

BA OYO
ABANTU
WECHI PONDO

CHIKATULIKA

THE UNIVERSITY OF ZAMBIA

SCHOOL OF HUMANITIES AND SOCIAL SCIENCES

2017 ACADEMIC YEAR FINAL EXAMINATIONS

DEM 2414: RESEARCH AND STATISTICAL METHODS IN DEMOGRAPHY

TIME: THREE HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS IN SECTIONS A AND C; ONE QUESTION FROM SECTIONS B AND ONE FROM SECTION D.

SECTION A

ANSWER ALL QUESTIONS IN THIS SECTION. THIS SECTION CARRIES 30 PERCENT.

ALL ANSWERS MUST BE VERY BRIEF AND TO THE POINT.

1. Define or explain the terms below making sure you also give the formulas where required in each case:

- a) Sampling fraction
- b) Sampling interval

2. What is the difference between

- a) Concept and variable
- b) Numeric and nonnumeric indicator

3. Indicate what sorts of questions are being referred to here:

- a) A question used when respondents are asked to make a judgment in terms of sets of ordered categories, reflecting the intensity of judgment involved.
- b) A question with predetermined options to choose from.
- c) A question asked depending on the response to the preceding question
- d) A method of organizing a large set of questions that have the same responses
- e) A question that applies only to a segment of the sample.
- f) A question without predetermined categories to choose from.

4. For the statements below, indicate whether they represent qualitative or quantitative research techniques:
- A researcher uses focus group discussion in attempting to understand the patterns of social relationships among kaponyas at KMB Bus Stop. He then writes a report in which he quotes them extensively in their own words.
 - Another researcher studies the ngw'ang'wazi using a questionnaire to collect his data. After this, he feeds the data into a computer and prints out a frequency distribution of their socio-economic and demographic characteristics.
 - Of the methods above, which one are you expected to use in Department of Population Studies?
5. Indicate what the flaws are with the following questions in a questionnaire:
- Do you accept the unimaginative way the university administration is handling student affairs?
 - Are you cognizant of the dysfunctional aspects of the registration exercise at the beginning of each semester?
 - Do you favour the abolition of free education and the reduction of student allowances at CBU?
 - Do you oppose the administration's handling of student affairs because they are unfair?
 - Are you not of the view that the administration should change its attitude towards the workers' welfare?
 - Do you smoke marijuana?
6. Researchers use both open-ended and closed-ended questions to collect data. Which of the following statements is true, false, or neither?
- Open-ended questions directly provide quantitative data based on the researcher's predetermined response categories
 - Closed-ended questions provide quantitative data in the participant's own words
 - Open-ended questions provide qualitative data in the participant's own words

- d) How much does your father earn per month?
- e) What is your father's religious affiliation?

9. Complete the following statements:

- a) A cross-sectional study is.....
- b) A longitudinal study is

10.

- a) Identify the two research designs below and briefly describe them
- b) For each design give one advantage and one disadvantage.

i.

R	EXPERIMENTAL	O1	X	O2	Diff = O2 - O1
R	CONTROL	O3		O4	Diff = O4 - O3

ii.

	EXPERIMENTAL	O1	X	O2	Diff = O2 - O1
	CONTROL	O3		O4	Diff = O4 - O3

11. Indicate the type of sampling designs represented by the situations below:

- a) A researcher selects students in his class for a study on gossiping after which he writes a report.
- b) A researcher selects every tenth household after having selected the first household randomly from the first interval of serially numbered households.
- c) A researcher selects ten hostels randomly and then interviews all the students from these hostels.
- d) A researcher selects 100 students using a table of random numbers and then gives self-administered questionnaires to the students.
- e) A researcher subdivides the student population into female and male categories and then selects equal numbers of males and female students randomly in a population where the ratio of males to females is four to one.
- f) A researcher selects every tenth household after having selected the first household randomly from serially numbered households.

12. Which of the following are examples of published or unpublished work

- a) A student's research report done in partial fulfilment of the course requirements in DEM 2414
- b) A master's thesis submitted for examination at CBU.
- c) The book - principles of Demography - by Donald Bogue.

- d) An article on declining fertility trends in Africa in a peer reviewed journal – Studies in Family Planning.
13. Which of the following statements below is a paradigm or theory or none of the two.
- a) A postulated relationship between two poverty and crime
 - b) A school of thought or research perspective
 - c) An established relationship between the protestant ethic and the spirit of capitalism
 - d) Phenomenological approach to the study of contraceptive use among students
 - e) The use of survey research as the accepted way of conducting research.
14. Indicate which of the following are primary or secondary data sources or none of the two.
- a) A research project undertaken by a student to investigate students' attitudes towards the counselling centre.
 - b) An analysis of contraceptive use using data from the Zambia Demography Health Survey
 - c) A study by a lecturer in the School of Education to investigate the impact of examination leakages on the academic performance of UNZA students.
 - d) A research report based on a desk review of reports on the causes of HIV/AIDS in Zambia.
15. Complete the following statements:
- a) A general objective is.....
 - b) A specific objective is.....

SECTION B

ANSWER ONE QUESTION IN THIS SECTION. THIS SECTION CARRIES 20 PERCENT.

1. Discuss the following with empirical examples where applicable:
- a) The differences between pure and applied research
 - b) The common uses of research
 - c) The common abuses of research
 - d) Ways of mitigating for abuses of research.
 - e) Give the steps required in formulating a conceptual framework.
2. Using empirical examples, discuss what is involved in the following:
- a) Identification of a problem of a research
 - b) Definition of the problem
 - c) Analysis of the research
 - d) Prioritization of a problem
 - e) What constitutes a dependent variable in problem identification?

3. Use empirical examples to describe and discuss the sampling designs below and the circumstances when you can use them:
- Linear and circular systematic sampling
 - Proportionate and disproportionate sampling
 - Cluster and multistage sampling
 - Snowball sampling
 - Quota sampling
 - Given below are data on UNZA students, you are required to do the following:

- Select a sample of 100 students, the criteria for stratification being hall of residence and year of study.
- Indicate the type of stratification method you have used.

Year of study	Hall of residence	
	New Residence	Ruins
Second year	400	200
Third year	300	500
Fourth year	500	100

SECTION C

ANSWER ALL QUESTIONS IN THIS SECTION. THIS SECTION CARRIES 30 PERCENT.

1. Use the standard normal table to complete the table below

	z - score	I Proportion of the area associated with score	II Proportion of the area below the score	III Proportion of the area above the score
a)	-2.20			
b)	-0.80			
c)	1.07			
d)	-0.60			
e)	2.63			
f)	1.67			

2. Indicate which measure of central tendency - mean, median or mode - would be appropriate in the situations below:
- In trying to determine who a typical UNZA student is.
 - In trying to estimate the total income of all UTH workers based on a sample of them.
 - In trying to estimate whether at least half the students passed the SS242 examination last year.

3. Complete the following statements:

- In a normal curve, unimodality means.....
- In a normal curve, symmetry means.....

4.

- Give one important application of a normal curve.
- Complete the following the statement:

A standard normal curve has a mean of and a standard deviation of while an ordinary normal curve has a mean which is.....and a standard deviation which is.....

5. Complete the following statements:

- A probability distribution is.....
- An empirical distribution is.....
- A subjective probability is based on.....
- An expected distribution is.....

6. Complete the following statements to illustrate your understanding of the different types of probability.

- A priori probability means.....
- Experimental probability is based on.....
- Subjective probability is based on.....

7. Given below are data on the political affiliations of 600 randomly selected CBU students classified by sex.

SEX	POLITICAL AFFILIATION			TOTAL
	PF	MMD	UPND	
MALE	162	124	118	404
FEMALE	38	76	82	196
TOTAL	200	200	200	600

- What is the probability of being female or PF?

- b) What is the probability of being a female and MMD member?
c) What is the probability of being a UPND member given that one is male?
8. State the three main axioms of probability.
9. Indicate the scales of measurement associated with the following types of data
- Qualitative data
 - Quantitative data
10. What type of graphs do you associate with
- Qualitative data
 - Quantitative data.
11. When $p < .05$ is reported in a journal article that you read for an observed relationship, it means that the author has rejected the null hypothesis (assuming that the author is using a significance or alpha level of .05).
- True
 - False
12. When $p > .05$ is reported in a journal article that you read for an observed relationship, it means that the author has rejected the null hypothesis (assuming that the author is using a significance or alpha level of .05).
- True
 - False
13. _____ results if you fail to reject the null hypothesis when the null hypothesis is actually false.
- Type I error
 - Type II error
 - Type III error
 - Type IV error
14. Which of the following is true about a weighted mean:
- It is an arithmetic mean in which each value is given an equal weight as any other value in the distribution.
 - It is an arithmetic mean in which each value is given arbitrary group weight regardless of their importance in the overall group.
 - It is an arithmetic mean in which each value is rarely weighted according to its importance in the overall group.

d) It is an arithmetic mean in which each value is weighted according to its importance in the overall group.

15. Which of the following is true about the percentile rank?

- a) It shows the score below which a certain number of measurements are located.
- b) It shows the percentage of observations falling below a score.
- c) It is the score below which half the observations are located.
- d) It is the third quartile in a distribution of measurements.

SECTION D

ANSWER ONE QUESTION IN THIS SECTION. THIS SECTION CARRIES 20 PERCENT.

1. The Managing Director of Zambia Breweries suspects that the mean sales are not equal in the four provinces – Central, Copperbelt, Lusaka, and Southern. The relevant data collected is presented in the table below. Is there any justification for the Managing Director's concerns? Ascertain this at 5% level of significance using ANOVA. What recommendation would you make to the Managing Director on the basis of your findings?

	Lusaka	Copperbelt	Southern	Central
Sample size	8	8	8	8
Mean sales	6	8	7	8
Grand mean	7.25			
Total sum of squares	148			

2. The Ministry of Labour wants to compare newly hired employees who tested "alcohol free" with those who tested "alcohol positive" after six months on the job. They wanted to see whether more alcohol users than alcohol-free employees would be fired after during the six-month probation period. After six months, the following data given below was collected. Would you agree with the conclusion that alcohol users are more likely to be fired than alcohol-free employees? Use 5% level of significance.

	Total hired	Total fired
Alcohol free	3,340	319
Alcohol users	315	42

3. A market survey carried out at Arcades Shopping Centre on a random sample of 10 customers finds that their trips to the Centre is influenced in part, by incomes and distance they live away from the Centre. The data is presented in the table below:

Subjects	Trips	Distance
A	15	4
B	24	2
C	22	3
D	16	7
E	7	6
F	20	3
G	21	3
H	24	3
I	18	4
J	10	5

Indepe X D
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- Find the correlation between number of trips and distance
- Find the regression of number of trips on distance.
- Interpret the constants in the context of the problem.
- Predict the number of trips one would make to the centre if she stays 20 kilometres away.
- Compute the coefficient of determination and explain what this means.

END OF EXAMINATION

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SURNAME: CHELLAH FIRST NAME: HAGGAI
COMPUTER NUMBER: 14030829 TUTOR: MISS. M. SIKALUWE
TUTORIAL DAY/TIME: FRIDAY 11:00 HRS

INSTRUCTIONS: ANSWER ALL QUESTIONS

TIME: ONE HOUR AND 30 MINUTES

INSTRUCTIONS: ANSWER ALL QUESTIONS FROM SECTION A AND ANY THREE
~~QUESTIONS FROM SECTION B.~~

SECTION A

1. The use of the laws of probability to make inferences and draw statistical conclusions about populations based on sample data is referred to as _____

- a) Descriptive statistics
- b) Inferential statistics
- c) Sample statistics
- d) Population statistics

10

2. Which of the following statements sounds like a null hypothesis?

- a) The coin is not fair
- b) There is a correlation in the population
- c) There is no difference between male and female incomes in the population ✓
- d) The defendant is guilty

3. If you drew all possible samples from some population, calculated the mean for each of the samples, and constructed a line graph (showing the shape of the distribution) based on all of those means, what would you have?

- a) A population distribution
- b) A sample distribution
- c) A sampling distribution
- d) A parameter distribution

4. What does it mean when you calculate a 95% confidence interval?

- a) The process you used will capture the true parameter 95% of the time in the long run

- b) You can be "95% confident" that your interval will include the population parameter
- c) You can be "5% confident" that your interval will not include the population parameter
- d) All of the above statements are true

5. Indicate only one appropriate statistical tests that would apply in the situations below:

	Condition	Statistical test
a)	The mean values for X and Y all lie on a straight line	ANOVA
b)	The scale of measurement is nominal	
c)	The average size of the residuals is roughly constant	
d)	The scale of measurement is ordinal	
e)	The scale of measurement is interval	
f)	The observations of Y are not in any way influenced by other observations	
g)	Population variances are homogeneous	
h)	The scale of measurement is interval	ANOVA ↑

6. The analysis of variance is a statistical test that is used to compare how many group means?

- a) Three or more
- b) Two or more
- c) One mean

7. What is the standard deviation of a sampling distribution called?

- a) Sampling error
- b) Sample error
- c) Standard error
- d) Simple error

8. Hypothesis testing and estimation are the two key branches of the field of inferential statistics?

- a) True
- b) False

9. A _____ is a numerical characteristic of a sample and a _____ is a numerical characteristic of a population.

- a) Sample, population
- b) Population, sample
- c) Statistic, parameter
- d) Parameter, statistic

10. A sampling distribution might be based on which of the following?

- a) Sample means
- b) Sample correlations
- c) Sample proportions
- d) All of the above

11. As a general rule, researchers tend to use ____ percent confidence intervals.
- a) 99%
 - b) 95%
 - c) 50%
 - d) none of the above
12. When $p < .05$ is reported in a journal article that you read for an observed relationship, it means that the author has rejected the null hypothesis (assuming that the author is using a significance or alpha level of .05).
- a) True
 - b) False
13. When $p > .05$ is reported in a journal article that you read for an observed relationship, it means that the author has rejected the null hypothesis (assuming that the author is using a significance or alpha level of .05).
- a) True
 - b) False
14. ____ are the values that mark the boundaries of the confidence interval.
- a) Confidence intervals
 - b) Confidence limits
 - c) Levels of confidence
 - d) Margin of error
15. ____ results if you fail to reject the null hypothesis when the null hypothesis is actually false.
- a) Type I error
 - b) Type II error
 - c) Type III error
 - d) Type IV error

16. Which of the following is true about a weighted mean:

- a) It is an arithmetic mean in which each value is given an equal weight as any other value in the distribution.
- b) It is an arithmetic mean in which each value is given arbitrary group weight regardless of their importance in the overall group.
- c) It is an arithmetic mean in which each value is rarely weighted according to its importance in the overall group.
- d) It is an arithmetic mean in which each value is weighted according to its importance in the overall group.

PR = (X)
PS = L10

17. Which of the following is true about the percentile rank?

- a) It shows the score below which a certain number of measurements are located.
- b) It shows the percentage of observations falling below a score.

- c) It is the score below which half the observations are located.
- d) It is the third quartile in a distribution of measurements.

18. The Zambia Police's Traffic Section lists the reasons for stopping cars and the number of tickets issued for the offences committed. Assume that a car was stopped.

Reason for stopping car	Issued ticket	Not issued ticket	Total
Speeding	40	170	210
No taillights	10	35	45
Failure to use signals	5	25	30
Careless driving	45	70	115
Total	100	300	400

- a) What is the probability that a ticket is issued?
- b) What is the probability that a car did not have taillights?
- c) What is the probability that a driver will get a ticket, given that he or she was stopped for careless driving?
- d) What is the probability that the person was stopped for speeding or for failure to use signals?
- e) What is the probability that a driver is speeding and not issued with a ticket?

The amount of time required per individual at a bank teller's window has been found to be approximately normally distributed with a mean of 130 seconds and a standard deviation of 45 seconds. What is the probability that a randomly selected individual:

- a) Requires less than 100 second to complete a section?
- b) Spends between 2 and 3 minutes at the teller's window?
- c) Spends less than 2 minutes?
- d) Spends more than 3 minutes?

a. Mean Standard Error test.

b. Chi-Square.

c. Parametric test.

d. Regression / Chi-Square. *only one.*

e. Regression.

f. Correlation analysis.

g. Analysis of Variance.

h. Analysis of regression.

1). Probability of Issued tickets.

$$P(I) = \frac{100}{400}$$

$$= \frac{1}{4} = 0.25$$

(b). Probability of Not available tickets.

$$P(\text{No } t) = \frac{45}{400}$$

$$= 0.1125$$

$$(c). P(I/C_d) = P(I) \cdot P(C_d/I)$$

$$= \frac{100}{400} \times \frac{45}{100}$$

$$= 0.1125$$

(d). Probability for Speeding or failure to Signals.

$$P(S \text{ or } S_1) = P(S) + P(S_1) - \cancel{P(S \cap S_1)}$$

$$= \frac{210}{400} + \frac{30}{400} =$$

$$= \underline{\underline{0.6}} \quad \text{H}$$

(e) Probability of Speeding and not issued a ticket.

$$P(S \text{ and NIT}) = P(S_r) \cdot P(NIT).$$

$$= \frac{210}{400} \times \frac{170}{300}$$

$$= 0.525 \times 0.566\bar{6}$$

$$= \underline{\underline{0.2975}}$$

$$\frac{130}{150} = 0.8\bar{6}$$

$$(b). P(2 \text{ and } 3 \text{ mm}) = \frac{85}{150}$$

$$= 0.566\bar{6}$$

$$= 0.57$$

$$(c). P(\text{less } 2 \text{ mm}) = \frac{85}{110}$$

$$= 0.77\bar{27}$$

$$= 0.77$$

$$(d). P(\text{more } 3 \text{ mm}) = \frac{175}{180}$$

$$= 0.97\bar{22}$$

Dem 2414 Tutorial Exercise 2 (Duration: 15 minutes)

- In research, there are different types of variables that are used. Show the following variables in a diagram to indicate how they interact with/link to each other: *independent variable*; *dependent variable*; *moderator variable*; *control variable*; *intervening variable*; *antecedent variable*
- Mention and define the two *general types of data*.....
- What are the *types of numerical data*?
- Scales are important in data analysis. Tick the boxes to indicate which scale applies to a particular type of data below...

Scale	Continuous data	Categorical data
Nominal		✓
Ratio	✓	
Ordinal		✓
Interval	✓	

- Different properties apply to different types of scales. Tick which properties apply to the indicated scales of measurements...

Features:	Nominal	Ordinal	Interval	Ratio
The 'order' of values is known		✓	✓	✓
Counts (aka frequency distributions)	✓	✓	✓	✓
Mode	✓	✓	✓	✓
Median		✓	✓	✓
Mean			✓	✓
Can quantify the difference			✓	✓
Can add or subtract values				✓
Can multiply and divide values				✓
Has a 'true zero'				✓

- How do you *measure variables or concepts*?
- Mention the 3 *main properties of scales*.....

The end

c) Of the methods above, which one are you expected to use in Department of Population Studies?

5. Indicate what the flaws are with the following questions in a questionnaire:

- Do you accept the unimaginative way the university administration is handling student affairs?
- Are you cognizant of the dysfunctional aspects of the registration exercise at the beginning of each semester?
- Do you favour the abolition of free education and the reduction student allowances at CBU?
- Do you oppose the administration's handling of student affairs because they are unfair?
- Are you not of the view that the administration should change its attitude towards the workers' welfare?
- Do you smoke marijuana?

6. Researchers use both open-ended and closed-ended questions to collect data. Which of the following statements is true, false, or neither?

- Open-ended questions directly provide quantitative data based on the researcher's predetermined response categories
- Closed-ended questions provide quantitative data in the participant's own words
- Open-ended questions provide qualitative data in the participant's own words
- Closed-ended questions directly provide qualitative data in the participants' own words

7. Complete the following statements:

- Pure research is *Production of know knowledge & with increase of scientific understanding of the world and not application of the outcome.*
- Applied research is *Places much emphasis on the application of knowledge required and problem solving.*

8. Match the statements below with the four aims and goals of the social sciences.

- A researcher studying AIDS concludes that the more promiscuous one's behaviour, the greater is the probability of contracting AIDS.
- The same researcher states that due to the unchanging sexual behaviour of Zambians, he foresees an increase in the number of AIDS victims in the next 10 years.
- At the start of his analysis, the researcher finds that 65% of AIDS cases are among prostitutes and 35% among the rest of the population.
- A research learns about the problems experienced by AIDS sufferers by interacting with them for six months.
- A social scientist investigating the increasing levels of recidivism among juvenile delinquents concludes, after an exhaustive study, that this is due to breakdown of the family in Zambia.
- A social scientist given a breakdown of the percentage of juvenile delinquents from broken families, their sex and their average ages.
- A social scientist joins a group of juvenile delinquents at the Inter-City Bus Terminal and tries to learn more about their way of life.
- After his study of juvenile delinquents, the social scientist suggests, on the basis of the increasing divorce rates among Zambian couples, that in ten years' time one out of every youth will be a juvenile delinquent.

9. Indicate which of the following statements refer to popular modes of knowledge or characteristics of the scientific method:

- a) Separation of values and prejudices from influencing the researcher's judgement
- b) Believing that all valid knowledge resides in the divine
- c) Basing research on observations and experiences
- d) Reducing data into a more ordered form using existing analytical tools such as statistics
- e) Believing something will happen on the basis of a premonition
- f) Coming to a conclusion on the basis of widely held opinions in society
- g) Basing one's judgement on the advice of a witchdoctor
- h) Using reasoning and logic to come to a conclusion
- i) Applying the findings of research to the whole population and socioeconomic contexts
- j) Making a judgement on the basis of what is traditionally taken to constitute the truth.

10. Indicate which of the following statement best defines a paradigm or theory:

- a) The use of qualitative methods in investigating social phenomena.
- b) The positivist approach in research
- c) Examining the relationship between attitudes towards family planning, family size and religious beliefs.
- d) Subscribing to the phenomenological perspective in research.
- e) A purported attempt to explain poverty on the basis of rising levels of poverty in society.

11. Indicate what is wrong with the hypotheses below:

- a) There is a relationship between education and job success
- b) The more religious an individual is, the greater is the likelihood of being saved
- c) The higher educational level of an individual, the better the chances of job success
- d) Female students are less likely to succeed in more demanding jobs
- e) There is a relationship between social class and performance in examinations.

12. What are the scales of measurement of the following variables?

- a) The religious affiliations of students at CBU.
- b) The amount of money has in his bank account at FNB.
- c) The grading system used at Mulungushi University.
- d) The number of male and female students in DEM 2414.
- e) The weights of students in DEM 1110.

13. Which of the two questions below best operationally defines the concept, social class, more accurately and precisely:

- a) What is your father's occupation? ✓
- b) What company does your father work for?
- c) Is your father divorced?
- d) How much does father earn per month?
- e) What is your father's religious affiliation? ✓

14. Complete the following statements:

- a) A cross-sectional study is *a study that takes place at one point in time.*
- b) A longitudinal study is *a study designed to meet observations made over a extended period of time.*

15. Indicate the type of sampling designs represented by the situations below:

- a) A researcher selects students in his class for a study on gossiping after which he writes a report.
- b) A researcher selects every tenth household after having selected the first household randomly from the first interval of serially numbered households.
- c) A researcher selects ten hostels randomly and then interviews all the students from these hostels.
- d) A researcher selects 100 students using a table of random numbers and then gives self-administered questionnaires to the students.
- e) A researcher subdivides the student population into female and male categories and then selects equal numbers of males and female students randomly in a population where the ratio of males to females is four to one.
- f) A researcher selects every tenth household after having selected the first household randomly from serially numbered households.

16. Complete the following statements:

- a) A general objective is.....
- b) A specific objective is.....

SECTION B

ANSWER ONE QUESTION IN THIS SECTION. THIS SECTION CARRIES 20 PERCENT.

1.

- a) Discuss the more salient advantages and disadvantages of an interview
- b) What are the more important advantages and disadvantages of a questionnaire
- c) What is the difference between primary and secondary data collection?
- d) Briefly discuss the major advantages and disadvantages of i) primary and ii) secondary techniques of data collection.

2.

- a) Explain the link between hypotheses formulation, measurement, and questionnaire construction.
- b) Give three important reasons why exploratory studies are necessary.
- c) Describe what a quasi-experimental design is and then discuss some strengths of it has over the classical experimental design.

3.

- a) Discuss three conditions to constitute a problem for investigation
- b) Discuss the criteria for prioritization of a research problem.
- c) Discuss some of the important reasons for undertaking literature review.

4.

Discuss the differences and similarities between the sampling designs given below:

- a) Linear and circular systematic sampling
- b) Proportionate and disproportionate sampling
- c) Under what circumstances do you use:

Simple random sampling

- ii. Cluster sampling
- iii. Snowball sampling

d) Given below are data on UNZA students, you are required to do the following

- i) Select a sample of a sample of 100, the criteria for stratification being hall of residence and year of study.
- ii) Indicate the type stratification method you have used.

Year of study	Hall of residence	
	New Residence	Ruins
Second year	400	200
Third year	300	500
Fourth year	500	100

SECTION C

ANSWER ALL QUESTIONS IN THIS SECTION. THIS SECTION CARRIES 30 PERCENT.

1. The use of the laws of probability to make inferences and draw statistical conclusions about populations based on sample data is referred to as.
 - a) Descriptive statistics
 - b) Inferential statistics
 - c) Sample statistics
 - d) Population statistics

2. If you drew all possible samples from some population, calculated the mean for each of the samples, and constructed a line graph (showing the shape of the distribution) based on all of those means, what would you have?
 - a) A population distribution
 - b) A sample distribution
 - c) A sampling distribution
 - d) A parameter distribution

6. The analysis of variance is a statistical test that is used to compare how many group means?
 - a) Three or more
 - b) Two or more
 - c) One mean

7. What is the standard deviation of a sampling distribution called?
 - a) Sampling error
 - b) Sample error

- c) Standard error
d) Simple error
8. As a general rule, researchers tend to use ____ percent confidence intervals.
- a) 99%
b) 95%
c) 50%
d) None of the above
9. When $p < .05$ is reported in a journal article that you read for an observed relationship, it means that the author has rejected the null hypothesis (assuming that the author is using a significance or alpha level of .05).
- a) True
b) False
10. When $p > .05$ is reported in a journal article that you read for an observed relationship, it means that the author has rejected the null hypothesis (assuming that the author is using a significance or alpha level of .05).
- a) True
b) False
11. _____ are the values that mark the boundaries of the confidence interval.
- a) Confidence intervals
b) Confidence limits
c) Levels of confidence
d) Margin of error
12. In 2015 academic year examinations, the following results were recorded in the DEM 1110 examination:

Mean	63.1
Median	67.1
Mode	60.8
Standard deviation	17.2

Briefly interpret:

- a) Mean
b) Median
c) Mode
d) Standard deviation
13. Which of the following is true about a weighted mean?
- a) It is an arithmetic mean in which each value is given an equal weight as any other value in the distribution.
b) It is an arithmetic mean in which each value is given arbitrary group weight regardless of their importance in the overall group.

- c) It is an arithmetic mean in which each value is rarely weighted according to its importance in the overall group.
- d) It is an arithmetic mean in which each value is weighted according to its importance in the overall group.
14. Which of the following is true about the percentile rank?
- a) It shows the score below which a certain number of measurements are located.
- b) It shows the percentage of observations falling below a score.
- c) It is the score below which half the observations are located.
- d) It is the third quartile in a distribution of measurements.
15. Respond to these questions briefly and to the point:
- a) Under what circumstances should a t-distribution be used instead of a normal distribution?
- b) Under what circumstances may a chi-square distribution be used instead of a normal distribution?
- c) Give one property the t - distribution shares with the normal (or z) distribution.
- d) Give one property that distinguishes the t - distribution from the normal (or z) distribution.
- e) In hypothesis testing, when can you use:
- i. A one-tailed test
 - ii. A two-tailed test
16. The amount of time required per individual at a bank teller's window at Stanbic Bank has been found to be approximately normally distributed with a mean of 130 seconds and a standard deviation of 45 seconds. What is the probability that a randomly selected individual?
- a) Require less than 100 seconds to complete a transaction?
- b) Spend between 2 and 3 minutes at the teller's window?
- c) Spend less than 2 minutes at the teller's window?
- d) Spend more than 3 minutes at the teller's window?

SECTION D

ANSWER ONE QUESTION IN THIS SECTION. THIS SECTION CARRIES 20 PERCENT.

1. The Zambia Police's Traffic Section lists the reasons for stopping cars and the number of tickets issued for the offences committed. Assume that a car was stopped.

Reason for stopping car	Issued ticket	Not issued ticket	Total
Speeding	40	170	210
No taillights	10	35	45
Failure to use signals	5	25	30
Careless driving	45	70	115

THE UNIVERSITY OF ZAMBIA

THE UNIVERSITY OF ZAMBIA

SCHOOL OF HUMANITIES AND SOCIAL SCIENCES
FIRST TEST

AUGUST 9, 2018

SURNAME:..... FIRST NAME.....

COMPUTER NUMBER..... TUTOR.....

TUTORIAL DAY/TIME.....

INSTRUCTIONS: ANSWER ALL QUESTIONS

TIME: ONE HOUR AND 15 MINUTES)

1.

- a) What is a hypothesis?
- b) What are the characteristics of a good hypothesis?
- c) Indicate what is wrong with the hypotheses below:

- i. There is a relationship between education and job success
- ii. The lesser the amount of marijuana consumption, the greater is one's chance of reincarnation.
- iii. The higher educational level of an individual, the better the chances of job success
- iv. Female students are less likely to succeed in more demanding jobs
- v. There is a relationship between social class and performance in examinations.

2.

- a) Give three functions of objectives
- b) Give four correct ways of stating objectives.
- c) Give four important reasons for undertaking literature review

3. Indicate which of the following statements refer to popular modes of knowledge or characteristics of the scientific method:

- a) A researcher argues that it is possible to avoid prejudicing or biasing one's research activity and/or research findings with one's personal views and opinions.

- b) A theologian debunks the Big Bang or Darwinian theory as underlying creation of man but ascribes this to God
- c) A sociologist argues that only those things that can be experienced – not metaphysical stuff – are worthy of investigation.
- d) Reducing data into a more ordered form using existing analytical tools such as statistics
- e) A traditional ruler argues that only by strict adherence to cultural norms and traditions can one acquire true knowledge.
- f) Believing something will happen on the basis of a premonition
- g) A student seeks the advice of a witchdoctor to pass his examination.
- h) Coming to a conclusion on the basis of widely held opinions in society
- i) A female gender activist at a workshop argues that what matters in getting to the roots of a community problem is not the collection of data but the opinions of most members of the community.
- j) Basing one's judgment on the advice of a witchdoctor
- k) A mathematician argues that only outcomes based on logic and mathematical reasoning can provide compellingly valid answers to difficult questions concerning society.

4.

- a) How do you define measurement in research?
- b) Why is measurement important?
- c) Why is it important to know the scale (or level) of measurement of variables?
- d) Indicate the appropriate levels of measurement interval/ratio, nominal, and ordinal for the following variables.

- i. Your father's car model.
- ii. Your mother's favourite colour
- iii. Your uncle's money in the account
- iv. Your brother's performance in the Grade 12 exams
- v. The religious affiliations of UNZA students
- vi. The ranking of workers in terms of an occupational prestige scale
- vii. The amount of time spent doing the DEM 1110 exam
- viii. The classification of a group of Zambians in terms of their degree of religiosity

5. Given the following concepts below, indicate which terms below are

- i. Conceptual definitions
- ii. Operational definitions
- iii. Indicators; or
- iv. None of the above

ETHNOCENTRISM

- a) Do you trust people of Jewish origin?
- b) Do you feel comfortable with people from foreign countries?
- c) Would you marry a person of another tribe or race?

- e) Percentage of respondents who do not trust Jews
- f) Percentage of respondents who are uncomfortable with foreigners
- g) Anti-Semitism
- h) Tribalism/Racism
- i) Xenophobia

SOCIOECONOMIC STATUS

- a) Where do you live?
- b) What is monthly salary before tax?
- c) What is your occupation or job?
- d) Occupational prestige
- e) Residence
- f) Income level
- g) Percentage of respondents living in high density, medium or low density areas.
- h) The mean income of respondents
- i) Percentage of respondents in managerial jobs

6. Indicate which of the following statement best defines a paradigm, theory, model. If the statement selected is a paradigm, indicate whether it is a positivist or phenomenological paradigm.

- a) A researcher argues that the only acceptable way of **conducting research is** through insights obtained by living in a community – **following their cultural traditions** and understanding their language.
- b) Another research insists that objective and generalizable data can **only be** obtained through scientific and systematic collection and analysis of data using the appropriate computer software
- c) A researcher postulates that corruption is as much a function of poverty as it is conditioned by the context in which thrives.
- d) UNESCO designs an educational system which simulates the exiting demographic and economic condition in Zambia
- e) A purported attempt to explain an increase in fertility as a function of demand for

7. Identify the variables underlined in the passage, and then answer the questions immediately following the passage.

A sociologist studying the process of social mobility finds that a positive correlation exists between the occupational achievement of UNZA workers and their parent's socioeconomic status. When the variable, educational attainment of the workers, is introduced into the equation however, he finds that the correlation between occupational achievement and parent's socioeconomic status nearly disappears.

From bold and underlined variables, indicate which is:

- a) Independent variable?
- b) Intervening variable?.....
- c) Dependent variable?.....

- d) Antecedent variable?.....
- e) Control variable?.....
- f) Confounding variable.....

8. Match the statements given below with the four aims of the social sciences - description, explanation, etc.

- a) A researcher studying AIDS concludes that the more promiscuous someone is, the greater is the probability of contracting AIDS.
- b) The same researcher states that due to the unchanging sexual behaviour of Zambians, he foresees an increase in the number of AIDS victims in the next 10 years.
- c) At the start of his analysis, the researcher finds that 65% of AIDS cases are among prostitutes and 35% among the rest of the population.
- d) A research learns about the problems experienced by AIDS sufferers by interacting with them for six months.
- e) A social scientist investigating the increasing levels of recidivism among juvenile delinquents concludes, after an exhaustive study, that this is due to breakdown of the family in Zambia.
- f) A social scientist given a breakdown of the percentage of juvenile delinquents from broken families, their sex and their average ages.
- g) A social scientist joins a group of juvenile delinquents at the Inter-City Bus Terminal and tries to learn more about their way of life.
- h) After his study of juvenile delinquents, the social scientist suggests, based on the increasing divorce rates among Zambian couples that in ten years time one out of every youth will be a juvenile delinquent.

END OF TEST

THE UNIVERSITY OF ZAMBIA
SCHOOL OF HUMANITIES AND SOCIAL SCIENCES
2016 ACADEMIC YEAR FINAL EXAMINATIONS
DEM 2414: RESEARCH AND STATISTICAL METHODS IN DEMOGRAPHY

TIME: THREE HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS IN SECTIONS A AND C; ONE QUESTION EACH FROM SECTIONS B AND D.

SECTION A

ANSWER ALL QUESTIONS IN THIS SECTION. THIS SECTION CARRIES 30 PERCENT.

1. Which form of reasoning is the process of drawing a specific conclusion from a set of premises?
 - a) Rationalism
 - b) Deductive reasoning
 - c) Inductive reasoning
 - d) Probabilistic

2. Which of the following is a correct definition of a population
 - a) All students enrolled at Evelyn Hone
 - b) All UNZA students enrolled at GER Campus in 2013 academic year.
 - a) Some of the students enrolled at NRDC campus in the 2013 academic year
 - b) Some of the students enrolled at CBU

3. Which of the following statements best describes applied or pure research.
 - a) Research to study gossiping patterns among UNZA students
 - b) Research to investigate dressing patterns among students
 - c) Feasibility study on the establishment of a gymnasium at UNZA
 - d) An opinion poll on students' attitudes towards street vending on campus
 - e) Research meant to find a cure for HIV AIDS.

4. Which of the following statements are true or false about positivism.
 - a) Positivism is a hypothesis that states that social reality exists independently of the observer
 - b) Positivism is a school of thought that argues that there are such things as social facts
 - c) Positivism is a theory that stresses the subjective dimension of social reality
 - d) Positivism is a research perspective that stresses the use of quantitative methods
 - e) Positivism is a paradigm that believes in the qualitative methodology.

5. Research that is done to examine the findings of someone else using the "same variables but different people" is which of the following?

- a) Exploration
- b) Hypothesis
- c) Replication
- d) Empiricism

6. Which of the following is not a form of nonrandom sampling?
- a) Snowball sampling
 - b) Convenience sampling
 - c) Quota sampling
 - d) Purposive sampling
 - e) They are all forms of nonrandom sampling
7. Which of the following best describes quantitative research?
- a) The collection of nonnumeric data
 - b) Research involving the use of statistics
 - c) Research that is exploratory
 - d) Focus group discussion
8. A variable that is presumed to cause a change in another variable is called a(n):
- a) Categorical variable
 - b) Dependent variable
 - c) Independent variable
 - d) Intervening variable
9. Sources of researchable problems can include:
- a) Researchers' own experiences as social scientists.
 - b) Practical issues that require solutions
 - c) Theory and past research
 - d) All of the above
10. A review of the literature prior to formulating research questions allows the researcher to do which following?
- a) To become familiar with prior research on the phenomenon of interest
 - b) To identify potential methodological problems in the research area
 - c) To develop a list of pertinent problems relative to the phenomenon of interest
 - d) All of the above
11. The feasibility of a research study should be considered in light of:
- a) Cost and time required to conduct the study
 - b) Skills required of the researcher
 - c) Potential ethical concerns
 - d) All of the above
12. What is the opposite of a variable?
- a) Constant
 - b) An extraneous variable

- c) A dependent variable
 - d) A data set
13. An ordinal scale is used to rank order people, objects, or characteristics.
- a) True
 - b) False
14. Which scale is the simplest form of measurement?
- a) Nominal
 - b) Ordinal
 - c) Interval
 - d) Ratio
15. Researchers use both open-ended and closed-ended questions to collect data. Which of the following statements is true or false?
- a) Open-ended questions directly provide quantitative data based on the researcher's predetermined response categories
 - b) Closed-ended questions provide quantitative data in the participant's own words
 - c) Open-ended questions provide qualitative data in the participant's own words
 - d) Closed-ended questions directly provide qualitative data in the participants' own words
16. Which of the following can best be described as a nominal variable?
- a) Age
 - b) Annual income
 - c) Grades in MAT 1110
 - d) Religious affiliation
17. Which of the following sampling techniques is an equal probability selection method in which every individual in the population has an equal chance of being selected?
- a) Simple random sampling
 - b) Systematic sampling
 - c) Proportionate stratified sampling
 - d) Cluster sampling
 - e) All of the above are given an equal chance of selection.
18. Mr. Banda is giving a breakdown of the characteristics of the students who participated in a research on drug abuse at CBU. Which of the following methods does he appear to be using?
- a) Prediction
 - b) Description
 - c) Explanation
 - d) Exploration
19. In which of the following nonrandom sampling techniques does the researcher ask the research participants to identify other potential research participants?
- a) Simple random sampling
 - b) Convenience

- c) Purposive
- d) Quota
- e) None of the above

20. In framing questions for research, certain pitfalls have to be avoided. Identify the pitfalls in the questions below:

- a) You don't think the government is fighting inflation strongly, don't you?
- b) Do you watch cinemas and play video games in your spare time?
- c) Are you of the view that diminishing returns in agriculture account for the exponential decline in Zambia's gross national product?
- d) Are you in support of the gross abuse of human rights by the current regime?
- e) Do you participate in sports because you are a fit?
- f) Is your father an alcoholic?

21. Indicate what sort of questions are being referred to here:

- a) A question used when respondents are asked to make a judgment in terms of sets of ordered categories, reflecting the intensity of judgment involved.
- b) A question with predetermined options to choose from.
- c) A question asked depending on the response to the preceding question
- d) A method of organizing a large of questions that have the same response questions
- e) A question that applies only to a segment of the sample.
- f) A question without predetermined categories to choose from.

22. Briefly explain what you understand by these terms:

- a) Population
- b) Sampling unit
- c) Responding unit
- d) Unit of reference

23. Briefly, in a sentence only, describe the following methods of data collection:

- a) Primary data
- b) Secondary data
- a) Qualitative data
- b) Quantitative data

24. Define the following concepts as briefly as possible:

- a) Conceptual definition
- b) Operational definition
- c) Numeric indicator
- d) Non-numeric indicator

SECTION B

ANSWER ONE QUESTION IN THIS SECTION. THIS SECTION CARRIES 20 PERCENT.

1. Answer the following questions on measurement and instrument development.
 - a) What is measurement?
 - b) What is a questionnaire?
 - c) What is the link between measurement and questionnaire construction?
 - d) Describe in the correct sequence, the stages in questionnaire construction.

2. For each of the following research designs below do the following:
 - a) Describe it in some detail and ;
 - b) Explain the circumstances under which you use it.
 - c) The pros and cons of the design
 - i. Descriptive design
 - ii. Explanatory design
 - iii. Longitudinal design
 - iv. Experimental design
 - v. Quasi- experimental design

3. For each of the following sampling designs below do the following:
 - a) Describe it in some detail and ;
 - b) Explain the circumstances under which you use it.
 - c) The pros and cons of the design
 - i. Proportionate stratified sampling
 - ii. Disproportionate stratified sampling
 - iii. Linear systematic sampling
 - iv. Multistage sampling
 - v. Snowball sampling

SECTION C

ANSWER ALL QUESTIONS IN THIS SECTION. THIS SECTION CARRIES 30 PERCENT.

1. Given the data below on the length of service of a random sample of KCM employees. Answer the questions that immediately follow:

Years of service	Number of employees
1-2	21
3-4	45
5-6	50
7-8	66
9-10	55
11-12	24

- Find the mean of years served by the workers and, in a sentence or two, explain what this means.
- Find the standard deviation of the distribution and, very briefly, explain what this suggests.
- Find the median year of service and in a sentence or two, explain what this means.
- Find the modal year of study and very briefly explain what this means.
- What is the percentage of students with years of service above 5.5 years?
- Above which year of service did 75% of the workers fall?

2. For the following statistical tests, indicate what the correct positions are:

		What is the scale of measurement?	Does it require the use of the normal curve? (Yes/No)	Does it make any inferences about the mean? (Yes/No)
a)	Analysis of variance	Interval	YES	
b)	Difference between means	Interval	YES	
c)	Single sample test for means	Interval	YES	
d)	Regression analysis	Interval	YES	NO
e)	Chi-square test of independence	Nominal	NO	NO
f)	Chi-square goodness of fit test	Nominal		NO

3. Given a situation where you have collected the data given below, indicate the type of graph that would be appropriate for the graphical representation of the data:

- Distribution of examination results in DEM 2210
- Distribution of students in DEM 4210 by sex
- Racial classification of students
- Lecturers' salaries at CBU.

4. Indicate which of the following statements is true, false or neither:

- In a drug manufacturing plant, a chemist testing the efficiency of a new drug, changes the significance level from 5% to 10% thereby decreasing the probability of Type I error.
- In a car manufacturing firm, an engineer testing a new car changes the significance level from 10% to 5% thereby increasing the probability of Type II error.
- In a Zambia Bureau of Standards (ZABS) laboratory, a scientist testing the toxicity of yellow maize changes the significance level from 5% to 10%, thereby increasing the probability of Type I error.
- A researcher concludes, based on 1 percent level of significance, that there is a relationship between religious affiliation and criminal behaviour after obtaining the following statistics from an SPSS output:

$$\chi^2 = 12.27, df = 5, p = .0055$$

> - accept

f = 261 - 287 (20) 3

- e) A researcher concludes, based on 5 percent level of significance, that there is a statistically significant difference in the ages of male and students at CBU after obtaining the following statistics from an SPSS output:

$$z = 0.64, df = 98, p=0934$$

5. Which of the following statements sounds like a null hypothesis?
- The coin is not fair
 - There is a correlation in the population
 - There is no difference between male and female incomes in the population
 - The defendant is guilty
6. What does it mean when you calculate a 95% confidence interval?
- The process you used will capture the true parameter 95% of the time in the long run
 - You can be "95% confident" that your interval will include the population parameter
 - You can be "5% confident" that your interval will not include the population parameter
 - All of the above statements are true
7. Hypothesis testing and estimation are the two key branches of the field of inferential statistics?
- True
 - False
8. A _____ is a numerical characteristic of a sample and a _____ is a numerical characteristic of a population.
- Sample, population
 - Population, sample
 - Statistic, parameter
 - Parameter, statistic
9. A sampling distribution might be based on which of the following?
- Sample means
 - Sample correlations
 - Sample proportions
 - All of the above
10. _____ results if you fail to reject the null hypothesis when the null hypothesis is actually false.
- Type I error
 - Type II error
 - Type III error
 - Type IV error

11. A random sample of 250 students from a normally distributed population of DEM 2414 students was found to have mean score at the end of the semester 49 with a standard deviation of 11. Based on this information answer the following questions.
- Find the point estimate of the mean score performance in the course and the bound on the errors of estimation and interpret the result.
 - Find the 95% confidence interval estimate of the students' mean performance and interpret the result.
 - If the score of 39.5 is the cut – off point for a pass grade with those below designated as failures,
 - What was the number of failures in the course?
 - How many students passed the test?
 - What was the percentile score of a student called Banda with a mark of 73?
 - What was the probability of performing better than Banda?
 - How many students performed worse than Banda?
12. Indicate if the statements below are (i) true (ii) false (iii) neither
- A one-tailed test is used when a researcher has a non-directional hypothesis
 - A two tailed test is used when a researcher has a directional hypothesis
 - A one-tailed test is also used when a researcher has a directional hypothesis.
13. Indicate which of the following examples below refers to (a) descriptive (b) inferential statistics or (c) or neither.
- A social scientist concluding, on the basis of sample information that the English proficiency level among all primary school students in the country has improved since the introduction of English medium of instruction.
 - The social scientist giving a statistical breakdown of the primary students in his EMI project in the form of bar and pie charts and histograms to depict the age and sex composition of the sample.
14. Select the correct answer out of the ones between the slash.
- A distribution is symmetrical if the coefficient of skewness is zero/negative /positive
 - A distribution is negatively skewed if the coefficient of skewness is zero/negative /positive
 - A distribution is positively skewed if the coefficient of skewness is zero/negative /positive
15. Indicate if the statements below are i) true ii) false iii) neither:
- Events are mutually exclusive if the occurrence of one event precludes the occurrence of another event.
 - Events are independent if the occurrence of one event influences the occurrence
 - Events are dependent if the occurrence of one event increases the likelihood of occurrence of another event.

SECTION D

ANSWER ONE QUESTION IN THIS SECTION. THIS SECTION CARRIES 20 PERCENT.

1. A developer is considering alternative sites for constructing a shopping mall in Lusaka and Kitwe using the mean household incomes (in thousands) in the two cities as a proxy variable for purchasing power. For a random sample in Lusaka with 30 households, the average annual income is K45, 000 with a standard deviation of K1, 500. For a random sample of 40 households in Kitwe, the average annual income is K44, 600 with a standard deviation of K2, 400. The investor eventually decides to construct a shopping mall in Lusaka on the premise that the purchasing power of Lusaka residents is significantly higher than that of Kitwe residents. Is his decision justified? Test this hypothesis at 1% level of significance?
2. A senior member of Lusaka Golf Club claims that attendance at club meetings is determined by the distance between the members' homes and the club. To argue his case, he collects data on a random sample of 10 club members and collects data on the monthly attendance at meetings and their distance from home.

Subjects	Attendance (per month)	Travel distance (miles)
A	15	4
B	24	2
C	22	3
D	16	7
E	7	6
F	20	3
G	21	3
H	24	3
I	18	6
J	10	5

- a) Compute the Pearson product moment correlation coefficient and interpret the result.
 - b) Find the regression of attendance on travel distance and interpret the constants in the context of the question.
 - c) Predict the number meetings attended by a member who stays 7.7 miles away.
 - d) If a member attends 13 meetings per month, what be the estimated distance of his home from the club?
 - e) What amount of variation in attendance is accounted for by distance?
3. Given below are quota preferences of UNZA students disaggregated by sex.
- a) Verify the claim by a member of the University Senate that there is a relationship between quota preference and sex.
 - b) The Senator further claims that female students are more inclined towards law and psychology while males are more likely to opt for demography, public administration, and economics. Do you agree or disagree with Senator. Use percentages to demonstrate how you have reached your conclusion.

Quota	Male	Female
Law	10	20
Demography	11	10
Public Administration	12	8
Psychology	14	30
Economics	13	12

END OF EXAMINATION

THE UNIVERSITY OF ZAMBIA

SCHOOL OF HUMANITIES AND SOCIAL SCIENCES

DEM 2414: RESEARCH AND STATISTICAL METHODS IN DEMOGRAPHY

TUTORIAL QUESTIONS

The Lusaka City Council has constructed an ultra-modern market as a way of decongesting city centre of vendors. Despite all efforts, it is found that instead of the situation improving the number of vendors is in fact increasing at an even more alarming rate. Given this scenario (or any of the topics you have submitted) you are required here to do the following:

1.
 - a) Identify the research problem.
 - b) Define the research problem.
 - c) Analyze the problem you have identified.
 - d) Explain the reasons for prioritizing this problem

2.
 - a) What important information must be included in this literature
 - b) Explain how you will collect this literature.

3.
 - a) Based on your literature review and other considerations, what paradigm, model or theory are you going to use to explain the problem.
 - b) State the research objectives.
 - c) Formulate the relevant hypotheses to enable you to investigate this problem more scientifically.
 - d) What are the major variables in your hypotheses?

4.
 - a) Explain how you will measure the concepts in your hypotheses.
 - b) Indicate the levels of measurement of these variables.
 - c) Explain why it is necessary to measure these concepts

5.
 - a) What research design are you going to use in investigating the problem? Why?
 - b) What sampling design will be appropriate for this research? Why?
 - c) In what way are you going to ensure that your research and the findings are reliable and valid?

6.
 - a) Explain the data collection techniques you are going to use and justify them.
 - ✓ b) Give your plan for data processing and analysis.
 - c) Give the format of the final report you are going to write on the topic.

THE UNIVERSITY OF ZAMBIA
SCHOOL OF HUMANITIES AND SOCIAL SCIENCES
DEPARTMENT OF POPULATION STUDIES

DEM 2414: RESEARCH AND STATISTICAL METHODS IN DEMOGRAPHY
FINAL TEST – OCTOBER 2018

TIME: ONE HOUR AND THIRTY MINUTES
INSTRUCTIONS: ANSWER ALL QUESTIONS

SECTION A

1. Indicate which type of graph is appropriate in the following situations:
 - a) The age distribution of students at CBU
 - b) The composition of students at ZCAS.
 - c) The weights of academic staff at UNZA
 - d) The marital status of general workers at Mopani Copper Mines.

2. Indicate the type of error I or II that is likely to be committed given the two scenarios below:
 - a) The significance level is increased from 3% to 9%
 - b) The significance level is decreased from 11% to 1%

3. Select one correct option out of the bolded options below:
 - a) A distribution is symmetrical if the coefficient of skewness is **zero/negative /positive**
 - b) A distribution is negatively skewed if the coefficient of skewness is **zero/negative /positive**
 - c) A distribution is positively skewed if the coefficient of skewness is **zero/negative /positive**

4. Complete the following statements below
 - a) Events are mutually exclusive if the occurrence of one event.....
 - b) Events are independent if the occurrence of one event.....
 - c) Events are dependent if the occurrence of one event.....

5. What are the properties of the normal curve?
 - a) It is symmetrical
 - b) Most common values are near the mean; less common values are further from it.
 - c) Standard deviation makes the distance from the mean.
 - d) All of the above.

6. In normal distribution what:
 - a) Percent of values lie within one standard deviation of the mean?
 - b) Percent of values lie within two standard deviation of the mean?
 - c) Percent of values lie within three standard deviation of the mean?

7. What are the mean and standard deviation of the z-distribution?

8. What measures of dispersion are sensitive to extreme values?

- a) Standard deviation
- b) Interquartile range
- c) Margin of error
- d) Choices a) and b)
- e) Choices a) and c)

9. Use the tables of the normal curve to find the z-score corresponding to the 85th percentile?

10. You test score is on the 85th percentile. What does this mean?

11. Which of the following is true about the relationship between the mean from a particular sample population mean?

- a) The sample mean is the same as the population mean.
- b) The sample mean is the best estimate of the population mean.
- c) Large samples yield more precise estimates of the population mean.
- d) Smaller samples yield more precise estimates of the sample mean.
- e) Choices b) and c).

12. Briefly define these two ways of estimated population mean:

- a) Point estimate
- b) Confidence interval estimate.
- c) Margin of error
- d) The standard error

SECTION B

1. This table from a survey shows a sample of adults and the type of phone they use most often. They are classified by three age categories: 18 to 40 years old, 41 to 65 years old, and 66 years old or older.

	Smartphone	Other mobile phone	Landline
Age 18-40	60	30	10
Age 41-65	40	40	20
Age 66 or older	20	30	50

- a) How many people took part in this survey? What is the probability that an individual in the survey is 41 to 65 years old?
- b) What is the probability of a respondent's most commonly used type of phone not being a landline?
- c) What is the probability of being between ages 18 and 40 and using a smartphone?
- d) What is the probability of using a landline given that one is between ages 18 to 40?
- e) What is the probability of using a landline given that one is between ages 18 to 40?

2. The weight of a random sample of 100 academic staff at the University of Zambia is normally distributed with a mean of 73 kilogrammes and a standard deviation of 9 kilogrammes.

- What is the point estimate for all academic staff?
- What is the 95 percent confidence estimate of their weights?
- What is the z-score score for a weight of 61 kilogrammes?
- What is the probability for a weight a greater than 100 kilogrammes?
- What is the probability less than of a weight less than 100 kilogrammes?
- What is the probability of a weight between 61 and 73 kilogrammes?
- What is the probability of a weight between 61 and 100 kilogrammes?

3. ZAMPOST is concerned with the time it takes to deliver mail. It would like not only to deliver mail as quickly as possible but also to have as little as variation as possible. Twenty letters are mailed from Lusaka Min Post Office to Kitwe. From the following number of days of delivery, what can you tell the ZAMPOST? This requires calculation the following measures of central tendency and interpreting the results:

- Mean
- Median
- Mode
- Standard deviation

20	5	3	4	3
4	3	8	3	5
2	6	1	3	3
2	3	4	4	3
10	17	16	14	

END OF TEST

MR CHISAS

THE UNIVERSITY OF ZAMBIA
SCHOOL OF HUMANITIES AND SOCIAL SCIENCES
DEPARTMENT OF POPULATION STUDIES

END OF SEMESTER TEST

JULY 28, 2017

SURNAME: FIRST NAME

COMPUTER NUMBER TUTOR

TUTORIAL DAY/TIME

INSTRUCTIONS: ANSWER ALL QUESTIONS

TIME: ONE HOUR AND FIFTEEN MINUTES

1. Which of the following statements correctly characterize 1) applied 2) pure research.
 - a) A master's degree research on student's attitudes towards rumour mongering.
 - b) Research testing the validity of a theory on gender mainstreaming.
 - c) A feasibility study on the establishment of a shopping mall in Kafue.
 - d) An environmental impact assessment on the construction of railway line between Chipata and Serenje.
 - e) A doctoral research on the relevance of the supply and model to the understanding of marriage dynamics.
 - f) A study on the efficacy of the social transfer scheme /program in the newly established districts.

2. Indicate which of the following statements refer to popular modes of knowledge or characteristics of the scientific method:
 - a) Conducting research without being influenced by personal sentiments and emotions.
 - b) Relying on the Bible and Koran as the basis for one's beliefs.
 - c) Basing one's research findings on a representative sample and analysing the data using statistics.
 - d) Relying on hunches and premonitions in making decisions in a company.
 - e) Reducing data into a more ordered form using existing analytical tools such as statistics.
 - f) Relying on what most people believe in making decisions.
 - g) Basing one's judgement on the advice of a witchdoctor.
 - h) Using pure mathematics and abstract logic to determine the validity of one's research findings.
 - i) Generalizing HIV research findings based on a representative sample of students to students in the country.
 - j) Making a judgement on the basis of what is traditionally taken to constitute the truth.

3. What are the major factors (with an example for each) that influence the choice of a problem for investigation?
4. Which of the following scenarios indicate i) problem identification ii) problem definition iii) problem analysis
- A researcher discovers that while there is an increase in the distribution of contraceptives among women in Lusaka, there is no evidence of fertility decline.
 - A study of contraceptive use reveals that in Zambia that 35 percent of women are not using the female condom but would rather rely on natural methods of family planning.
 - In one of his hypotheses, a researcher hypothesizes that religious beliefs and limited media exposure are among the reasons for the declining contraceptive.
5. Indicate whether there is anything wrong with the hypotheses below:
- There is no relationship between education and income
 - The more religious an individual is, the greater the likelihood of going to heaven.
 - The higher educational level of an individual, the better the chances of job success
 - Female students are less likely to succeed in more demanding jobs
 - There is a relationship between social class and performance in examinations.
6. Which of the following are the reasons for formulating research objectives
- To narrow down the scope of investigation of a research problem.
 - To collect any type of data, including that which is only of peripheral relevance to the research problem.
 - To facilitate the construction of data collection instruments.
 - To enlarge the scope of investigation of a research problem.
 - To avoid the collection of unnecessary and redundant information.
7. The following questions refer to indicators.
- What is your understanding of an indicator in research?
 - What is the difference between a numeric and a non-numeric indicator?
 - Which of the following questions in a questionnaire will result in a numeric or non-numeric indicator?
 - How old were you last birthday?
 - Do you drink beer?
 - What is your year of study?
 - Are you currently accommodated?
 - Give one important use of indicators.

8. Which of the following diagrams below is an example of a quasi-experimental or classical experimental design? Give reasons for your answer.

a)

R	EX	O1	X	O2	Diff = O2 - O1
R	CTRL	O3		O4	Diff = O4 - O3

b)

	EX	O1	X	O2	Diff = O2 - O1
	CTRL	O3		O4	Diff = O4 - O3

9. Indicate the type of sampling designs the following situations are referring to:

- A researcher selects students in his class for a study on gossiping after which he generalizes the findings
- A researcher selects every tenth student after having selected the first student randomly from the first interval.
- A researcher selects ten hostels randomly and then interviews all the students from these hostels.
- A researcher selects 100 students randomly from a population of 4,500 students and then gives them self-administered questionnaires.
- A researcher subdivides the student population into male and female categories and then selects randomly equal numbers of male and female students in a population where the ratio of males to females is four to one.

10. Indicate what the flaws are with the following questions in a questionnaire:

- Do you accept the unimaginative way the university administration is handling student affairs
- Are you cognisant of the dysfunctional aspects of the registration exercise at the beginning of each semester?
- Do you favour the abolition of free education and the reduction student allowances at CBU?
- Do you oppose the administration's handling of student affairs because they are unfair?
- Are you not of the view that the administration should change its attitude towards the workers welfare?
- Do you smoke marijuana?

11. Indicate what sort of questions are being referred to here:

- A question used when respondents are asked to make a judgement in terms of sets of ordered categories, reflecting the intensity of judgement involved.
- A question with predetermined options to choose from.
- A question asked depending on the response to the preceding question
- A method of organizing a large of questions that a the same response questions
- A question that applies only to a segment of the sample.
- A question without predetermined categories to choose from.

12. Which of the following are primary or secondary sources of data?

- Data collected by the Central Statistical Office which a researcher from UNZA analyses

- b) Data collected by a researcher which he uses to investigate trends in HIV prevalence at UNZA.
- c) Data collected by a postgraduate student at CBU who uses this in his master's thesis on high about turnover among academic staff at UNZA.
- d) Data collected by World Vision Zambia on the social cash transfer program which the World Bank uses in their analysis of poverty levels in Zambia.

END OF TEST

THE UNIVERSITY OF ZAMBIA
SCHOOL OF HUMANITIES AND SOCIAL SCIENCES
DEPARTMENT OF POPULATION STUDIES
DEM 2414: STUDY QUESTION

1. In your understanding, define research?
2. What are the two branches of science and using examples differentiate the two
3. What are the aim and goals of social science
4. What is the meaning and importance of research
5. With examples, what are the common sources of knowledge?
6. Discuss the factors that influence the choice of research problems
7. Outline in detail what criteria is used in prioritizing research problems
8. What is literature review and give the importance
9. What are some of the questions you need to ask when coming up with literature review?
10. Define the following with examples: Objective, Hypothesis, Variable Paradigm, Theory and Model
11. Outline the objectives of the literature review
12. Outline the different types of variables, giving examples for each
13. Discuss how variables are measured
14. Outline the different types of scales used in social sciences
15. What is a research design and discuss the components of research design
16. What are the different types of research designs
17. What is sampling and its importance in research? What problems are encountered during this process?
18. Outline the different sampling designs, provide examples
19. What is validity and discuss the major components
20. Discuss the threats to validity
21. What are the different types of data
22. With examples, discuss the different types of data collection