

FACULTY/COLLEGE	College of Business and Economics
SCHOOL	Johannesburg Business School
DEPARTMENT	Business Mangement
CAMPUS	АРВ
MODULE NAME	Introduction to Analytical Techniques
MODULE CODE	HC1ANAT
SEMESTER	Second
ASSESSMENT	Final Summative Assessment Opportunity (Nov 2019)

ASSESSMENT DATE	20 November 2019	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.

# 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 4 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

- 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

- 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

- 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

# SECTION B: DISCUSSION QUESTIONS

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

South Africa is getting a new food delivery service – which hopes to top Uber Eats and Mr D Food

E-hailing company Bolt, which recently changed its name from Taxify as it moves into new areas of business, says it plans to launch on-demand food delivery services in three countries: Estonia, Finland, and South Africa. This week it promised to provide "the best food delivery service" in South Africa – competing with Uber Eats, Mr D Food, and OrderIn, three companies already fighting for food delivery market share in major urban centres. Bolt will roll out the service using its existing drivers and customers, which covers a large geographic footprint thanks to an aggressive rollout into secondary cities such as East London, Pietermaritzburg and Polokwane in October, and to the Garden Route towns of Plettenberg Bay, Knysna, George and Mossel Bay in November.

Adapted from: de Wet, P. (2019). South Africa is getting a new food delivery service – which hopes to top Uber Eats and Mr D Food. Available from: <u>https://www.businessinsider.co.za/bolt-taxify-takes-on-uber-eats-and-south-africa-gets-it-first-2019-3</u>

#### **QUESTION 1**

# [10 MARKS]

In order to increase their market share, Bolt is considering expanding its service offering to Sandton, Randburg and Rosebank. Bolt would like you, as a data expert, to assist in planning their service offering. The main consideration is the amount drivers they would need. You have obtained the following data from an open-source and it reflects how many deliveries are conducted within a 0.5 – 3km and 3.1 – 6km radius in Sandton, Randburg and Rosebank on an hourly basis. However, some of the data is incomplete. Complete the table by answering the below questions.

	0.5 – 3km	3.1 – 6km	Total
Sandton	3	9	<u>? (1.1)</u>
Randburg	<u>? (1.4)</u>	<u>? (1.3)</u>	17
Rosebank	12	16	<u>? (1.2)</u>
Total	<u>? (1.5)</u>	35	57

1.1.	Calculate the total amount of deliveries within the Sandton area for both the 0.5 -	-
	3km and the 3.1 – 6km radii.	(2)
1.2.	Calculate the total amount of deliveries within the Rosebank area for both the 0.5	_
	3km and the 3.1 – 6km radii.	(2)
1.3.	Calculate the amount of deliveries within the 3.1 – 6km radius within the Randbur	g
	area.	(2)
1.4.	Calculate the amount of deliveries within the 0.5 – 3km radius within the Randbur	g
	area.	(2)
1.5.	Calculate the total amount of deliveries within the 0.5 – 3km radius.	(2)

# **QUESTION 2**

# [12 MARKS]

Bolt has approached you in assisting with the development of a questionnaire in order to assist in determining who their target market would be (i.e. their demographics), to determine how much they are willing to spend on deliveries and to determine the type of food they would like to see on the Bolt app. Explain the **four (4)** levels of measurement to Bolt (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 Bolt.

#### **QUESTION 3**

# In order to build awareness to the food-delivery app, Bolt has encouraged customers to register their details on the website. Bolt wants you to contact these customers to find out what their different favourite restaurants are. As you have this list of customer details, you have a sample frame which allows you to use probability sampling to conduct your research. Explain what *probability* sampling is (2 marks) then explain the **four (4)** <u>probability</u> sampling methods available to you (theory) and apply to the Bolt (examples).

Mark allocation: 2 marks allocated to the explanation of probability sampling, 1 mark allocated to the theory of each method & 2 marks allocated to the application to Bolt.

#### [14 MARKS]

#### **QUESTION 4**

# [12 MARKS]

Bolt wants to determine how much consumers typically spend on one delivery. You have already collected some data from 25 consumers who use food-delivery apps and indicated their spend in the table below. In order to present the information to Bolt, you decide to summarise this data in a stem-and-leaf (include frequency) and comment on your results and what this means.

66	90	68	94	86
96	70	138	90	120
92	102	82	120	132
82	64	80	88	78
92	66	106	106	93

# **QUESTION 5**

# [14 MARKS]

You have successfully collected the data relating to customer's preferences of the type food they prefer and compare this to their gender. You want to present this data to Bolt in a logical and clear manner therefore you decide to present the data in a <u>comparative bar chart (12</u> marks). As part of your presentation, interpret what the data means (2 marks).

Food-type	% of males	% of females
Salad	15%	45%
Burger	30%	10%
Pasta	20%	35%
Pizza	35%	10%

# **QUESTION 6**

# [12 MARKS]

The numbers below illustrate how frequently 13 consumers purchase food via food-delivery apps per month:

5	9	4	10	11	24	8	18	12	11	19	14	15
Calcula	ate the	followin	g (show	/ your w	orking	out):						
6.1	Mean											(3)
6.2	Media	า										(3)
6.3	Mode											(3)
6.4	Range	1										(3)

# **QUESTION 7**

# [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
iii) Mode	C) the value that occupies the middle position in a data set when
	arranged in numerical order
iv) Arithmetic	D) distribution that is high and thin
Maan	
Mean	
v) Kurtosis	E) distribution that is more normal in shape, that is neither very
v) Kurtosis	E) distribution that is more normal in shape, that is neither very peaked nor flat
v) Kurtosis vi) Leptokurtic	<ul><li>E) distribution that is more normal in shape, that is neither very peaked nor flat</li><li>F) measures symmetry or lack of symmetry</li></ul>
v) Kurtosis vi) Leptokurtic vii) Mesokuric	<ul> <li>E) distribution that is more normal in shape, that is neither very peaked nor flat</li> <li>F) measures symmetry or lack of symmetry</li> <li>G) distribution that is flat and spread out</li> </ul>

# END OF QUESTION PAPER

# SECTION A: MULTIPLE CHOICE ANSWER SHEET

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Student number:

Surname and Initials:

1.	A	В		
2.	Α	В	С	D
3.	A	В	С	D
4.	Α	В	С	D
5.	A	В	С	D
6.	Α	В	С	D
7.	Α	В	С	D
8.	Α	В	С	D
9.	A	В	С	D
10.	A	В	С	D
11.	A	В	С	D
12.	Α	В	С	D
13.	A	В	С	D
14.	A	В	С	D
15.	A	В	С	D
16.	A	В	С	D
17.	A	В	С	D
18.	Α	В	С	D