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 mortality 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.

COMMUNITY HEALTH

9/2/2014

1. Differentiate between measures of prevalence and measures of incidence in epidemiology. (2 marks)

2. Write down the balancing equation of demographic measures.(2 marks)

$$P_{t+1} = P_t + B - D + IN - out$$

3. Expound on the EMIC and ETIC perspectives in social anthropology. (3 marks)

4. Health education focuses on 3 main components. Outline them. (6 marks)

   1. Health promotion
   2. Prevention of disease
   3. Rehabilitation

5. Draw the following curves:
   - Unity Elasticity (1 mark)
   - Perfect Elasticity (1 mark)
   - Supply & Demand Curve, with mention of the significance of the equilibrium point. (3 marks)

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) Calculate the coefficient of variation

$SD = \sqrt{Variance}$

$Variance = \frac{\sum f x^2 - \sum f x}{n-1}$

Mean 3.0025

$SD: \frac{\sum (x-\bar{x})}{n-1} = 0.3112$

$CV = \frac{SD}{\bar{x}} = 9.648$

x = Midpoint

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.

- Prevalence
- Incidence

4. a) Enumerate 3 specific types of indoor air pollutants household members are exposed to in a community setting.
   ① Aerosols ② Insect repellants ③ Cigarette smoking
   ④ Paint(Lead poisoning) ⑤ Asbestos

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.
   - Education of mother
   - Socioeconomic

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 (5mks)

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
    - Awareness
    - Drills & training
    - Signs & hazards
    - Supervision

5. Outline two ways by which urbanization increases the prevalence of respiratory illness among urban dwellers / air pollution.
Global warming

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

1) Evidence-based.
2) Community engagement
3) Strong partnership

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.
Identifying ... how we mechanism ...
becoming su.

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
cost per unit item 8 output produce.
the cost of producing an additional item unit of output at any given point.

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? 84.5

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

$Mean = \frac{\sum x}{n} =$ 84.05

variance $\frac{(x - \bar{x})^2}{n-1}$

$sd = \sqrt{variance}$

REGISTRATION NO: ....

UNIVERSITY OF NAIROBI

SIRMA   *S*

School of Public Health

4th YEAR BACHELOR OF MEDICINE AND BACHELOR OF SURGERY

CONTINUOS ASSESSMENT TEST (CAT)

DATE: Thursday 13, 2015   TIME: 2.00PM – 5.00PM

INSTRUCTIONS

Read and follow the 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 QUESTIONS. Answer any other eight [8] questions.

Each question carries 10 marks.

Section III: LONG ANSWER QUESTIONS.

Answer Two Questions. Each Question Carries 20 Marks.

The total time allowed for 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 compulsory)

5. Immune system deficiency.

1. Up to early 1990's, the Macdonald food industry used **Chlorofluorocarbons** (CFCs) to manufacture their food packaging materials. Explain why this was a public health concern.
   1. Depletion of ozone → skin cr, cataracts, macular deg. → premature ageing
   2. CNS effects upon inhalation → headache, lightheadedness; alcohol like effects
   Arrhythmias   3. Ingestion → N,V,D   4. Contact → Dermatitis & skin irritation

2. In a study of cholera vaccine, the rate of developing cholera was estimated among those receiving vaccine and those receiving placebo: *Vaccine efficacy /effectiveness (VE) = RiskUV – R / RiskUV*

	Cases	Person-years
Placebo 100 per 1000 9.97%	90	903
Vaccine 20 per 1000 2.01%	17	847

= 9.97%
90/903
17/847
= 2.01%

80 per 1000 dxs have been prevented.

How much of the disease would be prevented by vaccination? (5 marks)
80%

$VE = \dfrac{9.97 - 2.01}{9.97}$

$= 0.798\%$ *80%*

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

VE = 1 – RR
=

Nutrition 3. Briefly outline any five high impact nutrition interventions in Kenya.
   HINI

H97 4. (a) Briefly describe the logical framework approach in evaluation (2 marks) ✓
   (b) List and define the factors which are under management control (3 marks)
   Setting standards, Measuring actual performance, Taking Corrective Action, Calculate and

Census 5. Briefly describe five main errors that are likely to occur before, during and after conducting a national populations and housing census in Kenya

1. what was intended to happen: (Objectives)
2. "   has been achieved or objectives
3. What values should be placed on methods used.
4. What use can be made from info gained from 1–3
5. What is the whole of territory are about ...

NCD

(b) Classify viral hemorrhagic fevers (VHF) by families of causative agent. Give two examples in each family.

(c) Propose prevention and control strategies you would put in place to protect Kenya from Ebola outbreak.

Reservoir — screening primates in 2005
Tr: → Isolate infected people
→ Immediate burning / burial
→ PPE
→ sterilisation of instruments

mass
Susc host → Health education
→ Quarantine Court policy)

Leadership
Objectives
Consults/Involve
stakeholders
Resource org
advertise/sensitize
plan days A's &
divide students into
groups

A group of medical students have volunteered to participate in a free one-day medical camp to be held at a local community centre in a rural area. Outline how you would organize the students to offer effective services.

— designate jobs
— group jobs
— Reporting relshps btn jobs
— distributing authority among jobs
— coordinating res btn jobs
— differentiating btn positions

Given the following observations on systolic blood pressure in mmHg

$\bar{x} = \frac{\Sigma fx_c}{\Sigma f} = \frac{193}{2543}$
$= 0.0759$
$= (0.0759 \times 10) + 125$
$= 125.76$

variance $= \frac{\Sigma x^2 - n\bar{x}^2}{n-1}$
$= \frac{8349}{} = 3.06$
$cd = 10$
$= 2879$
$= 3.06 \times 10^2$
$= 306.15$
$Sd = 17.5$

Class limits	X	frequency	CF	Xc	FXc	Fxc²
90-100	95	205	205	-3	-615	1845
100-110	105	326	531	-2	-652	1304
110-120	115	458	989	-1	-458	458
120-130	125	514	1503	0	0	0
130-140	135	420	1923	1	420	420
140-150	145	362	2285	2	724	1448
150-160	155	258	2543	3	774	2322

Pos of med = $\frac{2543+1}{2}$ $119.5 + \frac{1272-989}{514} \times 10$
$= 1272$
a) Calculate the median $= 125.01$
class (120-130)

b) Use the coded data method to calculate the arithmetic mean, variance and standard deviation

5. (Compare and contrast Cohort and Case-control studies
↓ both analytic studies

Incidence
↳ exposure over
↳ follow up over
↳ expensive cannot
↳ good for
rare exposure

Incidence
outcome
↳ takes shorter time
↳ relatively cheap
↳ good for rare outcome

(b) Researchers identified a group of 100 vegetarians and 200 non-vegetarians. The subjects in the two groups were followed-up for 30 years. Eight (8) of the vegetarians and 20 of the non-vegetarians developed heart disease during the 30-years follow-up.

(i) Which study design was this?

(ii) Present the results in a 2 by 2 (2X2) contingency table.

he appropriate measure (iii) Calculate and interpret the appropriate measure for strength of association. $RR = \frac{8/100}{20/200}$

	Present dx	-Ve	Total
Veg	8	92	100
N/veg	20	180	200
Total	28	272	300

$= 0.8$
Protective

A : caused by burning of paper & wood -ish-
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 & enters surface

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

8. List five activities in the Growth Monitoring programme in a health centre
Height Age Weight Immunisation 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 unit
→ External : owner, business, and trespassers of that smiled child.

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 particular time. think
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	8	8	6	6	7	8	9	5	6	7	8	4	7	8	9

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

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

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

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

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	a

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

Incidence exp $= 2.664\%$
Incidence nexp $= 0.9319\%$

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 nt d2 Radiation
$AR\% = \frac{2.859 - 1}{2.859} \times 100$
$= 65.02\%$
65% of tumors among those exposed are d2 exposure

- Level -y
- Contraceptive *prevalence* ✓
- Age at marriage ✓
- Desired family size
- Abortion ✓

1. Marriage patterns, [...]
2. Contraception: ↑ use of modern & effective methods
3. Postpartum infecundability: Abstinence & Breeding
4. 1°/pathological sterility
6. Abortion - people seeking H for abortion related complications

absames

3. Briefly describe five main factors that have influenced fertility levels and differentials in Kenya over the past four decades
   Social/Economic/Cultural

4. State two reasons why it is necessary to have a policy that states *the* that norms and standards for health service delivery in Kenya → Monitoring & evaluation
   → provides rational framework to guide *Effective service delivery & avoid unl* investment in health sector across country *Equitable, effective* framework
   2 ensures equity in av- of investments needed for service delivery

5. The industrial demonstration in the United States of America in 1980's "Can't Take No More" was about poor working conditions. Outline two health problems mentioned by the demonstrators Long working hours with no wages
   - Harsh unsafe working conditions.
   → HIV/eds
   → Focused ANC

6. List five areas addressed by the WHO preconception care intervention package → TT
   → [...] STI, HIV, cmu
   : adolescent health, Genetic counselling → Preventing b t [...] lifestyle Δs
   Status & Supplementation → Screening & Mx of [...]

7. Why does Social Health Insurance appear to be more promising for financing health care than private insurance in poor countries like Kenya? [...]
   → [...] → Pension easier mechanism → To Fund private health
   → [...] → [...] → Allows additional funding into H/d (public)

8. List four features of a successful community based health programme → villd [...] people have a greater
   → comm. participation/engagement → sustainability/local ownership → villagers
   → intersectoral collaboration. → evaluation support [...] → [...] of funds

9. Using examples, describe the synergistic relationship between malnutrition and infections.
   → weakens immune system & Vit A def → xerophthalmia, clin infection
   Vit A → Measles

10. Outline the major points in a communicable disease process and measures in prevention and control that can be undertaken at each point

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

1. Describe the key elements of a logical framework tool, explaining how it can be used to evaluate interventions to reduce maternal mortality
   Goal (Obj)
   2. Purpose
   3. Expected Results / output
   4. A°s
   5 Input

2. (a) Screening tests are often use for screening populations. List any five requirements for a test suitable for screening
   - Safe
   - Easy   - Acceptable, Inexpensive
   - Quick   Reliable   Quick Result
   - reliable   Valid   Acceptable
   (b) With examples, give any five activities of epidemiology   Health determinants   Easily administered.
   Screening   Minimum harm.
   - Detn. pop e risk
   - Leaving & research
   - Id pop e risk
   - [...] measures

The table below presents the results of a case control study conducted to determine if there was any association between a certain environmental exposure and development of asthma.

		Cases			Control		
Had been exposed	+	112	a	TP	176	b	FP
Had not been exposed	-	88	c	FN	224	d	TN

(c) Calculate and interpret the appropriate measure for strength of association between exposure to the environmental factor and development of asthma.   AR

① Access to contraceptives
② skilled & trained HW
③ Avail of BEOC
④ Avail of CEOC
⑤ Referrals

Indicators
Coverage/pop 4/5000
2C ≥ 1/6000
leakage → < 12
≥ 100%
: relative EOC
< 5h > 152

$$OR = \frac{112 \cdot 88}{176 \cdot 224}$$
$$= 1.62$$

$$AR = \frac{OR - 1}{OR} \times 100$$
$$= \frac{0.62}{1.62} \times 100$$
$$= 38.27\%$$

OR - 23 - 24 - 24 - 70 - D3
41. 89. 86. 15 Episodic [...]

A = 31°
Quality

SIRMA

3

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

DATE: Thursday, 30th May 2013   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 Hemorrhage = Mx 3rd stage labour
② Infections = ABX, Tetanus Vaccines, clean delivery.
1. List five evidence-based interventions for addressing the top three direct causes of maternal
   deaths globally. *③ Unsafe abortion = Post abortive care, FP ⑤ Obstructed labour = partogram*
   ④ Hypertensive dx (Eclampsia) = MgSO₄

2. Using a systems approach, outline how you would monitor ante-natal care in a health centre.
Av. of supplies →Continuity →Impaired comm →Structure   *★Effectiveness & efficiency*
→Integrated service delivery → Indicators   *★Actual task /A⁰*
★Quality of services ★Outcome ★Impact

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

IDENCE [→Risk of probability determination. → Magnitude of a h·r·e in a pop
→Study of aetiology of diseases → Acad trends or patterns of events
3. What are the measures of disease occurrence? What are their uses in public health? *PREVALENCE*
→ planning & allocations of resources
Incidence → Control measures
Prevalence (point & period) N
4. Briefly explain the significance of using upper arm circumference (MUAC) indicator in
   assessment of nutritional status of children at health facility and community levels.
wasting
acute, main ·
5. Briefly describe five main errors that are likely to occur before, during and after conducting a
   population and housing census in Kenya

6. Application of the so called '3 R's is crucial in implementation of occupational health
   and safety at work places. Briefly describe what they mean citing an example for each
Worker
R. Rights & Responsibilities   Report = Regular check-ins
Supervisor Resp.   Respond = Good emergency response plan.
Employer Resp.   Review = detailed documentation of problem, solutions
& policies adjusted accordingly

MUAC: →Both adults & children → Measures accurate quantitative data
→Both under & overnutrition →Community diagnosis
→Predicts mortality.
→Sensitive to Acute ∆s in nutrition status
★→Current & Past nutrition status
→Convenient, non invasive & culturally acceptable

14

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

[handwritten: Improve maternal health.]
[handwritten: — Maternal Mortality ratio; — Skilled attendance]

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

HSM

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

[handwritten annotations: — Health financing — Leadership & Gov; — HIS — Essential medicine & Pharmacy; supply management, Health service delivery; — Health workforce]

2. 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.

   [handwritten: Cohort]
   i. Which study design was this? Give reason for your choice (2 marks)
   ii. Give two advantages and two disadvantages of the above study (4 marks)
   [handwritten: — 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)

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.

[handwritten vertical text left margin: RH/oddl ARAF]

- ✔ Increasing no. of food street vendors
- ✔ Engagement of untrained food handlers and non-medically fit food handlers
- ✔ Laxity in application of relevant legal measures (Public health acts related to food hygiene/ sanitation)

EPID 17. **Define epidemiology?**

It is the study of how diseases and other health problems are distributed in the population and the factors that influence or determine their distribution.

18. PEM, among under 5z especially, is the single most widespread nutritional disorder in Kenya today. Briefly outline 4 prevention strategies that you would recommend to relevant policy makers.

- ✔ Improve Household food security
- ✔ Adequate maternal & child care
- ✔ Improve access to health care services
- ✔ Ensure a Healthy environment

Educate 2 PC Gen Adeq comp foods *Infections control of CD*

HSM 19. Briefly describe and illustrate by means of a sketch diagram the concept of "PUUL-PUSH model?**

- ✔ PUSH model the government gives health centres the goods whether needed or not as per a schedule that is predetermined i.e is faster less planning
- ✔ PUUL model the health centres in the periphery request for the goods as per need i.e is more efficient

EPID 20. List the Advantages and disadvantages of prospective cohort studies to case control studies?

Prospective cohort studies

Adv.
- Incidence or risk can be determined
- Multiple outcomes for a given exposure can be determined
- Suitable for rare exposures

Dis.
- long time required
- Relatively expensive
- large number of subjects required
- loss to follow up of subjects
- Unsuitable for rare outcomes
- Subjects might change their exposure status

Case control studies

Adv.
- Take less time
- Requires less no. of subjects
- Can study multiple exposures for the given disease

Dis.
- Required information may not be available
- Cannot determine risk or incidence
- Getting suitable controls may be a problem
- May not be able to determine cause of events

PHC 21. List the 8 elements of PHC

31. Describe briefly the theory of the demographic transition and point out its validity in understanding kenya's population dynamics.

- The demographic transition is a model of population change. As such it depicts in general terms the change from relatively uncontrolled high fertility and mortality to relatively controlled low fertility and mortality that took place in most of the industrialized countries during their period of economic expansion and growth.

19th Century Europe	21st Century Kenya
Growth rate 1.5% at its highest	Growth rate 3-4%
Mandatory education for children	A lot of children still at home working
Levels of fertility CBR <35	CBR>35 other African countries 50
More job opportunities	Few job opportunities
Momentum for growth low	Momentum for growth high

It is not valid to use the theory of demographic transition due to the above mentioned difference btw 19th century Europe and Kenya today to understand kenyas population dynamics

32. Define the following terms:
- Prevalence- It is the amount of health problem in the population *Proportion of people in a defined population who have outcome of interest at a given time*
- Sensitivity of a screening test - it is the proportion of truly ill people in the screened population who are identified as ill by the screening test

(probability test a test will be the ever dx is present)

33. Write short notes on the opportunities that allow for health education practice at the health centre?

On admission / As advised of post/surgery / On Discharge.

- Integrated services such as the maternal and child health clinic
- One on one interaction with mothers e.g in family planning, Child welfare clinic
- Waiting rooms for patients so that they can get health education through T.V or brochures and learning material

34. In what ways does culture define food? *Type of food consumed, foods restricted. Determines how acquired. Who prepares. How prepared*
- The meaning of food is an exploration of culture through food. What we consume, how we acquire it, who prepares it, whose at the table and who eats 1st is a form of communication that is rich with meaning

Types of goods distributed to low class & poverty suffering

35. Describe briefly measures that can be used to control contamination to food in an institution? *Maintain Quality Control & sanitary practices through all the stages of processing transport, preservation until it reaches Institute*
- Improve sanitation e.g clean work counters, separation of work counters and teach appropriate sanitary practices like washing hands before handling food, after visiting the toilet, washing uncooked vegetables and unpeeled fruits in chlorinated water
- Use of proper storage facilities like fridges *to preserve food.*
- Use of chlorinated water
- Screening food handlers for carrier state and yearly medical exams
- Enforce relevant legal measures if not complying to Public health act e.g cooking, storing *Strictly apply legal measures.*

36. Briefly describe the role of an Enrolled community nurse in Kenyas health services?
- Help with patient follow up and rehabilitation
- Educating patients and the public about various medical conditions *e.g HIV, STI, diabetes* *healthy behaviors & environments*
- Provide advice and emotional support to patients family members
- Help *control spread of CD. & prevent dx eg DM, HTN*
- *Caregiver - Provide prenatal care & educ for expectant mothers incuding info about nutrition & post partum care etc*
- *lead evidence based quality practice & policy dev*
- *Advocate for community needs eg safe H₂O & food, safe ... lead to healthier people.*

(left margin:) Reasearch to inform their practice & to improve health of their ...
encouraged members to ensure to know hygiene & comm...

N.b TFR 1977-78 8 children per woman

2003 4.9 children per woman

Ideal 2.5 children per woman to reach replacement level fertility

Others- general marital fertility rate, general legitimate fertility rate, general illegitimate fertility rate

38. Define measures used to describe the frequency of disease in the population. What are their uses in Public health?

- Point prevalence – numerator no. of existing cases of disease in a specific population at a particular point time, denominator no. of persons in the population at that particular point
- Period prevalence – numerator number of existing cases of a condition in a specific population during some specific period e.g 6 months denominator no. of people in the population during the period
- Uses of prevalence – Amount of health problem in the population, planning, trends in disease occurrence, surveillance – detection of outbreaks, evaluation – controls and preventive measures
- Incidence – the number of new cases/ occurrence in population in specified period of time i.e numerator no. of persons with new occurrence of a disease during a specified time period and denominator no. of persons initially at risk. Use this is a measure of risk.
- Attack rate – is an incidence rate (usually expressed as a percentage). Describes the incidence of disease when the population at risk is exposed for a short period of time
- Secondary attack rate – measures the number of cases of disease developing during a stated period among those members of a closed group who are susceptible e.g school. Numerator no. of new cases of a disease in a confined unit following the first case, denominator is the number of members of the group exposed to the initial case. Tells us h Host ious the disease is.

39. With reference to the epidemiological triangle, list 6 interventions (2 related to each factor of the triangle) that could sed to control diseases?

Agent   Environment

- Host – People can reduce their level of exposure e.g reduced risk factors like using ITN or improve their response to causative agent by improving their immunity e.g malnutrition decreases immunity
- Agent – If agent is biological can be destroyed and if chemical people can wear protective clothing to shield themselves or avoid all together
- Environment – These are extrinsic factors within the environment which affect the agent and the opportunity for exposure. Have a clean and sanitary environment e.g clear bushes for malaria, safe excreta disposal systems

40. Outline the main activities of MCH clinic?
- To treat diseases in the clinic
- To identify high risk cases and arrange frequent follow up or referral
- To prevent disease particularly through use of effective immunization

Maternal Health Services
Focussed ANC – High risk screen , vaccine, PT, Tetanus,
Maternal / Delivery care – Partograph.
Postpartum care,
Family Planning – Igcom, service delivery

Child Health Services
New born care
Immunisation
Growth monitoring
US clinic – Sick child clinic

Left margin handwritten notes (rotated):

Attack rate – No of new cases occurring during duration of outbreak among pop at risk of dpt

of outbreak

of Attack rate – Proportion of those exposed to dt who develop disease

Attack rate is rate that dvp dt due to exposure

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 eg Titanium → special powder which melts & forms surface of burning metals

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

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 crew
→ External: living, business and trespassers of that switch them.

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

11. With examples, compare the following demographic concepts
i. Fecundability and Period fertility
ii. Multiple decrement and Standard period life table

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	8	6	6	7	8	9	5	6	7	8	4	7	8	9

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

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

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

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

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	a

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

Incidence exp = 2.664 %
incidence unexp = 0.9319%

d) How many times more is the risk of tumors if a child is exposed to radiation compared to unexposed?
$RR = \frac{I_e}{I_0}$ $RR = 2.859 \times$

e) How much of tumors are attributable to exposure to radiation?
$AR = \frac{I_e - I_o}{I_e}$
$AR = 0.02664 - 0.009319$
$= 0.0173$
17 per 1000 cases of wt d/a Radiation
$AR\% = \frac{2.859 - 1}{2.859} \times 100$

SECTION II: LONG ANSWER QUESTIONS:

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	8

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

(b) Carry out the appropriate analysis.

(c) Give your conclusion.

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, these 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? AR. (5 marks)

	Bone ca	No Bone ca	
Radium Expose			
Non Exposed			

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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
smoker	84	2916
Non smoker	87	4913

(i) Which study design was this? Explain [2 Marks] — cohort
- subject identified & followed up to determine where they get the d/s

Exposure

(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

$R.E = \frac{84}{3000} \times 100 = 2.8\%$

(iv) Calculate and compare the rates of developing CHD among the subjects in the two groups [7 marks] Rate of developing smokers who dev. CHD is 1.9 than in Nonsmokers

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

(v) How many times 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] $\frac{2.8 - 1.74}{2.8} \times 100 = 37.85\%$

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

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:
$x^2_{95}(6) = 10.645 \quad x^2_{95}(3) = 7.815 \quad x^2_{95}(2) = 5.991$
$x^2_{975}(6) = 14.449 \quad x^2_{975}(3) = 9.348 \quad x^2_{975}(2) = 7.378$

Fri? 2?

$df = (R-1)(C-1)$
$= (2-1)(3-1)$
$= 1 \times 2$
$df = 2$

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SECTION 2: SHORT ANSWER QUESTIONS [1 hours]. ANSWER SIX (6) QUESTIONS ONLY.

1. Define the concept of cross elasticity of demand with an example.

2. Using a schematic diagram, illustrate the causal chain of non-communicable diseases.

3. a) Briefly discuss the merits and demerits of chlorination of drinking water (2 marks
    b) Define critical control point (CCP) in respect to food hygiene and give TWO examples how CCP can be applied (3 marks).

4. a) State the THREE epidemiologic variables that are considered when a foodborne outbreak occurs for the purpose of conducting case interviews and collection of samples (3 marks).
    b) Name two main categories of pesticides that are not classified as organochlorines (2 marks).

5. Describe the five components of communication?

6. Describe the difference between de jure and de facto approaches of census enumeration (5 marks)

7. Select a cultural practice and outline any five (5) consequences for health

REGISTRATION NO.

4. Briefly distinguish between replacement level fertility and zero population growth

5. The life of a community is organized around unwritten regulations. Using your experience and observations in the recent household program
   a. Identify and briefly explain three (3) areas and relevance of occupation and health of the household
   b. Adaptation to changing economy in diminishing land for cash crops

6. Define gender and outline its relevance to health.

7. Intraocular pressure (in mmHg) for a sample of elderly patients were recorded as follows:

| 15.2 | 16.1 | 17.3 | 14.5 | 16.3 | 13.6 | 12.7 | 13.4 | 14.8 |

   a. Calculate the median
   b. Calculate the mean
   c. What is the range?

8. Sketch the WHO recommended TT immunization schedule for women of childbearing age, indicating the timing and protection of each of the five TT doses.

9. Compare and contrast case control studies with cohort studies

10. A society suffers both direct and indirect costs of disease. Illustrate this observation for Kenya using an infectious disease of your choice.

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

1. Results from a survey involving the nutritional status of the youngest child and mother's occupation were summarised as below:

Occupation of mother		Nutritional status – youngest child		
		Undernourished	Fair	Obese
	Skilled	2	25	32
	Non-skilled	30	20	15

Use a test of hypothesis to determine whether there is any association between the nutrition status and occupation of the mother
Note $X^2_{.95}$ (z) = 5.991

2.
   a. What is a viral haemorrhagic fever (VHF)?
   b. VHF viruses are members of four (4) distinct families. Classify them with at least two (2) examples
   c. Discuss the modes of transmission of VHF
   d. Suggest prevention and control measures of VHF

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Section II: LONG ANSWER QUESTIONS.

(Answer BOTH Questions in this section)

1. The results of a study of the incidence of pulmonary tuberculosis in a certain village is given in the table below. All individuals in the village were examined during two surveys made two years apart, and the number of new cases was used to determine the incidence.

Category of household at first survey	No. of persons	No. of new cases
With culture positive cases E	500	
Without culture positive cases E_0	10,000	

$\frac{10 \times 100}{500} = 2$

a. What is the incidence of new cases in households that had a culture positive case during the first survey

$1\% \frac{\times 100}{10000} = 01$

b. What is the incidence of new cases in households that did not have a culture-positive case during the first survey?

$RR = \frac{IE}{IE_0} = \frac{2}{0.1} = 20$

c. Calculate the appropriate measure for strength of association of acquiring tuberculosis in households with a culture positive case compared to households without tuberculosis

aetimes for those exposed
risk of getting dee

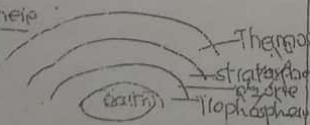d. What does the figure obtained in (c) above tell us?

2. Describe

a) The concept of global warming

b. The health consequences of global warming

Global Warming

Greenhouse gases - CO_2, Methane, Water vapour, CFCs

Greenhouse effect

UV rays penetrate green house then used by plants. Hit the ground and are transformed into Heat energy (long waves), which cannot get out / penetrate the greenhouse.

Atmosphere

Thermosphere
Stratosphere - ozone
Troposphere
Earth

Global warming occurs at the Troposphere level
There is accumm of CO_2, CFCs and other green house gases

Usually these are thrown out into the cost atmosphere and replaced by cool air

they are transformed into heat energy (long waves) that cannot penetrate. The Troposphere → global warming

HEALTH CONSEQUENCES

Drought
Heat stress related problems
Heat favours pests which eat crops → No food → Malnut
Heat favours recording of vector eg Mosquitos → td malaria

Heat / Global warming causes drier in highland areas which did not have them as often causes frequently
Sea level → melting ice caps

CFC when go to O with reactive

The reactive ozone to form unstable compound which combines with water to form. This destroys ozone causing its thinning

Normally Ozone absorbs UV rays as the reactive UV absorbed as passes and affects

CONSEQUENCE

Skin cancers

SECTION 1: LONG ANSWER QUESTIONS (1 hour)

Answer any two (2) questions

1) Cohort study

Epidemiology

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 follow-up. At the end of the study period, 84 of the smokers and 87 of the non-smokers had developed CHD.

Observational
Analytical
Cohort
Prospective

(i) Which study design was this? Explain [2 Marks]

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

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

Relative Risk / Attributable risk

(iv) Calculate and compare the rates of developing CHD among the subjects in the two groups [7 marks]

(v) How many times more I a cigarette smoker at risk of CHD as compares to a non-smoker? [4 marks]

(vi) How much of CHD could be prevented if no one smoked? [2 marks]

	Yes	No	Total
skis	84	2916	3000
S	87	4913	5000
Total	171	7829	8000

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
	Total	100	100	100

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:
$X^2_{95}(6) = 10.645$ $X^2_{95}(3) = 7.815$ $X^2_{95}(2) = 5.991$
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