TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

MEDICAL SCIENCES DEPARTMENT

SPECIAL SUPPLEMENTARY

University examination for Master of Science PARASITOLOGY

AML:5107 EPIDEMIOLOGY AND DEMOGRAPHY

SEPT. 2017

Instruction: Answer All questions

Question one (20mks)

i. Describe the role of epidemiology in prevention of disease (5mks)
ii. Outline the stages of the course of disease from inception to resolution (5mks)
iii. Outline the disadvantages of retrospective studies (5mks)
iv. Outline the advantages and disadvantages of adjusted rates (5mks)
v. Define the following terms (5mks)
   a) Life tables
   b) Risk
   c) Incidence rate
   d) Rate standardization
   e) Morbidity

Question two

Use the table below for question 2 (20 mks)

Kenya 1987				Uganda 1987		Tanzania 1987			
Age Group	Popu-Lation	Deaths from Malig-nant Neo-plasms	Deaths from Acci-dents	Popu-lation	Deaths from Malig-nant Neo-plasms	Deaths from Acc-idents	Popu-lation	Deaths from Malig-Nant Neo-plasms	Deaths From Acc-idents
<5	18,250,000	469	3,871	60,000	0	13	812,000	24	260
5-44	150,020,000	17,082	50,377	368,000	52	242	6,543,000	1,077	2,584
45-64	42,300,000	103,488	14,807	78,000	180	50	2,528,000	7,464	794
65+	29,840,000	242,617	25,838	19,000	210	15	2,140,000	21,599	1,482
Total	243,400,000	363,656	94,893	525,000	442	320	12,023,000	30,164	5,120

a) Calculate the death rate from all accidents in the age group 5-44 for Kenya, Uganda and Tanzania (6 mks)

b) Calculate the death rates from all malignant neoplasm in the age group 65 and older for Kenya, Uganda and Tanzania (6 mks)

c) Calculate the unadjusted death rates for the three countries (12 mks)

   i. Deaths from malignant neoplasm
   ii. Deaths from accidents

d) Use the direct method of age adjustment to calculate mortality rates in Uganda and Tanzania for malignant neoplasm. The table below provides age-specific death rates from neoplasm (6 mks)

AGE-SPECIFIC DEATH RATE FROM MALIGINANT NEOPLASMS PER 100,000				EXPECTED NUMBER OF DEATHS	
Age Groups	Uganda	Tanzania	East Africa Population	Uganda	Tanzania
<5	0	3.0	18,250,000		
5-44	14.1	16.5	150,020,000		
45-64	230.8	295.3	42,300,000		
65+	1105.3	1009.3	29,840,000		
Total					

Question three

i. A certain virus V is suspected of being the cause of infectious disease D. Design a cohort study to elucidate the relationship between V and D. How does the design change if V is a slow virus or if D is currently viewed as a non infectious disease? (10 mks)

ii. Below is a table of a case-control study of cocaine and alcohol use as risk factors for suicide by Russian roulette. The controls were handgun suicides. Toxicological analyses were performed and the data below obtained. Calculate the odds ratios and explain its meaning 10mks

A	**Drugs or alcohol present in blood**	**No Drugs or Alcohol in blood**	**Total**
Russian roulette suicide victims	11	3	14
Handgun suicide victims	33	21	54
Total	**44**	**24**	**68**
B	**Cocaine detected in blood**	**No cocaine detected in blood**	**Total**
Russian roulette suicide victims	9	5	14
Handgun suicide victims	19	35	54
Total	**28**	**40**	**68**

Question four

i. Two physicians were asked to classify 100 chest x-rays as abnormal or normal independently. The comparison of their classification is shown in the table below (10mks).

		Physician 2		
		Abnormal	Normal	Total
Physician 1	Abnormal	40	20	60

	Normal	10	30	40
	Total	50	50	100

a) What is the simple overall percentage agreement between the two physicians out of the total?
b) What is the overall percent agreement between the two physicians, removing the x-rays that both physicians classified as normal
c) Calculate the kappa value
d) The Kappa value represents which kind of agreement?

ii. Using both an infectious and a non-infectious disease as your examples, describe the predictive value of a test (10mks)

Question five

a) Describe two important ways to control for confounding variables when designing a study and the options for controlling for confounders in the analysis stage (8 mks)

b) The criteria for establishing a screening programme is usually related to the characteristic of the disorder or disease, its treatment and the screening test. Discuss any six requirements for instituting a medical screening programme (12 marks)