



**AMREF INTERNATIONAL UNIVERSITY**  
**SCHOOL OF PUBLIC HEALTH**  
**DEPARTMENT OF HEALTH SYSTEMS MANAGEMENT AND DEVELOPMENT**  
**BACHELOR OF SCIENCE IN HEALTH SYSTEMS DEVELOPMENT**  
**END OF SEMESTER EXAMINATION APRIL 2024**

**UNIT CODE:** HMD 131  
**UNIT NAME:** EPIDEMIOLOGY AND DEMOGRAPHY  
**DATE:** April 2024

**TIME:** TWO Hours      **Start:**      **Finish**

**INSTRUCTIONS**

1. This exam is marked out of 70 marks
2. This Examination comprises TWO Sections  
**Section A:** Compulsory Question (30 marks)  
**Section B:** Long Answer Questions (70 marks)

## SECTION A: COMPULSORY (30 Marks)

### QUESTION ONE

- a) Outline any 4 major components of the term epidemiology (4 Marks)
- b) A study from the University of Texas examined whether the risk of Hepatitis C (Hep C) was related to whether people had tattoos. A sample of 600 individuals was randomly selected from the student population. In this sample 113 had a tattoo. For individuals with a tattoo, 22 were found to have Hepatitis C and for individuals without a tattoo, 25 were found to have Hepatitis C. Researchers want to know if there is evidence from this study of an increased prevalence of Hep C for individuals with a tattoo amongst the population from which they were sampled
  - i. State the study design used in this example [1 mark]
  - ii. State the Null and Alternative hypotheses. [2 marks]
- c) A diabetes test is being applied in a population of 10000 men. Previous evaluation of the diabetes test in a different population showed a sensitivity of 70% and specificity of 80%. The prevalence of diabetes is 5%. Determine the positive predictive value of this test (3 Marks).
- d) Define the term demographic transition (2 Marks)
- e) Outline 4 source of information demographers use to acquire data (4 marks)
- f) Highlight FIVE factors that affect live births (5 Marks)
- g) Outline FOUR global effects of overpopulation (4 Marks)
- h) Using examples, differentiate between Hyperendemic and Holoendemic diseases (5 Marks)

### ANSWER ANY TWO (2) QUESTIONS (40 Marks)

### EPIDEMIOLOGY QUESTIONS (DO AT LEAST ONE IN THIS SECTION)

#### QUESTION TWO

- a) Explain five differences between retrospective cohort studies and case control studies (10 Marks)
- b) The following description is adapted from a published abstract.  
Aoki et al. Incidence of injury among adolescent soccer players: a comparative study of artificial and natural grass turfs. Clin J Sport Med 2010; 20: 1-7. The objective of this research was to

investigate the incidence of acute injuries and soccer-related chronic pain from long-term training and during matches in adolescent players using natural grass turfs and artificial turfs. Study participants were youth soccer players (12-17 years of age) from 6 teams, with a predominant tendency to train on either natural turf or artificial turf. Of 332 players enrolled in this study, 301 remained to completion. Medically diagnosed acute injuries and chronic pain were recorded daily by team health care staff throughout 2005 and this information was provided to the researchers. Acute injuries per 1000 player hours on each surface and chronic complaints per 1000 player hours were evaluated according to frequency of surface used most of the time. There was no significant difference in the incidence of acute injuries between the two surfaces during training and competition. However, the artificial turf group showed a significantly higher incidence of low back pain during training (RR = 1.63, 95% confidence interval = 1.06-2.48). Age (early rather than late adolescence) and prolonged training hours were factors associated with an increased incidence of chronic pain in the artificial turf group. **CONCLUSION:** Adolescent players routinely training on AT for prolonged periods should be carefully monitored, even on AT conforming to new standards

- a) State specific study design used by Aoki and colleagues (2 Marks)
- b) In your own words, describe the relationship between turf type used for training and low back pain. Include an explanation and interpretation of the information contained in the brackets (4 Marks)
- c) Complete the 2x2 table and show how the relative risk of 1.63 was calculated (4 Marks)

### **QUESTION THREE**

Conclusions of causality is a judgement based on a body of evidence. Discuss (20 Marks)

### **DEMOGRAPHY QUESTIONS (DO AT LEAST ONE QUESTION IN THIS SECTION)**

#### **QUESTION FOUR**

Describe the differences between the five phases of the “Demographic Transition” (20 Marks)

#### **QUESTION FIVE**

Discuss any Five Methods of family Planning (20 Marks)