



VINAYAKA MISSION'S RESEARCH FOUNDATION, SALEM
(Deemed to be University under section 3 of the UGC Act 1956)

Ph.D Entrance Test – November – 2025

Faculty of Interdisciplinary Studies / Medical Biotechnology

Instructions / Note:

1. Answer all the questions. Each question carries one mark.
2. No negative marks for wrong answers.
3. Read each question carefully and answer in the OMR sheet provided for each question with only blue/ black pen to fill the circles in the OMR Sheet.
4. Question number 1 - 35 questions belong to Research Methodology component and Question number 36-70 questions belong to the subject at PG level
5. Return the question paper along with the OMR sheet.

36. The cytoskeleton of a eukaryotic cell is primarily composed of _____
 - A. Cellulose fibers
 - B. Microtubules, microfilaments, and intermediate filaments
 - C. Peptidoglycan strands
 - D. Phospholipid bilayer
37. Which organelle is known as the “powerhouse” of the cell?
 - A. Ribosome
 - B. Mitochondrion
 - C. Endoplasmic reticulum
 - D. Golgi apparatus
38. DNA replication in prokaryotes begins at _____
 - A. Terminator site
 - B. Origin of replication
 - C. Promoter site
 - D. Operator region
39. Restriction enzymes are used in genetic engineering to _____
 - A. Join DNA fragments
 - B. Cut DNA at specific sequences
 - C. Replicate plasmids
 - D. Transcribe mRNA



VINAYAKA MISSION'S RESEARCH FOUNDATION, SALEM

(Deemed to be University under section 3 of the UGC Act 1956)

40. PCR technique was developed by _____
- A. James Watson
 - B. Kary Mullis
 - C. Rosalind Franklin
 - D. Paul Berg
41. The basic unit of inheritance is _____
- A. Protein
 - B. Gene
 - C. Enzyme
 - D. Chromosome
42. The most abundant biomolecule in living organisms is _____
- A. Lipids
 - B. Proteins
 - C. Water
 - D. Carbohydrates
43. The main function of lysosomes is _____
- A. Protein synthesis
 - B. Digestion of cellular waste
 - C. Lipid transport
 - D. Photosynthesis
44. A buffer solution resists change in _____
- A. Temperature
 - B. pH
 - C. Pressure
 - D. Ionic strength
45. Antibiotics like ciprofloxacin act by inhibiting _____
- A. Ribosomal subunit
 - B. DNA gyrase
 - C. RNA polymerase
 - D. Peptidoglycan synthesis
46. The capsid of a virus is composed mainly of _____
- A. RNA
 - B. Lipid
 - C. Protein
 - D. Carbohydrate



VINAYAKA MISSION'S RESEARCH FOUNDATION, SALEM
(Deemed to be University under section 3 of the UGC Act 1956)

47. Sterilization by autoclave uses _____
- A. Dry heat
 - B. UV light
 - C. Steam under pressure
 - D. Filtration
48. The first antibody produced during an immune response is _____
- A. IgA
 - B. IgE
 - C. IgM
 - D. IgG
49. The human immunodeficiency virus (HIV) primarily infects _____
- A. B lymphocytes
 - B. CD4+ T cells
 - C. Macrophages
 - D. Platelets
50. A Type I hypersensitivity reaction is mediated by _____
- A. IgM
 - B. IgE
 - C. IgA
 - D. IgG
51. Transplant rejection is mainly due to _____
- A. Autoantibodies
 - B. Cytotoxic T cells
 - C. Bacterial infection
 - D. Complement activation
52. Sensitivity of a diagnostic test refers to its ability to _____
- A. Detect true positives
 - B. Detect true negatives
 - C. Predict future disease
 - D. Estimate prevalence
53. Enzyme-linked immunosorbent assay (ELISA) is an example of _____
- A. Molecular diagnostics
 - B. Immunodiagnosics
 - C. Radio diagnostics
 - D. Biochemical assay



VINAYAKA MISSION'S RESEARCH FOUNDATION, SALEM
(Deemed to be University under section 3 of the UGC Act 1956)

54. Cold chain management is essential for ____
- A. Enzyme stability
 - B. Vaccine preservation
 - C. Blood collection
 - D. Tissue fixation
55. The separation in chromatography is based on differences in ____
- A. Density
 - B. Molecular weight
 - C. Affinity for stationary phase
 - D. Color
56. Beer–Lambert law is associated with ____
- A. Chromatography
 - B. Spectrophotometry
 - C. Centrifugation
 - D. Electrophoresis
57. Gamma radiation can penetrate ____
- A. Glass
 - B. Paper
 - C. Metal
 - D. Deep tissue
58. Neurons transmit impulses through ____
- A. Actin filaments
 - B. Synapses
 - C. Ribosomes
 - D. Lysosomes
59. Genetic diseases such as cystic fibrosis are caused by ____
- A. Viral infection
 - B. Single-gene mutations
 - C. Autoimmune reactions
 - D. Protein misfolding
60. Ethical approval for biomedical research involving humans is provided by ____
- A. R&D committee
 - B. Institutional Ethics Committee
 - C. Laboratory technician
 - D. Pharmacovigilance officer



VINAYAKA MISSION'S RESEARCH FOUNDATION, SALEM
(Deemed to be University under section 3 of the UGC Act 1956)

61. The process by which RNA folds into secondary structures like hairpins is primarily driven by _____
- A. Ionic bonding
 - B. Hydrogen bonding
 - C. Van der Waals forces
 - D. Disulfide bonds
62. Non-Mendelian inheritance includes all except _____
- A. Codominance
 - B. Incomplete dominance
 - C. X-linked traits
 - D. Simple dominance
63. The enzyme reverse transcriptase is used to _____
- A. Amplify DNA directly
 - B. Convert RNA into DNA
 - C. Ligate two DNA fragments
 - D. Translate mRNA
64. The electron transport chain is located in _____
- A. Cytoplasm
 - B. Inner mitochondrial membrane
 - C. Nucleus
 - D. Golgi complex
65. Autoimmunity can result from _____
- A. Tolerance to self-antigens
 - B. Molecular mimicry
 - C. Defective apoptosis
 - D. Both B and C
66. Sensitivity and specificity are statistical measures of _____
- A. Diagnostic accuracy
 - B. Drug potency
 - C. Vaccine efficiency
 - D. Antibody titer
67. Radioisotopes are safely handled in laboratories by _____
- A. Using lead shielding and dosimeters
 - B. Wearing cotton gloves
 - C. Keeping in plastic bottles
 - D. Refrigerating



VINAYAKA MISSION'S RESEARCH FOUNDATION, SALEM
(Deemed to be University under section 3 of the UGC Act 1956)

68. During gene recombination, Holliday junctions are resolved by _____
- A. DNA polymerase
 - B. Endonucleases
 - C. Helicases
 - D. Ligases
69. Oxidative stress induces lysosomal permeability primarily through _____
- A. ATP hydrolysis
 - B. Lipid peroxidation
 - C. Protein phosphorylation
 - D. Ion channel activation
70. Checkpoint inhibitors in cancer therapy mainly target _____
- A. CD4 receptors
 - B. PD-1/PD-L1 pathways
 - C. Toll-like receptors
 - D. BCR signaling

