REGISTRATION NO

UNIVERSITY OF NAIROBI

School of Public Health

4TH YEAR BACHELOR OF MEDICINE AND BACHELOR OF SURGERY

CONTINOUS ASSESSMENT TEST

DATE: 26th May 2011 TIME: 2.00PM. – 5.00 PM

INSTRUCTIONS

There are Three Sections to this Paper.

Section I: SHORT ANSWER QUESTIONS.
QUESTION 1 AND 2 are compulsory.Each Question carries 10 marks.

Section II :SHORT ANSWER QUESTIONSanswer any other eight (8) Ques
Each Question carries 10 marks.

Section III: LONG ANSWER QUESTIONS.
Answer BOTH Questions in this section. Each Question carries 20 Marks.

The Total Time allocated to this Paper is 3 hours.

Write your student registration number on each answer page.
Answer each question on a separate sheet of paper.

Section I :SHORT ANSWER QUESTIONS. (question 1 and 2 are compulsor

1. Out of a sample of 160 women attending ANC who were tested for
County 'X' 45 of them were found positive.
   a. What is the prevalence of HIV in the sample?
   b. Write down a 99% confidence interval for the prevalence of county 'X'. (Note $Z_{.995} = 2.576$.

2. Using relevant examples, describe uses of biochemical methods in assessment of nutritional status.

Note

Text

Freehand

Signature

6. Describe the Emic and Etic perspectives in health

7. In the community health strategy (CHS), a number of health personnel participate in activities of CHS.
   (a) List 3 categories of these health personnel
   (b) Describe briefly their roles
   (c) How are they compensated for the extra work

8. In economics theory, why is the slope of the demand curve negative (downward slope) and supply curve a positive slope (slopes upward)?

9. State three causes of work related stress and describe briefly how each cause can be combated.

10. The Occupational Safety and Health Act, 2007 of Laws of Kenya stipulates that each work place should have a fire safety preparedness plan. List five (5) indicators/ evidences that should be in place to show that a work place is in compliance with the act.

11. Define and state minimum levels for any three of the UN process indicators for monitoring obstetric care

Section III: LONG ANSWER QUESTIONS (Answer Any TWO Questions in this section)

12. In a clinical trial involving 4,396 patients aged 65-74 whose systolic pressure was between 160 and 209 mmHg and whose diastolic pressure was less than 115 mmHg, patients were randomly assigned to initial therapy with a diuretic or a beta-blocker or a matched placebo, and then followed up for an average of 5.8 years. The main objective was to see if a policy of anti-hypertensive treatment reduces the risk of stroke, coronary heart disease and death. The main results are as follows:

	Active treatment		
	Diuretic	Beta-blocker	Placebo
No. of patients	1081	1102	2213
Strokes	45	56	134
Coronary events	48	80	159
Deaths	134	167	315

Using confidence intervals in both cases, is there significant evidence for there being differences in the risk of:

(a) Death between those taking diuretic and those taking placebo? **(10 marks)**
(b) Stroke between those taking beta-blocker and those taking placebo? **(10 marks)**

13. Describe the phenomenon of biological transmission of diseases as it refers to malaria and outline its implications for prevalence of malaria globally.

14. Using the example of one essential drug found in a health centre, discuss five factors that have to be taken into account when determining the drug types and quantities required.

A: Caused by burning of paper & wood → ...
B: Flammable liquids which vaporize eg gasoline → CO_2 & dry powder
C: Energized electrical equipment → dry chemical powder.
D: Metals e.g Titanium → special powder which melts & forms ... when ...

1) Determine age of child
2) Accurate weighing
3) Plot wt accur. on growth chart of appr. gender & Compare to Std.
4) Interpret direction of growth curve
5) Discuss child's growth & follow up ...

8. List five activities in the Growth Monitoring programme in a health centre
Height Age
Weight Immunization follow-up of cases.

9. Name all the classes of fire and state the type of fire extinguishers corresponding to each class of fire. Name 2 key stakeholders who should be involved in fire safety
→ Internal: fire dept officials, Workplace In-charge, Fire Safety & emergency ...
→ External: town, business and trespassers of that jurisdiction.

10. List four features of a successful community based health programme

11. With examples, compare the following demographic concepts
i. Fecundability and Period fertility → fertility of parti. time
ii. Multiple decrement and Standard period life table → concerned with general mortality of a single cohort by age for a short period of time ≤ 3 yrs

Section III: LONG ANSWER QUESTIONS. (Answer BOTH questions in this section)

1. The following are distances from the household to the nearest public health facility as recorded in a recent community diagnosis:

HH No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Distance from facility	6	5	2	6	6	7	8	9	5	6	7	8	4	7	2	9

a) What is the median distance $L_m + \left(\frac{n/2 - cf}{f}\right) i$

b) Calculate the mean, variance and standard deviation (use the individual values)

c) Calculate the standard error of the mean $SEM = \frac{SD}{\sqrt{n}}$ SEM = cd/fn

d) Construct a 99% confidence interval for the mean distance from household to health facility in the population from which this random sample was drawn.

$\bar{X} \pm t_{16\alpha/2} \times SEM$

Note: $t_{995}(15) = 2.9467$

2. Dr. X conducted a study to determine if there was any association between exposure to radiation in uterus and development of tumors. Of the 2215 children who had been exposed to radiation, 59 developed tumors, while of the 1395 children who hadn't been exposed, 13 developed tumors.

a) What study design was this?
Retrospective Cohort Study Prospective

b) Present the above results using a 2 by 2 contingency table.

	a	b
	c	d

Incidence exp = 2.664%
Incidence unexp = 0.9319%

c) Compare the risks of developing tumors between the two groups of children.
$\frac{a}{a+b}$: RR = Incidence exp / Incidence unexp

d) How many times more is the risk of tumors if a child is exposed to radiation compared to unexposed?
$RR = \frac{I_e}{I_o}$ RR = 2.859 X

e) How much of tumors are attributable to exposure to radiation?
$AP = \frac{I_e - I_o}{I_e}$
AR = 0.02664 − 0.009319
= 0.0173
17 per 1000 cases of mt d2 Radiation
AR% = $\frac{2.859 - 1}{2.859} \times 100$
= 65.02%
65% of mt among pple exposed to rd exposure

SIROMA

UNIVERSITY OF NAIROBI
SCHOOL OF PUBLIC HEALTH

8

4TH YEAR BACHELOR OF MEDICINE AND BACHELOR OF SURGERY
COMMUNITY HEALTH
CONTINUOUS ASSESSMENT TEST (CAT)

DATE: Thursday, 29th May 2014 TIME: 2.00 – 5.00PM

INSTRUCTIONS

Read and follow the instructions. There are three (3) sections to this paper.

Section I: SHORT ANSWER QUESTIONS
QUESTION 1 AND 2 are compulsory. Each question carries 10 marks

Section II: SHORT ANSWER QUESTIONS
Answer any other eight (8) questions. Each question carries 10 marks

Section III: LONG ANSWER QUESTIONS
Answer BOTH questions in this section. Each question carries 20 marks

The Total time allocated to this Paper is 3 hours

Write your student registration number on EACH answer paper

ANSWER EACH QUESTION ON A SEPARATE SHEET OF PAPER

Section I: SHORT ANSWER QUESTIONS (Questions 1 and 2 are compulsory)

1. In a recent community diagnosis in greater Kiambu involving random sample of 800 women of reproductive age, 550 were found to be currently using a family planning method.

a) What is the proportion of women of reproductive age who were currently using a method?

550/800 X100% = 68.75% ✓

b) Write down a 99% confidence interval for the proportion women of reproductive age who were currently using a method in the population from which this sample was drawn.

68.75 ± 2.576 X 1.639

Note: the sampling variance of a proportion is given by: $\frac{p(1-p)}{n}$

64.53 to 72.97 ✓

2. Describe the mechanism of Global warming

Section II: SHORT ANSWER QUESTIONS (Answer any Eight [8] questions)

1. What should an educator take into account and why, when educating a seventy year old woman who had open heart surgery three months ago.

2. Using one example of your choice, distinguish between Emic and Etic perspectives in health

Q11 : Biological transmission

5. Outline two ways by which urbanization increases the prevalence of respiratory illness among urban dwellers

6. Dr. James is planning to conduct a study on the relationship between physical activity and developing of diabetes. He decides to carry-out a case-control study for his research problem. List two (2) advantages and three (3) disadvantages of Dr. James' study.

7. Select one cultural practice and explain its implication for health

8. List four features of a successful community based health programme.

CBHP

- acceptable
- affordable
- community participation
- Equity
- Self Reliance
- Focus on Need of community
- Collaboration

9. Using examples, distinguish between nutrition screening and nutritional surveillance.

continuous Monitoring of Nutritional community selected rapid

10. a) State three methods of preventing fire outbreak.

b) State two KEY stakeholders who in case of disasters such as fire are the most beneficiaries of material safety data sheet (MSDS). Justify how they benefit from MSDS

11. Define the terms Gonotrophic cycle, Oviposition and Larval habitats. Highlight how these can be used for control of malaria.

the process of blood-feeding & egg maturation, followed by oviposition

Process by a mosquito laying a group of eggs

Breeding of mosquito for larval depot where pupae stage of mosquito, dept, fresh or salty water, marshes, swamps, grassy ditches

12. Define the concepts of average and marginal costs. Give an application example in the provision of health care

Section III: LONG ANSWER QUESTIONS. (Answer BOTH questions in this section)

1. In the budgeting process,

a) Differentiate between step down allocation and activity based costing.

b) Which method would you use to determine costs of a maternity care?

c) What information do you require in order to work out the budget?

2. Following an intervention to improve healthier life styles, the following diastolic blood pressure levels were recorded in a sample from the community under intervention:

Serial no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DBP level (mmHg)	98	81	79	76	92	87	90	79	85	88	77	78	84	79	90	76	86	84	77	89

a) What is the median blood pressure level?

b) Calculate the mean, variance and standard deviation (use the individual values)

Gonotrophic Cycle A mosquito
- After a mosquito blood meal, digestion takes 3 days during eggs mature -> 2 days - half grown
- 7 days - fully grown
- A grown mosquito leaves & rests place to look for a suitable ... water where it lays its eggs then look for another blood meal

c) Calculate the standard error of the mean

d) Construct a 95% confidence interval for the mean sugar level in the population from which this random sample was drawn.

Note: $t_{.975\,(20)} = 2.0860$ $t_{.975\,(19)} = 2.0930$ $t_{.975\,(18)} = 2.1009$ $t_{.975\,(17)} = 2.1098$

$t_{.95\,(20)} = 1.7247$ $t_{.95\,(19)} = 1.7281$ $t_{.95\,(18)} = 1.7341$ $t_{.95\,(17)} = 1.7396$

Concept of transmission of communicable dx.

1. Agent inside a reservoir
2. Escape of agent from reservoir
3. Transmission of agent
4. Entry of agent into new host.
5. Development of agent inside ~~reservoir~~ host.

Levels of prevention or ctrl of CDCs.

1. level of reservoir: Destruction of reservoir - eg rodent
   Tx of reservoirs w drugs eg TB
   Exit from reservoir: few measures since it's a physiological process by reservoir
   Mechanism of transmission:
   - Direct → Isolation of reservoir.
   - Indirect passive → sterilization of vehicle of spread - water tx.
   - Indirect active → interfere w lifecycle of vectors & intermediate host.

Entry ~~of~~ agent into host.
- Interrupt entry by barrier methods: ITN, wearing shoes

Level of susceptible host → immunization / vaccination

→ Menopause & changes hor
→ Accidents ↓bone density & low oestrogen.
→ Cardiovascular dx
→ Healthy eating ↓salt, ↓ cholesterol

7. What are the main themes and why, when educating a 60yrs old rural woman
- Nutrition • Accidents • Dx to expect postmenopausal • Hygiene
8. Achievement of one Millennium Development Goal through environmental interventions may hasten achievement of other MDGs. Explain.

9. Classify diarrheal diseases by stool characteristics. Highlight major points at which measures can be taken to prevent and control of diarrheal diseases among children.
1. Watery Secretory or Osmotic 3. Inflammatory = Pus, Blood,
2. Fatty

10. Illustrate the application of the concept of marginal costs in the delivery of health /services- Cost to produce any extra item
- No extra cost in having a radiographer, XR machine as they are already in extend
- However extra cost in paper, power

11. Using one example of your choice, distinguish between Emic and Etic perspectives in health

12. Describe role of Community Health Extension Workers (CHEW) under the Community Health Strategy

Section III: LONG ANSWER QUESTIONS: (Answer BOTH questions in this section)

1. In a survey on a community living around a factory suspected to be causing air pollution, the number of hospital visits in the preceding year for the youngest child under 5 years is recorded for a sample of households as shown below:

HH No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
No. of visits	4	7	6	6	3	7	4	9	5	8	7	8	4	7	9	7	6	4	7	3

a) What is the median number of visits?
$n+1/2 = 21/2 = 10.5$ $\frac{6+7}{2} = 6.5$

b) Calculate the mean, variance and standard deviation (use the individual values)
$\bar{X} = 6.1$ Variance = 1.917 S.d = 1.384

c) Calculate the standard error of the mean
$SEM = sd/\sqrt{n} = 1.384/\sqrt{20} = 0.31$

d) Construct a 95% confidence interval for the mean number of hospital visits for the youngest child less than 5 years in the population from which this random sample was drawn.
$6.1 + 2.093 \times 0.31 = 6.75$

Note: $t_{.99}(19) = 2.539$; $t_{.995}(19) = 2.8609$; $t_{.975}(19) = 2.093$; $t_{.995}(20) = 2.8453$

2. Using malaria vectors as an example, describe the terms Anthrophilic, Endophilic and Endophagic, and how these can be used in prevention and control of malaria
usually bite humans : repellant creams ↓ ITNs
→ Rests inside house after feeding (IRS)
→ enters house to feed : spray indoor ↓ ITNs

Q9 Exit from reservoir → Proper disposal of faeces
Proper use of pit latrine.
Treat infected person

Transmission :- Washing hands before handling food.
- Washing hands after visiting a toilet
- Boiling drinking water
- Strict kitchen hygiene practices

Entry into susceptible host
- Through intake of vegetables in undiluted vinegar
- Vaccination against cholera

Reg. No.:.....

SECTION III: LONG ANSWER QUESTION (40 MINUTES (20 marks each)

Answer any 2 questions.

1. Health financing is considered as a very important element in implementing Kenya Health Policy Goal.

(a) Explain with examples how health financing can influence universal health care.

(b) Describe two mechanisms or initiatives that can improve access to health care for poor households in Kenya.

2. Describe the phenomenon of antigenic variation and its relationship to development of immunity to malaria in endemic areas.

3. In an anthropometric study to assess the nutritional status of school-going children in a rural community, the average weight of children at 10-years of age was found to be 25.7 kg with a standard deviation of 4.5. Accept these values as population parameters and that weight is normally distributed.

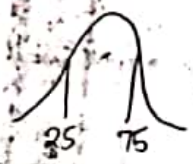
(a) What is the probability that a given 10-year old child in the community will have a weight greater than 24 kg?

(b) What is the probability that the average weight of 48 10-year olds will lie between 25 and 27 kg?

(c) What minimum weight do 10 year-olds in the community need to have to be in the top 10% of the children by weight? [7 marks]

Reg. No.:.....

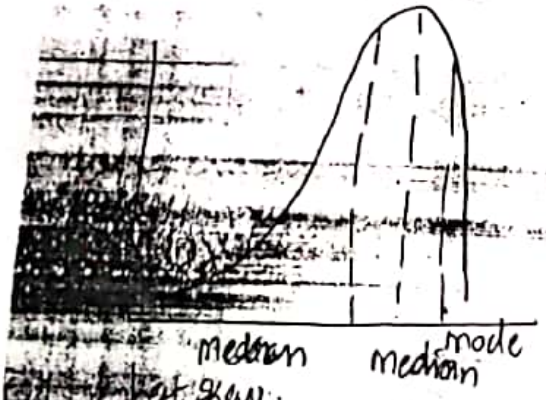
	Variable A	Variable B
Minimum Value	0.05	-0.20
First quartile	3.07	13.38
Median	6.22	18.29
Mean	8.97	16.61
Third quartile	11.59	25.14
Maximum value	43.34	33.37
Variance	68.94	92.97



(a) The middle fifty percent of the ordered values of variable A fall between which two values? 3.07 and 11.59

(b) Which variable is left skewed? Give reason.
Variable B. Mean is less than median.

(c) Which of the variables, A and B is more variable?
Variable B has ? variance.



left skew.

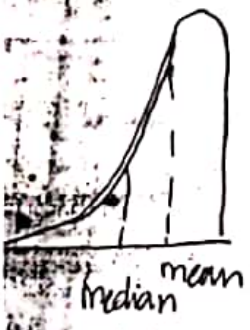
Mean < median < mode

eg Birth weight, Gestation period

SD

V

SD/m



Define the second target of the fifth MDG (target 5B) and list three indicators for measuring its achievement

Improve maternal health.

- Matern. Mortali ratio
- Skilled attendance

Section III: LONG ANSWER QUESTIONS (Answer Any TWO Questions in this section)

HSM 2. Discuss how the key health systems building blocks can influence health care delivery to Kenya's population. (6)

- Health financing
- HIS
- ~~Supply management~~ Health care delivery
- Health workforce
- Leadership & Gov
- Essential medicines/Pharmacy

a) Differentiate between "Experimental studies" and "Observational studies". (4 marks).

b) Dr. Evans conducted a study in order to determine the relationship between exposure to pesticides and development of of skin diseases. He identified 100 subjects who were exposed to pesticides and 100 subjects who were not exposed to pesticides. The subjects in the two groups were followed-up for a specified period of time. At the end of the follow-up period, 50 of the exposed subjects and 30 of the non-exposed subjects were found to have developed skin diseases.

i. Which study design was this? Cohort Give reason for your choice (2 marks)
ii. Give two advantages and two disadvantages of the above study (4 marks)
- Risk can be determined
iii. Compute and compare the rate of developing skin diseases in the two groups. (4 marks).
iv. How much more at risk of developing skin disease are the exposed subjects as compared to non-exposed subjects? (3 marks)
v. What rate of skin diseases among the exposed subjects would have been prevented if none of them had been exposed to pesticides? (3 marks)

RR/ODDS RATIO

EH 3. At the community you are conducting community diagnosis, there are various types of water sources accessible by the community members for their domestic uses:

a) How would you proceed to establish the types of water sources?
b) Which of these would you classify as high risk sources and why?
c) What kind of biological laboratory test would you recommend to ascertain the status of the risk?
d) Briefly describe two types of affordable methods that are used to make water safe for drinking at household level.

UNIVERSITY OF NAIROBI
SCHOOL OF PUBLIC HEALTH

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COMMUNITY HEALTH
CONTINUOUS ASSESSMENT TEST (CAT)

DATE: Thursday, 29th May 2014 TIME: 2.00

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ANSWER EACH QUESTION ON A SEPARATE SHEET OF PAPER

Section I: SHORT ANSWER QUESTIONS (Questions 1 and 2 are compulsory)

1. In a recent community diagnosis in greater Kiambu involving random sample of 800 w of reproductive age, 550 were found to be currently using a family planning method.

a) What is the proportion of women of reproductive age who were currently using a meth

b) Write down a 99% confidence interval for the proportion women of reproductive age w were currently using a method in the population from which this sample was drawn.

Note: the sampling variance of a proportion is given by:

$$\frac{p(1-p)}{n}$$

2. Describe the mechanism of Global warming

Section II: SHORT ANSWER QUESTIONS (Answer any Eight [8] questions)

1. What should an educator take into account and why, when educating a woman who had open heart surgery three months ago.

2. Using one example of your choice, distinguish between Emic and Etic perspectives in he

Reg. No.: .....

SECTION II: LONG ANSWER QUESTIONS:

1. A physical examination was used to screen for breast cancer on 2,500 women with biopsy-proven adenocarcinoma of the breast and in 5,000 age matched control women. The results of the physical examination were positive in 1800 cases and in 800 control women.

   (a) Present the above results in a 2x2 table.

   (b) Calculate and interpret the following:-

   (i) Sensitivity of the test
   (ii) Specificity of the test
   (iii) Positive predictive value of the test

   (c) What can you say about the performance of this test for breast cancer?

2. In a community survey on infant immunization in Kiambu County, the following data are obtained

		Mother's Education Level		
		Primary	Secondary	Tertiary
Immunization Status	Fully Immunized	40	32	16
	Not fully Immunized	20	12	5

   (a) State a null hypothesis for the problem under investigation.

   (b) Carry out the appropriate analysis.

   (c) Give your conclusion.

3. Define a communicable disease and the major points at which measures can be taken to control a communicable disease indicating possible challenges/obstacles at each point.

SECTION III: LONG ANSWER QUESTIONS

1. The Ministry of Health wishes to re-launch a program for Prevention of Mother to Child Transmission (PMTCT). Briefly describe the key areas that will need to be monitored once the program is launched.

2. Using malaria as an example, describe what you understand by the terms anthrophilic endophagic and endophilic and how these can be used to take action against malaria.

3. In 1945, there were 1,000 women who worked in a factory painting radium dials on watches. The incidence of bone cancer in these women up to 1975 was compared to that of 1,000 women who worked as telephone operators in 1945. Twenty of the radium dial painters and four of the telephone operators developed bone cancer between 1945 and 1975.

   (a) What study design is this? (2 marks)

   (b) Present the results in a 2x2 table. (2 marks)

   (c) Calculate and compare the incidence rates of bone cancer in the two groups of women. (6 marks)

   (d) How much more at risk of bone cancer was it for one exposed to radium dial painting than one not exposed? (5 marks)

   (e) How much of bone cancer could be prevented if there was no radium dial painting? (5 marks)

	Bone ca	NO Bone ca	
Radium Exposed			1000
Non exposed			1000

3 Discuss the terms nature, duration, course, fever and pain as used in diarrhoeal diseases and how they can be used in diagnosis and management of diarrhoeal diseases [20 marks].

4 With aid of a diagram, explain the hierarchy of sound Municipal Solid Waste Management (MSWM) [20 marks].

Describe the health systems building blocks in a country. Explain the significance of these building blocks in health care delivery in reference to Kenya's health policy goal.

SECTION II: SHORT ANSWER QUESTIONS (2 hours)

Answer any eight (8) questions. All questions carry equal marks.

1 Community Own Resource Persons (CORPS) are essential in the success of *Community Health Strategy*. Briefly discuss two essential contributions of CORPS.

2 Anthropometry provides one of the most important indicators of children's nutritional status. List five (5) advantages of use of anthropometry in nutritional status assessment.

3 Explain using an example from your health centre practice how monitoring of a health activity provides a means of improving service.

4 Given the following observations on systolic blood pressure in mmHG.

Class limits	Frequency	cf	X	fx
55-60	14	14	57.5	805
60-65	28	42	62.5	1750
65-70	40	82	67.5	2700
70-75	56	138	72.5	4060
75-80	38	176	77.5	2945
80-85	26	202	82.5	2145
85-90	18	220	87.5	1575
	220			15980

Calculate the mean and median

$$\text{Mean} = \frac{\sum fx}{\sum f} = \frac{15980}{220} = 72.64$$

$$\text{Median} = L.L + \left(\frac{\frac{n}{2} - \text{Cf above}}{f \text{ of median}} \times i\right)$$

$$= 70.5 + \left(\frac{110-82}{38}\right) \times 5 = 72$$

SECTION 1: LONG ANSWER QUESTIONS (1 hour)

Answer any two (2) questions

(1) A study was conducted to determine if a relationship exists between smoking and development of coronary heart disease (CHD). 3000 cigarette smokers and 5000 non-smokers were identified and followed up. At the end of the study period, 84 of the smokers and 87 of the non-smokers had developed CHD

	CHD	No CHD
smokers	84	2916
Non smokers	87	4913

(i) Which study design was this? Explain [2 Marks] – cohort – subject identified & followed up to determine whose these get the disease

(ii) Present the results in form of a 2 X 2 contingency table [4 Marks]

(iii) Which measure(s) of disease occurrence can be calculated from this study? [1 mark] Incidence Rate (Rate ratio), RR, AR

$RE = \frac{84}{3000} \times 100 = 2.8$

$RNE = \frac{87}{5000} \times 100 = 1.74$

(iv) Calculate and compare the rates of developing CHD among the subjects in the two groups [7 marks] Rate of developing CHD among smokers is 1.61 times higher than in Nonsmokers

(v) How many time more is a cigarette smoker at risk of CHD as compares to a non-smoker? [4 marks]. $\frac{2.8}{1.74} = 1.61$ times more

(vi) How much of CHD could be prevented if no one smoked? [2 marks] $\frac{2.8 - 1.74}{2.8} \times 100 = 37.85$

(2) In a community survey on women of reproductive age who were currently using family planning, households were classified as rural, peri-urban or urban and the results summarized as follows:

		Residence		
		Rural	Peri-urban	Urban
Currently using family planning	Yes	75	80	85
	No	25	20	15

a) State a null hypothesis for the issue under study

b) Carry out the appropriate analysis

c) State your conclusion, using a significance level of 0.05

d) Name the test you would use if in the analysis above the expected values were too small even after collapsing the table

Note:

$\chi^2_{.95}(6) = 10.645$ $\chi^2_{.95}(3) = 7.815$ $\chi^2_{.95}(2) = 5.991$

$\chi^2_{.975}(6) = 14.449$ $\chi^2_{.975}(3) = 9.348$ $\chi^2_{.975}(2) = 7.378$

$df = (R-1)(C-1)$

$= (2-1)(3-1)$

$= 1 \times 2$

$df = 2$

REGISTRATION NO.....

Section I: SHORT ANSWER QUESTIONS. (answer any eight (8) questions)

1. Distinguish between EMIC and ETIC perspectives in health
2. List five pillars of the Kenya Expanded Programme of Immunization (KEPI)
3. In a developing country like Kenya, development initiatives and entrepreneurship are essential.
   a. List any 3 development agenda
   b. Briefly discuss their impact on the health of the community
4. Write a five minute talk addressing a family in Kibera slums communicating TB support management and treatment.
5. Define the concepts of average and marginal costs. Give an application example in the provision of healthcare.
6. What is an epidemiology triad? (1 mark)
   a. List the determinants of malaria and present them in the form of an epidemiological triad (4 marks)
7. Name 3 water-washed diseases
   a. How can these infections/diseases be minimized?
8. Briefly describe the four main factors that have influenced morality levels and differentials in Kenya between 2003 and 2008-09?
9. State five key functions of a district health management team
10. Briefly outline the steps you would take to define the budget of the casualty or cleaning department in a hospital.

Section III: LONG ANSWER QUESTIONS.

(Answer BOTH Questions in this section)

1. Mr. Garget conducted a study to determine if exposure to factor 'X' is associated with disease 'Y'. He identified 180 subjects with the disease and 360 subjects without the disease. He questioned the study participants if they had been exposed to factor 'X' in the past. Of those with disease, 45 were found to have been exposed while 30 of those without the disease reported to have been exposed to the factor under investigation.
   a. What type of study design was this? Give reason for your response (2 marks)
   b. List any three advantages and two disadvantages of Garget's study (7 ½ marks)
   c. Determine the appropriate measure for strength of association between factor 'X' and disease 'Y' (7 marks)
   d. What does the figure obtained in C above tell us? (3 ½ marks)

2. Define and classify diarrheal diseases with examples, by duration of diarrhea and stool character. Briefly describe the mode of transmission of E.Histolytica using the basic principles of communicable diseases. Suggest general prevention and control strategies of diarrheal diseases.

Saadia (8)

Reg. No.:.....

SECTION III: LONG ANSWER QUESTION (40 MINUTES (20 marks each)
Answer any 2 questions.

1. Health financing is considered as a very important element in implementing Kenya Health Policy Goal.

   (a) Explain with examples how health financing can influence universal health care.

   (b) Describe two mechanisms or initiatives that can improve access to health care for poor households in Kenya.

2. Describe the phenomenon of antigenic variation and its relationship to development of immunity to malaria in endemic areas.

3. In an anthropometric study to assess the nutritional status of school-going children in a rural community, the average weight of children at 10-years of age was found to be 25.7 kg with a standard deviation of 4.5. Accept these values as population parameters and that weight is normally distributed.

   (a) What is the probability that a given 10-year old child in the community will have a weight greater than 24 kg?

   (b) What is the probability that the average weight of 48 10-year olds will lie between 25 and 27 kg?

   (c) What minimum weight do 10-year-olds in the community need to have to be in the top 10% of the children by weight? [7 marks]

Z score of 0.38 = 0.3520;
Z score of 3.29 = 0.0005;
Z score of 1.08 = 0.1401;
Z score of 1.285 = 0.10

Z score of 1.96 = 0.025;
Z score of 1.645 = 0.05 .
Z score of 1.645 = 0.05;

Reg. No.:.....

	Variable A	Variable B
Minimum Value	0.05	-0.20
First quartile	3.07	13.38
Median	6.22	18.29
Mean	8.97	16.61
Third quartile	11.59	25.14
Maximum value	43.34	33.37
Variance	68.94	92.97

(a) The middle fifty percent of the ordered values of variable. A fall between which two values?

(b) Which variable is left skewed? Give reason.

(c) Which of the variables, A and B is more variable?

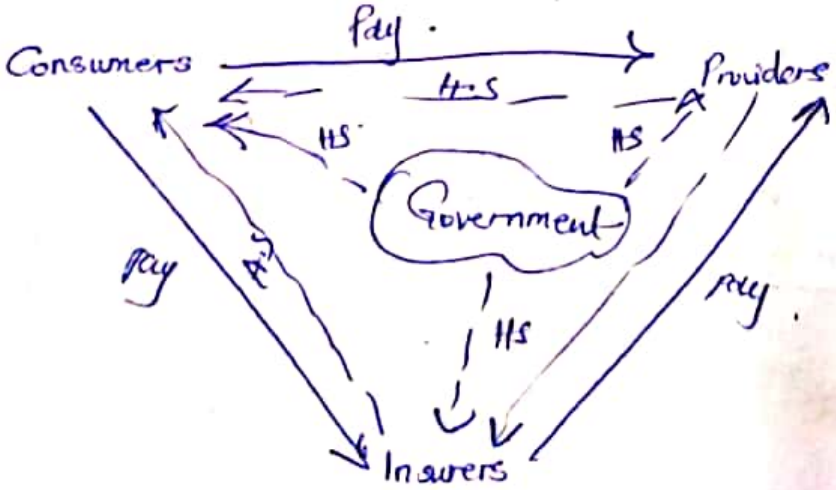
$\frac{\sigma}{\mu} \times 100\%$ = Variable A = $\frac{\sqrt{68.94}}{8.97} \times 100 = 92.56$

Variable B = $\frac{\sqrt{92.97}}{16.61} \times 100 = 58.05$

Normally distributed : mean = median = mode.

Left skewed = mean < median < mode.

Right skewed = mean > median > mode



Section I: SHORT ANSWER QUESTIONS

1. The data below describes the distribution of plasma volumes for patients seen at a clinic in Nairobi.

2.75, 2.86, 3.37, 2.76, 2.62, 3.49, 3.05, 3.12

a) Calculate the mean and standard deviation (SD) of the data

b) Hence calculate the coefficient of variation

2. Describe the phenomenon of biological transmission of communicable diseases and how it may influence prevalence of certain communicable diseases

3. Measuring disease occurrence in populations is one of the activities of epidemiology.

a) Differentiate the two measures of disease occurrence.

b) Give any three uses of the measures mentioned in (a) above.

4. a) Enumerate 3 specific types of indoor air pollutants household members are exposed to in a community setting.

b) When in the course of the day are the highest indoor exposures experienced and why?

5. Briefly explain the immediate and underlying determinants of under-nutrition in children.

6. Outline Any Five significance of demography for health professionals (5 marks)

7. Outline Any Five benefits of investing in school health as a strategy for reducing many of today's causes of death

8. Briefly describe Any five ways through which Epidemiology and Medical Anthropology interlink

9. In the theory of economics why is the slope of the demand negative (downward slope) and supply curve a positive slope (slopes upward slope).

10. Describe Five ways of reducing occupational risks to workers at the work

5. Outline two ways by which urbanization increases the prevalence of respiratory illness among urban dwellers

6. Dr. James is planning to conduct a study on the relationship between physical activity and developing of diabetes. He decides to carry-out a case-control study for his research problem. List two (2) advantages and three (3) disadvantages of Dr. James' study.

7. Select one cultural practice and explain its implication for health

8. List four features of a successful community based health programme.

9. Using examples, distinguish between nutrition screening and nutritional surveillance.

10. a) State three methods of preventing fire outbreak.

b) State two KEY stakeholders who in case of disasters such as fire are the most beneficiaries of material safety data sheet (MSDS). Justify how they benefit from MSDS

11. Define the terms Gonotrophic cycle, Oviposition and Larval habitats. Highlight how these can be used for control of malaria.

12. Define the concepts of average and marginal costs. Give an application example in the provision of health care

Section III: LONG ANSWER QUESTIONS. (Answer BOTH questions in this section)

1. In the budgeting process,

a) Differentiate between step down allocation and activity based costing.

b) Which method would you use to determine costs of a maternity care?

c) What information do you require in order to work out the budget?

2. Following an intervention to improve healthier life styles, the following diastolic blood pressure levels were recorded in a sample from the community under intervention:

Serial no.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DBP level (mmHg)	98	87	79	76	92	87	90	79	85	88	77	78	84	79	90	76	86	84	77	89

a) What is the median blood pressure level?

b) Calculate the mean, variance and standard deviation (use the individual values)

A: Caused by burning of paper & wood → H_2O

B: Flammable liquids which vaporize eg gasoline → CO_2 & dry powder

C: Energized electrical equipment → dry chemical powder

D: Metals e.g Titanium → special powder with melts & covers surface of burning metals

1) Determine age of child
2) Accurate weighing
3) Plot wt accurately on growth chart of appr. gender & compare to Sd.
4) Interpret direction of growth
5) Discuss child's growth & follow up to mother

8. List five activities in the Growth Monitoring programme in a health centre

Height, Age, Weight, Immunization, follow-up of cases.

9. Name all the classes of fire and state the type of fire extinguishers corresponding to each class of fire. Name 2 key stakeholders who should be involved in fire safety

Internal: fire dept officials, workplace in-charge, fire safety & emergency committee

External: town, business, and fire services of that jurisdiction.

10. List four features of a successful community based health programme

11. With examples, compare the following demographic concepts

i. Fecundability and Period fertility — fecundity: probability of a woman will conceive during a menstrual cycle; fertility: ability to give birth

ii. Multiple decrement and Standard period life table — compares rate of separate factors eg occupation & mortality, marriage & mortality; concerned with general mortality of a single cohort by age for a short period of time ≤ 3 yrs

many factors

Section III: LONG ANSWER QUESTIONS. (Answer BOTH questions in this section)

1. The following are distances from the household to the nearest public health facility as recorded in a recent community diagnosis:

HH No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Distance from facility	6	5	2	6	6	7	8	9	5	6	7	8	4	7	2	3

a) What is the median distance $L_m + \left(\frac{\frac{n}{2} - cf}{f}\right) i$

b) Calculate the mean, variance and standard deviation (use the individual values)

c) Calculate the standard error of the mean $SEM = \frac{SD}{\sqrt{n}}$ SEM = sd/√n

d) Construct a 99% confidence interval for the mean distance from household to health facility in the population from which this random sample was drawn.

$\bar{X} \pm t_{16\alpha/2} \times SEM$

Note: $t_{99\%}(15) = 2.9467$

2. Dr. X conducted a study to determine if there was any association between exposure to radiation in uterus and development of tumors. Of the 2215 children who had been exposed to radiation, 59 developed tumors, while of the 1395 children who hadn't been exposed, 13 developed tumors.

a) What study design was this?

Retrospective Cohort Study (prospective)

b) Present the above results using a 2 by 2 contingency table.

	a	b
	c	d

Incidence exp = 2.664%

Incidence unexp = 0.9319%

c) Compare the risks of developing tumors between the two groups of children.

$\frac{a}{a+b}$ $\frac{c}{c+d}$ $RR = \frac{\text{Incidence exp}}{\text{Incidence unexp}}$

d) How many times more is the risk of tumors if a child is exposed to radiation compared to unexposed?

$RR = \frac{I_e}{I_o}$ RR = 2.859 X

e) How much of tumors are attributable to exposure to radiation?

$AP = \frac{I_e - I_o}{I_e}$ AR = 0.02664 − 0.009319 = 0.0173

17 per 1000 cases of wt d2 Radiation

$RR\% = \frac{2.859 - 1}{2.859} \times 100$ = 65.02% ≈ 65%

→ Menopause & changes
→ Accidents d/t bone density & low oestrogen.
→ Cardiovascular dx
→ Healthy eating · ↓salt, ↓ cholesterol

7. What are the main themes and why, when educating a 60yrs old rural woman
- Nutrition · Accidents · Δc to expect postmenopausal

8. Achievement of one Millennium Development Goal through environmental interventions may hasten achievement of other MDGs. Explain.

9. Classify diarrheal diseases by stool characteristics. Highlight major points at which measures can be taken to prevent and control of diarrheal diseases among children.
1. Watery : Secretory or
2. Fatty
3. Inflammatory = Pus, Blood,

10. Illustrate the application of the concept of marginal costs in the delivery of health /services—Cost to produce any extra item
— No extra cost in having a radiograph ie, XR movie as they are already in extend
— However extra cost in paper, power

11. Using one example of your choice, distinguish between Emic and Etic perspectives in health

12. Describe role of Community Health Extension Workers (CHEW) under the Community Health Strategy

Section III: LONG ANSWER QUESTIONS (Answer BOTH questions in this section)

13. In a survey on a community living around a factory suspected to be causing air pollution, the number of hospital visits in the preceding year for the youngest child under 5 years is recorded for a sample of households as shown below:

HH No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
No. of visits	4	7	6	6	3	7	4	9	5	8	7	8	4	7	9	7	6	4	7	3

3 11 8 9 1 12 4 9 7 17 13 18 5 14 20 15 10 6 16 2

a) What is the median number of visits?
n+1/2 = 21/2 = 10.5 (6+7)/2 = 6.5

b) Calculate the mean, variance and standard deviation (use the individual values)
x̄ = 6.1 Variance = 1.917 s.d = 1.384

c) Calculate the standard error of the mean,
SEM = sd/√n = 1.384/√20 = 0.31

d) Construct a 95% confidence interval for the mean number of hospital visits for the youngest child less than 5 years in the population from which this random sample was drawn.
6.1 ± 2.093 × 0.31 = 6.75

Note: $t_{.99}(.9) = 2.539$; $t_{.995}(19) = 2.8609$; $t_{.975}(19) = 2.093$; $t_{.995}(20) = 2.8453$

14. Using malaria vectors as an example, describe the terms Anthrophilic, Endophilic and Endophagic, and how these can be used in prevention and control of malaria
Usually bite humans : repellant creams ↓ITNs
Rests inside house after feeding (IRS)
enters house to feed : spray indoor ↓ITNs

Q9 Exit from reservoir → Proper disposal of faeces
Proper use of pit latrine.
Treat infected persons

Transmission :- Washing hands before handling food.
- Washing hands after visits to toilet
- Boiling drinking water
- Strict kitchen hygiene practices

Entry into susceptible host
- Thorough washing of vegetables in undiluted vinegar
- Vaccination against cholera