No. of Printed Pages : **5**

21CHE2S2LP

M.Sc. II Semester Degree Examination, Sept./Oct. - 2024

CHEMISTRY

SEC-2 : Research Methodology

(NEP)

Time : 1 Hour Maximum Marks : 30

---

1. Determine which option does not function as a Literature Survey engine :

(A) Scopus (B) Web of Science

(C) Google Scholar (D) HTML

2. Identify the metric that evaluates both the productivity and citation impact of a scholar's publications :

(A) Bibliography (B) Mendeley (C) h-index (D) Sci-Hub

3. Which metric reflects the average number of citations per article for a journal over the past two years, as indexed by Clarivate's Web of Science ?

(A) Students-t (B) i10 Index

(C) Journal Impact Factor (JIF) (D) Global indexing

4. Which platform offers unrestricted access to a vast collection of research papers and books, circumventing copyright laws ?

(A) C++ (B) Web crawler (C) NCBI (D) Sci-Hub

5. What is the comprehensive definition of research ?

(A) A point of view, an attitude of inquiry, or a frame of mind.

(B) The systematic investigation and study of materials and sources to establish facts and reach new conclusions.

(C) Both (A) and (B)

(D) None of the above

6. How is a "research problem" best described ?

(A) A specific issue, difficulty, or contradiction in research

(B) A gap in knowledge that the research aims to address

(C) Only (A)

(D) Both (A) and (B)

7. Expand the acronym NCBI.

(A) National Centre for Biochemistry Information

(B) National Centre for Biotechnology Information

(C) National Centre for Biotechnology Investigation

(D) National Centre for Biomechanics Investigation

8. Identify the option that does not represent a type of research :

(A) Fundamental research (B) Applied research

(C) Theoretical research (D) Global research

9. Which statement is not a characteristic of rigorous research ?

(A) It gathers new knowledge or data from primary or first-hand sources.

(B) The researcher avoids only seeking data that supports their hypotheses.

(C) The researcher adheres to procedures leading to potentially unpopular conclusions.

(D) It is a direct replication of systematic and accurate investigation.

10. Which option does not qualify as an objective of research ?

(A) Application objective (B) Temporary objective

(C) Factual objective (D) Theoretical objective

11. What is data ?

(A) Facts and statistics collected together for reference or analysis.

(B) Quantities, characters, or symbols on which operations are performed by a computer, which may be stored and transmitted as electrical signals and recorded on magnetic, optical, or mechanical recording media.

(C) Things known or assumed as facts, forming the basis of reasoning or calculation.

(D) All of the above.

12. How should a hypothesis be framed ?

(A) The hypothesis should propose a relationship between dependent and independent variables.

(B) The hypothesis should propose a relationship between a set of variables.

(C) The hypothesis should propose a relationship between two variables.

(D) All of the above.

13. What does "sample size" refers to in data collection ?

(A) The measure of the number of individual samples used in an experiment

(B) The measure of the number of average samples being used in an experiment

(C) Both (A) and (B)

(D) None of the above

14. When does sampling bias occur ?

(A) When some members of a population are systematically more likely to be selected.

(B) When some members of a population are systematically more likely to be selected in a sample than others.

(C) When some members of a population are avoided.

(D) When some members of a population are selected randomly.

15. Why is experimental replication important ?

(A) When studies are replicated and achieve the same or similar results as the original study.

(B) It gives greater validity to the findings if a researcher can replicate a study's results.

(C) It means that it is more likely that those results can be generalized to the larger population.

(D) All of the above.

16. Which of the following is an example of causation ?

(A) Rain clouds cause rain (B) Exercise causes muscle growth

(C) Both (A) and (B) (D) None of the above

17. Which of the following is not included in good laboratory practices ?

(A) Correct use of equipment (B) Standard operating procedures

(C) Correct training (D) Working alone

18. What is ChemDraw used for ?

(A) A drawing tool

(B) Allows users to draw chemical structures and reactions

(C) To draw biological objects and pathways

(D) All of the above

19. What is the use of ChemSketch ?

(A) A drawing tool

(B) Calculates a variety of molecular descriptors

(C) Generates IUPAC names for small molecules

(D) All of the above

20. Good lab practices are essential for conducting research safely. Which of the following is not allowed in the lab ?

(A) Good hygiene (B) Use proper storage containers

(C) Don't work alone (D) Food and drink

21. What are the key components in a technical presentation ?

(A) You - Your experience, knowledge, reputation, insight and understanding- are the heart and soul of the presentation.

(B) Them. "They" are the audience

(C) Question and Answers

(D) All of the above

22. Which of the following is not an example of technical writing ?

(A) Standard operating procedures (SOP)

(B) Software user documentation (help files)

(C) Troubleshooting guides, and legal disclaimers

(D) Lyrics

23. There are many different citation styles used across different academic disciplines for research article writing, but they fall into three basic approaches to citation. Which of the following is not an approach to citation ?

(A) Parenthetical citations (B) Numerical citations

(C) i10 index (D) Note citations

24. Which of the following is not a feature of MS Excel ?

(A) Drawing the molecular structure

(B) Sorting of tabulated data

(C) Adding formulas to the sheet

(D) Inserting a pivot table

25. In Statistics, what is the standard deviation ?
(A) A measure of the amount of variation
(B) Dispersion of a set of values
(C) Both (A) and (B)
(D) None of the above

26. In statistics, what does the term variance signify ?
(A) A measure of dispersion.
(B) A measure of how far a set of numbers is spread out from their average value.
(C) Expectation of the squared deviation of a random variable from its population mean or sample mean.
(D) All of the above.

27. Which of the following statements is not applicable to Student's t-distribution ?
(A) It is any member of a family of continuous probability distributions that arise when estimating the mean of a normally distributed population.
(B) The t-distribution plays a role in a number of widely used statistical analyses, including Student's t-test.
(C) Student's t-distribution also arises in the Bayesian analysis of data from a normal family.
(D) The t-distribution is asymmetric and inverted bell-shaped, like the normal distribution.

28. Expand ANOVA.
(A) Analysis of vector
(B) Analysis of variable
(C) Analysis of variance
(D) None of the above

29. Which of the following statements is true for the Chi squared test ?
(A) It is a statistical hypothesis test
(B) It is used to determine whether there is a statistically significant difference between the expected frequencies and the observed frequencies
(C) Both (A) and (B)
(D) None of the above

30. What is Data Analysis ?
(A) It is a process of inspecting data
(B) It is a process of cleansing and transforming data
(C) It is modelling data with the goal of discovering useful information, informing conclusions and supporting decision-making.
(D) All of the above

- o O o -