



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 research question may also be described as the following
 - a. The none researchable issue
 - b. The uncertainty to be resolved
 - c. The study perspective
 - d. Review of the study
2. Which of the following study elements defines the measurements be made in the study
 - a. Variables
 - b. Research question
 - c. Significance
 - d. Sample size
3. The following is true concerning participation in case control studies
 - a. A group followed over time
 - b. A group examined at a point in time
 - c. Two groups based on outcome
 - d. Two groups blinded and random

4. The logical sequence of research follows a series of which the following is normally the first
 - a. Descriptive studies
 - b. Predictive research
 - c. Cohort studies
 - d. Randomized clinical trials
5. A researcher assigns one group to receive placebo and another treatment. Then reverses this so that each group has received both. This is known as?
 - a. randomized trial
 - b. crossover trial
 - c. case control
 - d. cohort study
6. The fundamental problem arising from drawing causal inference from predictor and outcome variables is usually the following
 - a. design errors
 - b. confounding factors
 - c. internal validity
 - d. external validity
7. Types of hypothesis include the following except
 - a. One sided
 - b. Two sided
 - c. Three sided
 - d. Alternate
8. The largest version of the study plan is referred to as follows
 - a. The study protocol
 - b. The operations manual
 - c. Study outline
 - d. Study contract
9. The endeavor to discover and or collate new or old facts scientifically is known as the following
 - a. Objective
 - b. Study protocol
 - c. Research
 - d. All of the above
10. The following is not an observational study
 - a. Cohort
 - b. Controlled trial
 - c. Case series
 - d. Cross-sectional
11. The difference between primary and secondary objectives is as follows
 - a. Primary objective is the main answer to research question
 - b. Secondary objectives are the main answer to research question
 - c. These objectives are never related
 - d. There is no difference between the two

12. What is internal validity?
 - a. Generalizable truth in the universe
 - b. Truth from biased study
 - c. Truth due to chance
 - d. Truth affected by confounding factors
13. Characteristics of observational studies include the following except?
 - a. Possibility of confounding
 - b. Study individuals in native environment
 - c. No control over study units
 - d. Control over study units
14. The following is false concerning the cross-sectional study
 - a. Results reflect reference population
 - b. They may estimate frequencies of exposure and outcome
 - c. Repeated measures over time
 - d. Cross-sectionals are typically surveys
15. The following is not an outcome of cohort studies
 - a. Allows for direct measurement of incidence
 - b. Can only examine single effect per exposure
 - c. It is able to measure multiple effects per single exposure
 - d. Provides a clear temporal sequence between exposure and disease
16. Case control studies are not susceptible to the following limitations
 - a. Recall bias
 - b. Selection bias
 - c. Disease with long latency
 - d. Disease and exposure status hard to determine
17. During drug development which of the following stages applies to humans
 - a. Testing
 - b. Clinical trial II
 - c. In-vivo screening
 - d. All of the above
18. Characteristics of clinical trials include the following except?
 - a. Causal interpretation is likely
 - b. Causal interpretation is not likely
 - c. Exposure groups fully comparable
 - d. Control over exposure
19. The following is not an advantage of cross-over design over parallel design
 - a. Constant subject characteristics
 - b. All subjects receive treatment being investigated
 - c. Statistical power is less than in parallel
 - d. Statistical power is greater than in parallel
20. The goal of research is to do the following
 - a. Prove that a commonly held belief is wrong
 - b. Draw inferences from study findings
 - c. Create a universe of truth
 - d. Misinterpret study findings

21. To establish a truth in the universe, a research study must have the following
 - a. A sound study plan
 - b. Compounding factors
 - c. Internal variables
 - d. External variables
22. Errors affecting inference predominantly occur during which stage of research
 - a. Study plan
 - b. Study design
 - c. Implementation of study
 - d. When choosing intended variables
23. When precision of the estimate is increased, the following may occur
 - a. Increase in the likelihood of error
 - b. Reduction of random errors
 - c. Reduction of systematic errors
 - d. Increase in systematic errors
24. A target population is defined as follows
 - a. The available population for research
 - b. The accessible population for research
 - c. The population that participates in research
 - d. The actual study population
25. Factors leading to exclusion from study include the following except?
 - a. Unpredictable behaviour
 - b. Unreliable follow-up patterns
 - c. Possible risk of adverse effects
 - d. Demographically acceptable
26. The following strategies are helpful in recruitment except
 - a. Using local population and leaders
 - b. Using all out of town researchers
 - c. Getting support from important organizations
 - d. Prescreening of potential recruits
27. Continuous variables are defined as follows
 - a. These are those quantified on an infinite scale
 - b. Phenomena not suitable for quantification
 - c. Those that must be grouped in order for quantification
 - d. Have unordered categories
28. The protection of human subjects is governed by the following principles except
 - a. Informed consent
 - b. No exit path provided to eliminate bias
 - c. Compensation is provided
 - d. Confidentiality guarantee

29. The following is principally true concerning community intervention studies
- Volunteers not necessarily representative
 - Demonstrate if change in exposure leads to change in outcome
 - Aim is not associated with interventions practicality
 - Representativeness is not a concern
30. The following are aspects relating to compliance except?
- Participants commonly forget or deliberately fail to comply
 - Measurement of compliance is not essential in clinical trials
 - An independent measure of compliance should be used where possible
 - Comparison group may alter behavior to mirror the treatment group
31. The following is true concerning systematic errors
- They are wrong results due to chance
 - Systematic errors affect the sample either way
 - Systematic errors result from bias
 - The use of larger samples diminishes error
32. Improvement of sample design will have the following impact
- Increase random error
 - Diminish systemic error
 - Diminish random error
 - Diminish systematic error
33. The following is an example of exploitation encountered in clinical research
- Fair level of benefits
 - Unfair level of Community funding
 - Unfair level of benefits
 - Fair burden of risks
34. Which of the following is not a factor associated with increased level of exploitation in developing countries
- Adequate health care
 - Illiteracy
 - Linguistic differences
 - Limited understanding of nature of research
35. Multinational research in developing countries should collaborative with the following except
- Healthcare policy makers
 - Researchers in developing countries
 - Researchers in developed countries
 - The community
36. Social values in ethical research require that the researcher do the following
- Ensure collaboration with local researchers
 - Evaluate prospective research value to each participant
 - Respect community values
 - Ensure scientific design realizes scientific values
37. Assessment of favourable risk-benefit ratio will entail the following
- Determining non-risk benefits of research
 - Identification and protection of vulnerable groups
 - Evaluation of health risks to the study population
 - Ensure social values are realized towards the primary study population

38. Fair selection of study populations can be achieved through the following
- Maximize bias
 - Maximize benefit of research
 - Minimize risk of research
 - None of the above
39. Independent review will be attained if the following are met except?
- Ensuring public accountability
 - Ensure local laws and regulations are followed
 - Ensure dependence of the reviews
 - Ensuring the competence of reviews
40. Scientific validity should be considered feasible in the following contexts except?
- Social aspects
 - Political set-up
 - Non-cultural context
 - Provides sustainable improvement in primary health care

Section B

- Discuss benchmarks for the attainment of the following ethical principles in research
 - Collaborative partnership (10mks)
 - Social value (10mks)
- Compare and contrast the following
 - Clinical trial and cross-sectional study (10mks)
 - Cross-over trials vs parallel trials (10mks)
- Discuss the following elements of a research protocol (5mks each)
 - Variables
 - Study subjects
 - Statistical issues
 - Study design