Tutorial letter 101/3/2018

Basic Statistics

STA1510

Semesters 1 & 2

Department of Statistics

IMPORTANT INFORMATION:

This tutorial letter contains important information about your module and includes the assignment questions for both semesters.

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1 INTRODUCTION

Dear Student,

Welcome to this module. We trust your studies will be rewarding and successful!

This is the service module of the Department of Statistics and is prescribed for students from different disciplines and with different background knowledge. It aims to present statistics in an interesting and useful way without complicating the module using difficult mathematics. The basic techniques in statistics will be covered to familiarise students with statistical terms and basic knowledge so that they will be able to use statistical textbooks in their future careers if needed. This is a *stand-alone* module and is not a prerequisite for any other modules in statistics.

1.1 Tutorial matter

The tutorial matter that UNISA provides to you for this module consists of the following:

- **Tutorial letter 101** (this tutorial letter). Read this letter now to the end, and save it as it contain important information *as well as your assignments for the semester.*
- **A study guide** written by a lecturer to guide you through the relevant sections in the prescribed textbook. Use it together with the textbook, as the guide indicates the relevant prescribed sections, explaining difficult concepts in more detail, giving additional examples and exercises, etc.
- Other tutorial letters to further assist you with your studies, will be dispatched to you throughout the year.

Note that you will need to buy a prescribed textbook. See section 4 of this letter for details on the textbook.

The Department of Despatch should have supplied to you the tutorial letter 101 and the study guide shortly after your registration. The other tutorial letters will be sent to you throughout the semester. Follow the instructions in the brochure entitled *my Studies @ Unisa* if you do not receive some of the material that should have been sent to you.

Take note that every tutorial letter you will receive is important and you have to read them all immediately and carefully. Some information contained in these tutorial letters may be urgent, while others may, for example, contain examination information. So, it is wise to keep them all in a file!

If you have access to the Internet, you can view and print the study guide and tutorial letters for the modules for which you are registered on the University's online campus, myUnisa, at http://my.unisa.ac.za
As UNISA is moving increasingly towards online access to study material, please note that some tutorial letters may only be available for downloading on the module's myUnisa web site. We will attempt to send you all the material in printed copy, however this might only be later in the semester. All the study material is immediately availabe on myUnisa, often long before it reaches you via mail or courier. It is important that you activate your myLife email account, since a notification is sent to your myLife email address whenever a new resource is made availabe. Alternatively, you should regularly visit the module web site so check on any new available material.

2 PURPOSE OF AND OUTCOMES FOR THE MODULE

2.1 Purpose

Students credited with this unit standard will be familiar with the most important basic statistical concepts. After completion students should have an informed understanding of different visual descriptions of data, including graphical and tabular techniques; and measures of central location, dispersion and association. They should be able to use probability as a tool to create discrete and continuous probability distributions, used extensively in statistical inference; determine confidence intervals and perform hypothesis testing involving a sample mean and proportion; apply different forms of Chi-square testing; understand simple linear regression and correlation.

2.2 Outcomes

Qualifying students will be able to:

- Analyse data considering different types of data and how they relate to relevant graphical and tabular presentations e. g. pie charts, bar charts, histograms, stem-and-leaf displays, line charts and scatter diagrams.
- Analyse data by calculating accurate numerical measures of central location, variability, relative standing.
- Describe the different concepts and laws of probability and apply definitions of joint, marginal and conditional probability.
- Apply the complementary, multiplication and addition rules or probability.
- Understand the role of probability in decision making and the application in basic statistical inference.
- Describe random variables and the probabilities associated with them in the form of a table, formula or graph and also in terms of their parameters, usually the expected value and the variance.
- Describe different probability distributions as either discrete or continuous and know the parameters of expected value and variance.
- Construct small-sample tests and confidence intervals for population means and proportions.

3 LECTURER AND CONTACT DETAILS

3.1 Lecturer

The lecturer responsible for this module is:

Mr TP Mohlala
Room: 6-18, Florida Science Campus
GJ Gerwel Building
Tel: 011 670 9254
Email: mohlatp@unisa.ac.za

You might also want to write to us. Letters should be sent to:

Mr. T.P. Mohlala
Department of Statistics
Florida Science Campus
PO Box 392
UNISA
0003

If you encounter difficulties, either with the assignment or with the contents of the textbook or the study guide, please feel free to contact me directly. If you cannot get hold of me, please phone the departmental secretary at (011) 670 9255. She will assist you with information about the availability of a lecturer or can put you through to other lecturers who will be able to help you.

All queries that are not of a purely administrative nature but are about the content of this module should be directed to me. Please have your study material with you when you contact me.

PLEASE NOTE: Letters to lecturers should not be enclosed with or inserted into assignments.

3.2 Department

The departmental secretary can be contacted at (011) 670 9255 for other queries.

3.3 University

If you need to contact the University about matters not related to the content of this module, please consult the publication *My Studies @ Unisa* that you received with your study material, and which is also available on the myUnisa web site.. This brochure contains information on how to contact the University (e.g. to whom you can write for different queries, important telephone and fax numbers, addresses and details of the times certain facilities are open).

Always have your student number at hand when you contact the University.

4 MODULE RELATED RESOURCES

4.1 Prescribed books

The prescribed book for this module is

David. M. Levine, K.A. Szabat and David F. Stephan.
BUSINESS STATISTICS: A First Course
(2016), 7th edition, Pearson, ISBN: 9781292096056

You have to buy this book. Please consult the list of official booksellers and their addresses listed in *my Studies @ Unisa*. Prescribed books can be obtained from the University's official booksellers. If you have difficulty locating your book(s) at these booksellers, please contact the Prescribed Books Section at 012 429 4152 or e-mail vospresc@unisa.ac.za.
For shorter reference, we use **Levine** in the rest of this tutorial letter when we need to refer the prescribed book.
Note that the edition of the book with the ISBN number as given above, and which is stocked by UNISA's official booksellers, is a special UNISA edition and comes bundled with the access code to a resource called MyStatLab. This is an internet based interactive course built around this textbook. See under Section 5.4 for more information on how MyStatLab can help you.

4.2 Recommended books

There are no recommended books for this module.

4.3 Electronic Reserves (e-Reserves)

There are no e-Reserves for this module.

4.4 Library services and resources information

For brief information go to : http://www.unisa.ac.za/contents/studies/docs/myStudies-at-Unisa2018-brochure.pdf
For more detailed information, go to the Unisa website: http://www.unisa.ac.za/, click on Library
For research support and services of Personal Librarians, go to:
http://www.unisa.ac.za/Default.asp?Cmd=ViewContent&ContentID=7102
The Library has compiled numerous library guides:

- find recommended reading in the print collection and e-reserves - http://libguides.unisa.ac.za/request/undergrad
- request material - http://libguides.unisa.ac.za/request/request
- postgraduate information services - http://libguides.unisa.ac.za/request/postgrad
- finding , obtaining and using library resources and tools to assist in doing research http://libguides.unisa.ac.za/Research_Skills
- how to contact the Library/find us on social media/frequently asked questions - http://libguides.unisa.ac.za/ask

5 STUDENT SUPPORT SERVICES FOR THE MODULE

For information on the various student support systems and services available at Unisa (e.g. student counseling, tutorial classes, language support), please consult the publication *my Studies @ Unisa* that you received with your study material.

5.1 Tutors

To further assist you in mastering this module, you will be allocated an e-tutor. Communication with your e-tutor is via a special e-tutor website you will be linked to soon after registration. The tutor is there to support you throughout the semester as you work through the study material.
Certain Statistics modules will also have face-to-face tutors at selected regional centres. Please enquire at your local centre about this.

5.2 Contact with Fellow Students

5.2.1 Study Groups

It is advisable to have contact with fellow students. One way to do this is to form study groups. **Please consult the publication *my Studies@Unisa* to find out how to obtain the addresses of students in your region.**

5.3 myUnisa

If you have access to a computer that is linked to the internet, you can quickly access resources and information at the University. The *myUnisa* learning management system is Unisa's online campus that will help you to communicate with your lecturers, with other students and with the administrative departments of Unisa - all through the computer and the internet. Please consult the publication *my Studies @ Unisa* which you received with your study material for more information on *myUnisa*.

To go to the *myUnisa* website, start at the main Unisa website, http://www.unisa.ac.za, and then click on the "Login to *myUnisa*" link on the right-hand side of the screen. This should take you to the *myUnisa* website. You can also go there directly by typing in http://my.unisa.ac.za. On the website you will find general Unisa related information, plus a module site for each module you are registered for.

We strongly recommend you to visit the myUnisa site of this module regularly through the semester, for the following reasons:

- You can click on course contact to send an email to the lecturer right away.
- You will find a discussion forum which helps you stay in touch with fellow students.
- Through the discussion forum and the Frequently Asked Questions (FAQ) section, you are likely to find answers to any specific queries you may have about the contents of the module.
- myUnisa gives you the fastest access to any tutorial letters of the module – you should go there if any tutorial matter you are expecting has been delayed in mail.

5.4 Discussion classes

Details on the dates, venues, etc. on discussion classes will be announced on a separate tutorial letters accordingly.

5.5 Free computer and internet access

Unisa has entered into partnerships with establishments (referred to as Telecentres) in various locations across South Africa to enable you (as a Unisa student) free access to computers and the Internet. This access enables you to conduct the following academic related activities: registration; online submission of assignments; engaging in e-tutoring activities and signature courses; etc. Please note that any other activity outside of these are for your own costing e.g. printing, photocopying, etc. For more information on the Telecentre nearest to you, please visit www.unisa.ac.za/telecentres.

5.6 MyStatLab

As discussed before, the prescribed textbook for this modules comes with an access code to an internet-based online course for the textbook, hosted by the publishers. If you have access to the internet, and have purchased a copy of the textbook with the access code, we strongly recommend that you make use of the MyStatLab resource.

What are the benefits of using MyStatLab?

As a Unisa student you are studying from home and probably have a demanding full time job that takes up a lot of your time. You are working on your own and do not have the luxury of immediate, personal communication with friends in the same course or the lecturers who teach you.

Here are some reasons why you should definitely start using MyStatLab today:

- 24 hour personal tutor: Pearson's MyStatLab is like having a 24 hour tutor at your disposal. MyStatLab will show you your personal strengths and weaknesses and develop a personalised study plan for you. The study plan allows you to practice the problems as much as you need to, until you have mastered the concept. This will help you to prepare better and therefore lead to better results on your assignments and exams!
- Instant feedback: MyStatLab will immediately give you specific feedback on a problem you are working on. This means you do not have to wait for your lecturer's office hours if you get stuck on a problem - you can work at your own pace, in your own time.
- Interactive learning aids: Pearson understands that you are an individual and that you learn in a specific way. If you are struggling with problem in MyStatLab there are a variety of different hints and tools that can help you get to the right answer on your own: Help me solve this, View an Example, an eBook, videos and more. These are specifically designed to complement your personal learning style and to make your learning experience more enjoyable.

HOW TO ACCESS MYSTATLAB

PEARSON ALWAYS LEARNING

How to Register and Enrol in Your MyStatLab Course

Welcome to STA1510 and MyStatLab! Your instructor has set up a MyStatLab course for you so you can engage with your course content in an enjoyable and interactive manner.

The first thing you need to do is go and buy your new prescribed textbook, with MyMathLab access card, from any official Unisa bookseller:

To join your instructor's course, please complete the following **two** steps:

1. **REGISTER** for MyStatLab, and,
2. **ENROL** in your instructor's course

To register, you will need:

1. A valid e-mail address;
2. The **access code** that came with your new prescribed textbook; and
3. The STA1510 course ID: (will be provided in Tutorial Letter 102 OR please ask your lecturer at phone number 011 670 9254).

Step 1: Register for MyStatLab

1. Go to http://www.mymathlab.com and click the **Students** button, in the Register section.
2. Choose **Register with an Access Code**
3. Follow the instructions to set up your login and password and register for your course.

Step 2: Enrol in your instructor's course

1. Log in to MyStatLab (powered by Mymathlab) at http://www.mymathlab.com with your newly created Login Name and Password
2. Enter your Course ID**: will be provided in Tutorial Letter 102.**
3. Get started with MyStatLab! Work through the sample tests and quizzes so MyStatLab can create your individual study plan.

PEARSON ALWAYS LEARNING

Having trouble with registration and enrolment? Go to Pearson 24/7 customer support

Pearson has a 24/7 support website with professionals dedicated to helping you sort out any technical problems you may be having.

For assistance go to http://247xl.custhelp.com. You can:

- Browse through Frequently Asked Questions;
- Search the Pearson knowledge base;
- Send an email; or
- Participate in a live chat.

Pearson wishes you all the best in your course. We know that MyStatLab is going to help you achieve the results you desire.

6 MODULE-SPECIFIC STUDY PLAN

The semester during which you study at UNISA consists of 15 weeks between the last day of registration and the beginning of the examination period, during which time you need to study and understand the contents of the module, complete and submit two assignments, and then prepare for the examination. Therefore it is important that you create a timetable for planning your studies for this module, and all the other modules you take this semester. That this is particularly important in this module – Statistics as a subject needs continuous work, since you will not make sense of later sections if you skip some sections earlier on!

The following time tables are provided as a starting point for your personal schedule.

SEMESTER 1	**Study units for preparing your assignments** Levine and Study Guide:	**From**	**To**
Assignment 1	Study units 1 - 6	Registration	7 March
	Start writing your assignment & submit	8 March	**15 March**
Assignment 2	Study units 7 - 11	18 March	4 April
	Start writing your assignment & submit	5 April	**17 April**
Exam	Prepare for the examination	20 April	Exam

SEMESTER 2	**Study units for preparing your assignments** Levine and Study Guide:	**From**	**To**
Assignment 1	Study units 1 - 6	Registration	20 August
	Start writing your assignment & submit	21 August	**29 August**
Assignment 2	Study units 7 - 11	2 September	23 September
	Start writing your assignment & submit	24 September	**3 October**
Exam	Prepare for the examination	4 October	Exam

7 MODULE PRACTICAL WORK AND WORK-INTEGRATED LEARNING

There are no practicals for this module.

8 ASSESSMENT

8.1 Assessment criteria

The outcomes of this module are given in Section 2.2 of this tutorial letter. These outcomes describe what you should be able to do in order to successfully pass this module. Assignments, examinations, and in some modules projects and portfolios are the ways we use to assess whether you have reached the outcomes.
The criteria we use to assess your work can be summarised as follows:

- You must apply the correct and appropriate formulas, presentations, methods, rules, laws, values from tables, and so on, as required in the question.
- Applying of formulas, methods etc. must be done correctly.

- Results, tests, computer printouts etc. should be interpreted correctly, when you are asked to do so.
- Calculations must be correct and accurate.

The following general comments are valid to all our modules. In some cases the lecturers will give further instructions to keep in mind when completing your work; these will be given in the tutorial letters for that particular module.

8.1.1 Written assignment and examination questions

Please keep the following in mind when answering questions.

- Read the question carefully – you will get zero marks if you end up answering what was not asked for!
- Give full calculations, marks will usually not be given for the end results only.
- Present your solutions clearly. A collection of disjointed formulas and numbers is not the right way to answer questions, please use words to explain what you are doing and why. Use correct mathematical notation and remember that lines of mathematical equations must always be linked to each other – for example with the = sign if they are a series of continuing calculations, or otherwise maybe by the signs for “equals” or “therefore”. See your textbooks and/or study guides for examples.

We strongly recommend that you submit your written assignments through myUnisa, since then the turnaround time for your assignment to get back to you will be shorter, and your assignment can never get lost. For most of the statistics modules we only accept file submissions in the PDF format. You can scan your hand-written assignment into a PDF file; or alternatively you can use a word-processing program with an equation editor (e.g. MSWord) or you can use special mathematical typesetting programs such as LaTeX, and at the end convert your assignment to PDF. Please note that for typed assignments, you must still use all the correct mathematical notations, and include all necessary graphs, diagrams, and so on, just as if you were submitting a hand-written assignment!

8.1.2 Multiple choice questions

- Only one of the given answers is correct. If you believe several to be correct, check your work again!
- We suggest you keep copies of your calculations, so that when you get the results, you can check where you went wrong.

8.2 Assessment plan

The assessment in this module consists of two assignments and an examination.

Your final mark for the module is determined from your year mark and your examination mark. The year mark forms 20% and the examination mark 80% of the final mark. However, there is also a subminimum rule which states that you must get at least 40% in the examination to pass. The year mark is the average of the marks you receive for assignments 1 and 2. An assignment submitted

late or not at all will give you 0%. Finally, you will only get examination admission if you submit the first assignment by its due date.

Assignments and Learning

The assignments prescribed for this module must be seen as an important part of the learning process. As you do the assignment, study the textbook and study guide, consult other resources, discuss the work with fellow students or tutors or do research, you are actively engaged in learning. The typical assignment question is a reflection of a typical examination question. There are fixed submission dates for the assignments and each assignment is based on specific chapters in the prescribed book. These submission dates have been selected such that you will work steadily through the semester.

You MUST complete Assignment 1 by its due date, otherwise you will not get examination admission. In addition, you should complete both assignments as well as you can, since:

- They are the sole contributors towards your year mark; if you do well in your assignments you have a good year mark and that can make all the difference between a pass or fail, or between a distinction or simply a pass! Note that if your year mark is zero, then you must get 59% in the exam to pass the module! Rather play it safe and make sure that your year mark is as good as possible.

- Submitting assignments and getting feedback on how you did in them is the only way you can assess how well you understand the study material.

- The assignment questions prepare you for the examination questions, as they are similar in form and nature – completing the assignments questions means that you are well prepared for the examination, and from your performance on the assignment questions, you will know exactly which areas you need to work more on.

8.3 General assignment numbers

The two assignments are numbered 01 and 02 for each semester.

8.3.1 Unique assignment numbers

Please note that each assignment has its unique six-digit assignment number which has to be written on the cover of your assignment or on the mark reading sheet upon submission. The unique numbers are given in the table in the next section of this tutorial letter; you will also find them in the heading of each set of assignment questions.

8.3.2 Due dates for assignments

The closing dates for the submission of the assignments are:

Assignment for SEMESTER 1	**Sections from the Study Guide check for equivalent chapter in the textbook**	**Due Date**	**Type**	**Unique number**
1	Study units 1 - 6	16 March 2018	Multiple Choice	863596
2	Study units 7 - 11	18 April 2018	Multiple Choice	866219

Assignment for SEMESTER 2	Sections from the Study Guide check for equivalent chapter in the textbook	Due Date	Type	Unique number
1	Study units 1 - 6	31 August 2018	Multiple Choice	768992
2	Study units 7 - 11	03 October 2018	Multiple Choice	727480

8.4 Submission of assignments

In this module, Assignments 1 and 2 are multiple choice assignments. For general information and requirements as far as assignments are concerned, see the brochure *my Studies @ Unisa* which you received with your study material.

Note that if you have access to Internet, the easiest, fastest and safest way to submit assignments is via myUnisa.

To submit an assignment via myUnisa:

- Go to myUnisa.
- Log in with your student number and password.
- Select the module.
- Click on assignments in the menu on the left-hand side of the screen.
- Click on the assignment number you wish to submit.
- Follow the instructions.

Please note: Although students may work together when preparing assignments, each student must write and submit his or her own individual assignment. It is unacceptable for students to submit identical assignments on the basis that they worked together. That is copying (a form of plagiarism) and none of these assignments will be marked. Furthermore, you may be penalised or subjected to disciplinary proceedings by the University.

8.5 Assignments

This tutorial letter 101 contains the assignments for both semesters, so select the semester you are enrolled for and do the set of assignments for that semester only. The assignments for Semester 1 are in Appendix A, pages 18–31. The assignments for Semester 2 are in Appendix B, pages 32–46.

Solutions to the assignments will be posted to ALL students registered for this module after the closing date of the relevant assignment. Solutions will also be available on *myUnisa*.

9 OTHER ASSESSMENT METHODS

There are no other assessment methods for this module.

10 EXAMINATION

10.1 Examination Admission

Currently admission to the examination is only based on the proof that you are actively involved in your studies. This proof is based on the **submission of your first assignment** before a fixed given date. Admission therefore does not rest with the Department of Statistics and if you do not submit that particular assignment in time, we can do nothing to give you admission. Although you are most probably a part time student with many other responsibilities, work circumstances will not be taken into consideration for exemption from assignments or the eventual admission to the examination.

No concession will be made to students who do not qualify for the examination!

10.2 Examination Period

This module is offered in a semester period of fifteen weeks. This means that

- if you are registered for the first semester, you will write the examination in May/June 2018 and should you fail and qualify for a supplementary examination, that supplementary examination will be written in October/November 2018.
- if you are registered for the second semester, you will write the examination in October/November 2018 and should you fail and qualify for a supplementary examination, that supplementary examination will be written in May/June 2019.

The examination section will provide you with information regarding the examination in general, examination venues, examination dates and examination times. Eventually, your results will also be processed by them and sent to you.

10.3 Examination Paper

Your examination will be a **2 hour examination** consisting of multiple choice questions only. You need to have a final mark of 50% to pass this module and 75% to obtain a distinction. The final mark consists of your year mark (20%) and your examination mark (80%).

Should you have a final mark of less than 50%, it implies that you failed the module STA1510. However, should your results be within a specified percentage (from 40% to 49%), you will be given a second chance in the form of a *supplementary* examination on the dates as specified in 10.2. If you fail the examination with less than 40%, the year mark will not count to help you pass.

10.4 Previous Examination Papers

Previous examination papers are available to students on myUnisa. Remember that the examples, exercises, activities in the guide as well as your assignment questions are also indicators of typical examination questions.

10.5 Tutorial Letter with Information on the Examination

In the study guide you are given clear indications of the sections in the textbook that you have to know and can be tested on in the examination. Remember that you have to work continuously and do not treat statistics as any other subject, where it may be possible to study only selected sections of the work. All the topics are interlinked and you will definitely run into trouble if you skip sections!

You are automatically admitted to the exam on the submission of Assignment 01 by a specific date – see Section 10.1. Please note that lecturers are not responsible for exam admission, and ALL enquiries about exam admission should be directed by e-mail to exams@unisa.ac.za.

11 FREQUENTLY ASKED QUESTIONS

The my Studies @ Unisa brochure contains an A-Z guide of the most relevant study information. Please refer to this brochure for any other questions.

12 SOURCES CONSULTED

No books other than the prescribed book was consulted in preparing this tutorial letter.

13 CONCLUSION

Remember that there are no "short cuts" to studying and understanding Statistics. You need to be dedicated, work consistently and practise, practise and practise some more! If you are an athlete or a football player or a swimmer or ....or play the piano you will know exactly what is meant with this comment! We hope that you will enjoy studying this module and we wish you success in your studies.

Your lecturers

ADDENDUM A: FIRST SEMESTER ASSIGNMENTS

A.1 Assignment 01

ONLY FOR SEMESTER 1 STUDENTS
ASSIGNMENT 01
Unique Nr.: 863596
Fixed closing date: 16 March 2018

This multiple-choice assignment will be marked by computer. Hence the closing date is **fixed** and no extension of time can be granted.

Your answers must be entered on an optical mark reading sheet. But before you attempt that, please study in detail the relevant chapter of the publication *my Studies @ Unisa*. Please make sure that you know how to handle the optical mark reading sheets, since sheets which are marked incorrectly and which are rejected by the computer will not be marked by hand and students will not receive marks for such assignments. The unique number appearing in the box above links your assignment to the corresponding set of answers in the computer. It must therefore be filled in correctly on the optical mark reading sheet.

Note that your assignment will not be returned to you. Please keep a record of your answers so that you can compare them with the correct answers.

In each of the following twenty questions, mark the number of the answer that you think is correct. Each correct answer gives you 5%, adding up to a total of 100%.

QUESTION 1

Choose the option below that best fit the following description: The number of push-ups you can do is considered to be?

1. Quantitative, Discrete data
2. Qualitative data
3. Quantitative, Continuous data
4. Numerical data
5. None of the above fit the description.

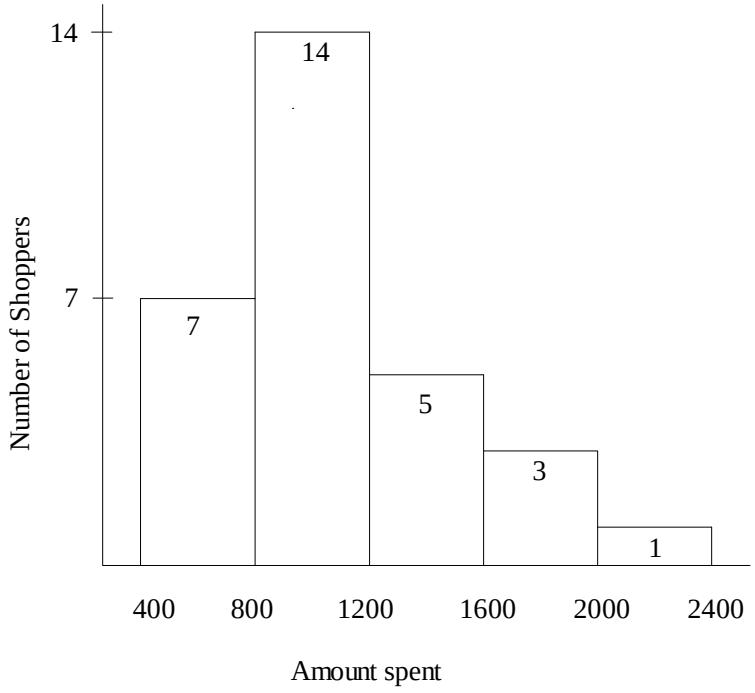
QUESTION 2

Techniques used to organise, summarise and present data that has been collected are known as:

1. Samples
2. Inferential statistics
3. Populations
4. Descriptive Statistics
5. Parameters

QUESTION 3

Consider the histogram of the numeric frequency distribution for the amount spend on groceries by the shoppers.



What proportion of the shoppers spent between R1200 and R1600?

1. 13.3%
2. 16.7%
3. 86.7%
4. 100%
5. 20%

QUESTION 4

Refer to the information on question 3:
What percentage of shoppers spent between R800 and R1600?

1. 63.33%
2. 86.7%
3. 46.7%
4. 16.7%
5. 23.33%

QUESTION 5

Consider the following cross tabulation of the shopping habits of 30 grocery shoppers:

Store	Gender		Total
	Female	Male	
Checkers	7	3	10
Pick and Pay	10	7	17
Spar	2	1	3
Total	19	11	30

What percentage of all grocery shoppers are females who prefers Pick n Pay?

1. 23.33%
2. 41.18%
3. 70%
4. 33.33%
5. 63.33%

QUESTION 6

Consider the following data set:

-3	-3	6	4	10	-4	10	2	-1	5	1

Calculate the range of the data set.

1. 6
2. -3
3. 2
4. 14
5. 4.5

QUESTION 7

Refer to information on question 6:
Calculate the coefficient of variation for the data set:

1. 2.45%
2. 30%
3. 5.0073%
4. 204%
5. 10%

QUESTION 8

The human resources department of a company recorded the number of days absent of 23 employees in the technical department over the past nine months:

5	4	8	17	10	9	30	5	6	15	10	9
2	16	15	18	4	12	6	6	15	10	5	

Compute the third quartile of the number of days absent:

1. 10 days
2. 15 days
3. 9 days
4. 6 days
5. 5 days

QUESTION 9

Refer to the table on question 8:
Find the median number of days absent over this nine month period:

1. 15 days
2. 10.3 days
3. 6 days
4. 9 days
5. 30 days

QUESTION 10

An insurance broker is interested in knowing the occupations and races of the residents of a small town. After a survey they found the information shown in the summary table below:

Occupation	Race			
	Black	White	Indian	Total
Teacher	18	22	4	44
Farmer	24	5	7	36
Businessman	14	31	13	58
Total	56	58	24	138

Determine the probability that a person picked at random from this town is a Black farmer?

1. 0.4058
2. 0.1739
3. 0.2609
4. 0.4928
5. 0.0362

QUESTION 11

Refer to the information given in Question 10: Determine the probability that a person picked at random from this town is either black or a teacher, or both?

1. 0.8261
2. 0.4058
3. 0.1739
4. 0.3188
5. 0.5942

QUESTION 12

Refer to the information given in question 10:
Determine the probability that a person picked at random from this town is either black or white?

1. 0.8261
2. 01739
3. 0.6667
4. 0.4203
5. 0.5942

QUESTION 13

Events A and B are such that:

$$\begin{aligned} P(A) &= P(B) = 0.4 \\ P(A \cap B) &= 0.1 \end{aligned}$$

Determine $P\left(A' \cap B\right)$?

1. 0.9
2. 0.1
3. 0.6
4. 0.3
5. 0.7

QUESTION 14

A Cape Town courier service promises that 20% of Johannesburg-bound parcel deliveries will reach their destinations within 12 hours. What is the probability that of the seven parcels sent at random times by a particular client in Cape Town, only one is delivered late?

1. 0.3670
2. 0.2753
3. 0.2097
4. 0.0004
5. 0.0287

QUESTION 15

Refer to the information given in question 14:
What is the probability that of seven parcels sent at random times by a particular client in Cape Town, only one is delivered within 12 hours?

1. 0.0004
2. 0.2753
3. 0.2097
4. 0.0043
5. 0.3670

QUESTION 16

Let the random variable X represent the number of bicycles sold per day by Mohlala's Bicycle Shop. The probability distribution for this activity is shown below:

X	0	1	2	3	4
$P\ (X)$	0.2	0.1	0.3	??	0.1

Find the probability that the shop sells one, two or three bicycles on a given day.

1. 0.1
2. 0.3
3. 0.7
4. 1.0
5. 0.4

QUESTION 17

The average number of traffic accidents per seven-day week on a certain section of highway is equal to 10. Based on this information, what is the probability that there will be four accidents next week?

1. 0.0298
2. 0.0902
3. 0.9098
4. 0.0733
5. 0.0189

QUESTION 18

A study on the delivery time of mail between two locations has found that the data follows a normal distribution. The study has also found that on average, mail takes up to five days to arrive with a standard deviation of 0.75 days. Using this information, what is the probability that the mail will take between four and six days to arrive?

1. 0.9082
2. 0.8164
3. 0.9962
4. 0.0038
5. 0.0918

QUESTION 19

Given a normal distribution with $\mu = 25$ and $\sigma = 11$, find the normal curve area between $X = 33$ and $X = 38$.

1. 0.8810
2. 0.1137
3. 1.1800
4. 0.7673
5. 0.7273

QUESTION 20

Given the normally distributed variable X with mean 25 and standard deviation 2.5, find the value of k such that $P\,(X < K) = 0.2148$.

1. -0.79
2. 23.025
3. 26.975
4. 0.790
5. 0.7852

A.2 Assignment 02

ONLY FOR SEMESTER 1 STUDENTS
ASSIGNMENT 02
Unique Nr.: 866219
Fixed closing date: 18 April 2018

This multiple-choice assignment will be marked by computer. Hence the closing date is **fixed** and no extension of time can be granted.

Your answers must be entered on an optical mark reading sheet. But before you attempt that, please study in detail the relevant chapter of the publication *my Studies @ Unisa*. Please make sure that you know how to handle the optical mark reading sheets, since sheets which are marked incorrectly and which are rejected by the computer will not be marked by hand and students will not receive marks for such assignments. The unique number appearing in the box above links your assignment to the corresponding set of answers in the computer. It must therefore be filled in correctly on the optical mark reading sheet.

Note that your assignment will not be returned to you. Please keep a record of your answers so that you can compare them with the correct answers.

In each of the following 15 questions, mark the number of the answer that you think is correct.

QUESTION 1

A survey found that 31% of South Africans who have lost weight believed that the most effective strategy involved exercises. A random sample of 300 South Africans who have lost weight is selected.
What is the probability that between 29% and 33% of the sample believe that the most effective strategy to lose weight involves exercise?

1. 0.7734
2. 0.2266
3. 0.5468
4. 0.75
5. -0.75

QUESTION 2

Suppose cars arrive at a certain garage at an average rate of 25 cars every hour. A random sample of 25 one–hour time periods is selected and it is found that, on average, 27.5 cars arrived. Assume that the population standard deviation is 10 cars and the arrival times are normally distributed. What is the probability that a random sample of 25 one–hour time periods results in a mean of at least 27.5 cars?

1. 0.1056
2. 0.1587
3. 0.7357
4. 0.8413
5. 0.8944

QUESTION 3

In a certain neighbourhood it is known that 12% of school leavers are unemployed. If a random sample of 150 school leavers is selected, what is the probability that the sample contains at least 10% unemployed?

1. 0.7734
2. 0.0200
3. 0.2266
4. 0.9800
5. 0.0800

QUESTION 4

Suppose that a random sample of 50 bottles of particular brand of cough medicine is selected and the alcohol content of each bottle measured. The sample mean alcohol content is 8.6ml with a population standard deviation of 2.88ml. A 99% confidence interval for the true mean alcohol content for the population of all bottles of the brand under study was calculated as being $(7.55; 9.65)$. If we were interested in testing the null hypothesis that the population mean is equal to 8.5. Using the 99% confidence interval calculated above, our conclusion would be:

1. Reject the null hypothesis since the 99% confidence interval does contain the point 8.5.
2. Reject the null hypothesis since the 99% confidence interval does not contain the point 8.5.
3. Do not reject the null hypothesis since the 99% confidence interval does contain the point 8.5.
4. Do not reject the null hypothesis since the 99% confidence interval does not contain the point 8.5.
5. None of the above.

QUESTION 5

A study on the lifespan of light bulbs found the following results based on a sample of 29 light bulbs. The light bulbs have an average lifespan of 1200 hours with a standard deviation of 13.7 hours. Assume that lifespan of bulbs is normally distributed. Using this information create a 95% confidence interval for the average lifespan of the light bulbs. Which one of the following intervals is correct?

1. $(1194.79;\ 1205,21)$
2. $(800.45;\ 950,87)$
3. $(1250;\ 1300,88)$
4. $(1200.00;\ 1229,00)$
5. $(1192.97;\ 1207,03)$

QUESTION 6

A study was conducted for your company to see whether your clients would recommend the company to other people. A sample of 400 clients was taken and the researcher found that 200 people would recommend the company to others. Calculate a 99% confidence interval for the proportion of clients that would recommend the company. Which one of the following intervals is correct?

1. $[0.451;\ 0.549]$
2. $[0.435;\ 0.565]$
3. $[49.02;\ 60.05]$
4. $[48.35;\ 58,45]$
5. $[0.459;\ 0.541]$

QUESTION 7

Which of the following statements about hypothesis testing is true?

1. If the p-value is greater than the significance level, we fail to reject H_0.
2. A Type II error is rejecting the null hypothesis when it is actually true.
3. If the alternative hypothesis is that the population mean is greater than a specified value, then the test is a two-tailed test.
4. The significance level equals one minus the probability of a Type I error.
5. None of the above statements are true.

QUESTION 8

The mean life of a battery used in a digital clock is 305 days. The lives of the batteries follow a normal distribution. The battery was recently modified to last longer. A sample of 20 of the modified batteries had a mean life of 311 days with a standard deviation of 12 days. A hypothesis test is undertaken to determine whether the modification increased the battery life. State the rejection area testing at 1% significance level.

1. Cannot be determined with this information.
2. Reject H_0 if z_{stat} is > 1.96
3. Reject H_0 if z_{stat} is > 2.5395
4. Reject H_0 if z_{stat} is < -1.96
5. Reject H_0 if z_{stat} is < -1.645

QUESTION 9

Refer to information given in question 8:
What conclusion can be made about the battery life, given a 5% level of significance for the test?

1. We do not reject the null hypothesis at the 5% level of significance and conclude that the mean battery life has increased.
2. We reject the null hypothesis at the 5% level of significance and conclude that the mean battery life has not increased.
3. We do not reject the null hypothesis at the 5% level of significance and conclude that the mean battery life has not increased.
4. We reject the null hypothesis at the 5% level of significance and conclude that the mean battery life has increased.
5. No conclusion can be made about the mean battery life as too little information is available.

QUESTION 10

Many Companies use well-known celebrities as spokespersons in their TV advertisements. A study was conducted to determine whether brand awareness of female TV viewers and the gender of the spokesperson are independent. A sample of 300 female TV viewers was asked to identify a product advertised by a celebrity spokesperson. The gender of the spokesperson and whether or not the viewer could identify the product was recorded. The number in each category are given below:

	Male Celebrity	Female Celebrity
Identified Product	41	61
Could not identity	109	89

At a 1% level of significance, the critical value of the test statistic is ___?

1. 3.8415
2. 5.9914
3. 9.4877
4. 6.635
5. 8.1535

QUESTION 11

A study on the mode of transport that workers use to commute to work and the associated distance covered by each mode of transport is summarised in the following table:

Distance	Mode of Transport			
	Bus	Car	Train	Total
10 km $>$	15	21	22	58
10 km $-$ 50 km	30	27	17	74
50 km $<$	23	19	26	68
Total	68	67	65	200

Select the *incorrect* statement

1. H_0 : Mode of transport and distance travelled are independent.
2. H_1 : Mode of transport and distance travelled are dependent.
3. Rejection region. reject H_0 if the calculated $\chi^2 < \chi^2_{0{,}05;\ 4} = 9.488$
4. The χ^2 test statistic value is 6.29.
5. We can conclude that the mode of transport is independent of the distance travelled by the sampled workers at 5% level of significance.

QUESTION 12

Refer to the information in Question 11. For testing at 10% significance level, the critical value of the χ^2 will be?

1. 9.488
2. 5.991
3. 14.860
4. 7.779
5. 13.277

QUESTION 13

A candy bar manufacturer is interested in trying to estimate how sales are influenced by the price of their product. To do this, the company randomly chooses six cities and offers the candy bar at different prices. Using candy bar sales as the dependent variable, the company will conduct a simple linear regression on the data below:

City	Price (R)	Sales
Mbombela	1.30	100
Polokwane	1.60	90
Durban	1.80	90
Tshwane	2.00	40
Cape Town	2.40	38
Johannesburg	2.90	32

What is the percentage of the total variation in candy bar sales explained by the regression model?

1. 21.61%
2. 88.54%
3. 78.39%
4. 48.19%
5. 20.50%

QUESTION 14

Refer to the information in Question 13. The prediction for candy bar sales given candy bar price of R2.50 will be

1. R31.27
2. R89.10
3. R250.50
4. R40.92
5. R161.39

QUESTION 15

Refer to the information in Question 13. The error or residual sum of squares (SSE) is equal to

1. 1058.90
2. 4918.00
3. 3859.10
4. 5976.90
5. 8777.10

ADDENDUM B: SECOND SEMESTER ASSIGNMENTS

B.1 Assignment 01

ONLY FOR SEMESTER 2 STUDENTS
ASSIGNMENT 01
Unique Nr.: 768992
Fixed closing date: 31 August 2018

This multiple-choice assignment will be marked by computer. Hence the closing date is **fixed** and no extension of time can be granted.

Your answers must be entered on an optical mark reading sheet. But before you attempt that, please study in detail the relevant chapter of the publication *my Studies @ Unisa*. Please make sure that you know how to handle the optical mark reading sheets, since sheets which are marked incorrectly and which are rejected by the computer will not be marked by hand and students will not receive marks for such assignments. The unique number appearing in the box above links your assignment to the corresponding set of answers in the computer. It must therefore be filled in correctly on the optical mark reading sheet.

Note that your assignment will not be returned to you. Please keep a record of your answers so that you can compare them with the correct answers.

In each of the following twenty questions, mark the number of the answer that you think is correct. Each correct answer gives you 5%, adding up to a total of 100%.

QUESTION 1

Consider the following statements:

A. The make of a vehicle is an interval variable.

B. Money spent at a shopping mall is an ordinal variable.

C. Rating availability of parking as excellent, good, fair and poor, implies an ordinal variable.

D. Listing occupation is a nominal variable.

Which of the above statements is/are *correct*?

1. A and B
2. C and D
3. B and C
4. Only B
5. Only D

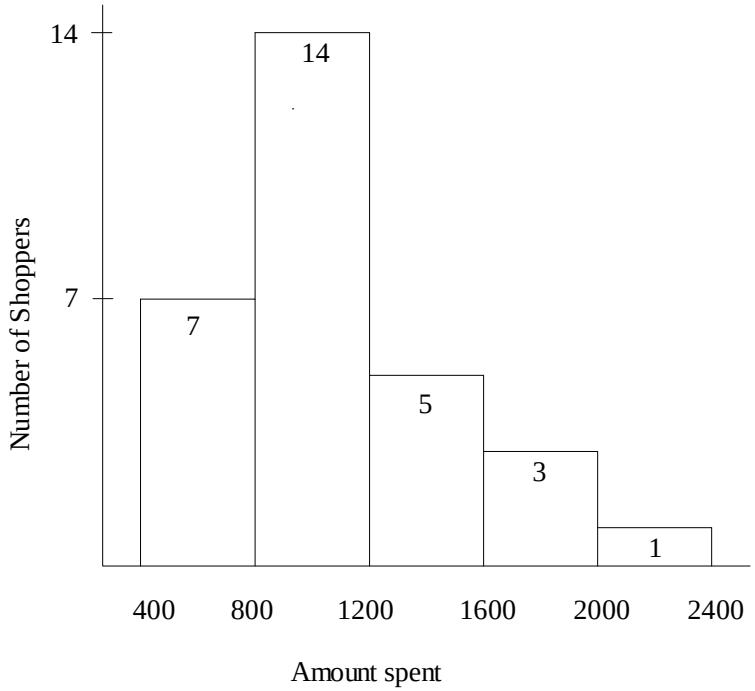
QUESTION 2

Choose the option below that best fit the following description: A set of observations with the number of viewers of a movie.

1. Quantitative, Discrete data
2. Qualitative data
3. Quantitative, continuous data
4. Categorical data
5. None of the above fit the description.

QUESTION 3

Consider the histogram of the numeric frequency distribution for the amount spend on groceries by the shoppers



What proportion of the shoppers spend R800 or less?

1. 63.3%
2. 86.7%
3. 46.7%
4. 16.7%
5. 23.33%

QUESTION 4

Refer to the information on question 3:
How many shoppers spent R1600 or less?

1. 26
2. 21
3. 5
4. 8
5. 30

QUESTION 5

Consider the following cross tabulation of the shopping habits of 30 grocery shoppers:

Store	Gender		Total
	Female	Male	
Checkers	7	3	10
Pick and Pay	10	7	17
Spar	2	1	3
Total	19	11	30

What percentage of all grocery shoppers are males who prefer Pick n Pay?

1. 23.33%
2. 37%
3. 70%
4. 33.33%
5. 66.67%

QUESTION 6

Consider the following data set:

−3	−3	6	4	10	−4	10	2	−1	5	1

Calculate the interquartile (IQR) range:

1. 3
2. 9
3. 2
4. 11
5. 4.5

QUESTION 7

The following data represent the number of children in a sample of 11 families from a certain community:

2 0 4 1 0 5 1 1 4 0 2

Which one of the following statements is *correct*?

1. The distribution is positively skewed.
2. The median is 5
3. Only the mode is equal to the median
4. Only mean and median are equal
5. The mode of this dataset is equal to one

QUESTION 8

Refer to **question 7**, the coefficient of variation is?

1. 182%
2. 178%
3. 1.82
4. 1.78
5. 97.80%

QUESTION 9

The following is a stem–and–leaf display representing the amount of gasoline purchased, in gallons for a sample of seventeen cars.

4	1 5 8
5	0 2 2 5 9
6	1 2 5 5 6 6 7
7	0 3

Which one of the following statements is incorrect?

1. The range is 32
2. The mode is 65 and 66
3. The fifth largest observation is 66
4. The median is 61
5. The third (upper) quartile value is equal to 66.

QUESTION 10

Suppose that A and B are mutually exclusive such that $P(A) = 0.30$ and $P(B) = 0.20$
Which one of the following statements is *incorrect*?

1. $P\left(A'\right) = 0.70$
2. $P(A \text{ and } B) = 0$
3. $P(A \mid B) = P(B \mid A)$
4. $P(A \text{ or } B) = 0.5$
5. A and B are independent events

QUESTION 11

An insurance broker is interested in knowing the occupations and races of the residents of a small town. After a survey they found the information shown in the summary table below.

Occupation	Race			
	Black	White	Indian	Total
Teacher	18	22	4	44
Farmer	24	5	7	36
Businessman	14	31	13	58
Total	56	58	24	138

Determine the probability that a person picked at random from this town is a White farmer?

1. 0.4058
2. 0.1739
3. 0.2609
4. 0.4928
5. 0.0362

QUESTION 12

Refer to the information given in Question 11: Determine the probability that a person picked at random from this town is neither an Indian nor a teacher?

1. 0.5362
2. 0.4638
3. 0.3188
4. 0.1739
5. 0.0362

QUESTION 13

Events A and B are such that:

$$\begin{aligned} P(A) &= P(B) = 0.4 \\ P(A \cap B) &= 0.1 \end{aligned}$$

Determine $P(A' \cap B')$?

1. 0.9
2. 0.1
3. 0.6
4. 0.3
5. 0.7

QUESTION 14

The number of power outages at a nuclear power plant has a poisson distribution with a mean of 3 outages per year.
Which of the following statements is incorrect?

1. $\lambda = 3$ outages per night
2. $P(X = 2) = 0.2240$
3. $P(X = 5) = 0.1080$
4. $P(X \leq 2) = 0.4232$
5. The variance of this poisson distribution is equal to three.

QUESTION 15

A Cape Town courier service promises that 80% of Johannesburg-bound parcel deliveries will reach their destinations within 12 hours. What is the probability that of the seven parcels sent at random times by a particular client in Cape Town, only one is delivered late?

1. 0.3670
2. 0.2753
3. 0.2097
4. 0.0004
5. 0.0287

QUESTION 16

Refer to the information given in question 15:
What is the probability that of seven parcels sent at random times by a particular client in Cape Town, only one is delivered within 12 hours?

1. 0.0004
2. 0.2753
3. 0.2097
4. 0.0043
5. 0.3670

QUESTION 17

A BSc student in statistics applies for five different jobs. Let X represent the number of offers. Given below are the probabilities for the number of job offers:

X	0	1	2	3	4	5
$P(X)$	0.039	0.175	0.324	0.299	0.138	0.025

Which statement is correct?

1. P (at least $2) = 0.538$
2. $P(X \leq 5) = 0.975$
3. $P(2 < X \leq 4) = 0.437$
4. $E(X) = 2.379$
5. $\sigma^2 = 1.1178$

QUESTION 18

If $Z \sim N(0, 1)$ which one of the following statements is *correct*?

1. $P(Z > -1.44) = 0.9251$
2. $P(Z < 2.03) = 0.0212$
3. $P(Z < -1.35) = 0.9115$
4. $P(Z > 1.59) = 0.9441$
5. $P(Z < 2.84) = 0.0023$

QUESTION 19

Given the normally distributed variable X with mean 25 and standard deviation 2.5, find the value of k such that $P\left(X > K\right) = 0.2676$.

1. 26.55
2. 0.62
3. 0.7324
4. 62.50
5. 10

QUESTION 20

A study on the delivery time of mail between two locations has found that the data follows a normal distribution. The study has also found that on average, mail takes up to five days to arrive with a standard deviation of 0.75 days. Using this information, what is the probability that the mail will take at most 4 days to arrive?

1. 0.0918
2. 0.9082
3. 0.50
4. 0.4082
5. 1.00

B.2 Assignment 02

ONLY FOR SEMESTER 2 STUDENTS
ASSIGNMENT 02
Unique Nr.: 727480
Fixed closing date: 03 October 2018

This multiple-choice assignment will be marked by computer. Hence the closing date is **fixed** and no extension of time can be granted.

Your answers must be entered on an optical mark reading sheet. But before you attempt that, please study in detail the relevant chapter of the publication *my Studies @ Unisa*. Please make sure that you know how to handle the optical mark reading sheets, since sheets which are marked incorrectly and which are rejected by the computer will not be marked by hand and students will not receive marks for such assignments. The unique number appearing in the box above links your assignment to the corresponding set of answers in the computer. It must therefore be filled in correctly on the optical mark reading sheet.

Note that your assignment will not be returned to you. Please keep a record of your answers so that you can compare them with the correct answers.

In each of the following 15 questions, mark the number of the answer that you think is correct.

QUESTION 1

A survey found that 31% of South Africans who have lost weight believed that the most effective strategy involved exercises. A random sample of 300 South Africans who have lost weight is selected. What is the probability that more than 29% of the sample believe that the most effective strategy to lose weight involves exercise?

1. 0.7734
2. 0.2266
3. 0.5468
4. 0.75
5. -0.75

QUESTION 2

In a certain neighbourhood it is known that 12% of school learners are unemployed. If a random sample of 150 school leavers is selected, what is the probability that the sample contains at least 15% unemployed?

1. 0.8708
2. 0.1500
3. 0.1292
4. 1.00
5. 0.95

QUESTION 3

It is important for airline to know the appropriate total weight of the baggage carried on each airplane. An airline researcher believes that the mean baggage weight for each adult is 60kg. To test his belief, he draws a random sample of 50 adult passengers and weights their baggage. He finds the sample mean to be 57.1kg. If he knows that the population standard deviation is 10kg, the probability that the average baggage weight is at most 57.1 is?

1. 0.9798
2. 0.0202
3. 0.9772
4. 0.0979
5. -2.0506

QUESTION 4

Of the 100 people who were given a vaccine, 80 developed immunity to a disease. The 99% confidence interval of the proportion of people developing immunity is given by:

1. $(0.7216,\ 0.8784)$
2. $(0.7342,\ 0.8658)$
3. $(0.7984,\ 0.8924)$
4. $(0.7480,\ 0.8106)$
5. $(0.6968,\ 0.9032)$

QUESTION 5

Your statistics instructor wants you to determine a confidence interval estimate for the mean test score. Past experience indicated that tests scores are normally distributed with a sample mean of 160 and a population standard deviation of 45. A 90% confidence interval estimate if your group has 36 students is:

1. 145.3 to 174.7
2. 157.55 to 162.45
3. 152.5 to 167.5
4. 140.65 to 179.35
5. 147.66 to 172.34

QUESTION 6

In a news story distributed by the local news paper, it reports that a substantial fraction of mortgage loans that go into default within the first year of the mortgage were approved on the basis of falsified applications. For instance, loan applications often exaggerate their income or fail to declare degrees. Suppose that a random sample of 1000 mortgage loans that were defaulted within the first year reveals that 410 of these loans were approved on the basis of falsified applications. A 90% confidence interval for proportion of all the first year defaults that are approved on the basis of falsified applications is given by:

1. $(0.3795,\ 0.4405)$
2. $(0.3579,\ 0.0445)$
3. $(0.3944,\ 0.4256)$
4. $(0.4098,\ 0.4102)$
5. $(0.3843,\ 0.4357)$

QUESTION 7

In testing the hypotheses $H_0 : \pi = 0.40$ against $H_1 : \pi > 0.40$, at the 5% significance level, if the sample proportion is 0.45 and the sample size is 49. State the rejection area of this test.

1. Reject H_0 if $z_{stat} > 1.96$
2. Reject H_0 if $z_{stat} < -1.96$
3. Reject H_0 if $z_{stat} > 1.645$
4. Reject H_0 if $z_{stat} < -1.645$
5. Cannot be stated with this information.

QUESTION 8

Consider the information on **question 7.** The standardised test statistic is equal to

1. 0.71
2. 1.645
3. 0.45
4. 0.07
5. 0.40

QUESTION 9

In testing the hypotheses $H_0 : \mu = 50$ vs $H_1 : \mu \neq 50$. If $n = 64$, $\bar{X} = 53.5$ and $\sigma = 10$. At 1% significance level, state the rejection area of this test.

1. Cannot be determined with this information.
2. Reject H_0 if $z_{stat} > 1.96$
3. Reject H_0 if $z_{stat} < -2.58$ or > 2.58
4. Reject H_0 if $z_{stat} < -1.96$
5. Reject H_0 if $z_{stat} > 2.33$

QUESTION 10

Consider the information on **question 9**, then the p–value of the test is equal to

1. 0.0026
2. 0.0052
3. 0.9974
4. 0.4974
5. 0.0087

QUESTION 11

The certain Media company published 4 magazines for the teenage market. The executive editor of the company would like to know whether readership preference for the 4 magazines is independent of gender. A survey among 200 teenagers was carried out. The following contingency table was obtained.

Gender	Magazine preference			
	Beat	Youth	Grow	Live
Girls	18	12	20	28
Boys	38	26	34	24

Which one of the following statements is incorrect?

1. The expected value for cell youth and girls is 14.82
2. The null hypothesis H_0 is gender and magazine preference are independent
3. The alternative hypothesis H_1 is gender and magazine preference are dependent
4. The degrees of freedom is 3
5. The chi–square curve is symmetrical

QUESTION 12

Refer to **question 11**, the χ^2 test statistic is equal to

1. 8.6916
2. 200
3. 6.8916
4. 11.345
5. 6.251

QUESTION 13

The planning director of an electronics company is interested in finding out the effect of research and development (R&D) expenditure on company profits (in rands). He has obtained expenditure and profit data from six companies operating in the same market as his company.

Profit Y	R&D expenditure X
50	30
65	35
40	20
70	40
35	15
60	35

$\sum X^2 = 5575$ $\sum Y^2 = 18050$ $\sum XY = 10000$ $\sum X = 175$ $\sum Y = 320$
The coefficient of correlation is equal to?

1. 0.9798
2. 0.9600
3. 0.9898
4. 0.9900
5. 0.9801

QUESTION 14

Consider the information on **question 13,** which one of the following statements is incorrect?

1. The mean of $X = 29.1667$ and the mean of $Y = 53.333$
2. The slope is 1.4160
3. The y–intercept is 12.0354
4. The equation line is $\hat{Y}_i = 1.4160 + 12.0354X_i$
5. The relationship is very strong.

QUESTION 15

Consider the information on question 13, the estimated profit for R&D expenditure of R38.00 will be?

1. R44.60
2. R12.0354
3. R141.60
4. R40.00
5. R65.84