MS JUNIOR COLLEGE
Hyderabad

BOTANY
II-Year Final Exam Important Questions

LAQ's

1. Explain calvin cycle.
2. Give an account of glycolysis. Where does it occur? What are the end products? Trace the fate of this product in both aerobic and anaerobic respiration.
3. Explain the reactions of krebs cycle.
4. Explain briefly the various processes of recombinant DNA technology.
5. You are Botanist working in the area of plant breeding. Describe the various steps that you will undertake to release a new variety.
6. Describe the tissue culture technique and what are the advantages of tissue culture over conventional method of plant breeding in crop improvement programmes.
7. Give a brief account of the tools of recombinant DNA technology.
8. Write brief essay on microbes in sewage treatment .

SAQ's

1. Define and explain water potential.
2. What is meant by plasmolysis? How is it practically useful to us?
3. How does ascent of sap occur in tall trees?
4. "Transpiration is a necessary evil". Explain.
5. Transpiration and photosynthesis –a compromise. Explain.
6. Define transpiration? Explain the structure and mechanism of opening and closing of stomata.
7. Explain the steps involved in the formation of root nodule.
8. Write briefly about enzyme inhibitors.
9. Explain different types of cofactors.
10. Tabulate any eight difference between C_3 and C_4 plants/cycles.
11. Describes in brief photo respiration.
12. Why is the respiratory pathway referred to as and amphibolic pathway? Explain.
13. The net gain of ATP for the complete aerobic oxidation of glucose is 36. Explain.
14. Define RQ. Write a short note on RQ.
15. Describe briefly the process of fermentation.
16. "Bacteria are friends and foes of man" - discuss.
17. Write a note on agriculture/ horticulture application of auxins.
18. Write the physiological responses of gibberellins in plants.
19. Write any Four physiological effects of cytokinins in plants.
20. What are the physiological processes that are regulated by ethylene in plants?
21. Write short notes on seed dormancy?
22. How are bacteria classified on the basis of morphology?
23. Explain the conjugation in bacteria.
24. How are the bacteria classified on the basis of number and distribution of flagella?
25. Explain the chemical structure of Viruses.
26. Explain the structure of TMV
27. Explain the structure of T-even bacteriophages.
28. Draw the schematic/diagrammatic presentation of the lac operon.
29. Mention the advantages of selecting pea plant for experiment by Mendel.

30. Differentiate between the following:
    (a) Dominant and recessive , (b) Homozygous and Heterozygous,
31. Explain the Law of Dominance using a monohybrid cross.
32. Define and design a test-cross.
33. Explain Co-dominance
34. Explain the incomplete dominance with example.
35. Write a brief note on chromosomal mutations and gene mutations.
36. Define transformation in Griffith's experiment. Discuss how it helps in the identification of
    DNA as genetic material.
37. What are the contributions of George Gamow, H.G.Khorana, Marshall Nirenberg in deciphering the genetic code?
38. What are the differences between DNA and RNA
39. Write about the important features of Genetic code?
40. Write briefly on nucleosomes.
41. Write short notes on restriction enzymes
42 .What are the different methods of insertion of recombinant DNA into the host cell?
43. List out the beneficial aspects of transgenic plants.
44. What is a bio-reactor? Describe briefly the stirring type of bio-reactor.
45. Give a brief account of pest resistant plants.
46. What are some bio-safety issues concerned with genetically modified crops?
47. Give few examples of biofortified crops. What benefits do they offer to the society?
48. What are biofertiliser? Write a brief note on them.
49. Explain the structure of Choloroplast? Draw a neat labeled diagram.
50. Give a brief account of Bt. Cotton.
51. Explain the nitrogen cycle, giving relevant examples.
52. Write a short note on SCP
53. What is the chemical nature of biogas? Explain the process of biogas production.

VSAQ's (2 Marks)

1. What are Porins? What role do they play in diffusion?
2. Define Water potential. What is the value of water potential of pure water?
3. Differentiate Osmosis from Diffusion.
4. How does guttation differ from transpiration?
5. Does transpiration occur at night? Give an example.
6. Compare the pH of guard cells during the opening and closing of stomata.
7. How does ABA bring about the closure of stomata under water stress condition?
8. Compare imbibing capacities of pea and wheat seeds.
9. Define hydroponics.
10. Give two examples of essential elements that act activators for enzymes.
11. Name the essential mineral elements that play an important role photolysis of water.
13. Name two aminoacids in which sulphur is present.
14. Name two elements whose symptoms of deficiency first appear in younger leaves.
15. Explain the role of the pink colour pigment in the root nodule of legume plants. What is it called?
16. Which element is regarded as the 17^{th} essential element? Name a disease caused by its deficiency.
17. Name the essential elements present in nitrogenase enzyme. What type of essential element are they?
18. Write the balanced equation of nitrogen fixation.
19. Name any two essential elements and the deficiency diseases caused by them.
20. How are prosthetic groups different from co-factors?

21. What is meant by 'feed-back' inhibition?
22. Distinguish between apoenzyme and cofactor.
23. What are apoplast and symplast.
24. What are non-competitive enzyme inhibitors? Mention one example.
25. What do the four digit of an enzyme code indicate?
26. Who proposed 'lock and key hypothesis' and induced fit hypothesis?
27. Where does the photolysis of H_{2O} Occur? What is its Significance?
28. Name the processes which take place in the grana and stroma regions of chloroplast.
29. Of the basic raw material of photosynthesis, what is reduced? What is oxidized?
30. Define the law of limiting factors proposed by Blackman.
30. What is the primary acceptor of Co_2 in C3 plants? What is first stable compound formed in a calvin cycle?
31. What is the primary acceptor of Co_2 in C4 plants? What is the compound formed as a result of primary carboxylation in the C4 pathway?
32. What is the specific role if $F_{0\text{-}F1}$ particals in respiration?
33. What is the common pathway for aerobic and anaerobic respirations? Where does it take place?
34. Why is the RQ of fats less than of carbohydrates?
37. What is apical dominance? Name that causes it.
38. What is meant by bolting? Which hormone causes bolting?

39. Define respiratory climatic. Name the PGR associated with it.
40. What is ethephon? Write its role in agriculture practices.
41. Which of the PGRs is called stress hormone and why?
42. What do they understand by Vernalisation? Write its significance.
43. Name the bacteria which is a common inhabitant of human intestine. How is it used in biotechnology?
44. What are pleomorphic bacteria? Give an example.
45. What is plasmid? What is its significance.
46. What is sex pilus? What is its function.
47. What is conjugation? Who discovered it and in which organism.
48. What is transformation? Who discovered it and in which organism
49. What is transduction? Who discovered it and in which organism
50. What is the shape of T4 phage? What is its genetic material?
51. What is lysozyme and what is its function?
52. Who proposed chromosome theory of Inheritance?
53. Explain the term phenotype and genotype
54. What is point mutation? Give an example.
55. What is the function of histones in DNA packaging?
57. Who proved that DNA is genetic material? What is the organism they worked out.
58. What are the components of a nucleotide?
59. Given below is the sequence of coding strand of DNA in a transcription unit .
    3' AATGCAGCTATTAGG-5'
    Write the sequence of
    (a) its complementary strand (b) the mRNA
60. Name any 3 viruses which have RNA as the genetic material.
61. What is meant by point mutation? Give an example.
62. What is the function of the codon – AUG.
63. Define stop codon? Write the codons.
64. The proportion of nucleotides in a given nucleic acid are : Adenine 18%, Guanine 30%, Cytosine 42%, Uracil 10%. Name the nucleic acid and mention the number of strands in it.
65. What are molecular scissors? Where are they obtained from?
66. Name any two artificially restructured plasmids.

67. What is EcoR1? How does it function?
68. What are cloning vectors? Give an example.
69. What is the full form of PCR? How is it useful in biotechnology?
70. What is palindromic sequence?
72. What is GEAC and what are its objectives?
73. Name the nematode that infects the roots of tobacco plants. Name the strategy adopted to prevent this infestation.
74. For which variety of Indian rice, has a patent been filed by USA company.
75. What is green revolution? Who is regarded as father of green revolution?
76. Name two Semi-dwarf varieties of rice developed in India.
77. Give two example of wheat varieties introduced in india, which are high yielding and disease resistant.
78. Give two example of fungi used in SCP production.
79. Which two species of sugarcane were crossed for better yield?
80. What is meant by biofortilication?
81. Why does “swiss cheese’ have big holes. name the bacteria responsible for it.
82. Name a microbe used for statin production. How do statins lower blood cholesterol level?
83. Why do we prefer to call secondary waste water treatment as biological treatment?
84. What is Nucleopolyhedrovirus is being used for now a days?
85. Write the most important characteristic that Aspergillus niger, chostriduium butylicum and Lactobacillus share.
86. Name an immunosuppressive agent. From where it is obtained?
87. Name the scientists who were credited for showing the role of penicillin as an antibioitic.
88. What are competitive enzyme inhibitors? Mention one example.
89. How has the discovery of antibiotics helped mankind in the field of medicine?
90. Name any 2 industrially important enzymes.
92. In which food would you find lactic acid bacteria? Name the bacterium.
93. Name any 2 genetically modified crops.

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