

8 Biochemistry 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 Kornberg [Option ID = 11413]
2. Kornberg 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. Lipoygenases [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. Karner [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]

- Both A and R are true and R is the correct explanation of A [Option ID = 11541]
- Both A and R are true but R is NOT the correct explanation of A [Option ID = 11542]
- A is true but R is false [Option ID = 11543]
- 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]

- 5 types of histones [Option ID = 11545]
- 8 types of histones [Option ID = 11546]
- 8 histones of 4 different types [Option ID = 11547]
- 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]

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

[Option ID = 11549]

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

[Option ID = 11550]

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

[Option ID = 11551]

- 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]

- A - V, B - III, C - II, D - I, E - IV [Option ID = 11553]
- A - IV, B - V, C - III, D - II, E - I [Option ID = 11554]
- A - II, B - I, C - IV, D - V, E - III [Option ID = 11555]
- 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]

- Legionella pneumophila* [Option ID = 11557]
- Toxoplasma* [Option ID = 11558]
- Norovirus [Option ID = 11559]
- 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:- 8 Biochemistry_PHD

1) Which among the following is the right order of bond dissociation energy of the given bonds in the biomolecules?

[Question ID = 2901][Question Description = 101_52_PBB_SEP22_Q01]

1. $C\equiv C > N\equiv N > C-C$ [Option ID = 11601]
2. $N\equiv N > C-C > C\equiv C$ [Option ID = 11602]
3. $N\equiv N > C\equiv C > C-C$ [Option ID = 11603]
4. $C-C > C\equiv C > N\equiv N$ [Option ID = 11604]

2) Read the following statements regarding pH and buffers-

A. A mix of weak acid (or base) and its salt resists the change in pH on addition of H^+ or OH^- , called as buffer.

B. The pH of an acid and buffer both remains the same on addition of water.

- C. The pH of an acid increases, whereas pH of buffer remains same on addition of water.
- D. Henderson-Hasselbalch equation states; $\text{pH} = \text{pK}_a - \log \frac{[\text{A}^-]}{[\text{HA}]}$
- E. The stronger the acid, the lower its pK_a ; the stronger the base, the higher its pK_a .

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

[Question ID = 2902][Question Description = 102_52_PBB_SEP22_Q02]

1. A, B and D only [Option ID = 11605]
2. B, C and E only [Option ID = 11606]
3. A, C and D only [Option ID = 11607]
4. A, C and E only [Option ID = 11608]

3) Match List I with List II

List I	List II
Reagent	Specificity/Cleavage point
A. Trypsin	I. Lys-Arg (C-terminus)
B. Pepsin	II. Phe, Trp, Tyr (N-terminus)
C. Chymotrypsin	III. Met (C-terminus)
D. Cyanogen bromide	IV. Phe, Trp, Tyr (C-terminus)

Choose the correct answer from the options given below:

[Question ID = 2903][Question Description = 103_52_PBB_SEP22_Q03]

1. A - I, B - III, C - II, D - IV [Option ID = 11609]
2. A - I, B - II, C - IV, D - III [Option ID = 11610]
3. A - III, B - IV, C - II, D - I [Option ID = 11611]
4. A - II, B - I, C - IV, D - III [Option ID = 11612]

- 4) Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R
 Assertion A : All the eicosanoids derived from arachidonic acid carry and pass the messages only to nearby cells.

Reason R : Eicosanoids are endocrine hormones.

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

[Question ID = 2904][Question Description = 104_52_PBB_SEP22_Q04]

1. Both A and R are true and R is the correct explanation of A [Option ID = 11613]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 11614]
3. A is true but R is false [Option ID = 11615]
4. A is false but R is true [Option ID = 11616]

5) Which one among the following is *NOT* having aliphatic R group?

[Question ID = 2905][Question Description = 105_52_PBB_SEP22_Q05]

1. Valine [Option ID = 11617]
2. Leucine [Option ID = 11618]
3. Tyrosine [Option ID = 11619]
4. Alanine [Option ID = 11620]

- 6) Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R
 Assertion A : Plants require light for maximum induction of nitrate reductase mRNA (NR mRNA).

Reason R : Phytochromes mediate the enhancement of NR.

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

[Question ID = 2906][Question Description = 106_52_PBB_SEP22_Q06]

1. Both A and R are true and R is the correct explanation of A [Option ID = 11621]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 11622]
3. A is true but R is false [Option ID = 11623]
4. A is false but R is true [Option ID = 11624]

7) Waxy starch, found in waxy mutant of maize lacks_____.

[Question ID = 2907][Question Description = 107_52_PBB_SEP22_Q07]

1. Granule bound starch synthase [Option ID = 11625]
2. Soluble starch synthase [Option ID = 11626]
3. Sucrose synthase [Option ID = 11627]

4. RuBisCO [Option ID = 11628]

8) Given below are two statements-

Statement I: Cotyledon and endospermic tissue of dicots and monocots store lipids in specialized organelles called as oleosomes which are lost during senescence.

Statement II: In senescing photosynthetic tissue, peroxisomes are converted to glyoxysomes.

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

[Question ID = 2908][Question Description = 108_52_PBB_SEP22_Q08]

1. Both Statement I and Statement II are true [Option ID = 11629]
2. Both Statement I and Statement II are false [Option ID = 11630]
3. Statement I is true but Statement II is false [Option ID = 11631]
4. Statement I is false but Statement II is true [Option ID = 11632]

9) Read the following sentences related to nucleic acid metabolism-

- A. Orotate is the first product of *de novo* purine biosynthesis.
- B. Nitrogenous bases are formed prior to ribosylation step in case of *de novo* pyrimidine biosynthesis.
- C. Thymine is different from uracil only in terms of having an extra methyl group.
- D. During DNA catabolism, DNA is first hydrolysed to oligonucleotide by phosphodiesterases, and then to mononucleotides by deoxyribonucleases.
- E. Lesch-Nyhan syndrome, a genetic disorder in human children is caused by lack of HGPRTase.

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

[Question ID = 2909][Question Description = 109_52_PBB_SEP22_Q09]

1. A, C and E only [Option ID = 11633]
2. B, C and D only [Option ID = 11634]
3. B, C and E only [Option ID = 11635]
4. A, C and D only [Option ID = 11636]

10) Which among the following is a true statement?[Question ID = 2910][Question Description = 110_52_PBB_SEP22_Q10]

1. Monosaccharides can have only one chiral carbon. [Option ID = 11637]
2. Glucose is also called as "Table Sugar". [Option ID = 11638]
3. Sucrose contains no free anomeric carbon atom. [Option ID = 11639]
4. Sucrose is a reducing sugar. [Option ID = 11640]

11) Which of the following is the correct statement related to enzyme inhibition?[Question ID = 2911][Question Description = 111_52_PBB_SEP22_Q11]

1. Mixed inhibitor binds either to E or ES complex and affects only V_{max} . [Option ID = 11641]
2. Uncompetitive inhibitor binds only to ES complex and affects both V_{max} and K_m . [Option ID = 11642]
3. Uncompetitive inhibitor can bind to both E or ES complex and affects only V_{max} . [Option ID = 11643]
4. Competitive inhibition of an enzyme cannot be reversed by adding more and more substrate. [Option ID = 11644]

12) Which of the vitamin's deficiency leads to Pellagra disease?[Question ID = 2912][Question Description = 112_52_PBB_SEP22_Q12]

1. Niacin [Option ID = 11645]
2. Pantothenic acid [Option ID = 11646]
3. Riboflavin [Option ID = 11647]
4. Thiamine [Option ID = 11648]

13) Given below are two statements-

Statement I: Sitosterol, the most abundant sterol in many plants, is the major and preferred precursor of Brassinosteroid (BR) biosynthesis.

Statement II: Brassinolide, a C-28 BR, elicits the highest biological activity of all the natural BRs identified.

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

[Question ID = 2913][Question Description = 113_52_PBB_SEP22_Q13]

1. Both Statement I and Statement II are true [Option ID = 11649]
2. Both Statement I and Statement II are false [Option ID = 11650]
3. Statement I is true but Statement II is false [Option ID = 11651]
4. Statement I is false but Statement II is true [Option ID = 11652]

14) Which among the following is the correct statement?[Question ID = 2914][Question Description = 114_52_PBB_SEP22_Q14]

1. Michaelis-Menten equation is only applicable to single-substrate reactions, not to the bisubstrate reactions. [Option ID = 11653]
2. Enzymes affect the reaction rates, not equilibria. [Option ID = 11654]
3. Specificity constant of enzymes is expressed as K_{cat}/V_{max} . [Option ID = 11655]
4. Enzymes affect the reaction rates as well as the equilibria. [Option ID = 11656]

15) Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R
Assertion A : Physical adsorption onto an inert carrier is simple procedure for enzyme immobilization, where the enzyme can be desorbed easily from the carrier by change in pH, ionic strength or substrate concentration.

Reason R : Enzyme and carrier mostly make covalent bonds with each other in physical adsorption.

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

[Question ID = 2915][Question Description = 115_52_PBB_SEP22_Q15]

1. Both A and R are true and R is the correct explanation of A [Option ID = 11657]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 11658]
3. A is true but R is false [Option ID = 11659]
4. A is false but R is true [Option ID = 11660]

16) Which among the following is the measure of DNA's superhelicity?

[Question ID = 2916][Question Description = 116_52_PBB_SEP22_Q16]

1. Twist [Option ID = 11661]
2. Linking number [Option ID = 11662]
3. Supertwist [Option ID = 11663]
4. Writhing number [Option ID = 11664]

17) Which among the following is NOT true as per Watson-Crick model of DNA?

[Question ID = 2917][Question Description = 117_52_PBB_SEP22_Q17]

1. The two strands of DNA are always antiparallel. [Option ID = 11665]
2. Each DNA strand forms a right-handed helix. [Option ID = 11666]
3. Surface of double-helix contains two grooves of equal width. [Option ID = 11667]
4. The bases occupy the core of the helix. [Option ID = 11668]

18) Match List I with List II

List I	List II
Scientist	Discovery
A. Linus Pauling	I. Structure of Bacteriorhodopsin
B. Richards Roberts and Phillip Sharp	II. Structure of α -helix (DNA)
C. Richard Henderson	III. Discovery of Introns
D. Temin and Baltimore	IV. Reverse transcriptase in RNA viruses

Choose the correct answer from the options given below:

[Question ID = 2918][Question Description = 118_52_PBB_SEP22_Q18]

1. A - I, B - III, C - II, D - IV [Option ID = 11669]
2. A - II, B - III, C - I, D - IV [Option ID = 11670]
3. A - II, B - IV, C - I, D - III [Option ID = 11671]
4. A - IV, B - III, C - II, D - I [Option ID = 11672]

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

Assertion A : Several ' σ ' factors are involved in controlling the prokaryotic gene expression.

Reason R : These ' σ ' factors have different specificity towards different promoters.

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

[Question ID = 2919][Question Description = 119_52_PBB_SEP22_Q19]

1. Both A and R are true and R is the correct explanation of A [Option ID = 11673]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 11674]
3. A is true but R is false [Option ID = 11675]
4. A is false but R is true [Option ID = 11676]

20) Read the following sentences-

- A. Mutation that affects non-essential DNA with negligible effect on the function of gene is called as non-sense mutation.
- B. The normal functioning of gene after non-sense mutation can be restored with second mutation that suppress the effect of first one, is called as non-sense suppressors.
- C. All type of mutations/alteration to DNA by mutagens have phenotypic consequences.
- D. There is a strong correlation between accumulation of mutations (or mutagenesis) and carcinogenesis.
- E. Ames test, which is used to detect bacterial mutagens, also serves as rapid screen for potential human carcinogens.

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

[Question ID = 2920][Question Description = 120_52_PBB_SEP22_Q20]

- 1. A, C and E only [Option ID = 11677]
- 2. B, C and D only [Option ID = 11678]
- 3. B, D and E only [Option ID = 11679]
- 4. A, C and D only [Option ID = 11680]

21) Which one among the following is true for DNA binding SYBR green dye used in qPCR technique?[Question ID = 2921]

[Question Description = 121_52_PBB_SEP22_Q21]

- 1. binds to minor groove of dsDNA [Option ID = 11681]
- 2. binds to major groove of dsDNA [Option ID = 11682]
- 3. binds only to major groove of ssDNA [Option ID = 11683]
- 4. binds only to minor groove of ssDNA [Option ID = 11684]

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

Assertion A : Phase-contrast microscopy is used to view the unstained cells growing in tissue culture.

Reason R : Specialized phase condenser and phase objective lens are the main components of phase-contrast microscope.

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

[Question ID = 2922][Question Description = 122_52_PBB_SEP22_Q22]

- 1. Both A and R are true and R is the correct explanation of A [Option ID = 11685]
- 2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 11686]
- 3. A is true but R is false [Option ID = 11687]
- 4. A is false but R is true [Option ID = 11688]

23) Read the following sentences-

- A. Agarose gels are used only for nucleic acids, not for proteins.
- B. Agarobiose, the basic repeat unit of agarose comprises of glucose and 3,6-anhydrogalactose.
- C. Photopolymerization is a method which utilizes riboflavin to initiate polymerization of acrylamide gels.
- D. The more the concentration of agarose/acrylamide, the smaller the pore size of the gel.
- E. In SDS-PAGE protein gels, one SDS molecules binds for two amino acids on an average.

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

[Question ID = 2923][Question Description = 123_52_PBB_SEP22_Q23]

- 1. A, B and E only [Option ID = 11689]
- 2. B, D and E only [Option ID = 11690]
- 3. C, D and E only [Option ID = 11691]
- 4. A, C and D only [Option ID = 11692]

24) Read the following statements-

- A. Hydrophobic Interaction Chromatography (HIC) is a type of Adsorption chromatography.
- B. HIC is most suitably used to separate ssDNA from dsDNA.
- C. Hydroxylapatite chromatography is most suitably used to separate ssDNA from dsDNA.
- D. Adsorption chromatography is another name of affinity chromatography.
- E. Affinity chromatography can be used for purification of nucleotides, nucleic acids and immunoglobulins along with enzymes.

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

[Question ID = 2924][Question Description = 124_52_PBB_SEP22_Q24]

1. A, B and D only [Option ID = 11693]
2. A, C and E only [Option ID = 11694]
3. B, C and D only [Option ID = 11695]
4. B, C and E only [Option ID = 11696]

25) Given below are two statements-

Statement I: Chemiluminescence arises from relaxation of excited electrons transitioning back to the ground state.

Statement II: Luminescence depends on optical excitation, therefore, problem of autofluorescence is a major limitation in these assays.

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

[Question ID = 2925][Question Description = 125_52_PBB_SEP22_Q25]

1. Both Statement I and Statement II are true [Option ID = 11697]
2. Both Statement I and Statement II are false [Option ID = 11698]
3. Statement I is true but Statement II is false [Option ID = 11699]
4. Statement I is false but Statement II is true [Option ID = 11700]

26) Given below are two statements

Statement I: Vitamin B₁₂ is synthesized by the plants and animals.

Statement II: Vitamin D₃ is synthesized in the skin from 7-dehydrocholesterol in a photochemical reaction driven by the UV component of sunlight.

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

[Question ID = 2926][Question Description = 126_52_PBB_SEP22_Q26]

1. Both Statement I and Statement II are true [Option ID = 11701]
2. Both Statement I and Statement II are false [Option ID = 11702]
3. Statement I is true but Statement II is false [Option ID = 11703]
4. Statement I is false but Statement II is true [Option ID = 11704]

27) In which form, tap roots of sugar beet store carbohydrates?[Question ID = 2927][Question Description = 127_52_PBB_SEP22_Q27]

1. Starch [Option ID = 11705]
2. Sucrose [Option ID = 11706]
3. Glucose [Option ID = 11707]
4. Raffinose [Option ID = 11708]

28) Given below are two statements

Statement I: Storage proteins have no enzymatic activity.

Statement II: Storage proteins are located in the endosperm of cereals and in the cotyledons of the most legumes, whereas in potato tubers they are found in vacuoles.

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

[Question ID = 2928][Question Description = 128_52_PBB_SEP22_Q28]

1. Both Statement I and Statement II are true [Option ID = 11709]
2. Both Statement I and Statement II are false [Option ID = 11710]
3. Statement I is true but Statement II is false [Option ID = 11711]
4. Statement I is false but Statement II is true [Option ID = 11712]

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

Assertion A: Flour of barley and maize is not suitable for baking bread.

Reason R: Flour of barley and maize contains higher glutenin content.

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

[Question ID = 2929][Question Description = 129_52_PBB_SEP22_Q29]

1. Both A and R are true and R is the correct explanation of A [Option ID = 11713]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 11714]
3. A is true but R is false [Option ID = 11715]
4. A is false but R is true [Option ID = 11716]

30) Read the following statements-

- A. Partial hydrogenation of vegetable oils converts some *trans* double bonds of unsaturated fatty acids to *cis* double bonds.
- B. *Trans* fatty acids are produced by fermentation in the rumen of dairy animals.
- C. *Trans* fats in the diet are associated with a risk of coronary heart diseases.
- D. *Trans* fats raise the level of HDL cholesterol in the blood and lower the level of LDL cholesterol.
- E. The deleterious effects of *trans* fats occur at an intake of 2 to 7 g/day.

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

[Question ID = 2930][Question Description = 130_52_PBB_SEP22_Q30]

1. A, B and E only [Option ID = 11717]
2. A, C and D only [Option ID = 11718]
3. B, C and E only [Option ID = 11719]
4. B, D and E only [Option ID = 11720]

31) What is the first stable product of photosynthesis in C₄ plants?

[Question ID = 2931][Question Description = 131_52_PBB_SEP22_Q31]

1. Malate [Option ID = 11721]
2. Oxaloacetate [Option ID = 11722]
3. Phosphoenolpyruvate [Option ID = 11723]
4. Pyruvate [Option ID = 11724]

32) Read the following statements-

- A. Rubisco enzymes catalyze the CO₂ fixation into a 3-phosphoglycerate.
- B. The eight large subunits of rubisco are encoded by the nuclear genome whereas the eight small subunits of rubisco are encoded by the chloroplast genome.
- C. The oxygenase activity of Rubisco increases more rapidly than the carboxylase activity at higher temperatures.
- D. Rubisco is activated by carbamoylation of Lys residue catalyzed by rubisco activase and inhibited by a natural transitional state analog, whose concentration rises in the dark and falls during daylight.
- E. Phosphoglycerate kinase is an important enzyme involved in the regeneration of RuBP.

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

[Question ID = 2932][Question Description = 132_52_PBB_SEP22_Q32]

1. A, B and C only [Option ID = 11725]
2. A, C and D only [Option ID = 11726]
3. A, C and E only [Option ID = 11727]
4. B, D and E only [Option ID = 11728]

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

Assertion A : The uncoupling agent 2,4-dinitrophenol (DNP) allows electron transport to proceed without ATP synthesis.

Reason R : The DNP prevents the formation of the proton gradient.

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

[Question ID = 2933][Question Description = 133_52_PBB_SEP22_Q33]

1. Both A and R are correct and R is the correct explanation of A [Option ID = 11729]
2. Both A and R are correct but R is NOT the correct explanation of A [Option ID = 11730]
3. A is correct but R is not correct [Option ID = 11731]
4. A is not correct but R is correct [Option ID = 11732]

34) Given below are two statements-

Statement I: The photorespiratory pathway takes place in chloroplast, peroxisome, and mitochondria.

Statement II: The malate-oxaloacetate shuttle provides the reducing equivalents in the form of NADH into the peroxisomes.

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

[Question ID = 2934][Question Description = 134_52_PBB_SEP22_Q34]

1. Both Statement I and Statement II are true [Option ID = 11733]
2. Both Statement I and Statement II are false [Option ID = 11734]

3. Statement I is true but Statement II is false [Option ID = 11735]
4. Statement I is false but Statement II is true [Option ID = 11736]

35) What is/ are the product(s) of cyclic photophosphorylation?

[Question ID = 2935][Question Description = 135_52_PBB_SEP22_Q35]

1. ATP, NADPH and O_2 [Option ID = 11737]
2. ATP and O_2 [Option ID = 11738]
3. ATP and NADPH [Option ID = 11739]
4. Only ATP [Option ID = 11740]

36) Given below are two statements-

Statement I: The reaction of nitrate to nitrite reduction catalyzed by nitrate reductase takes place in the chloroplasts.

Statement II: The reaction of nitrite to NH_4^+ reduction catalyzed by nitrite reductase takes place in the cytosols.

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

[Question ID = 2936][Question Description = 136_52_PBB_SEP22_Q36]

1. Both Statement I and Statement II are true [Option ID = 11741]
2. Both Statement I and Statement II are false [Option ID = 11742]
3. Statement I is true but Statement II is false [Option ID = 11743]
4. Statement I is false but Statement II is true [Option ID = 11744]

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

Assertion A : Nitrogen fixation can take place at very low oxygen concentration.

Reason R : The respiratory chain is located in the bacterial membrane and nitrogenase enzyme in the interior of the bacteroids, maintain the safe distance between O_2 and nitrogenase.

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

[Question ID = 2937][Question Description = 137_52_PBB_SEP22_Q37]

1. Both A and R are true and R is the correct explanation of A [Option ID = 11745]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 11746]
3. A is true but R is false [Option ID = 11747]
4. A is false but R is true [Option ID = 11748]

38) How many ATP molecules are required to fix one molecule of Nitrogen?[Question ID = 2938][Question Description = 138_52_PBB_SEP22_Q38]

1. 8 ATP [Option ID = 11749]
2. 16 ATP [Option ID = 11750]
3. 12 ATP [Option ID = 11751]
4. 10 ATP [Option ID = 11752]

39) How many electrons are required to reduce SO_4^{2-} to SO_3^{2-} and SO_3^{2-} to H_2S ?[Question ID = 2939][Question Description = 139_52_PBB_SEP22_Q39]

1. 6 and 2 [Option ID = 11753]
2. 2 and 6 [Option ID = 11754]
3. 8 and 2 [Option ID = 11755]
4. 2 and 8 [Option ID = 11756]

40) Given below are two statements

Statement I: HCN is a cyanogenic glycoside which inhibits the cytochrome oxidase complex of the electron transport chain.

Statement II: Mustard oil glycoside is an example of glucosinolates.

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

[Question ID = 2940][Question Description = 140_52_PBB_SEP22_Q40]

1. Both Statement I and Statement II are true [Option ID = 11757]
2. Both Statement I and Statement II are false [Option ID = 11758]
3. Statement I is true but Statement II is false [Option ID = 11759]
4. Statement I is false but Statement II is true [Option ID = 11760]

41) Given below are two statements

Statement I: *CaMV-35S* promoter is a constitutive promoter and most commonly used in monocot plants.

Statement II: The *vicilin* and *PHA* are seed specific promoters.

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

[Question ID = 2941][Question Description = 141_52_PBB_SEP22_Q41]

1. Both Statement I and Statement II are true [Option ID = 11761]
2. Both Statement I and Statement II are false [Option ID = 11762]
3. Statement I is true but Statement II is false [Option ID = 11763]
4. Statement I is false but Statement II is true [Option ID = 11764]

42) Given below are two statements

Statement I: The plastid RNA polymerase, encoded in the plastids enables the transcription of plastid genes for subunit of photosynthesis complex.

Statement II: The plastid RNA polymerase, encoded in the nucleus enables the transcription of housekeeping genes such as synthesis of rRNA and tRNA.

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

[Question ID = 2942][Question Description = 142_52_PBB_SEP22_Q42]

1. Both Statement I and Statement II are true [Option ID = 11765]
2. Both Statement I and Statement II are false [Option ID = 11766]
3. Statement I is true but Statement II is false [Option ID = 11767]
4. Statement I is false but Statement II is true [Option ID = 11768]

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

Assertion A: The *Arabidopsis* NHX1 antiport protein gene is used to engineer salt tolerance plants.

Reason R: The *Arabidopsis* NHX1 is vacuolar Na⁺ / H⁺ antiport protein.

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

[Question ID = 2943][Question Description = 143_52_PBB_SEP22_Q43]

1. Both A and R are true and R is the correct explanation of A [Option ID = 11769]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 11770]
3. A is true but R is false [Option ID = 11771]
4. A is false but R is true [Option ID = 11772]

44) Which of the following is an example of a co-dominant molecular marker?[Question ID = 2944][Question Description = 144_52_PBB_SEP22_Q44]

1. RAPD [Option ID = 11773]
2. SSR [Option ID = 11774]
3. RFLP [Option ID = 11775]
4. AFLP [Option ID = 11776]

45) Read the following statements-

- A. Functional genomics deals with determination of the function of a gene product.
- B. Functional genomics provides information about when and where particular genes are expressed.
- C. Proteomics refer to the study of set of proteins in a specific region of the cell.
- D. Structural proteomics refer to the quantitative study of protein expression between samples differing by some variable.
- E. EST, SAGE, Microarray and MPSS are example of transcriptomic technologies.

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

[Question ID = 2945][Question Description = 145_52_PBB_SEP22_Q45]

1. A, B and E only [Option ID = 11777]
2. A, B and C only [Option ID = 11778]
3. B, C and E only [Option ID = 11779]
4. A, B and D only [Option ID = 11780]

46) Match List I with List II

List I	List II
Herbicide	Target protein
A. Glyphosate	I. Glutamine synthase

B. Basta	II. 33 kDa protein
C. Glean	III. EPSPS
D. Atrazine	IV. Acetolactate synthase

Choose the correct answer from the options given below:

[Question ID = 2946][Question Description = 146_52_PBB_SEP22_Q46]

1. A - III, B - IV, C - I, D - II [Option ID = 11781]
2. A - III, B - I, C - IV, D - II [Option ID = 11782]
3. A - II, B - I, C - IV, D - III [Option ID = 11783]
4. A - II, B - IV, C - I, D - III [Option ID = 11784]

47) Which was the first Indian product tagged with geographical indication?

[Question ID = 2947][Question Description = 147_52_PBB_SEP22_Q47]

1. Bikaneri bhujia [Option ID = 11785]
2. Banarasi brocades and sarees [Option ID = 11786]
3. Darjeeling tea [Option ID = 11787]
4. Gucchi mushroom [Option ID = 11788]

48) Read the following statements-

- A. Golden rice is transgenic rice with yellow/orange-colored grains.
- B. Golden rice requires the introduction of three genes: phytoene synthase, carotene desaturase, and lycopene β -cyclase.
- C. Phytoene synthase gene from daffodil fused to a rice endosperm-specific promoter.
- D. Carotene desaturase gene was transferred from *Bacillus* bacteria.
- E. Golden rice is a genetically modified crop with high protein content.

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

[Question ID = 2948][Question Description = 148_52_PBB_SEP22_Q48]

1. A, B and C only [Option ID = 11789]
2. A, C and D only [Option ID = 11790]
3. B, C and D only [Option ID = 11791]
4. A, C and E only [Option ID = 11792]

49) Given below are two statements-

Statement I: After ingestion, the Cry proteins are dissolved in the acidic juices present in the midgut lumen.

Statement II: The toxin fragment of Cry proteins has three domains: domain I function in the pore and ion channel formations, domain II is involved in receptor recognition, while domain III binds the receptor and affects channel properties.

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

[Question ID = 2949][Question Description = 149_52_PBB_SEP22_Q49]

1. Both Statement I and Statement II are true [Option ID = 11793]
2. Both Statement I and Statement II are false [Option ID = 11794]
3. Statement I is true but Statement II is false [Option ID = 11795]
4. Statement I is false but Statement II is true [Option ID = 11796]

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

Assertion A: Calcium phosphate and polyethylene glycol enhance the uptake of DNA by plant protoplasts.

Reason R: These chemicals are used to precipitate the DNA on the outer surface of plasmalemma and the precipitate is taken up by endocytosis.

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

[Question ID = 2950][Question Description = 150_52_PBB_SEP22_Q50]

1. Both A and R are true and R is the correct explanation of A [Option ID = 11797]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 11798]
3. A is true but R is false [Option ID = 11799]
4. A is false but R is true [Option ID = 11800]

