



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN MEDICAL LABORATORY SCIENCE

AML 2212 : RESEARCH METHODS

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: Pick Date Select Month Pick Year

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **TWO** Section(s). Attempt ALL questions.

Circle the correct answer in section A.

Section A


1. The following term refers to the objective of the study
 - a. The study protocol
 - b. The concept note
 - c. The study outline
 - d. The research question
2. Which of the following elements gives the study its rationale?
 - a. Significance
 - b. Design
 - c. Proposal
 - d. None of the above
3. In the following study design, measurements are made at a single point in time
 - a. Cohort
 - b. Cross-sectional
 - c. Case control
 - d. Retrospective study
4. The following statement is true concerning the predictor variable

- a. This is the inferred variable
 - b. It is the causal variable
 - c. It is not likely to occur first
 - d. Are those that Interfere with the outcome of research
5. The following is not an observational study design
- a. cross-sectional
 - b. case control
 - c. controlled trials
 - d. case report
6. The following is true about drawing of inferences
- a. study truth relates to truth in the universe
 - b. study findings are always actual facts
 - c. study findings do not reflect on the design
 - d. all of the above are correct
7. what is the difference between random error and systematic error
- a. Random error is due to chance
 - b. Systematic errors are due to chance
 - c. Random errors are die to bias
 - d. Systematic errors are due to unknown sources
8. Research may be defined as follows
- a. Systematic increase of knowledge
 - b. Systematic investigation towards increase in knowledge
 - c. Discovery of old facts
 - d. Relationship between organisms
9. The following may not be regarded as grounds for creative data
- a. Brainstorming sessions
 - b. Graffiti
 - c. Perusing the internet
 - d. Information from peers
10. A good clinical research question is one that has the following characteristics except?
- a. Ethical
 - b. Supported by available dataqq
 - c. Supported by unavailable data
 - d. Not a replication of established evidence
11. When acquiring data for research, the following maybe viewed as prospective resources
- a. All test results since commencement of the study
 - b. Clinical history of patients
 - c. Family history of the patient
 - d. None of the above is prospective
12. The following is true regarding the occurrence of measurement bias
- a. During the use of equal variables
 - b. Use of different methods between groups

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- c. The presence of design errors
 - d. When same methods between groups
13. The distortion of the effect of one risk factor due to the presence of another is referred to as?
- a. Bias
 - b. Confounding
 - c. Variability
 - d. Validity
14. Observational studies aim at the following
- a. Refine exposure and disease
 - b. Describe impact of disease on risk factors
 - c. Evaluate effects of suspected risk factor
 - d. Derive disease from exposure
15. Advantages of a cross-sectional study include the following except?
- a. Does not determine causal relationship
 - b. They are normally quick
 - c. Determines disease prevalence
 - d. Can study several exposure factors simultaneously
16. The following are strategies we use to enhance validity except?
- a. Training observers
 - b. Defining the instruments
 - c. Refining the instruments
 - d. Certifying observers
17. The following are characteristics of case control studies except?
- a. They are retrospective
 - b. Are designed to retrieve data from previous exposure
 - c. They never use health register data
 - d. Suitable controls are problematic to identify
18. Animal tests cannot do the following
- a. Suggest effective drugs
 - b. Indicate which drugs are harmful
 - c. Predict exactly what will happen in humans
 - d. Indicate adverse effects likely
19. The following is true concerning type I and type II errors
- a. Type I error is the adoption of a true null hypothesis
 - b. Type one error is a false negative
 - c. Random errors are type I & II errors due to bias
 - d. It is possible to reduce errors in a study
20. The following statements apply to the use of a P-value
- a. Beta is the predetermined level of significance
 - b. A non-significant result always means there is no association
 - c. A non significant result could mean a very small association
 - d. Accept alternate if P-value is greater than alpha



21. The following statement is true about the use of primary and secondary hypotheses
- Secondary hypothesis are usually stand alone
 - The secondary hypothesis is used to determine main sample size
 - Setting a secondary objective in advance does increase credibility
 - Secondary objectives are not built around a primary hypothesis
22. The following are principal issues in choosing study design except
- Group similarity
 - Group asymmetry
 - Internal validity
 - Confounders
23. The following are characteristics of observational studies except
- There is no specific control over study units
 - There is a possibility of confounders
 - Usually aim at evaluating risk factor effect on an outcome
 - Cannot study risk factors that have serious consequences
24. The following is false concerning scope of a cross-sectional study
- It is a quick study
 - Can easily help determine causal relationship
 - Is not appropriate if exposure or outcome is rare
 - Studies exposure factors and outcomes at the same time
25. The following are regarded as origins of a research question except
- Delving into literature
 - Careful observation of the surrounding 
 - Future studies
 - Prior studies
26. The following is not considered a "FINER" criteria for a good research question
- Feasible
 - Unethical
 - Relevant
 - Interesting
27. The advantage of having many research questions include the following
- Increased complexity in implementation
 - Increased efficiency
 - Complex and variable inferences
 - None of the above
28. Limitations of a cohort study include the following except
- Time consuming
 - Allow direct measurement of incidence
 - Inefficient in rare diseases
 - Loss to follow-up and data unavailability
29. The following is not characteristic of case-control studies
- Controls are set in different diagnostic groups other than study
 - Researcher can avoid particular risk groups
 - Measurement is predominantly on odds ratio

- d. Case controls give a one point statistical association
30. The following is an advantage of a randomized control trial
- a. Randomization does not produce valid statistical tests
 - b. Randomization assures causal relationship
 - c. It is not easy to recruit subjects
 - d. Participants may not represent general population
31. Statistical issues in the study protocol include the following
- a. Hypotheses
 - b. Sample size
 - c. Analytic approach
 - d. Outcome variables
32. The literature review section does the following
- a. Previous irrelevant research
 - b. Excludes the investigators previous works
 - c. Gives what is known of the topic at hand
 - d. Vaguely describe how findings will be used
33. Study subjects must be chosen according to the following except?
- a. Fulfil a specific criteria
 - b. How best to recruit participants who will actually participate
 - c. Describe the kinds of patients best suited for the research question
 - d. All of the above
34. The following statements is true concerning choice of variables
- a. Characteristics of the patients
 - b. Characteristics of the study subjects
 - c. Characteristics of the study subjects to be measured in the study
 - d. All measurable characteristics in the population
35. What is an intervention in research?
- a. A non manipulable outcome variable
 - b. A manipulable predictor variable
 - c. A manipulable outcome variable
 - d. A non manipulable predictor variable
36. Management of study data is done by the following
- a. Statistical software
 - b. Citation manager
 - c. Reference manager
 - d. None of the above
37. How does the findings of a study relate to the truth in the universe
- a. They give the inferences
 - b. They describe the alternative truths
 - c. They are used to answer individual questions
 - d. None of the above
38. The following is true about study subjects
- a. They are always the same as the chosen sample
 - b. They are normally different from the intended sample

- c. None of the study subjects is allowed to leave the study
 - d. Chosen study subjects cannot refuse to participate in a study
39. The following is true concerning errors in research
- a. All research must be free of errors
 - b. Most research have errors
 - c. Erroneous inferences are never addressed
 - d. Errors in research are only due to the investigator
40. Errors in research include the following
- a. Random errors
 - b. Systemic errors
 - c. Non-systemic errors
 - d. Clerical errors

Section B

41. Discuss the following aspects of experimental studies
- a. Allocation of treatment regimens 10mks
 - b. Length of observations 10mks
42. Ethical research in developing countries has many challenges. Discuss remedies that can be used to safeguard the following principles
- a. Informed consent 10mks
 - b. Favourable Risk-Benefit ratio 5mks
 - c. Fair selection of study population 5mks
43. Outline the characteristics of the following observational studies
- a. Cohort studies 10mks
 - b. Cross-sectional studies 5mks
 - c. Case control studies 5mks