ID = 11447]
4. Vitamin B₆ [Option ID = 11448]

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

Assertion A : Hygroscopic water is held by soil particles of colloidal complex due to adhesive force.

Reason R : Hygroscopic water is generally available water to plant roots.

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

[Question ID = 2863][Question Description = 113_54_CRP_SEP22_Q13]

1. Both A and R are true and R is the correct explanation of A [Option ID = 11449]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 11450]
3. A is true but R is false [Option ID = 11451]
4. A is false but R is true [Option ID = 11452]

14) Who defined “enzymes” as simple or compound proteins acting as specific catalysts?[Question ID = 2864][Question Description = 114_54_CRP_SEP22_Q14]

1. Buchner (1897) [Option ID = 11453]
2. Kuhne (1898) [Option ID = 11454]
3. Porter (1955) [Option ID = 11455]
4. Mayrback (1952) [Option ID = 11456]

15) Given below are two statements-

Statement I: Reduced CO₂ concentration favours opening of stomata while an increase in CO₂ concentration promotes stomatal closing.

Statement II: Accumulation of abscisic acid causes closing of stomata in plants.

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

[Question ID = 2865][Question Description = 115_54_CRP_SEP22_Q15]

1. Both Statement I and Statement II are true [Option ID = 11457]
2. Both Statement I and Statement II are false [Option ID = 11458]
3. Statement I is true but Statement II is false [Option ID = 11459]
4. Statement I is false but Statement II is true [Option ID = 11460]

16) Match List I with List II

List I	List II
Plant Hormone	Function
A. Auxin	I. Hyponasty of leaves
B. Gibberellin	II. Prevention of premature drop of fruits
C. Cytokinin	III. Increases chlorophyllase activity
D. Ethylene	IV. Delay of senescence

Choose the correct answer from the options given below:

[Question ID = 2866][Question Description = 116_54_CRP_SEP22_Q16]

1. A - II, B - III, C - IV, D - I [Option ID = 11461]
2. A - I, B - II, C - III, D - IV [Option ID = 11462]
3. A - II, B - I, C - IV, D - III [Option ID = 11463]
4. A - IV, B - I, C - II, D - III [Option ID = 11464]

17) Given below are two statements-

Statement I: Molybdenum deficiency in plants is characterized by wilting of terminal shoots followed by frequent death.

Statement II: Boron deficient plants produce lesser number of flowers and are sterile or lacking.

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

[Question ID = 2867][Question Description = 117_54_CRP_SEP22_Q17]

1. Both Statement I and Statement II are true [Option ID = 11465]
2. Both Statement I and Statement II are false [Option ID = 11466]
3. Statement I is true but Statement II is false [Option ID = 11467]
4. Statement I is false but Statement II is true [Option ID = 11468]

18) Consider the following statements-

- A. Water, aeration and temperature are the most important factors which influence seed germination.
- B. Light plays a meagre role in seed germination.
- C. The seed viability is lost when anabolism is exceeded by catabolism.
- D. Generally, carbon dioxide reduces the percentage of germination.

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

[Question ID = 2868][Question Description = 118_54_CRP_SEP22_Q18]

- 1. A, B and C only [Option ID = 11469]
- 2. A, C and D only [Option ID = 11470]
- 3. B, C and D only [Option ID = 11471]
- 4. A, B and D only [Option ID = 11472]

19) Who proposed the theory of two-phase flowering?[Question ID = 2869][Question Description = 119_54_CRP_SEP22_Q19]

- 1. Chailakhyan (1968) [Option ID = 11473]
- 2. Lobimenka and Scheglova (1938) [Option ID = 11474]
- 3. Knott (1934) [Option ID = 11475]
- 4. Bunning (1958) [Option ID = 11476]

20) Who proposed the Osmotic theory for water absorption?

[Question ID = 2870][Question Description = 120_54_CRP_SEP22_Q20]

- 1. Atkins and Priestly [Option ID = 11477]
- 2. Thimann [Option ID = 11478]
- 3. Karmer [Option ID = 11479]
- 4. Levitt [Option ID = 11480]

21) Given below are two statements-

Statement I: Transpiration may occur through the cuticle, lenticels or stomata.

Statement II: Transpiration creates suction force and helps in the ascent of sap.

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

[Question ID = 2871][Question Description = 121_54_CRP_SEP22_Q21]

- 1. Both Statement I and Statement II are correct [Option ID = 11481]
- 2. Both Statement I and Statement II are incorrect [Option ID = 11482]
- 3. Statement I is correct but Statement II is incorrect [Option ID = 11483]
- 4. Statement I is incorrect but Statement II is correct [Option ID = 11484]

22) Match List I with List II

List I	List II
Scientist	Proposed theory
A. Godlewski	I. Pulsation theory
B. J. C. Bose	II. Relay pump theory
C. Boehm	III. Transpiration pull theory
D. Dixon and Jolly	IV. Capillarity

Choose the correct answer from the options given below:

[Question ID = 2872][Question Description = 122_54_CRP_SEP22_Q22]

- 1. A - III, B - IV, C - I, D - II [Option ID = 11485]
- 2. A - III, B - I, C - IV, D - II [Option ID = 11486]
- 3. A - II, B - I, C - IV, D - III [Option ID = 11487]
- 4. A - II, B - IV, C - I, D - III [Option ID = 11488]

23) Given below are two statements-

Statement I: Each photon contains an amount of energy that is called a quantum.

Statement II: Quantum yield of photosynthesis is ratio of number of photochemical products to total number of quanta absorbed.

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

[Question ID = 2873][Question Description = 123_54_CRP_SEP22_Q23]

1. Both Statement I and Statement II are correct [Option ID = 11489]
2. Both Statement I and Statement II are incorrect [Option ID = 11490]
3. Statement I is correct but Statement II is incorrect [Option ID = 11491]
4. Statement I is incorrect but Statement II is correct [Option ID = 11492]

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

Assertion A: Tryptophan is primary precursor of IAA in plants.

Reason R: TIBA inhibits polar auxin transport and called as antiauxins.

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

[Question ID = 2874][Question Description = 124_54_CRP_SEP22_Q24]

1. Both A and R are correct and R is the correct explanation of A [Option ID = 11493]
2. Both A and R are correct but R is NOT the correct explanation of A [Option ID = 11494]
3. A is correct but R is not correct [Option ID = 11495]
4. A is not correct but R is correct [Option ID = 11496]

25) Given below are two statements-

Statement I: Seeds with life span of a few weeks to 4 years are known as “Microbiotic seeds”.

Statement II: Seeds with life span varying from 15 years to 100 years or more are known as “Macrobiotic seeds”.

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

[Question ID = 2875][Question Description = 125_54_CRP_SEP22_Q25]

1. Both Statement I and Statement II are correct [Option ID = 11497]
2. Both Statement I and Statement II are incorrect [Option ID = 11498]
3. Statement I is correct but Statement II is incorrect [Option ID = 11499]
4. Statement I is incorrect but Statement II is correct [Option ID = 11500]

26) Match List I with List II

List I	List II
Scientists	Associated with
A. W Arber, D Nathans, and H O Smith	I. RNA interference (RNAi)
B. A Z Fire and C C Mello	II. CRISPR Technology
C. Marc V Montagu, M D Chilton, and R Fraley	III. Recombinant DNA technology using restriction endonuclease
D. J Doudna and E Charpentier	IV. <i>Agrobacterium</i> -mediated genetic transformation

Choose the correct answer from the options given below:

[Question ID = 2876][Question Description = 126_54_CRP_SEP22_Q26]

1. A - III, B - II, C - I, D - IV [Option ID = 11501]
2. A - III, B - IV, C - I, D - II [Option ID = 11502]
3. A - III, B - I, C - IV, D - II [Option ID = 11503]
4. A - I, B - II, C - III, D - IV [Option ID = 11504]

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

Assertion A: Golden Rice (GR) is rich in pro-vitamin A.

Reason R: GR is engineered with two genes (*psy* and *crtl*) of the beta-carotene biosynthesis pathway.

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

[Question ID = 2877][Question Description = 127_54_CRP_SEP22_Q27]

1. Both A and R are true and R is the correct explanation of A [Option ID = 11505]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 11506]
3. A is true but R is false [Option ID = 11507]
4. A is false but R is true [Option ID = 11508]

28) Which of the following strategy was used in genetically engineered *Rainbow* papaya to control ringspot virus?[Question ID = 2878][Question Description = 128_54_CRP_SEP22_Q28]

1. Antisense RNA approach [Option ID = 11509]
2. Ribozyme [Option ID = 11510]
3. cDNA of RNA satellite [Option ID = 11511]
4. Coat protein gene [Option ID = 11512]

29) Which of the following component is enriched/fortified in CRISPR-edited tomatoes commercialized in Japan?

[Question ID = 2879][Question Description = 129_54_CRP_SEP22_Q29]

1. Enriched with omega-3-fatty acids [Option ID = 11513]
2. Fortified with Fe and Zn [Option ID = 11514]
3. Enriched in gamma-aminobutyric acid [Option ID = 11515]
4. Enriched in lycopene and anthocyanin [Option ID = 11516]

30) Which population type do NAM and MAGIC represents?

[Question ID = 2880][Question Description = 130_54_CRP_SEP22_Q30]

1. Eco-tilling population [Option ID = 11517]
2. Uni-parental population [Option ID = 11518]
3. Multi-parent population [Option ID = 11519]
4. Bi-parental population [Option ID = 11520]

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

Assertion A: Biological Nitrogen Fixation (BNF) converts N_2 gas to ammonia (NH_3).

Reason R: BNF are catalyzed by a *nitrogenase* protein complex in legumes.

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

[Question ID = 2881][Question Description = 131_54_CRP_SEP22_Q31]

1. Both A and R are true and R is the correct explanation of A [Option ID = 11521]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 11522]
3. A is true but R is false [Option ID = 11523]
4. A is false but R is true [Option ID = 11524]

32) Who among the following first reported generation of haploid plants from pollen grains?

[Question ID = 2882][Question Description = 132_54_CRP_SEP22_Q32]

1. Murashige and Skoog [Option ID = 11525]
2. Maheshwari and Guha [Option ID = 11526]
3. Nitch and Nitch [Option ID = 11527]
4. Reinert and Steward [Option ID = 11528]

33) Which of the following is the main effect of cytokinins in the tissue culture system?

[Question ID = 2883][Question Description = 133_54_CRP_SEP22_Q33]

1. Adventitious root formation [Option ID = 11529]
2. Induction of somatic embryos [Option ID = 11530]
3. Adventitious shoot formation [Option ID = 11531]
4. Shoot elongation [Option ID = 11532]

34) How many sister chromatids are present in the maize (*Zea mays*) plant cell that is entering the first meiotic division?

[Question ID = 2884][Question Description = 134_54_CRP_SEP22_Q34]

1. 10 [Option ID = 11533]
2. 20 [Option ID = 11534]
3. 30 [Option ID = 11535]
4. 40 [Option ID = 11536]

35) Given below are two statements

Statement I: Watson and Crick proposed semi-conservative DNA replication.

Statement II: ^{35}S is used in proving semi-conservative DNA replication.

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

[Question ID = 2885][Question Description = 135_54_CRP_SEP22_Q35]

1. Both Statement I and Statement II are true [Option ID = 11537]
2. Both Statement I and Statement II are false [Option ID = 11538]
3. Statement I is true but Statement II is false [Option ID = 11539]
4. Statement I is false but Statement II is true [Option ID = 11540]

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

Assertion A: Mismatch repair system is dependent on the methylation.

Reason R: MutS is a site-specific endonuclease that acts only on the hemimethylated GATC sequence.

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

[Question ID = 2886][Question Description = 136_54_CRP_SEP22_Q36]

1. Both A and R are true and R is the correct explanation of A [Option ID = 11541]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 11542]
3. A is true but R is false [Option ID = 11543]
4. A is false but R is true [Option ID = 11544]

37) What is the histone octamer made of?

[Question ID = 2887][Question Description = 137_54_CRP_SEP22_Q37]

1. 5 types of histones [Option ID = 11545]
2. 8 types of histones [Option ID = 11546]
3. 8 histones of 4 different types [Option ID = 11547]
4. 6 histones of 3 different types [Option ID = 11548]

38) Match List I with List II

List I	List II
Enzyme	Function
A. Alkaline phosphatase	I. Removes nucleotide residues from the 3' ends of a DNA strand.
B. Polynucleotide kinase	II. Cleave DNA molecules at a specific base sequence.
C. Exonuclease III	III. Removes terminal phosphates from the 5' or 3' end (or both).
D. Type II restriction endonucleases	IV. Joins two DNA molecules or fragments.
E. DNA ligase	V. Adds a phosphate to the 5'-OH end of a polynucleotide to label it or permit ligation.

Choose the correct answer from the options given below:

[Question ID = 2888][Question Description = 138_54_CRP_SEP22_Q38]

1. A - III, B - V, C - I, D - II, E -IV
[Option ID = 11549]
2. A - V, B - III, C - I, D - II, E -IV
[Option ID = 11550]
3. A - I, B - V, C - III, D - II, E -IV
[Option ID = 11551]
4. A - IV, B - III, C - I, D - II, E -V
[Option ID = 11552]

39) Match List I with List II

List I	List II
Genes / Its products	Gene product / Function
A. <i>fixLJ</i>	I. Membrane bound cytochrome oxidase
B. <i>fixNOQP</i>	II. Oxygen responsive regulator
C. <i>nifH</i>	III. Negative regulator
D. NifA	IV. Dinitrogenase reductase
E. NifL	V. Positive regulator

Choose the correct answer from the options given below:

[Question ID = 2889][Question Description = 139_54_CRP_SEP22_Q39]

1. A - V, B - III, C - II, D - I, E - IV [Option ID = 11553]
2. A - IV, B - V, C - III, D - II, E - I [Option ID = 11554]
3. A - II, B - I, C - IV, D - V, E - III [Option ID = 11555]
4. A - II, B - V, C - IV, D - I, E - III [Option ID = 11556]

40) Common cause of gastrointestinal illness due to contaminated water and the leading cause of GI illnesses worldwide is _____.

[Question ID = 2890][Question Description = 140_54_CRP_SEP22_Q40]

1. *Legionella pneumophila* [Option ID = 11557]
2. *Toxoplasma* [Option ID = 11558]
3. Norovirus [Option ID = 11559]
4. *Clostridium perfringens* [Option ID = 11560]

41) Match List I with List II

List I	List II
Primary/Secondary Metabolites	Commercial significance
A. Glutamic acid	I. Anticancer agent
B. Phenylalanine	II. Cholesterol lowering agent
C. Lysine	III. Antiparasitic agent
D. Lovastatin	IV. Precursor agent of aspartame
E. Avermectin	V. Flavour enhancer agent
F. Bleomycin	VI. Feed supplement agent

Choose the correct answer from the options given below:

[Question ID = 2891][Question Description = 141_54_CRP_SEP22_Q41]

1. A - IV , B - VI , C - II , D - V , E - I , F - III [Option ID = 11561]
2. A - V , B - IV , C - VI , D - II , E - III , F - I [Option ID = 11562]
3. A - III , B - VI , C - II , D - V , E - I , F - IV [Option ID = 11563]
4. A - VI , B - III , C - V , D - I , E - IV , F - II [Option ID = 11564]

42) Given below are two statements-

Statement I: As of now, 11 types of biofertilizers (bacterial and fungal) are approved under Fertilizer Control Order in India.

Statement II: Since not approved under FCO, algal biofertilizers like blue green algae are not available in the market.

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

[Question ID = 2892][Question Description = 142_54_CRP_SEP22_Q42]

1. Both Statement I and Statement II are correct [Option ID = 11565]
2. Both Statement I and Statement II are incorrect [Option ID = 11566]
3. Statement I is correct but Statement II is incorrect [Option ID = 11567]
4. Statement I is incorrect but Statement II is correct [Option ID = 11568]

43) In statistics, skewness is referred to _____.

[Question ID = 2893][Question Description = 143_54_CRP_SEP22_Q43]

1. Measure of peakedness [Option ID = 11569]
2. Measure of convexity [Option ID = 11570]
3. Lack of symmetry [Option ID = 11571]
4. Measure of chance that an event occurs [Option ID = 11572]

44) Given below are two statements-

Statement I: Ion torrent sequencing method measures the release of protons (H⁺) each time a new deoxyribonucleotide is added to a growing strand of DNA and the resulting pH change by an electrode.

Statement II: In nanopore sequencing method, a DNA double helix is allowed to passthrough a protein nanopore, which causes changes in electric current that are base specific.

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

[Question ID = 2894][Question Description = 144_54_CRP_SEP22_Q44]

1. Both Statement I and Statement II are true [Option ID = 11573]
2. Both Statement I and Statement II are false [Option ID = 11574]
3. Statement I is true but Statement II is false [Option ID = 11575]
4. Statement I is false but Statement II is true [Option ID = 11576]

45) The term “Vaccines” derived from Latin word *vacca*, meaning_____.[Question ID = 2895][Question Description = 145_54_CRP_SEP22_Q45]

1. Cow [Option ID = 11577]
2. Sheep [Option ID = 11578]
3. Fox [Option ID = 11579]
4. Goat [Option ID = 11580]

46) Which of the following statements are true regarding electron microscopy?

- A. Produces good magnification but inferior resolution over light microscopy.
- B. Uses electron beam with wavelength of 0.05 Å°.
- C. Microbes can be viewed in living state under transmission electron microscope.

D. Scanning electron microscope can reveal striking three dimensional picture of specimen.

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

[Question ID = 2896][Question Description = 146_54_CRP_SEP22_Q46]

1. A, B and D only [Option ID = 11581]
2. A, C and D only [Option ID = 11582]
3. B and D only [Option ID = 11583]
4. A and D only [Option ID = 11584]

47) Which of the following organisms are capable of using either respiratory or fermentation processes, depending on the availability of oxygen in the cultural environment?

[Question ID = 2897][Question Description = 147_54_CRP_SEP22_Q47]

1. Obligate anaerobes [Option ID = 11585]
2. Facultative anaerobes [Option ID = 11586]
3. Obligate aerobes [Option ID = 11587]
4. Microaerophiles [Option ID = 11588]

48) Given below are two statements-

Statement I: Autotroph can derive its carbon from carbon dioxide.

Statement II: Lithotroph is an organism that uses organic molecules as sources of electron.

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

[Question ID = 2898][Question Description = 148_54_CRP_SEP22_Q48]

1. Both Statement I and Statement II are true [Option ID = 11589]
2. Both Statement I and Statement II are false [Option ID = 11590]
3. Statement I is true but Statement II is false [Option ID = 11591]
4. Statement I is false but Statement II is true [Option ID = 11592]

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

Assertion A : Nitrogenase enzyme complex is highly sensitive to oxygen and must be protected from oxygen inactivation for nitrogen fixation process.

Reason R : *Azotobacter* forms specialized cell structure called heterocyst to prevent oxygen inactivation of nitrogenase.

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

[Question ID = 2899][Question Description = 149_54_CRP_SEP22_Q49]

1. Both A and R are true and R is the correct explanation of A [Option ID = 11593]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 11594]
3. A is true but R is false [Option ID = 11595]
4. A is false but R is true [Option ID = 11596]

50) Which of the following method is used to determine species richness in soil sample?[Question ID = 2900][Question Description = 150_54_CRP_SEP22_Q50]

1. Viable plate count [Option ID = 11597]
2. Fatty acid methyl ester profiles [Option ID = 11598]
3. Soil respiration [Option ID = 11599]
4. Soil enzymes activity [Option ID = 11600]

Topic:- 10 Molecular Biology and Biotechnology_PHD

1) What is the gap between the M-phase and S-phase is known as?

[Question ID = 3001][Question Description = 101_53_ABB_SEP22_Q01]

1. G2 phase [Option ID = 12001]
2. G1 Phase [Option ID = 12002]
3. Interphase [Option ID = 12003]
4. G3 phase [Option ID = 12004]

2) Which of the following mechanisms drives the protein transport into mitochondria?

A. GTP hydrolysis

B. Membrane potential

C. ATP hydrolysis

D. Osmosis

Choose the correct answer from the options given below:

[Question ID = 3002][Question Description = 102_53_ABB_SEP22_Q02]

1. A, B and D only [Option ID = 12005]
2. B and C only [Option ID = 12006]
3. A and C only [Option ID = 12007]
4. A, C and D only [Option ID = 12008]

3) How are lysosomal proteins marked?

[Question ID = 3003][Question Description = 103_53_ABB_SEP22_Q03]

1. Fructose -6-phosphate [Option ID = 12009]
2. Mannose-6-phosphate [Option ID = 12010]
3. Glucose-6-phosphate [Option ID = 12011]
4. Lactose-6-phosphate [Option ID = 12012]

4) Given below are two statements-

Statement I: Nuclear localization signals are responsible for the active nuclear export process.

Statement II: Nucleoporins are arranged in octagonal symmetry.

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

[Question ID = 3004][Question Description = 104_53_ABB_SEP22_Q04]

1. Both Statement I and Statement II are true [Option ID = 12013]
2. Both Statement I and Statement II are false [Option ID = 12014]
3. Statement I is true but Statement II is false [Option ID = 12015]
4. Statement I is false but Statement II is true [Option ID = 12016]

5) How many enzymes are in pyruvate dehydrogenase?

[Question ID = 3005][Question Description = 105_53_ABB_SEP22_Q05]

1. Four [Option ID = 12017]
2. Two [Option ID = 12018]
3. Three [Option ID = 12019]
4. Five [Option ID = 12020]

6) How many enzymes are involved in carbon dioxide assimilation in plants?

[Question ID = 3006][Question Description = 106_53_ABB_SEP22_Q06]

1. 11 [Option ID = 12021]
2. 12 [Option ID = 12022]
3. 13 [Option ID = 12023]
4. 14 [Option ID = 12024]

7) Given below are two statements-

Statement I: Cyanide interferes with oxidative phosphorylation by inhibiting F_0 .

Statement II: Carbon monoxide interferes with oxidative phosphorylation by inhibiting cytochrome oxidase.

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

[Question ID = 3007][Question Description = 107_53_ABB_SEP22_Q07]

1. Both Statement I and Statement II are true [Option ID = 12025]
2. Both Statement I and Statement II are false [Option ID = 12026]
3. Statement I is true but Statement II is false [Option ID = 12027]
4. Statement I is false but Statement II is true [Option ID = 12028]

8) How many ATPs are produced when Palmitoyl-CoA is oxidized to carbon dioxide and water?

[Question ID = 3008][Question Description = 108_53_ABB_SEP22_Q08]

1. 100 ATP [Option ID = 12029]
2. 108 ATP [Option ID = 12030]
3. 28 ATP [Option ID = 12031]

4. 82 ATP [Option ID = 12032]

9) Who coined the term 'enzymes' ?

[Question ID = 3009][Question Description = 109_53_ABB_SEP22_Q09]

1. Eduard Buchner [Option ID = 12033]
2. James Sumner [Option ID = 12034]
3. Frederick W. Kühne [Option ID = 12035]
4. J. B. S. Haldane [Option ID = 12036]

10) Given below are two statements-

Statement I: Michaelis-Menten equation is only applicable to single-substrate reactions, and not to the bisubstrate reactions.

Statement II: The specificity constant of enzymes can be defined as K_m/k_{cat} .

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

[Question ID = 3010][Question Description = 110_53_ABB_SEP22_Q10]

1. Both Statement I and Statement II are correct
[Option ID = 12037]
2. Both Statement I and Statement II are incorrect
[Option ID = 12038]
3. Statement I is correct but Statement II is incorrect
[Option ID = 12039]
4. Statement I is incorrect but Statement II is correct
[Option ID = 12040]

11) Match List I with List II

List I	List II
Enzyme	Cofactors (Inorganic Ions)
A. Pyruvate kinase	I. Ni^{2+}
B. Cytochrome oxidase	II. Mg^{2+}
C. Urease	III. K^+
D. Catalase	IV. Fe^{2+}
E. Hexokinase	V. Cu^{2+}

Choose the correct answer from the options given below:

[Question ID = 3011][Question Description = 111_53_ABB_SEP22_Q11]

1. A - II, B - V, C - I, D - IV, E - III [Option ID = 12041]
2. A - III, B - V, C - I, D - IV, E - II [Option ID = 12042]
3. A - III, B - IV, C - I, D - V, E - II [Option ID = 12043]
4. A - III, B - V, C - IV, D - I, E - II [Option ID = 12044]

12) Given below are two statements-

Statement I: Ubiquitination is a covalent modification of enzyme.

Statement II: Chymotrypsin is a zymogen.

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

[Question ID = 3012][Question Description = 112_53_ABB_SEP22_Q12]

1. Both Statement I and Statement II are correct [Option ID = 12045]
2. Both Statement I and Statement II are incorrect [Option ID = 12046]
3. Statement I is correct but Statement II is incorrect [Option ID = 12047]
4. Statement I is incorrect but Statement II is correct [Option ID = 12048]

13) What was the first cellular organism to have its entire genome sequenced?

[Question ID = 3013][Question Description = 113_53_ABB_SEP22_Q13]

1. *Arabidopsis thaliana* [Option ID = 12049]
2. *Drosophila melanogaster* [Option ID = 12050]
3. *Haemophilus influenzae* [Option ID = 12051]
4. *Escherichia coli* [Option ID = 12052]

14) Read the following statements regarding the nuclear pre-mRNA splicing

- A. snRNP U1 binds to the 5' splice site
- B. snRNP U2 binds to the branch site
- C. U1, U2, and U3 form a specific snRNP particle
- D. U4, and U6 form a specific snRNP particle
- E. The 5' end of the intron is joined to the A in the branch site

Choose the correct answer from the options given below:

[Question ID = 3014][Question Description = 114_53_ABB_SEP22_Q14]

1. A, B, C, and D only

[Option ID = 12053]

2. B, C, D, and E only

[Option ID = 12054]

3. A, C, and E only

[Option ID = 12055]

4. A, B, D, and E only

[Option ID = 12056]

15) Given below are two statements-

Statement I: Most of the prokaryotes have circular genomes but linear genomes also exist

Statement II: Prokaryotic genomes are rich in repetitive DNA

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

[Question ID = 3015][Question Description = 115_53_ABB_SEP22_Q15]

- 1. Both Statement I and Statement II are true [Option ID = 12057]
- 2. Both Statement I and Statement II are false [Option ID = 12058]
- 3. Statement I is true but Statement II is false [Option ID = 12059]
- 4. Statement I is false but Statement II is true [Option ID = 12060]

16) Match List I with List II

List I	List II
DNA polymerase	Role
A. DNA polymerase γ	I. Base excision repair
B. DNA polymerases α	II. Mitochondrial DNA replication
C. DNA polymerase β	III. Low fidelity replication of damaged DNA
D. DNA polymerases λ	IV. DNA replication
E. DNA polymerases η	V. Repair of double-stranded breaks

Choose the correct answer from the options given below:

[Question ID = 3016][Question Description = 116_53_ABB_SEP22_Q16]

- 1. A - III, B - IV, C - V, D - II, E - I [Option ID = 12061]
- 2. A - III, B - IV, C - V, D - I, E - II [Option ID = 12062]
- 3. A - II, B - IV, C - V, D - I, E - III [Option ID = 12063]
- 4. A - II, B - IV, C - I, D - V, E - III [Option ID = 12064]

17) What is the mechanism that causes genomic imprinting in the genome?

[Question ID = 3017][Question Description = 117_53_ABB_SEP22_Q17]

- 1. Acetylation [Option ID = 12065]
- 2. Methylation [Option ID = 12066]
- 3. Phosphorylation [Option ID = 12067]
- 4. Ubiquitination [Option ID = 12068]

18) What does RNA polymerase I transcribe?

[Question ID = 3018][Question Description = 118_53_ABB_SEP22_Q18]

- 1. siRNAs [Option ID = 12069]
- 2. miRNAs [Option ID = 12070]
- 3. 28S rRNA [Option ID = 12071]

4. 16S rRNA [Option ID = 12072]

19) Match List I with List II

List I	List II
Amino Acid	Type
A. L- Leucine	I. Hydrophobic
B. L- Serine	II. Hydrophilic
C. L-Aspartic acid	III. Acidic
D. L- Lysine	IV. Basic

Choose the correct answer from the options given below:

[Question ID = 3019][Question Description = 119_53_ABB_SEP22_Q19]

1. A - I, B - II, C - III, D - IV [Option ID = 12073]
2. A - IV, B - II, C - III, D - I [Option ID = 12074]
3. A - II, B - IV, C - III, D - I [Option ID = 12075]
4. A - II, B - IV, C - I, D - III [Option ID = 12076]

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

Assertion A: Mutations in the operator of the *lac* operon result in the constitutive synthesis of the gene products.

Reason R : The *lac* Operon is subjected to negative regulation.

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

[Question ID = 3020][Question Description = 120_53_ABB_SEP22_Q20]

1. Both A and R are true and R is the correct explanation of A [Option ID = 12077]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 12078]
3. A is true but R is false [Option ID = 12079]
4. A is false but R is true [Option ID = 12080]

21) Given below are two statements

Statement I: Aminoacyl - tRNA carrying the amino acid enters the P site of the ribosome.

Statement II: Ribosome consists of one large subunit and one small subunit in both prokaryotes and eukaryotes.

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

[Question ID = 3021][Question Description = 121_53_ABB_SEP22_Q21]

1. Both Statement I and Statement II are true [Option ID = 12081]
2. Both Statement I and Statement II are false [Option ID = 12082]
3. Statement I is true but Statement II is false [Option ID = 12083]
4. Statement I is false but Statement II is true [Option ID = 12084]

22) What principle is mass spectrometry based on?

[Question ID = 3022][Question Description = 122_53_ABB_SEP22_Q22]

1. Mass [Option ID = 12085]
2. Charge [Option ID = 12086]
3. Mass to charge ratio [Option ID = 12087]
4. Charge to mass ratio [Option ID = 12088]

23) Match List I with List II

List I	List II
Substance(Reagent)	λ max (nm)
A. Amino acids (Ninhydrin)	I. 260
B. Protein (Biuret)	II. 540
C. DNA (Direct)	III. 420
D. Glucose (Phosphate buffer)	IV. 570

Choose the correct answer from the options given below:

[Question ID = 3023][Question Description = 123_53_ABB_SEP22_Q23]

1. A - III, B - II, C - IV, D - I [Option ID = 12089]
2. A - III, B - II, C - I, D - IV [Option ID = 12090]
3. A - IV, B - II, C - I, D - III [Option ID = 12091]
4. A - III, B - I, C - II, D - IV [Option ID = 12092]

24) Given below are two statements-

Statement I: T4 DNA ligase transfers terminal phosphate groups from ATP to 5'-OH groups.

Statement II: Alkaline phosphatase links 5'-phosphate and 3'-hydroxyl ends via a phosphodiester bond.

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

[Question ID = 3024][Question Description = 124_53_ABB_SEP22_Q24]

1. Both Statement I and Statement II are true [Option ID = 12093]
2. Both Statement I and Statement II are false [Option ID = 12094]
3. Statement I is true but Statement II is false [Option ID = 12095]
4. Statement I is false but Statement II is true [Option ID = 12096]

25) Match List I with List II

List I	List II
Program	Query (subject)
A. blastn	I. Amino acid (Translated nucleotide)
B. blastx	II. Nucleotide (Nucleotide)
C. blastp	III. Translated nucleotide (Amino acid)
D. tblastn	IV. Nucleotide (Amino acid)
E. tblastx	V. Amino acid (Amino acid)

Choose the correct answer from the options given below:

[Question ID = 3025][Question Description = 125_53_ABB_SEP22_Q25]

1. A - II, B - IV, C - V, D - I, E - III [Option ID = 12097]
2. A - II, B - IV, C - V, D - III, E - I [Option ID = 12098]
3. A - II, B - III, C - V, D - IV, E - I [Option ID = 12099]
4. A - II, B - I, C - V, D - III, E - IV [Option ID = 12100]

26) Which of the following enzyme can be used for the dephosphorylation of DNA ends?[Question ID = 3026][Question Description = 126_53_ABB_SEP22_Q26]

1. T4 Polynucleotide Kinase [Option ID = 12101]
2. Calf-intestinal alkaline phosphatase (CIAP) [Option ID = 12102]
3. DNA polymerase I (Klenow Fragment) [Option ID = 12103]
4. Exonuclease III [Option ID = 12104]

27) Given below are two statements-

Statement I: TA cloning capitalizes on the 3'- thymine overhang of the PCR product.

Statement II: PCR product can be cloned into any linearized vectors with complementary 3'- adenine overhangs.

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

[Question ID = 3027][Question Description = 127_53_ABB_SEP22_Q27]

1. Both Statement I and Statement II are correct [Option ID = 12105]
2. Both Statement I and Statement II are incorrect [Option ID = 12106]
3. Statement I is correct but Statement II is incorrect [Option ID = 12107]
4. Statement I is incorrect but Statement II is correct [Option ID = 12108]

28) Match List I with List II

List I	List II
Restriction Endonuclease	Recognition Sequence
A. EcoRI	I. 5'ACGT↓3'
B. MaeII	II. 5'G↓AATTC3'
C. SmaI	III. 5'CCC↓GGG3'
D. TaqI	IV. 5'A↓CGT3'

Choose the correct answer from the options given below:

[Question ID = 3028][Question Description = 128_53_ABB_SEP22_Q28]

1. A - I, B - III, C - II, D - IV [Option ID = 12109]
2. A - II, B - I, C - III, D - IV [Option ID = 12110]
3. A - II, B - IV, C - III, D - I [Option ID = 12111]
4. A - IV, B - II, C - III, D - I [Option ID = 12112]

29) Given below are two statements-

Statement I: The Patent Act of India accommodates the protection of plant variety.

Statement II: PPVFRA of India accommodates protection of plant variety and rights of plant breeders and farmers.

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

[Question ID = 3029][Question Description = 129_53_ABB_SEP22_Q29]

1. Both Statement I and Statement II are correct [Option ID = 12113]
2. Both Statement I and Statement II are incorrect [Option ID = 12114]
3. Statement I is correct but Statement II is incorrect [Option ID = 12115]
4. Statement I is incorrect but Statement II is correct [Option ID = 12116]

30) Which of the following represents the plant cytosolic ribosome component?[Question ID = 3030][Question Description = 130_53_ABB_SEP22_Q30]

1. Subunits (40,60) RNAs (18, 28, 5.8, 5) [Option ID = 12117]
2. Subunits (30,50) RNAs (16, 23, 5, 4.5) [Option ID = 12118]
3. Subunits (40,60) RNAs (18, 28, 5, 4.5) [Option ID = 12119]
4. Subunits (30,50) RNAs (18, 28, 5.8, 5) [Option ID = 12120]

31) Which of the following methods can be used for the precise identification of transcript (mRNA) ends?

[Question ID = 3031][Question Description = 131_53_ABB_SEP22_Q31]

1. TAIL PCR [Option ID = 12121]
2. qPCR [Option ID = 12122]
3. RACE [Option ID = 12123]
4. RT-PCR [Option ID = 12124]

32) Which of the following is the correct cleavage site for the enzyme, trypsin?

[Question ID = 3032][Question Description = 132_53_ABB_SEP22_Q32]

1. C-terminal of methionine only [Option ID = 12125]
2. C-terminal of phenylalanine and tryptophan [Option ID = 12126]
3. C-terminal of lysine and arginine [Option ID = 12127]
4. C-terminal of leucine and iso-leucine [Option ID = 12128]

33) Which of the following is NOT used in ionomics?

[Question ID = 3033][Question Description = 133_53_ABB_SEP22_Q33]

1. ICP-MS [Option ID = 12129]
2. DNA Chips [Option ID = 12130]
3. XRF [Option ID = 12131]
4. Neutron Activation Analysis [Option ID = 12132]

34) Given below are two statements-

Statement I: RuBisCo catalyzes the first major step of carbon fixation.

Statement II: RuBisCo functions as carboxylase only.

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

[Question ID = 3034][Question Description = 134_53_ABB_SEP22_Q34]

1. Both Statement I and Statement II are correct [Option ID = 12133]
2. Both Statement I and Statement II are incorrect [Option ID = 12134]
3. Statement I is correct but Statement II is incorrect [Option ID = 12135]
4. Statement I is incorrect but Statement II is correct [Option ID = 12136]

35) Match List I with List II

List I	List II
Crops	Storage proteins
A. Wheat	I. Hordein
B. Barley	II. Gliadin
C. Corn	III. Zein
D. Oats	IV. Avenin

Choose the correct answer from the options given below:

[Question ID = 3035][Question Description = 135_53_ABB_SEP22_Q35]

1. A - II, B - I, C - III, D - IV [Option ID = 12137]
2. A - II, B - I, C - IV, D - III [Option ID = 12138]
3. A - I, B - II, C - III, D - IV [Option ID = 12139]
4. A - I, B - IV, C - II, D - III [Option ID = 12140]

36) Who among the following coined the term “phytohormones”?[Question ID = 3036][Question Description = 136_53_ABB_SEP22_Q36]

1. Reece and Kackson [Option ID = 12141]
2. Buchanan and Jones [Option ID = 12142]
3. Murashige and Skoog [Option ID = 12143]
4. Went and Thimann [Option ID = 12144]

37) Which of the following was used to demonstrate the ethylene receptor as a two-component system?

[Question ID = 3037][Question Description = 137_53_ABB_SEP22_Q37]

1. ABP1 [Option ID = 12145]
2. GTPase [Option ID = 12146]
3. ETR1 [Option ID = 12147]
4. GPRC [Option ID = 12148]

38) Which of the following term is best describes hybrids with the nuclear genome of one fusion parent and cytoplasm of both fusion parents?

[Question ID = 3038][Question Description = 138_53_ABB_SEP22_Q38]

1. Vybryds
[Option ID = 12149]
2. Cybrids
[Option ID = 12150]
3. Asymmetric hybrids
[Option ID = 12151]
4. Heterobryds
[Option ID = 12152]

39) Which of the following describes the mode of action of growth retardant tri-idobenzoic acid (TIBA)?

[Question ID = 3039][Question Description = 139_53_ABB_SEP22_Q39]

1. Gibberellin antagonist [Option ID = 12153]
2. Arrest cyclin multiplication [Option ID = 12154]
3. Blocks GA₃ receptor [Option ID = 12155]
4. Inhibit polar transport of auxins [Option ID = 12156]

40) Which method was used for the development of the mustard variety “Pusa Jai Kisan”?

[Question ID = 3040][Question Description = 140_53_ABB_SEP22_Q40]

1. Somaclonal variation [Option ID = 12157]
2. Embryo rescue [Option ID = 12158]
3. Somatic embryogenesis [Option ID = 12159]
4. Bioconversion [Option ID = 12160]

41) Arrange the stages of somatic embryogenesis development

- A. Torpedo
- B. Globular
- C. Pro-embryo
- D. Cotyledonary stage
- E. Heart-shaped

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

[Question ID = 3041][Question Description = 141_53_ABB_SEP22_Q41]

1. C, B, A, D, E [Option ID = 12161]
2. C, E, B, A, D [Option ID = 12162]
3. C, B, E, A, D [Option ID = 12163]
4. D, C, B, A, E [Option ID = 12164]

42) Which of the following is the primary source of Green Fluorescent Protein (GFP)?

[Question ID = 3042][Question Description = 142_53_ABB_SEP22_Q42]

1. *Escherichia coli* [Option ID = 12165]
2. *Aequorea victoria* [Option ID = 12166]
3. *Saccharomyces cerevisiae* [Option ID = 12167]
4. *Bacillus thuringiensis* [Option ID = 12168]

43) Match List I with List II

List I	List II
Genetic Elements	Trait
A. EPSPS	I. Male Sterility
B. Cry	II. Virus Resistance
C. Barnase-barstar	III. Herbicide Tolerance
D. CP	IV. Insect Resistance

Choose the correct answer from the options given below:

[Question ID = 3043][Question Description = 143_53_ABB_SEP22_Q43]

1. A - IV, B - III, C - I, D - II [Option ID = 12169]
2. A - IV, B - III, C - II, D - I [Option ID = 12170]
3. A - III, B - I, C - II, D - IV [Option ID = 12171]
4. A - III, B - IV, C - I, D - II [Option ID = 12172]

44) Which of the following transgenic crop is approved for commercial cultivation in India?[Question ID = 3044][Question Description = 144_53_ABB_SEP22_Q44]

1. BT-brinjal [Option ID = 12173]
2. HT-soybean [Option ID = 12174]
3. BT-cotton [Option ID = 12175]
4. DT-maize [Option ID = 12176]

45) Which of the following gene is related to the “FlavrSavr” tomato?[Question ID = 3045][Question Description = 145_53_ABB_SEP22_Q45]

1. ACC synthase [Option ID = 12177]
2. Stearoyl-ACP desaturase [Option ID = 12178]
3. Chalcone Synthase [Option ID = 12179]
4. Phytoene synthase [Option ID = 12180]

46) Which of the following categories of Genome Edited plants were exempted from the provisions of Rules, 1989 in India?[Question ID = 3046][Question Description = 146_53_ABB_SEP22_Q46]

1. SDN1 and SDN3 [Option ID = 12181]
2. SDN1 and SDN2 [Option ID = 12182]
3. SDN2 and SDN3 [Option ID = 12183]
4. SDN1 and SDN4 [Option ID = 12184]

47) Which of the following is Immortal mapping Population?[Question ID = 3047][Question Description = 147_53_ABB_SEP22_Q47]

1. BC_1F_2 [Option ID = 12185]
2. F_2 [Option ID = 12186]
3. $F_{2:3}$ [Option ID = 12187]
4. RIL [Option ID = 12188]

48) Which of the following term best describe the conservation of blocks of gene content and order in chromosomes of related species?

[Question ID = 3048][Question Description = 148_53_ABB_SEP22_Q48]

1. Synteny [Option ID = 12189]
2. Minimum Tiling Path [Option ID = 12190]
3. Haplotype [Option ID = 12191]
4. Congruence [Option ID = 12192]

49) Match List I with List II

List I	List II
Activity	Associated with
A. Foreground selection	I. Historic Recombination

B. Background selection	II. Contrasting Bulk Phenotypes
C. Bulk Segregant Analysis	III. Genome-wide markers
D. Association Mapping	IV. Trait Linked markers

Choose the correct answer from the options given below:

[Question ID = 3049][Question Description = 149_53_ABB_SEP22_Q49]

1. A - I, B - II, C - III, D - IV [Option ID = 12193]
2. A - I, B - III, C - IV, D - II [Option ID = 12194]
3. A - IV, B - III, C - II, D - I [Option ID = 12195]
4. A - IV, B - II, C - III, D - I [Option ID = 12196]

50) Which of the following marker system uses PCR amplification followed by restriction enzyme digestion?[Question ID = 3050][Question Description = 150_53_ABB_SEP22_Q50]

1. RAPD [Option ID = 12197]
2. CAPS [Option ID = 12198]
3. AP-PCR [Option ID = 12199]
4. AFLP [Option ID = 12200]