



**M.Sc. II Semester Degree Examination, September/October - 2022**  
**21CHE2S2LP SEC 2 : RESEARCH METHODOLOGY**

Time : 1 Hour

Maximum Marks : 30

1. The purpose of basic research is :
  - (a) Documentation, discovery and interpretation of data
  - (b) Research and Development (R & D) of methods and systems for the advancement of human knowledge
  - (c) Both (a) and (b)
  - (d) Only (b)
  
2. The features of applied research is :
  - (a) It accesses and uses accumulated theories, knowledge, methods and techniques, for a specific, state, business or client-driven purpose.
  - (b) It is the practical application of science.
  - (c) Applied research usually has specific commercial objectives related to products, procedures or services.
  - (d) All of the above.
  
3. The source of the data for qualitative research is :
  - (a) In-depth interviews
  - (b) Focus groups
  - (c) Standardized interviews
  - (d) All of the above
  
4. The true statement of quantitative research :
  - (a) Quantitative research is a research strategy that focuses on quantifying the collection and analysis of data.
  - (b) It is formed from a deductive approach where emphasis is placed on the testing of theory, shaped by empiricist and positivist philosophies.
  - (c) Both (a) and (b)
  - (d) Only (a)
  
5. Which of the following is not a source of literature ?
  - (a) Journals
  - (b) Books
  - (c) News
  - (d) Conferences



6. The meaning of research problem is :
- (a) It is a specific issue, difficulty or contradiction in research
  - (b) It is a gap in knowledge that you will aim to address in your research
  - (c) Only (a)
  - (d) Both (a) and (b)
7. The expansion of NCBI is :
- (a) National Center for Biochemistry Information
  - (b) National Center for Biotechnology Information
  - (c) National Center for Biotechnology Investigation
  - (d) National Center for Biomechanics Investigation
8. Which of the following is not a type of research ?
- (a) Fundamental research                      (b) Applied research
  - (c) Theoretical research                      (d) Global research
9. Which of the following is not a characteristic of the 'Research' ?
- (a) It gathers new knowledge or data from primary or first-hand sources.
  - (b) The researcher resists the temptation to seek only the data that support his hypotheses.
  - (c) The researcher is willing to follow his procedures to the conclusions that may be unpopular.
  - (d) It is an exact copy of systematic and accurate investigation.
10. Which of the following is not an objective of research ?
- (a) Application objective                      (b) Temporary objective
  - (c) Factual objective                          (d) Theoretical objective
11. 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
12. The key components in a technical presentations are :
- (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 & answers
  - (d) All of the above



13. 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
14. Which of the following is not an approach to citation ?
- (a) Parenthetical citations
  - (b) Numerical citations
  - (c) i10 index
  - (d) Note citations
15. Which of the following is not the 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
16. In statistics, the meaning of standard deviation is :
- (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
17. In statistics, the term variance signifies :
- (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 means or sample mean
  - (d) All of the above
18. Which of the following statement 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.



19. Expand ANOVA :

- (a) Analysis of vector
- (b) Analysis of variable
- (c) Analysis of variance
- (d) None of the above

20. The statement true for Chi-squared test is :

- (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) None of the above
- (d) Both (a) and (b)

21. Data analysis means :

- (a) It is a process of inspecting data
- (b) It is a process of cleansing and transforming data
- (c) It is a modelling data with the goal of discovering useful information, informing conclusions and supporting decision-making.
- (d) All of the above

22. Plotting in data indicates :

- (a) A plot is a type of citations used in ANOVA
- (b) A plot is a graphical technique for representing a data set
- (c) A plot is a usually a graph showing the relationship between two or more variables.
- (d) Both (b) and (c)

23. List out the true option in the case of a bar chart or a bar graph :

- (a) It presents categorical data with rectangular bars with heights or lengths proportional to the values that they represent
- (b) The bars can be plotted vertically or horizontally
- (c) A vertical bar chart is sometimes called a column chart
- (d) All of the above

24. Curve fitting in data analysis is :

- (a) The process of constructing biodegradable material
- (b) This is an algorithm
- (c) Curve fitting has the best fit to a series of data points
- (d) Loop



- 25.** ANOVA testing is :
- (a) It is used to presents categorical data with rectangular bars with heights or lengths proportional to the values that they represent
  - (b) Used to find out whether the differences between groups of data are statistically significant
  - (c) It is used for a modelling data with the goal of discovering useful information, informing conclusions, and supporting decision - making
  - (d) It is used for trouble shooting guides, and legal disclaimers
- 26.** Which of the following is not an example of data collection software ?
- (a) Forms on fire
  - (b) GoSpotCheck
  - (c) ChemOffice
  - (d) Replsly Mobile CRM
- 27.** Hypothesis testing :
- (a) Is a form of statistical inference that uses data from a sample to draw conclusions about a population parameter or a population probability distribution
  - (b) It is a software user documentation
  - (c) A measure of how far a set of numbers is spread out from their average value
  - (d) All of the above
- 28.** Which of the following is not the feature(s) of ChemDraw ?
- (a) NMR spectrum simulation ( $^1\text{H}$  and  $^{13}\text{C}$ )
  - (b) Mass spectrum simulation
  - (c) IR spectrum simulation
  - (d) Chemical name to structure conversion
- 29.** An error in data analysis :
- (a) Is an action which is inaccurate or incorrect
  - (b) It is a difference between observed value and standard value
  - (c) Errors are useful part of analysis
  - (d) None of the above
- 30.** Chi-square tests :
- (a) Used to find out whether the differences between groups of data are statistically significant
  - (b) To measure how far a set of numbers is spread out from their avarage value
  - (c) To compare observed results with expected results
  - (d) None of the above

