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FACULTY/COLLEGE	College of Business and Economics
SCHOOL	Johannesburg Business School
DEPARTMENT	Business Mangement
CAMPUS	APB
MODULE NAME	Introduction to Analytical Techniques
MODULE CODE	HC1ANAT
SEMESTER	Second
ASSESSMENT	Supplementary Examination

ASSESSMENT DATE	8 January 2020	SESSION	08:30 – 10:30
ASSESSOR(S)	Dr N Cunningham		
MODERATOR(S)	Ms N Mashaba		
DURATION	2 hours	TOTAL MARKS	100

NUMBER OF PAGES OF QUESTION PAPER (Including cover page)	10

INFORMATION/INSTRUCTIONS:

- This is a closed-book assessment.
- Answer each question in a separate book.
- Read the questions carefully and answer only what is required.
- Number your answers clearly and correctly as per the question paper.
- Write neatly and legibly on both sides of the paper in the answer book, starting on the first page.

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SECTION A: MULTIPLE CHOICE QUESTIONS   (18 MARKS)

Answer the following questions by marking an 'X' on the answer sheet provided (page 10).

1. In a survey conducted by a marketing research company on 2 600 randomly selected residents in Gauteng, 1 380 indicated that they are satisfied with the ruling party. Based upon this survey, the marketing research company concluded: 'If the election were held today, over half of all voters would vote for the ruling party to stay in office.' This is an example of
    a) Descriptive statistics
    b) Inferential statistics

A Member of Parliament wants to know what the voters of his district think of current legislation on firearms control. He mails a questionnaire on the subject to all 2 500 registered voters in his district. Four hundred questionnaires have been returned, of which 292 (or 73%) support the current legislation. He announced that in his district at least 70% of all voters support the current legislation.
Answer the next four questions.

2. The population is
    a) The 292 returns supporting the legislation
    b) All the registered voters in his district
    c) The 70% voters supporting the legislation
    d) The 400 returns received

3. The sample is
    a) The 73% voters supporting the legislation
    b) All the voters in his district
    c) The 2 500 voters receiving the questionnaire
    d) The 400 returns received

4. The value 73% describes
    a) The sample statistic
    b) The population statistic
    c) The variable of interest
    d) Population parameter

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5. If all 2 500 registered voters had returned the questionnaire, the investigation would

   have been known as
   a) Inferential statistics
   b) Descriptive statistics
   c) Finite population
   d) A census

6. A characteristic of interest for the data set is known as
   a) An element
   b) A variable
   c) Descriptive statistics
   d) Parameter

7. Human beings have one of four blood types: A, B, AB or O. What type of data do you
   receive when you are told your blood type?
   a) Quantitative and discrete
   b) Qualitative and continuous
   c) Qualitative
   d) Quantitative and nominal scaled

8. The possible responses to the question 'What model washing machine did you

   purchase?' result in
   a) A nominal scale variable
   b) An ordinal scale variable
   c) An interval scale variable
   d) A ratio scale variable

9. A group of Grade 12 learners were randomly assigned to an outcome-based learning

   treatment or to a conventional learning treatment. After two weeks learners were tested

   for their ability to answer questions in an achievement test. The outcomes of the test

   were used as data in a research study. This collection method can be classified as
   a) An experiment
   b) An observation
   c) Conducting a survey
   d) Written questionnaire

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10. The South African Airways flight booking Internet site provides a questionnaire that can be answered electronically. Which of the following methods of data collection is involved when people complete the questionnaire?
    a) Conducting an experiment
    b) Conducting a survey
    c) Observation data
    d) Focus group data

11. An advertiser of Pain Away capsules claims it is the pain-killer preferred by doctors. This conclusion was based on a survey among a sample of doctors in which the choices were: Pain Away Aspro, Stop Pain and Anodin. This is an example of
    a) An easy question
    b) An open question
    c) A bias question
    d) A closed question

12. To study housewives' attitudes about their role in society the interviewer went from house to house in a randomly selected cluster with questionnaires for the women to complete. The data collection method used is
    a) An experiment
    b) An observation
    c) A survey
    d) Personal interview

13. When the items are destroyed during the investigation it is not possible to do
    a) Sampling
    b) A census
    c) An investigation
    d) An interview

14. A representative sample is used so that the results of a sample study are
    a) Convenient
    b) Inferable
    c) Limited
    d) Reliable

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15. A sample can be defined as a:
    a) Population of interest to the investigator
    b) Quota drawn from within the population
    c) Subset of a population
    d) Representative of the population of interest to the researcher

16. Sampling error occurs because:
    a) The researcher made mistakes in his report
    b) A sample is used in the investigation instead of a population
    c) The researcher used judgement in choosing the sample
    d) The wrong sampling method is used

17. The type of sampling approach where each person in the sampling frame has an equal chance of being selected is best described as:
    a) Systematic sampling
    b) Stratified random sampling
    c) Random sampling
    d) Non-probability sampling

18. An auditor wants to select a sample from a file of sequentially numbered invoices. He uses a randomly chosen starting point and draws every 20th invoice. The method he is using is:
    a) A simple random method
    b) A stratified method
    c) A systematic method/
    d) A cluster method

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SECTION B: DISCUSSION QUESTIONS   [82 MARKS]

Answer Section B in your answerbook using the mini-case study below as required.

Paula has noticed that there is a demand for parents looking for safe, reliable and affordable transportation for their children. Currently one of the main competitors is Uber but from Paula's initial market research, parents feel as though Uber is not in the business for transporting children. Parents are looking for a taxi company that offers the same driver every day, for cameras to be in the cars so that they can monitor their children and for the car to be tracked by a monitoring team. Paula would be able to offer these benefits but would like you to conduct some more research before she introduces her service to the market.

QUESTION 1   [10 MARKS]

Paula would like to know determine the travel distance required by the parents at a certain school. You have obtained the following data from the school showing the distance from the school for various groups of learners: pre-school, primary school and high school. However, some of the data is incomplete. Complete the table by answering the below questions.

	0.1 – 10km	9km – 20km	Total
Pre-school	20	9	_? (1.1)_
Primary school	? (1.4)	_? (1.3)_	17
High school	26	8	_? (1.2)_
Total	? (1.5)	**26**	**80**

1.1.   Calculate the total amount of pre-school learners for both the 0.1 – 10km and 9 – 20km radii.   (2)

1.2.   Calculate the total amount of high school learners for the 0.1 – 10km and 9 – 20km radii.   (2)

1.3.   Calculate the amount of primary school learners travelling within the 9 – 20km radius.   (2)

1.4.   Calculate the amount of primary school learners travelling within the 0.1 – 10km radius.   (2)

1.5.   Calculate the total amount of learners travelling between the 0.1 – 10km radius.   (2)

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QUESTION 2 **[12 MARKS]**

Paula has approached you to assist her in developing a questionnaire to assist her in conducting some market research. Explain the **four (4)** levels of measurement to Paula (theory) and provide a practical example of a typical question for each level of measurement (application).

Mark allocation: 1 mark allocated to the theory of each level & 2 marks allocated to the example of a typical question – relating to Paula's study

QUESTION 3 **[12 MARKS]**

In order to build awareness to Paula's transportation services, Paula has encouraged customers to register their details on her website. Paula wants you to contact these customers to find out whether they would see this service as useful. As you have this list, you have a sample frame which allows you to use probability sampling to conduct your research. Explain the **four (4)** _probability sampling methods_ available to you (theory) and apply to Paula's service (examples).

Mark allocation: 1 mark allocated to the theory of each method & 2 marks allocated to the application to Paula's transportation services.

QUESTION 4 **[12 MARKS]**

Based on the research you've conducted for Paula thus far from a sample of 27, you report that parents use the following transportation methods:
- Own (O) = they transport children using their own vehicles
- School transport (ST) = they use the school transportation system
- Lift club (LC) = they make use of lift clubs to transport their children
- Public transport (PT) = they make use of public transportation methods
- Taxi services (TS) = they make use of other taxi services

O	PT	ST	O	ST	TS	TS	O	ST
PT	O	TS	O	PT	ST	PT	TS	ST
LC	PT	O	TS	LC	O	O	TS	TS

Based on the information above, create a <u>frequency table</u> (include a column for frequency and relative frequency). (12)

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QUESTION 5 **[10 MARKS]**

After conducting some more research, you want to present the following data to Paula in a comparative bar chart (8 marks). As part of your presentation, explain what this data means (2 marks).

Type of pupil	% of parents who see a taxi service as a <u>convenient</u> option of transport for their children	% of parents who see a taxi service for their children as a <u>waste of money</u>
Primary school	25%	70%
High school	75%	30%

QUESTION 6 **[12 MARKS]**

The numbers below illustrate the distance children are transported from school and home:

5 9 4 10 11 24 8 18 12 11 19 14 15

Calculate the following (show your working out):

6.1	Mean	(3)
6.2	Median	(3)
6.3	Mode	(3)
6.4	Range	(3)

QUESTION 7 **[6 MARKS]**

The most common methods of measuring central tendancy are: the arthimetic mean, the median and the mode. Each of these have <u>different characteristics</u>. Identify **two (2)** characteristics for each method. (6)

QUESTION 8 **[8 MARKS]**

Match the following concepts and write the answer in your answer book. Structure your answer as follows: i = C for example.

i) Median	A) the sum of all the values in a data set, divided by the number of values in the data set
ii) Skewness	B) measures peakedness

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iii) Mode	C) the value that occupies the middle position in a data set when arranged in numerical order
iv) Arithmetic Mean	D) distribution that is high and thin
v) Kurtosis	E) distribution that is more normal in shape, that is neither very peaked nor flat
vi) Leptokurtic	F) measures symmetry or lack of symmetry
vii) Mesokuric	G) distribution that is flat and spread out
viii) Platykurtic	H) the value that occurs most frequently

END OF QUESTION PAPER

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SECTION A: MULTIPLE CHOICE ANSWER SHEET

Student number: _____

Surname and Initials: _____

1.	**A**	**B**		
2.	**A**	**B**	**C**	**D**
3.	**A**	**B**	**C**	**D**
4.	**A**	**B**	**C**	**D**
5.	**A**	**B**	**C**	**D**
6.	**A**	**B**	**C**	**D**
7.	**A**	**B**	**C**	**D**
8.	**A**	**B**	**C**	**D**
9.	**A**	**B**	**C**	**D**
10.	**A**	**B**	**C**	**D**
11.	**A**	**B**	**C**	**D**
12.	**A**	**B**	**C**	**D**
13.	**A**	**B**	**C**	**D**
14.	**A**	**B**	**C**	**D**
15.	**A**	**B**	**C**	**D**
16.	**A**	**B**	**C**	**D**
17.	**A**	**B**	**C**	**D**
18.	**A**	**B**	**C**	**D**