

Bajaj College of Science, Wardha

Practice Sheet During Lockdown

B .Sc.Sem VI

Subject: Microbiology

**MOLECULAR BIOLOGY,
BIOINSTRUMENTATION AND BIOTECHNOLOGY**

Long answer questions (7 Marks)

1. Explain in detail Lac operon
2. What do you mean by genetic suppression. Explain intragenic suppression with suitable example.
3. Explain in detail base pair substitution and frame shift mutation
4. What is intergenic and intragenic suppression
5. Explain the process of Homologous recombination in bacteria
6. Write a note on following
 - A) spontaneous mutation
 - B) suppressor genes
7. Give detail account on Transformation
8. Explain in detail Conjugation
9. Discuss in detail transduction
10. Discuss in detail induced mutation
11. Write a note on chemical mutagens
12. Describe the role of following as a mutagenic agent
 - A) Agents modifying Purines and pyrimidines
 - B) Radition
13. Write a note on gene within gene and split gene.
14. Describe the following features of genetic code
 - A) Non overlapping code
 - B) code is comma less.
15. Write a note on
 - A) codons

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B) anticodons

16. Describe the transcription process in prokaryotes.
17. Discuss the events in prokaryotic elongation of polypeptide chain
18. Discuss about structure and function of RNA polymerase
19. Explain in detail about Wobble hypothesis
20. Discuss on colinearity of gene structure & its polypeptide products.
21. Write a note on preparation of pure sample of DNA
22. Give detail account on various enzymes used in DNA manipulation
23. Describe PCR technique and add a note on its applications.
24. Explain in detail about plasmid vectors used in rDNA technology
25. Describe in detail about different methods used for selection of Recombinants
26. Discuss about different types of restriction endonucleases.
27. Discuss on technique of DNA fingerprinting.
28. Give an account on construction of Genomic libraries
29. Differentiate between Genomic Library and cDNA library
30. Give the general concept of biosensor with its applications
31. Give the applications of enzymes in various industries
32. Explain the process of production of enzyme amylase by solid state fermentation
33. Give the concept, method & significance of enzyme immobilization
34. Explain in detail about ethics and hazards of biotechnology
35. Explain in detail analytical centrifugation
36. Give the principle and methodology of Sodium dodecyl sulphate
37. Polyacrylamide gel electrophoresis
38. Give detail account on ion exchange chromatography
39. Explain isotopic tracer technique and give its applications
40. Discuss about detection and measurement of radioactive isotope by scintillation counter.
41. Explain in detail Gel filtration chromatography
42. Explain in detail UV-Visible spectroscopy
43. Explain the method for recombinant insulin production
44. Explain in detail transgenic plant B T cotton
45. Explain monoclonal antibody production by hybridoma technology

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46. Discuss the production of BCG vaccine
47. Describe in detail production of salk polio vaccine.
48. Explain the production of interferon by any one method.
49. Discuss in detail about edible vaccines

Short Questions (3.5 Marks)

1. Write a short note on concept of gene
2. Differentiate between monocistronic and polycistronic genes
3. Write a note on directed mutation
4. Comment on intergenic suppression
5. Describe frameshift mutation
6. Explain Griffiths experiment
7. Explain the concept of bacterial conjugation
8. Describe site specific recombination
9. Explain the concept of transduction
10. Write a note on transposable elements
11. Explain Davis U tube experiment
12. Genetic code is triplet, justify the statement
13. Explain the initiation of bacterial translation
14. Explain the termination of bacterial translation
15. Comment on promoter and operator regions involved in transcriptions
16. Explain the scope of rDNA technology
17. Comment on Type III restriction enzymes
18. Explain how DNA fragments size can be analyzed
19. Give the characteristics of ideal vectors
20. Comment on cosmids
21. Write a note on blue-white screening
22. Comment on selectable marker genes used in vectors
23. Write a note on plasmid vector
24. Comment on yeast artificial chromosome
25. Give the applications of DNA fingerprinting
26. Explain the mechanism of action of DNA ligase
27. Explain how bacteriophage can be useful in rDNA technology

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28. Give the applications of PCR
29. Give the applications of biosensor
30. Give the applications of biochips
31. Comment on glucose biosensor
32. Write a note on immobilized enzymes
33. Give the applications of amylase enzymes in industry
34. Comment on immobilization on invertase enzyme
35. Write a note on hazards of biotechnology
36. Comment on differential centrifugation
37. Give the applications of UV-Visible spectroscopy.
38. Give the principle of thin layer chromatography
39. Give the principle of size exclusion chromatography
40. Give the principle of ion exchange chromatography
41. Explain different applications of isotopic tracer technique.
42. Give the significance of scintillation counter
43. Write a note on Soya sauce
44. Give the concept of BT cotton
45. Write a note on recombinant insulin
46. Comment on DNA vaccine
47. Give the applications of monoclonal antibodies
48. Write a note on gene therapy

Short Questions (2 Marks)

1. What is spontaneous mutation?
2. Define gene within gene.
3. What is split gene.
4. What is ovalbumin gene
5. What is recon?
6. What is cistron and muton
7. What is genome and plasmone
8. What is tautomerism
9. What is mustard gas
10. Name the agents producing distortions in DNA

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11. How X-ray bring about mutation
12. What are thymine dimmers
13. How thymine dimmers are repaired
14. Define loci and alleles
15. What is beta globin gene
16. Define Polycistronic gene
17. What is conjugation bridge
18. What do you mean by Hfr
19. Define frameshift mutation
20. What is missense mutation
21. What is nonsense mutation
22. What is Base analogue
23. Name the amino acids having one codon and six codons
24. What do you understand by the term charged tRNA?
25. During initiation of protein synthesis, the FMet-tRNA binds to which site of ribosome?
26. What do you mean by ochre, amber and opal?
27. What is the contribution of Dr. Hargobind Khurana
28. Name the termination codons.
29. Which was the first codon deciphered?
30. Which enzymes involved in attachment of amino acids to tRNA.
31. Name any three proteins involved in elongation process of translation.
32. Which protein is responsible for separation of large and small subunits of ribosomes
33. What is blunt end ligation?
34. What do you mean by minisatellite DNA
35. What is the significance of Taq polymerase
36. Define gene library
37. What is Genomic Library and cDNA library
38. How Alkaline phosphatase is useful in rDNA technology
39. What are shuttle vectors
40. Enlist the enzymes used in preparation of genomic DNA
41. What do you mean by blue-white screening
42. What are marker genes? Give one example.

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43. What is amperometric biosensor
44. What is Nanobiotechnology
45. Give two possible hazards of biotechnology.
46. What are biochips? Give one example.
47. What is the application of sodium alginate in enzyme technology
48. What do you mean by solid state fermentation?
49. What is microarray?
50. What do you mean by immobilized enzymes
51. Give Beers and Lamberts law
52. What is electrophoretic mobility
53. What is GM counter
54. Enlist the factors affecting electrophoretic mobility
55. Give one application of mass spectrometry.
56. What is the chemical nature of agarose
57. What are ion exchange resins
58. Why are isotopes used as tracers?
59. Define oriental fermented food
60. What is diphtheria toxoid
61. What is the significance of golden rice?
62. What is gene therapy
63. What is soya sauce
64. What is DNA vaccine
65. What is edible vaccine
66. Give use of Hypoxanthine aminopterin thymidine medium
67. What is the significance of HGPRT enzyme in hybridoma technology

For any queries, feel free to contact us on E-mail/ Whats App No.:

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