

Seat No.

Total No. of Pages : 14

Ph.D. Entrance Examination 2024-25**Biochemistry/Biotechnology****Sub Code: 58808**

Day and Date : Wednesday, 13-11-2024**Total Marks : 100****Time : 04.00 pm to 06.00 pm**

Instruction :

1. All questions are compulsory.
 2. Each question carries 2 marks.
 3. Answers should be marked in the given OMR answer sheet by darkening the appropriate option.
 4. Use black ball point pen only for marking the circle. Do not make any stray mark on the OMR Answer Sheet.
 5. Follow the instructions given on OMR Sheet.
 6. Rough work shall be done on the sheet provided at the end of question paper.
 7. Only non programmable calculators are allowed.
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1. Tools that are for searching research topics

- a) Books, journal, scientific discussion, internet
- b) Books, journal, discussion. Library,
- c) Scientific journal, discussion internet
- d) None of these

2. Innovation can best be defined as

- a) the generation of new ideas.
- b) the evolution of new ideas
- c) the opposite of creativity.
- d) of the successful exploitation of new ideas

3. The research studies that explore the effect of one thing on another and more specifically, the effect of one variable on another are known as
 - a) Causal research
 - b) Applied research
 - c) Conclusive research
 - d) Exploratory research
4. Questionnaire is a :
 - a) Research method
 - b) Measurement technique
 - c) Tool for data collection
 - d) Data analysis technique
5. The assumption about the expected result of the research is called the
 - a) Hypothesis
 - b) Synopsis
 - c) Objectives
 - d) None of the above
6. The essential qualities of a researcher are
 - a) Spirit of free enquiry
 - b) Reliance on observation and evidence
 - c) Systematization or theorizing of knowledge
 - d) All the above

7. In the process of conducting research "Formulation of Hypothesis" is followed by
 - a) Statement of Objectives
 - b) Analysis of Data
 - c) Selection of Research Tools
 - d) Collection of Data
8. A research paper is a brief report of research work based on
 - a) Primary Data only
 - b) Secondary Data only
 - c) Both Primary and Secondary Data
 - d) None of the above.
9. Information is.....
 - a) Raw Data
 - b) Processed Data
 - c) Input data
 - d) Organized data
10. An example of scientific knowledge.....
 - a) Laboratory and field work
 - b) Social traditions and customs
 - c) Laboratory work
 - d) None of the above

11. Which of the following is the first step in starting the research process?
 - a) Searching sources of information to locate problem.
 - b) Survey of related literature
 - c) Identification of problem
 - d) Searching for solutions to the problem
12. Which of the following features are considered as critical in qualitative research?
 - a) Collecting data with the help of standardized research tools.
 - b) Design sampling with probability sample techniques.
 - c) Collecting data with bottom-up empirical evidence.
 - d) Gathering data with top-down schematic evidence.
13. Which one among the following statement is true in the context of the testing of hypotheses?
 - a) It is only the alternative hypotheses that can be tested.
 - b) It is only the null hypotheses that can be tested
 - c) Both the alternative and the null hypotheses can be tested.
 - d) Both the alternative and the null hypotheses cannot be tested.
14. Who can successfully conduct Research?
 - a) Someone who is a hard worker
 - b) Possesses post-graduation degree
 - c) Has studied research methodology
 - d) Possesses thinking and reasoning ability

15. A research problem is feasible only when
- a) It has utility and relevance
 - b) It is new and adds something to knowledge
 - c) It is researchable
 - d) All of the above
16. Which one among the following statements is correct in context to research?
- a) Research refers to a series of systematic activity or activities undertaken to find out the solution to a problem.
 - b) It is a systematic, logical and unbiased process wherein verification of hypotheses. data analysis. interpretation and formation of principles can be done.
 - c) It is an intellectual inquiry or quest towards truth.
 - d) All of the above
17. What are the core elements of a dissertation?
- a) Introduction; Data Collection; Data Analysis: Conclusions and Recommendations
 - b) Executive Summary: Literature Review: Data Gathered; Conclusions; Bibliography
 - c) Research Plan; Research Data; Analysis; References
 - d) Introduction: Literature Review: Research Methodology, Results: Discussions and Conclusions
18. Research problem is selected from the standpoint of
- a) Social
 - b) Financial support
 - c) Researcher's interest
 - d) Availability of relevant literature

19. Ethics can be defined as :
- a) A process of reasoning in terms of the right thing to do.
 - b) Rules governing society
 - c) The basis of the criminal code.
 - d) All of the above
20. Integrity and transparency are fundamental:
- a) Issues in business.
 - b) Requirements in research.
 - c) Ethical principles in research
 - d) Methodologies in research.
21. In carrying out the research, the researcher should engage properly and thoroughly with:
- a) The media.
 - b) The literature of the topic
 - c) Their peers.
 - d) All the above
22. The term "Intellectual Property Rights covers
- a) Copyrights
 - b) Know-how
 - c) Trade dress
 - d) All of the above

23. Which is not a type of intellectual property?
- a) Trade secrets
 - b) Trademarks
 - c) Horne loans
 - d) Copyrights
24. We review the relevant literature to know:
- a) What is already known about the topic
 - b) What concepts and theories have been applied to the topic
 - c) Who are the key contributors to the topic
 - d) All of the above
25. Beers Lambert's Law is...
- a) a linear relationship between the intensity of a UV absorbance and the concentration of the analyte.
 - b) an inverse relationship between the IR stretching frequency and the energy of light.
 - c) used to calculate the chemical shift (δ) of an NMR resonance relative to that of the tetramethylsilane standard.
 - d) used to derive a molecular formula from the mass-to-charge ratio of an analyte.
26. Salting out process involves...
- a) Precipitation of proteins using ammonium sulphate
 - b) Precipitation of proteins using copper sulphate
 - c) Precipitation of proteins using sodium chloride
 - d) None of these

27. Resting membrane potential is always between
- a) -10 to 50 mV
 - b) 10 to 50 mV
 - c) -40 to -90 V
 - d) 40 to 90 mV
28. Which of the following is not biogenic amine?
- a) Dopamine
 - b) Epinephrine
 - c) Norepinephrine
 - d) GABA
29. BLAST stands for
- a) Base Local Alignment Search Tool
 - b) Basic local alignment sequence tool
 - c) Basic locally aligned similar tool
 - d) Basic lower alignment sequence tool
30. Which would be the best method to separate a protein that binds strongly to its substrate?
- a) Gel filtration
 - b) Affinity chromatography
 - c) Cation exchange
 - d) Anion exchange

31. Which of the following is a type of RNA involved in protein synthesis?
- a) snRNA
 - b) rRNA
 - c) yRNA
 - d) dsRNA
32. The stretch of codons between AUS and a stop codon is called
- a) open reading frame
 - b) TATA box
 - c) collinearity
 - d) degenerate
33. In isoelectric focusing, proteins are separated on the basis of their
- a) relative content of positively charged residue only
 - b) relative content of negatively charged residue only
 - c) size
 - d) relative content of positively and negatively charged residue
34. In reverse phase chromatography, the stationary phase is made
- a) non-polar
 - b) polar
 - c) either non-polar or polar
 - d) none of these

35. During S phase of animal cell, cycle, which of the following cyclin and edk involved?
- a) Cyclin D and edk 2
 - b) Cyclin E and edk 2
 - c) Cyclin A and edk2
 - d) Cyclin B and edk2
36. A normal eukaryotic human cell remains hours in interphase
- a) 23 hours
 - b) 24 hours
 - c) 11 hours
 - d) 1 hour
37. In a Nucleotide, the nitrogen base is joined to the sugar molecule by.....
- a) Phosphodiester bond
 - b) Glycosidic band
 - c) Hydrogen bond
 - d) None of the above
38. What is the preferred method for sterilization of air for fermentation
- a) UV Sterilization
 - b) Steam Sterilization
 - c) Filler Sterilization
 - d) Autoclave

39. Fructose and Glucose can be distinguished by
- a) Seliwanoffs's reagent
 - b) Benedict's reagent
 - c) Fehling's reagent
 - d) Barfoed's reagent
40. proteins after hydrolysis yields prosthetic group.
- a) Simple
 - b) Conjugate
 - c) Filamentous
 - d) Trypsin
41. In World War II, the fermentation was used for the production of
- a) Alcohol
 - b) Antibiotics
 - c) Wine
 - d) Beer
42. The bioreactor is not capable of
- a) Producing aseptic conditions
 - b) Meeting containment regulations
 - c) Controlling pH
 - d) Produce electricity

43. Coefficient of variation also known as
- a) Coefficient of Quartile deviation
 - b) Standard deviation
 - c) Relative standard deviation
 - d) Coefficient of Mean deviation
44. Which is not step of Descriptive Statistics?
- a) Collecting
 - b) Organizing
 - c) Hypothesis testing
 - d) Presenting Data
45. Gaucher's disease is associated with which of following cell organelles?
- a) Lysosomes
 - b) Peroxisomes
 - c) Cytoplasm
 - d) Mitochondria
46. Cell wall less bacteria are called.....
- a) Protozoa
 - b) Virus
 - c) Microplasma
 - d) Yeast

47. The portion of the growth curve where a rapid growth of bacteria is observed is known as
- a) Lag phase
 - b) Logarithmic phase
 - c) Stationary phase
 - d) Decline phase
48. The main function of lysosomes is
- a) Excretion
 - b) Synthesis
 - c) Secretion
 - d) Digestion
49. In cell wall cellulose are bound with linkage (bond)
- a) α -1,4.
 - b) β -1,4.
 - c) γ -1,4.
 - d) ϵ -1,4.
50. Human liver and kidney cells are mostly arrested inphase of cell cycle
- | | |
|-------------------|-------------------|
| a) G ₀ | b) G ₁ |
| c) S | d) M |

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-- ROUGH WORK --