



**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 Arts & Science / Biochemistry**

**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 activity of the enzyme pyruvate carboxylase can be modified allosterically by \_\_\_\_\_
- A. pyruvate
  - B. ATP
  - C. Isocitrate
  - D. Acetyl-CoA
37. Calcium level in the blood is regulated by the \_\_\_\_\_
- A. Thyroid
  - B. Parathyroid
  - C. Posterior pituitary
  - D. A and B
38. All of the following are hormones of the anterior pituitary except \_\_\_\_\_
- A. Human growth hormone (GH)
  - B. Follicle-stimulating hormone (FSH)
  - C. Parathyroid hormone (PTH)
  - D. Thyroid-stimulating hormone (TSH)
39. The secretions from which of these glands differs between males and females?
- A. Adrenal
  - B. Parathyroid
  - C. Gonadal
  - D. Pancreas



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

40. Which of these hormones is made by the posterior pituitary?
- A. FSH
  - B. LH
  - C. ACTH
  - D. ADH
41. Only a very small proportion of fatty acids is actually free in the body. The immense majority of them are linked to proteins, CoA or ACP, depending on their location. This is a major advantage because it prevents \_\_\_\_\_
- A. Disorganize membranes on account of their detergent power
  - B. Being metabolized out of control
  - C. Leak out from cells and not be available for use
  - D. Inactivation of glycolysis by inhibition of phosphofructokinase
42. Which gland controls basal metabolic rate (BMR)?
- A. Thyroid
  - B. Parathyroid
  - C. Testes
  - D. Pancreas
43. G proteins \_\_\_\_\_
- A. Act as receptors for some hormones
  - B. Are signal transducers through the membranes
  - C. Synthesize intracellular second messengers
  - D. Catalyze the synthesis of cAMP from ATP
44. A patient of chronic alcoholism may present a thiamine deficiency (B1 vitamin), because alcohol inhibits its intestinal absorption. In this case the functioning of which enzyme would be impaired?
- A. Glutamate dehydrogenase
  - B. Succinate dehydrogenase
  - C. Isocitrate dehydrogenase
  - D. Pyruvate dehydrogenase
45. Cytochromes are \_\_\_\_\_
- A. Hydrogen atoms transporters
  - B. Proton acceptors
  - C. Hydruere ions acceptors
  - D. Electron acceptors



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

46. All digestive enzymes have as a common feature that they \_\_\_\_\_
- A. Are secreted as precursors
  - B. Catalize hydrolysis reactions
  - C. Are activated by pH changes
  - D. Act in the digestive tract lumen
47. Proponents of a carbohydrate-poor diet argue that unlike conventional diets with the same amount of calories, their varied methods \_\_\_\_\_
- A. Have a greater satiety power
  - B. Increases the offer of essential nutrients
  - C. Improves insulin secretion
  - D. Diminishes the risk of ketosis
48. Domestic cooking oil is made up mainly of \_\_\_\_\_
- A. Phospholipids
  - B. Free fatty acids (FFA)
  - C. Triacylglycerols (TAG)
  - D. A mixture of TAG and free fatty acids
49. The addition of polyunsaturated fatty acids in the diet has a beneficial effect on hypertriglyceridemia and it has been proposed that this happens because they diminish the expression of SREBP1e, something that diminishes the synthesis of \_\_\_\_\_
- A. Glycerol phosphate acyl transferase
  - B. Acetyl CoA carboxylase
  - C. Fatty acid synthase
  - D. All of the above
50. Which of the following does not qualify as a degenerative disease?
- A. Atherosclerosis
  - B. Obesity
  - C. Hypertension
  - D. Alzheimer's disease
51. There is a finite number of binding sites for fatty acids in blood plasma, this means an increase in fatty acid concentration can give rise to an increase in Free Fatty Acids (FFA). This may happen if there is \_\_\_\_\_
- A. Stress, with catecholamine liberation
  - B. Increase in fat ingestion
  - C. Decrease in fatty acid oxidation
  - D. Hyperglycemia



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

52. This system has the power to directly bypass the usual endocrine controls in the body.
- A. Reproductive
  - B. Nervous
  - C. Circulatory
  - D. Digestive
53. Which reagent was used for the specific cleavage?
- A. Chymotrypsin
  - B. Trypsin
  - C. V8 protease
  - D. Cyanogen bromide
54. If this peptide is normally part of a multi-meric protein composed of four identical subunits, what procedure might be needed prior to performing the Edman degradation?
- A. The four subunits should be separated and sequenced individually.
  - B. Two specific cleavages should be done to create two sets of fragments.
  - C. Peptide bonds should be broken using hydrazine.
  - D. Disulfide bonds should be reduced with mercapto ethanol.
55. The activities of the kinases dependent on AMP and cAMP have in common the stimulation of \_\_\_\_\_
- A. Glycolysis
  - B. Beta oxidation
  - C. Glycogenolysis
  - D. Translocation of GLUT 4 to the plasma membrane
56. Which reagent would break only one peptide bond in the intact peptide?
- A. Cyanogen bromide
  - B. V8 protease
  - C. Chymotrypsin
  - D. Trypsin
57. Which among the following is the leading reason for blindness in children worldwide?
- A. Glaucoma
  - B. Vitamin A deficiency
  - C. Colour blindness
  - D. Cataracts
58. Beriberi is caused due by the deficiency of \_\_\_\_\_
- A. Vitamin B12
  - B. Vitamin B2
  - C. Vitamin B6
  - D. Vitamin B1



## VINAYAKA MISSION'S RESEARCH FOUNDATION, SALEM

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

59. The substrate for Enzyme A is a sugar phosphate while the substrate for Enzyme B is a sugar alcohol. Which amino acid is likely to be found in the active site of both enzymes?
- A. Leucine
  - B. Tryptophan
  - C. Aspartate
  - D. Glutamine
60. Which of the following nutrient deficiencies cause megaloblastic anemia?
- A. Pyridoxine
  - B. Niacin
  - C. Folic acid
  - D. Cobalamin
61. Which characteristic is different when comparing the open-chain forms of D-sorbose and D-ribose?
- A. The number of primary alcohol groups
  - B. The number of secondary alcohol groups
  - C. The number of stereogenic centers
  - D. The number of carbonyl groups
62. Deficiency of niacin is caused due to the deficiency of \_\_\_\_\_
- A. Scurvy
  - B. Rickets
  - C. Pernicious anemia
  - D. Pellagra
63. The Best source of vitamin A is \_\_\_\_\_
- A. Poultry
  - B. Sweet potato
  - C. Legumes
  - D. Dairy products
64. Scientific name of vitamin K is \_\_\_\_\_
- A. Ascorbic acid
  - B. Pantothenic Acid
  - C. Tocopherol
  - D. Phytonadione
65. Which property is shared by these two polysaccharides?
- A. Both function mainly in energy storage
  - B. Both have coiled shapes
  - C. Both are homopolysaccharides
  - D. Both have the same molecular weight



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

66. A disease that becomes unusually widespread and even global in its reach is referred to as \_\_\_\_\_
- A. Epidemic
  - B. Pandemic
  - C. Spanish flu
  - D. Hyperendemic
67. Zika virus is related to which of the following diseases \_\_\_\_\_
- A. Dengue
  - B. Yellow fever
  - C. Japanese encephalitis
  - D. All of the above
68. Which vitamin deficiency causes scurvy?
- A. Vitamin E
  - B. Vitamin D
  - C. Vitamin C
  - D. Vitamin A
69. Deficiency of which vitamin leads to night blindness?
- A. Vitamin B12
  - B. Vitamin A
  - C. Vitamin C
  - D. Vitamin D
70. Osteoporosis is caused due to the deficiency of which mineral?
- A. Magnesium
  - B. Potassium
  - C. Calcium
  - D. Zinc

