

CODE: 41

Booklet Serial No.

Signature Invigilator

**Maulana Azad National Urdu University
PhD Allied Health Sciences (MLT)
Entrance Test May 2026
Question Paper cum Answer Script**

Hall Ticket No.

OMR Serial No.

Time: 2hrs

Maximum Marks: 70

INSTRUCTIONS FOR CANDIDATES

1. Candidate should write their Hall Ticket number and OMR number on the space provided above. Candidate should not write their Hall Ticket and OMR number at any other place.
2. This question booklet contains (24) pages. The Candidate should check the booklet before taking the Test. In case of any discrepancy, a new booklet may be provided by the Invigilator.
3. The question booklet consists of Part A and Part B. Part A contains 50 multiple-choice questions, each with four options. The candidate must select the correct answer and mark the corresponding circle on the OMR sheet using a blue or black ballpoint pen. Each question carries one mark. No marks will be awarded if the correct answer is not properly marked against the corresponding question number in the OMR sheet. Further, if more than one option is marked for any question, no marks will be awarded for that question.
4. Part B consists of four descriptive questions, each carrying 5 marks. The answers must be written only in the 8-page answer booklet provided. No additional answer booklet will be issued.
5. There are no Negative marks.
6. At the end of Entrance Test, candidates are allowed to take their question booklet and handover the OMR Sheet and answer booklet to the Invigilator.

Part A
Section 1 – Research Methodology

1. Which of the following best defines a null hypothesis (H_0)?
 - (A) A statement that predicts a significant difference between variables
 - (B) A statement that assumes no relationship or difference between variables
 - (C) A hypothesis that is always accepted in research
 - (D) A statement that proves the research hypothesis
2. Which of the following describes hypothesis testing?
 - (A) Only the process of collecting data
 - (B) Accepting a hypothesis without evidence
 - (C) Using statistical methods to accept or reject a hypothesis
 - (D) Only describing the results
3. Which statistical test is commonly preferred when the sample size is small ($n < 30$) and the population standard deviation is unknown?
 - (A) Z-test
 - (B) t- test
 - (C) Chi-square test
 - (D) ANOVA
4. Which of the following statements correctly differentiates parametric and non-parametric tests?
 - (A) Parametric tests do not require any assumptions, while non-parametric tests do require prior assumptions
 - (B) Both tests require normally distributed data
 - (C) Non-parametric tests are only used for large sample sizes
 - (D) Parametric tests assume normal distribution of data, while non-parametric tests do not
5. In a positively skewed (right-skewed) distribution, which of the following relationships is correct?
 - (A) Mean < Median < Mode
 - (B) Mean = Median = Mode
 - (C) Mean > Median > Mode
 - (D) Median > Mean > Mode
6. Which of the following best describes kurtosis in a statistical distribution?
 - (A) The measure of symmetry or skewness of data
 - (B) The measure of central tendency of data
 - (C) The measure of peakedness and tail heaviness of a distribution
 - (D) The measure of dispersion of data

7. Under CPCSEA guidelines, which of the following is mandatory for institutions using laboratory animals?
- (A) Approval from pharmaceutical companies
 - (B) Registration with CPCSEA
 - (C) Permission from local police
 - (D) Approval from WHO
8. Which principle is emphasized by CPCSEA to minimize animal use in research?
- (A) Replacement, Reduction, and Refinement (3Rs)
 - (B) Expansion principle
 - (C) Maximum utilization principle
 - (D) Randomization principle
9. What is the significance of randomized control trial?
- (A) It reduces the bias between cause and effect
 - (B) It reduces the need of data analysis
 - (C) It is only used in observational case studies
 - (D) It increases the sample size
10. A researcher wants to test whether there is a relationship between individuals above the age of 30 with both one or both parents as diabetic and their fasting blood sugar > 110 mg/dL. Which one of the following tests should be applied.
- (A) ANOVA
 - (B) Pearson's correlation
 - (C) Students t-test
 - (D) Chi-squared test
11. Which one of the following is **not** one of the assumptions of a parametric test?
- (A) Data should be normally distributed
 - (B) The population must not have the same variance
 - (C) Variable considered as cause must be a dependent variable
 - (D) The observations should be independent
12. Percentile means_____
- (A) Dataset average value
 - (B) The most repeating value in a set of data
 - (C) The value below which a certain percentage of the observations fall
 - (D) Difference between minimum and maximum value

13. In a hypothesis test, the calculated p-value = 0.03 and the level of significance (α) = 0.05. What is the correct decision?
- (A) Accept the null hypothesis (B) Reject the null hypothesis
(C) Increase the sample size (D) None of them
14. Which of the following is the necessary for conducting literature search?
- (A) Systemic review of the existing published research studies and relevant recent information of the topic
(B) Preparing a research report
(C) Studying the laboratory protocols
(D) Collecting raw experimental data
15. According to CPCSEA ethical guidelines, which is the most important requirement for a protocol that has approval of euthanization?
- (A) Use of readily available procedure without any approval
(B) Pain induction to assure effectiveness
(C) Institutional Animals Ethics Committee (IAEC) approval
(D) Euthanasia only after completing all experiments
16. The best way to eliminate the sampling error is by
- (A) Doing non-random sampling (B) Increasing the sample size
(C) Decreasing the sampling size (D) Doing random sampling
17. Blood groups belong to which type of variable?
- (A) Discrete (B) Continuous
(C) Categorical (D) Ratio
18. Which statement is **not** a prerequisite for performing ANOVA?
- (A) Sampling should be random
(B) Residual components should be normally distributed
(C) There should exist an equality of variances
(D) The additivity effect should be high
19. The dependence of a variable on an independent variable is best discussed by:
- (A) Regression analysis (B) Correlation analysis
(C) Correlation coefficient (D) Both B and C

20. Which of the following is not a statistical package for a researcher to carryout data analysis?
- (A) IBM. SPSS (B) NVivo
(C) SAS (D) PDB
21. Which of the graph can be used to represent a categorical data?
- (A) Histogram (B) Bar charts
(C) Trend graphs (D) Receivers operating curve
22. Which electronic data base is used to access nursing and primary journals virtually in English language?
- (A) ABI/INFORM (B) MEDLINE
(C) CINAHL (D) ERIC
23. Which stands true for a negatively skewed data
- (A) Mode<Median<Mean (B) Mean<Median<Mode
(C) Mode>Median>Mean (D) Mean>Median>Mode
24. A measuring instrument that provides consistent result can be best described as:
- (A) Reliable (B) Valid
(C) Practical (D) Both valid and practical
25. Which of the following mentioned below does not represent a formal experimental design?
- (A) Latin square design
(B) Factorial design
(C) Randomized block design
(D) Before and after with control design

Section 2 – Allied Health Sciences (MLT)

26. At what stage, sampling for amniocentesis is performed?
- (A) 24-28 weeks (B) 15-20 weeks
(C) 10-15 weeks (D) 2-4 weeks

27. Ethidium bromide is an intercalating dye which binds to which of the following components of the cell?
- (A) DNA (B) Membrane proteins
(C) DNA and RNA (D) Mitochondrial membrane
28. Rapid heartbeat (>100 beats/min) is medically termed as:
- (A) Palpitation (B) Bradycardia
(C) Arrhythmia (D) Tachycardia
29. In medical laboratories, the commonly used chemical disinfectant for surface decontamination contains which of the following chemical?
- (A) Ethanol (B) Sodium azide
(C) Sodium hypochlorite (D) Trisodium citrate
30. Which of the following antibody reagent is suitable for identifying *Du* variants and partial D variants?
- (A) Anti-Human Globulin (AHG) (B) Monoclonal IgM
(C) Monoclonal Blend (IgM + IgG) (D) Polyclonal (IgG)
31. What is the source of carbohydrates (energy) that is present in citrate base anticoagulants necessary for the survival of the cells after collecting the blood?
- (A) Mannose (B) Dextrose
(C) Sucrose (D) Glucose
32. The UV-range in UV spectrophotometer is between 200-400 nm. At what wavelength/wavelengths (nm) may a protein sample show absorption maximum?
- (A) ~ 260 nm (B) ~ 276 nm
(C) ~ 276 nm and 280 nm (D) ~ 280 nm
33. Which amino acid/amino acids are responsible for quantification of protein content using spectrophotometry?
- (A) Alanine, Histidine and Valine
(B) Arginine and leucine
(C) Tryptophan, phenylalanine and tyrosine
(D) Proline and isoleucine

34. Which of the following is widely used as a reactant for various chemiluminescence-based molecular biology techniques such as western blot and ELISA?
- (A) Luminol (B) Acridine orange
(C) Coomassie brilliant blue (D) Propidium iodide
35. Which of the following is the commonly used primary marker for colorectal cancer?
- (A) Phosphatidylserine
(B) Alpha-Fetoprotein (AFP)
(C) Carcinoembryonic Antigen (CEA)
(D) p53
36. In human brain, the corpus callosum is the largest set of fibers belonging to which of the following fiber groups?
- (A) Commissural fibers (B) Projection fibers
(C) Association fibers (D) Bundle of Purkinje fibers
37. High levels of unconjugated bilirubin cause the typical pale-yellow color of the skin and sclera of the eyes. It is produced as result of breakdown of erythrocytes (RBCs) in jaundice. Which of the following RBC content and enzyme is responsible for its production?
- (A) Albumin and heme oxygenase
(B) Heme and heme oxygenase
(C) Heme and heme reductase
(D) Cytochrome C and cyclooxygenase
38. Which of the following is primarily the most active form of Thyroid hormone?
- (A) T4 (B) TSH
(C) Calcitonin (D) T3
39. The α -pancreatic cells of the pancreas are responsible for the secretion of which of the following hormones?
- (A) Growth hormone (B) Glucagon
(C) Insulin (D) Leptin

40. Which of the following is **not** the component of bile?
- (A) Lecithin (B) Mucin
(C) Lipase (D) Bilirubin
41. What is the amount of total protein present in cerebrospinal fluid?
- (A) 60-90 mg/dL (B) 10-25 mg/dL
(C) 100-120 mg/dL (D) 15-45 mg/dL
42. If a person has fasting blood sugar more than 110 mg/dL but the postprandial blood sugar remains below 140 mg/dL, then the person is suffering from which of the following conditions?
- (A) Frank diabetes (B) Impaired fasting glycemia
(C) Type I diabetes (D) Morning hyperglycemia
43. What healthy range of glycated hemoglobin (HbA1C) in humans?
- (A) 5.5-6.6% (B) 6.5-7%
(C) 4-5.5% (D) 4.5-6.5%
44. Paul Bunnell test is used to which of the following virus in physical suspects?
- (A) Rhinovirus (B) Epstein–Barr virus (EBV)
(C) Corona virus (D) Human papilloma virus
45. Pertussis or whooping cough is commonly caused by which of the following pathogen?
- (A) *Bordetella* (B) *Pasteurulla*
(C) *Treponema* (D) *Brucella*
46. The autoanalyzers through which serum or plasma glucose levels can detected use which of the following enzymes as part of their chemical reaction?
- (A) Glucokinase
(B) Enolase
(C) Glucose oxidase
(D) Glyceraldehyde 3-phosphatase dehydrogenase

47. What is the normal level of urea in serum?
- (A) 40-60 mg/dL (B) 20-40 mg/dL
(C) 30-50 mg/dL (D) 60-80 mg/dL
48. The color development in ELISA is because of which of the following enzymes?
- (A) Glucose oxidase (B) Catalase
(C) Horseradish peroxidase (D) Superoxide dismutase
49. When the blood pressure drops, which hormone is responsible for the conversion of angiotensin I to angiotensin II?
- (A) Renin (B) Adrenaline
(C) Dopamine (D) Growth hormone
50. Which of the following is not used in estimation of total bilirubin in a blood serum sample?
- (A) Diazotized sulfanilic acid (B) Potassium oxalate
(C) Standard (D) Methanol

Part B (Descriptive Questions)

Answer all four questions

20 Marks

Research Methodology

- Write short notes on the following
 - Design of the research project
 - Objectives of research
 - Criteria of good research
 - Research and scientific methods
- Explain in detail, any two in the context of research design :
 - Confounded relationship
 - Research hypothesis
 - Experimental and control groups

Allied Health Sciences (MLT)

3. Write short notes on the following
- A. Enzyme linked immunosorbent assay (ELISA)
 - B. Blood grouping & Rh typing
 - C. Gel electrophoresis
 - D. Glycolysis
4. Answer any **two** of the following-
- A. What is the purpose of kidney function test (KFT)? What are the important biomarkers that are assayed in KFT? What are their significances?
 - B. Discuss the various levels of organisation of structure (primary, secondary, tertiary and quaternary) in proteins.
 - C. Write note on the following:
 - 1. Amniocentesis
 - 2. Recombinant DNA technology
