

Tumkur University, Tumkur
Department of studies and Research in Biotechnology
Ph.D., Entrance Examination June/July-2026

PART-A: Research Methodology-Key Answers

1. C. Median
2. A. The difference between the highest and lowest values
3. B. A subset of the population
4. D. Histogram
5. C. 0 and 1
6. B. Qualitative Data
7. A. To compare three or more population means simultaneously
8. C. Pie Chart
9. D. All of the above
10. B. To prevent exposure to infectious agents
11. A. To ensure research is conducted responsibly and protects participants
12. C. Fabrication of data
13. B. Presents another person's work without proper acknowledgment
14. D. Submitting the same manuscript to different journals and publishing it more than once.
15. A. Committee on Publication Ethics (COPE)
16. C. It can lead to false conclusions and undermine scientific integrity
17. B. To assign credit and responsibility for the work
18. A. Listing an individual as an author without their consent
19. D. To manage communication with the journal and readers regarding the manuscript
20. A. Checking the journal's editorial board, peer-review process, and indexing status
21. C. To promote transparency and maintain trust in research findings

- 22. B. Manipulating research materials, equipment, processes, or data to misrepresent results
- 23. A. A publication freely accessible online to readers without subscription fees
- 24. D. Article Processing Charges (APCs) paid by authors, institutions, or funders
- 25. B. The legal rights granted to a publisher over a published work, usually transferred or licensed by the author
- 26. A. To obtain legal rights to publish, distribute, and protect the work
- 27. D. To help authors identify suitable journals for their research manuscripts
- 28. C. The manuscript title, abstract, keywords, or subject area
- 29. C. Properly citing all sources used in the work
- 30. D. Retraction of publications and disciplinary action

PART-B:
Cognate Subject: Biotechnology-Key Answers

- 31. C. Storage of genetic material and control of cell activities
- 32. B. Phospholipids and proteins
- 33. C. Absence of a true nucleus
- 34. A. Peptidoglycan
- 35. B. Survival under adverse environmental conditions
- 36. A. *Streptomyces*
- 37. C. Substitution of one nucleotide for another
- 38. A. Transformation
- 39. B. Golgi apparatus
- 40. D. Cyclins and cyclin-dependent kinases (CDKs)
- 41. B. Energy can neither be created nor destroyed, only transformed from one form to another
- 42. C. Phosphoanhydride bonds between phosphate groups

43. B. NAD⁺
44. C. Oxygen (in aerobic respiration)
45. D. Gas
46. C. Glycogen
47. A. Thylakoid membranes of chloroplasts
48. B. Glucagon
49. C. Type of reaction they catalyze
50. B. Self-splicing introns
51. D. Hershey and Chase experiment
52. B. Ability to store, replicate, and transmit information
53. A. Mitochondria (and chloroplasts in plants)
54. C. Cellular respiration and ATP production
55. D. Primase
56. A. Helicase.
57. B. Causing DNA strand breaks
58. D. DNA glycosylase
59. A. To control when, where, and how much a gene is expressed
60. C. Male fertility
61. A. Metaphase
62. D. One mutant allele sufficient to express the disorder
63. A. Combining DNA from different sources
64. A. Recombinant human insulin

- 65. D. All of the above
- 66. C. Both coding and non-coding DNA sequences
- 67. B. Inserting into genes or regulatory regions
- 68. A. A labeled nucleic acid sequence used to detect complementary sequences
- 69. D. Detection of specific DNA or RNA sequences
- 70. B. Frederick Sanger
- 71. C. Silencing specific genes by targeting mRNA
- 72. B. BLAST
- 73. C. B lymphocytes (plasma cells)
- 74. B. The body's own immune system produces antibodies after exposure to an antigen
- 75. A. Two heavy chains and two light chains
- 76. D. Epitope
- 77. D. IgE
- 78. B. Recognition of graft antigens as foreign by the recipient's immune system
- 79. C. Autoimmunity
- 80. A. CHO (Chinese Hamster Ovary) cells
- 81. C. Controlled aseptic conditions
- 82. D. All of the above
- 83. A. Auxins and cytokinins
- 84. D. All of the above
- 85. B. Maintain long-term viability of biological materials
- 86. D. DMEM (Dulbecco's Modified Eagle Medium)
- 87. C. Proliferate indefinitely under suitable culture conditions

- 88. A. Viruses
- 89. D. Stem Cell Factor (SCF)
- 90. C. GFP (Green Fluorescent Protein)
- 91. C. Organic pollution in water
- 92. D. All of the above
- 93. B. *Rhizobium*
- 94. C. In situ bioremediation
- 95. D. All of the above
- 96. B. Vegetable oils or animal fats
- 97. B. Difficult or impossible to culture in vitro
- 99. A. Antibiotics
- 100. C. Converts crude product into a pure, usable form