

MINERAL NUTRITION

1. **Important features of mycorrhizal roots is / are**
1) Parasitic association 2) Absence of root hairs
3) Fungi enters into cortex 4) Nitrogen fixing
2. **Best biofertilizer for the paddy field is**
1) *Azolla* 2) *Rhizobium* 3) *Glomus* 4) *Azospirillum*
3. **Mr. Venkataraman is associated with**
1) Discovery of Spirogyra lateral conjugation 2) C4 cycle of photosynthesis
3) Algalization 4) Criteria of essentiality of nutrients
4. **Azolla, a symbiotic fern can be used as**
1) Biofertilizer & green manure 2) pollution indicator
3) Biomass 4) Bioinsecticide
5. **In Woodward's experiment plants cannot grow luxuriantly in rain water. Reason is**
1) Rain water contains toxins 2) Rain water contains less oxygen
3) Nutrients are less in rain water 4) Rain water shows more CO₂.
6. **True statement regarding criteria of essentiality**
A: Without essential element plant can not complete only vegetative stage.
B: It may be replaced by another element.
C: Essential element participates in metabolic reaction directly.
D: It should be available from soil.
1) A & B 2) B & C 3. A & D 4) Only C
7. **Element that can be absorbed both in anionic and cationic forms**
1) K 2) N 3) S 4) C
8. **Elements that crosses membrane passively**
1) C, H, O 2) N, S, P 3) C, H, K 4) K, Ca, N
9. **Total essential mineral elements are**
1) 16 2) 13 3) 6 4) 7
10. **True statement regarding uniporters**
1) Uniporters utilizes proton motive force
2) Uniporters are responsible for proton motive force
3) Uniporters can transfer both sides
4) They can carry two different solutes.
11. **Secondary active transporters are**
1) Utilize ATP 2) Coporters & Uniporters
3) Antiporters & Uniporters 4) Coporters
12. **Accumulation of solutes in plants depends on**
1) Only availability of solutes 2) Membrane structure
3) Membrane structure, availability & Energy 4) Cell wall, energy and availability
13. **Protection against salt water in plants is due to**
1) Antiporters 2) Coporters 3) Uniporters 4) All symporters
14. **Element required in minute amounts and absorbed as anion is**
1) Phosphorous 2) Boron 3) Sulphur 4) Zinc
15. **Number of essential micronutrients**
1) 6 2) 7 3) 13 4) 16
16. **Rhizobium as a biofertilizer used on**
1) All Dicots 2) Monocots 3) Fabaceae plants 4) Any plants
17. **True statement regarding Azolla**
1) It can fix atmospheric nitrogen 2) It is an angiosperm
3) It can be used only in paddy fields 4) It is a mesophyte
18. **Glomus is**
1) Bacteria 2) Fungus 3) Angiosperm 4) Cyanophyceae
19. **Azospirillum is a/an**
1) Independent bacteria 2) Endosymbiont
3) Ectoparasite 4) Symbiotic associate
20. **Protection against pathogens is imparted by**
1) *Rhizobium* 2) *Azospirillum* 3) Cyanophyceae 4) VAM

21. Application of bacteria on seeds as a fertilizer is called as
 1) Inoculation 2) Infection
 3) Bacterization 4) Algalization
22. *Azospirillum* can be used effectively on
 1) Pulsus 2) Millets 3) Tubers 4) Fruit crops
23. Root hairs cannot develop due to association of
 1) Rhizobium 2) Nostoc 3) VAM 4) Azatobacter

Mineral Nutrition

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	1	3	4	3	4	2	1	2	2	4	3	1	2	2	3	3	2	4	4
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
3	2	3																	

Nitrogen metabolism

1. Metabolism means

- 1) Nitrogen fixation into NH₃
- 2) Conversion of NH₃ into amino acids
- 3) Metabolic conversion of ionic nitrogen into simple organic constituents
- 4) Protein synthesis from amino acids

2. Role of IF2 in protein synthesis is

1. It transfers an acylated tRNA into 'P' site
2. It transfers an acylated tRNA into 'A' site
3. It transfers an formyl methionated tRNA into 'P' site
4. It transfers an formyl methionated tRNA into 'A' site

3. Nitrogen fixation means

- 1) Formation of NH₃ from NO₃
- 2) Formation of ammonia from NO₂
- 3) Formation of NH₃ from NO₂
- 4) Chemical reaction of N₂ with other elements

4. Enzyme required in biological nitrogen fixation is

- 1) Nitrate reductase 2) Nitrogenase
- 3) Nitrite reductase 4) Transaminase

5. Assertion (A) : All prokaryotes do not have ability to fix atmospheric dinitrogen

Reason (R) : All prokaryotes do not have ability to produce nitrogenase enzyme

- 1) Both A and R are true, R explains A
- 2) Both A and R are true but R does not explain A
- 3) A is true, R is false 4) A is false, R is true.

6. Co-factors required for activity of the nitrogenase enzyme is

- 1) Fe & Mo 2) Fe & S 3) S & Mo 4) Zn & Mo

7. Protein that carries oxygen for the bacterioids

- 1) Fe-Mo protein 2) Leghaemoglobin
- 3) Cytochrome 4) Protein can't carry O₂

8. Example for non-symbiotic bacteria that can fix N₂ is

- 1) *Rhizobium* 2) *Nostoc* 3) *Clostridium* 4) *Klebsiella*

9. Oxygenic prokaryote which can live independently and symbiotically

- 1) *Rhodospirillum* 2) *Rhizobium* 3) *Azatobacter* 4) *Anabaena*

10. Assertion (A) : Sequence of amino acids in protein cannot be a sequence of nucleotides in mRNA

Reason (R) : A single amino acid may be coded by many codons

- 1) Both A and R are true, R explains A
- 2) Both A and R are true but R does not explain A
- 3) A is true, R is false 4) A is false, R is true.

11. Micro organism that shows association with *Casuarina* is

- 1) *Actinomycetes* 2) *Rhizobium* 3) *Klebsiella* 4) *Anabaena*

12. A free floating cryptogamic hydrophyte that associates symbiotically with prokaryotic algae
1) *Anabaena* 2) *Azolla* 3) *Jussiaea* 4) *Cycas*
13. *Rhizobium* is
1) Gram +ve, anaerobe 2) Gram +ve, aerobe
3) Gram -ve, aerobe 4) Gram -ve, anaerobe
14. In a mutually beneficial relationship of *Rhizobium* and a leguminous plant, *Rhizobium* will not be benefited in
1) Carbohydrates from leguminous plants
2) Shelter from leguminous plants
3) Energy in the form of ATP from the plant
4) Enzymes and proteins from the host plant
15. Assertion (A): *Rhizobium* enters the host passively.
Reason (R): *Rhizobium* cannot produce any enzyme
1) Both A and R are true, R explains A
2) Both A and R are true but R does not explain A
3) A is true, R is false 4) A is false, R is true.
16. In reducing dinitrogen into two molecules ammonia the number of ATP required are
1) 8 2) 4 3) 16 4) 3
17. 'Bacteroids' are
1) Bacteria without cell wall 2) Aggregations of bacteria
3) Daughter bacteria from *Rhizobium* 4) Globose *Rhizobium* present in nodules
18. Tubular invagination of plasma membrane during infection of *Rhizobium* is called as
1) Tubules 2) Infection thread 3) Nodule 4) Bacterial colony
19. Interaction between *Rhizobium* and host result in
1) Nodule formation 2) Production of haemoglobin
3) IAA production by host plant 4) All the above
20. For a single molecule of N_2 reduction how many electrons are required
1) 16 2) 8 3) 2 4) 6
21. If the genetic code is a doublet how many amino acids cannot be coded?
1) 16 2) 20 3) 4 4) 6
22. The amino acid with maximum number of codons is
1) Serine 2) Glutamine 3) Tryptophane 4) Glycine
23. In a short sequence of mRNA with six nucleotides AUGUUA has 2 codons, AUG & UUA. This character can be described as
1) Code is a triplet 2) Code is commaless
3) Code is non-overlapping 4) All the above
24. CGU codes for arginine in virus, bacteria, fungus and all other eukaryotes. This is
1) Degeneration of code 2) Code is non-ambiguous
3) Code is universal 4) All the above
25. Wrong statement regarding termination codons
1) UAA, UGA & UAG are terminating codons
2) tRNA for anticodon UAA, UGA, UAG are present
3) In normal condition a gene ends with a terminating codon
4) Terminating codons are not seen on DNA strand
26. True statement regarding transcription
1) Two strands of DNA act as templates
2) Enzyme involved is DNA polymerase
3) In prokaryotes transcription takes place within nucleus and in Eukaryotes outside nucleus
4) Sequence of mRNA is exactly like that of the strand other than template
27. AUG codes for methionine whether as first codon or within the gene.
But recognition as first codon is by a process
1) Methylation 2) Formylation 3) Activation 4) Acylation
28. tRNA always enter into
1) 'A' site 2) 'P' site
3) 'F' site 4) Any site without discrimination

- 29. True statement regarding initiation of polypeptide chain**
 1) tRNA with amino acid enter into 'P' site
 2) IF proteins & EF-TU proteins are essential
 3) Direct utilization of ATP
 4) Integrated ribosome participates
- 30. Codon and anticodon join together by**
 1) Weak ionic bonds
 2) Hydrogen bonds
 3) Phospho diester bonds
 4) Glycosidic bonds
- 31. In peptide bond formation**
 1) Carboxyl group of amino acid in 'A' site bonds with NH₂ of amino acid in 'P' site
 2) Carboxyl group of amino acid in 'P' site bonds with NH₂ of amino acid in 'A' site
 3) NH₂ group of amino acid in 'P' site bonds with COOH group of amino acid in 'A' site
 4) NH₂ of amino acid in 'P' site bonds with NH₂ of amino acid in 'P' site
- 32. Separation of protein from 'P' site is facilitated by**
 1) IF
 2) EF-TU
 3) R1 & R2
 4) EF - TS
- 33. A DNA strand with sequence ATGUCGCT acted as template. What is the sequence of m-RNA?**
 1) TAC GGCGA
 2) UACGGCGA
 3) AGCGACAU
 4) AUGCCGCT
- 34. Length of m RNA is 1020 A⁰. What can be the length of protein after translation**
 1) 1020 amino acids
 2) 300 amino acids
 3) 100 amino acids
 4) 340 amino acids
- 35. The number of nucleotides in a DNA that can code for a protein of 600 amino acids**
 1) 1800
 2) 6120
 3) 2520
 4) 3600
- 36. Length of DNA that can code for a protein of 450 amino acids**
 1) 1350 A⁰
 2) 1260 A⁰
 3) 4590 A⁰
 4) 2700 A⁰
- 37. A DNA of 2040 nucleotides started transcribing and translation. For every one second 5 amino acids are synthesized. In how much time protein synthesis will be completed**
 1) 6 min 48 sec
 2) 1 min 8 sec
 3) 3 min 24 sec
 4) 2 min 16 sec
- 38. In a DNA of length 2380 A⁰ length 301st, 302nd & 303rd nucleotides are T,A,C respectively. While transcribing the sequence in m RNA mutation occurred on 303rd nucleotide and 'C' replaced with 'A'. What can be the length of protein after translation**
 1) 100 amino acids
 2) 700 amino acids
 3) 233 amino acids
 4) 760 amino acids
- 39. The first amino acids in all proteins immediately after translation is**
 1) Depends on type of protein
 2) Valine
 3) Methionine
 4) Glycine
- 40. In a triplet code maximum possible codes is**
 1) 61
 2) 64
 3) 20
 4) 49

Nitrogen metabolism

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
3	3	4	2	1	1	2	3	4	1	1	2	3	3	4	3	4	2	4	2
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
3	1	4	3	2	4	2	1	1	2	2	3	2	3	4	3	2	1	3	2