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(*University of Choice*)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

(MMUST)

UNIVERSITY EXAMINATIONS

2022/2023 ACADEMIC YEAR

SECOND YEAR SECOND SEMESTER MAIN EXAMINATIONS

FOR THE DEGREE

OF

FOR THE DEGREE OF BSc MEDICAL BIOTECHNOLOGY /BSc OPTOMETRY & VISUAL SCIENCES

COURSE CODE: BMB 427/NUR 300

COURSE TITLE: EPIDEMIOLOGY

DATE: 20TH APRIL 2023 **TIME: 11.00AM – 1.00 PM**

INSTRUCTIONS TO CANDIDATES

This paper is divided into three sections, **A B** and **C,** carrying respectively: Multiple Choice Questions (**MCQs**), Short Answer Questions (**SAQs**) and Long Answer Questions (**LAQs**). **Answer all questions. DO NOT WRITE ON THE QUESTION PAPER.**

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 5 Printed Pages. Please Turn Over

SECTION A: Multiple Choice Questions (20 Marks)

1. Infectivity is defined as
   A. is the ability of an infectious agent to invade and multiply (produce infection) in a host •
   B. the ability to induce clinically apparent illness •
   C. the proportion of clinical cases resulting in severe clinical manifestations.
   D. Progression of disease
2. What is the minimum criterion for case definition?
   A. Clinical criteria, plus specification of time, place, and person
   B. Clinical features, plus the exposure(s) you most suspect
   C. Suspect cases
   D. The nationally agreed standard case definition for disease reporting
3. In the ongoing Framingham Heart Study (FHS) that was launched in 1948, was launched to identify common factors or characteristics that contribute to cardiovascular disease. In 1971and 2002 the study enrolled a second and third generations, respectively, of the original participants' adult children and their spouses—to participate. This kind of study that assesses (but does not dictate) exposure and follows to document subsequent occurrence of disease is an example of:
   A. Experimental
   B. Observational cohort
   C. Retrospective cohort
   D. Clinical trial
4. Disease control involves all the measures designed to prevent or reduce as much as possible the incidence, prevalence and consequences of disease. These measures include the following, except
   A. Controlling the reservoir
   B. Investigating of a epidemic outbreak
   C. Interruption of transmission
   D. Protection of susceptible host
5. Which of the following is the use of a spot map?
   A. pinpointing the geographic location of exposures, residences,
   B. employment sites, and t occurrences, either of exposure or disease.
   C. to display incidence rates.
   D. to display prevalence rates.
6. Prevalence of disease is estimated from which of the following studies?
   A. case control study
   B. cross sectional study
   C. cohort study
   D. randomized trial
7. All of the following diseases are spread by droplet nuclei except
   A. common cold, diphtheria,
   B. whooping cough, tuberculosis,
   C. meningococcal meningitis
   D. hookworm, tetanus, rabies
8. The separation, for the period of communicability of infected persons or animals from others in such places and under such conditions, as to prevent or limit the direct or indirect transmission of the infectious agent from those infected to those who are susceptible known as:

A. Isolation
B. Quarantine
C. Notification
D. punishment

9. John Snow is famed in the field of epidemiology for being the father of:
   A. Cholera
   B. Broad Street pump
   C. Typhoid Mary
   D. Field epidemiology
10. Final step of epidemic investigation?
   A. Preparing case definition
   B. Mapping the epidemic
   C. Communicating findings to relevant authorities
   D. Searching for the cases
11. A case definition during an outbreak investigation should specify all of the following except::
   A. Hypothesized exposure
   B. Clinical features and Person
   C. Time
   D. Place
12. "Determinants" in epidemiology generally exclude:
   A. Agents
   B. Causes and sources
   C. Control measures
   D. Risk factors
13. Epidemiology, when defined as community medicine would exclude which of the following activities?
   A. Describing the demographic characteristics of persons with acute aflatoxin poisoning in an area
   B. Prescribing an antibiotic to treat a patient with community-acquired methicillin-resistant *Staphylococcus aureus* infection
   C. Comparing the family history, amount of exercise, and eating habits of those with and without newly diagnosed diabetes
   D. Recommending that a restaurant be closed after implicating it as the source of a hepatitis A outbreak
14. John Snow's investigation of cholera is considered a model for epidemiologic field investigations because it included all of the following except a:
   A. Biologically plausible hypothesis
   B. Comparison of a health outcome among exposed and unexposed groups
   C. Multivariate statistical model
   D. Spot map and recommendation for public health action
15. Air-borne, vector-borne, water-borne and formite-borne are all terminologies ssociated with: forms of
   A. Direct transmission
   B. Indirect transmission
   C. Controlling the reservoir

D. Protection of susceptible host

16. A retrospective cohort study is one in which
    A. The disease has already occurred
    B. The investigator no control over enrollment cohort
    C. The investigator follows the cohort to determine if they will develop disease
    D. The investigator does not determine the exposures and risk factors
17. Which of the following refers to the ability of an intervention or a program to produce the intended or expected results i*n the field?*
    A. Field epidemiology
    B. Effectiveness
    C. Efficiency
    D. Efficacy
18. The hallmark feature of an analytic epidemiologic study is:
    A. Use of an appropriate comparison group
    B. Laboratory confirmation of the diagnosis
    C. Publication in a peer-reviewed journal
    D. Statistical analysis using logistic regression
19. Which of the following are host factors that influence the chance for disease or its severity in the epidemiologic triangle?
    A. Personal traits, Behaviors, Genetic predisposition, Immunologic factors
    B. Air, water, soil, housing, heat, light, noise, radiation, satellite systems
    C. Viruses, rickettsiae. fungi, bacteria, protozoa
    D. Proteins, fats, carbohydrate, vitamins, minerals and water
20. Which of the following statements is untrue regarding a cross-sectional study?
    A. it is weaker than a cohort study
    B. it is used to document disease prevalence at a point in time
    C. it cannot disentangle risk factors for survival from those for occurrence of disease
    D. it is stronger than a case-control study

SECTION B (Short Answer Questions (40 Marks)

1. Expound on three measures of preventing and controlling the diseases in a community **(9marks)**
2. Describe the criteria for case definition and case definition modification**(6marks)**
3. Outline the chronological events that prompted the World Health organization to recognize and declare COVID-19 "a global pandemic" on 11 March, 2020 **(5marks)**
4. Describe the application of analytical epidemiological in diagnosing the health of a community **(6marks)**
5. Citing a relevant examples, define immunity and explain the concept of herd immunity **(4marks)**
6. Outline the uses and core functions of epidemiology in ensuring optimum public health of the community **(10 marks).**

SECTION C (ESSAY 60 MARKS)

1. Imagine a scenario where cholera has infected your water source and there is an occurrence of more cases than expected. Discuss the steps that you, as the lead epidemiologist, would take to prove that it is cholera before informing relevant authorities? **(20 marks)**
2. Explicate the carriers of communicable diseases by type, duration and portal of exit **(20marks)**
3. Discuss the factors that influence disease causation as stipulated in the Epidemiologic Triad **(20 marks)**