



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

REGULAR UNIVERSITY EXAMS

SCHOOL OF NURSING MIDWIFERY AND PARAMEDICAL SCIENCES

**UNIVERSITY EXAMINATIONS
2023/2024 ACADEMIC YEAR
SECOND TRIMESTER**

BACHELOR OF SCIENCE NURSING -DL

COURSE CODE: NCD 233

COURSE TITLE: MEDICAL EPIDEMIOLOGY

DATE: MONDAY 08TH APRIL 2024

TIME: 3PM-6PM

INSTRUCTIONS TO CANDIDATES

All questions are compulsory

DURATION: 3 Hours

MMUST observes ZERO tolerance to examination cheating

This paper consists of 5 (five) printed pages. Please turn over.

SECTION A: MULTIPLE CHOICE QUESTIONS (MCQS); 27 MARKS**Choose the most appropriate answer**

1. In planning a screening program for a certain disease, epidemiologists concluded that above all, they should minimize the number of false positive tests, which otherwise would result in many people going through unnecessary, invasive, and expensive testing. **They usually therefore look for a test that has high:**
 - (a) Negative predictive value
 - (b) Sensitivity
 - (c) Specificity
 - (d) a and b
2. People whose diagnosis of cancer is made by a screening test, will often **appear** to do better than those who wait for symptoms, to prompt their diagnosis, because:
 - (a) People who show up for screening tend to have other “healthy” characteristics compared to those who don’t have screening.
 - (b) Their disease is detected at an earlier stage, so the expected time to death is longer.
 - (c) Cases detected by screening tend to be slower growing and therefore less lethal.
 - (d) All of the above
3. Which of the following statement about primary prevention is true?
 - (a) Primary prevention aims to reduce the prevalence of disease by treating new cases earlier
 - (b) Primary prevention aims to reduce the incidence of disease by preventing new cases of disease occurring.
 - (c) Primary prevention aims to reduce the complications and consequences of disease in new cases.
 - (d) All of the above
4. A patient walks into a doctor’s office and says that he’s read an article about a new test called COLONOSCOPY that can prevent colorectal cancer. The patient’s mother died of colon cancer and so he wants the test. The doctor explains that the test isn’t routinely given to a patient his age (35 years) and that his insurance company is unlikely to cover the cost – unless he is showing symptoms. The patient tells the doctor he is feeling “fine” and that he doesn’t care about the cost, and so the doctor schedules a colonoscopy for the next week. This scenario is an example of:
 - (a) Mass screening.
 - (b) Secondary prevention at its best
 - (c) Case finding
 - (d) Diagnostic testing
5. A randomized clinical trial is the gold standard method of evaluating the efficacy of any new screening modality because;
 - (a) Its results are not susceptible to the effects of lead-time bias.
 - (b) It involves the comparison of the disease-specific mortality rate in those randomized to the screening group with those randomized to the non-screening group.
 - (c) Its results are not susceptible to the effects of length-time bias
 - (d) All of the above
6. A decision to develop a mass screening program for lung cancer is **best made on the basis** of which ONE ..in all of the following:
 - (a) The widespread availability of technologically advanced imaging equipment.
 - (b) The availability of data from a randomized clinical trial showing the benefit of a screening test in reducing the lung-cancer specific mortality rate.
 - (c) The free services of a lifetime smoking celebrity to promote the program
 - (d) Strong political support for the program.

7. The numerator is not the component of denominator in
 (a) rate
 (b) ratio
 (c) Proportion
 (d) None of the above
8. The extent to which a test is measuring what it is intended to measure
 (a) Reliability
 (b) Validity
 (c) Sensitivity
 (d) Specificity
9. Occurrence in the community of a number of cases of disease that is unusually large or unexpected
 (a) Endemic
 (b) Epidemic
 (c) Pandemic
 (d) Infection
10. Dr Girolamo Fracastoro in the mid-16th century;
 (a) came up with one of the earliest theories of diseases causation '*the origin of disease was primarily the fault of human luxury*'
 (b) came up with one of the earliest theories of diseases causation '*Disease is caused by very small, unseeable, particles that are alive. These particles are able to spread by air, multiply by themselves and to be destroyable by fire*'
 (c) provided visual evidence of living particles consistent with a germ theory of disease.
 (d) did experiments to track cholera outbreak in London (because of that he is referred to as the father of field epidemiology) .
12. Which of the following is a description for 'descriptive epidemiology'?
 (a) examining the incidence of disease in relation to person, place and time
 (b) identifying the associations between disease and causes
 (c) intervention to change exposure to the factor being studied
 (d) actions to reduce exposure to factors which impact on health
13. Increases in the ability of a biologic agent to enter a host is called:
 (a) infectivity
 (b) pathogenicity
 (c) virulence
 (d) toxicity

With regard to natural history of disease, match the TERM in column A with the DEFINITION in column B

	Column A	Column B
14	Secondary level	(a) Preventive measures that occur during the stage of subclinical disease, intended to delay the onset of disease or reduce its duration or severity
15	Tertiary level	(b) Preventive measures aimed at the stage of susceptibility, intended to reduce new occurrences of disease.
16	Level of subclinical disease	(c) Preventive measures that are intended to reduce the complications and disabilities associated with an ongoing disease.
17	Level of susceptibility	(d) The stage of disease that follows exposure to the agent but is before symptoms are apparent.
18	Natural history of disease	(e) The stage in the natural history of a disease that precedes exposure to the causal agent.
19	Level of clinical	(f) The progression of a disease in an individual over time symptoms

	disease	
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20. Level of resistance of a community or group of people to a particular disease is
- Passive immunity
 - Active immunity
 - Herd immunity
 - None of them
21. What is a research design?
- A way of conducting research that is not grounded in theory.
 - The choice between using qualitative or quantitative methods.
 - The style in which you present your research findings, e.g. a graph.
 - A framework for every stage of the collection and analysis of data
22. What is a cross-sectional design?
- A comparison of two or more variables longitudinally
 - A design that is devised when the researcher is in a bad mood.
 - The collection of data from more than one case at one moment in time.
 - Research into one particular section of society, e.g. the middle classes
23. What does the term 'longitudinal design' mean?
- A study completed far away from where the researcher lives.
 - A study which is very long to read.
 - A study with two contrasting cases.
 - A study completed over a distinct period of time to map changes in social phenomena.
24. Dr AKC has just published a study whereby he had followed a group of men suspected to have prostate cancer. During the follow-up, he documented the number of cases who improved, stay unchanged, or progressed into clinical prostate cancer for a period of 2yrs before analysing. The study design he might have used can best be described as:
- Analytic, experimental prospective cohort.
 - Analytic, observational, prospective cohort
 - Analytic, observational, retrospective cohort
 - Descriptive, observational retrospective cohort.
25. A case-control study is characterized by all of the following except:
- It is relatively inexpensive compared with most other epidemiologic study designs
 - Patients with the disease (cases) are compared with persons without the disease (controls)
 - Incidence rates may be computed directly
 - Assessment of past exposure may be biased

True /False statements

26. Lead time is equivalent to the pre-clinical phase of a study
- True
 - False
27. Lead time is the duration between detection by screening and when the diagnosis would have been made (i.e., the start of the clinical phase)
- True
 - False

SECTION B: SHORT ANSWER QUESTIONS (SAQS); 33 MARKS

1. Describe the stages of disease outbreak investigation (10 Marks)
2. (i) LIST TWO (2) reasons why research is important to an epidemiologist (1 Mark)
 (ii) Describe any two (2) data collecting tools/instruments available to an epidemiologist (4 Marks)
 (iii) Describe three (3) random sampling techniques which an epidemiologist can use, in determining his or her subjects for study (6 Marks)
3. (a) What is surveillance (2 Marks)
 (b) Why surveillance (4 Marks)
 (c) Describe the types of surveillance (6 Marks)

SECTION C: LONG ESSAY QUESTIONS (LEQS); 40 MARKS

1. With reference to epidemiology, discuss- determinants of a disease (20 marks)
2. With the use of examples, describe -risks in epidemiology (20 Marks)

End