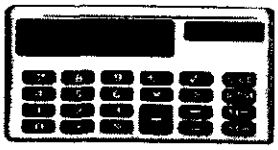
UNIVERSITY EXAMINATIONS



UNIVERSITEITSEKSAMENS

UNISA university of south africa

PYC3704 (482777) October/November 2015

PSYCHOLOGICAL RESEARCH

Duration 2 Hours 70 Marks

EXAMINATION PANEL AS APPOINTED BY THE DEPARTMENT

Use of a non-programmable pocket calculator is permissible.

Closed book examination

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EXAMINERS:
FIRST: **PROF P KRUGER** **PROF HC JANEKE**
SECOND: **PROF SH VAN DEVENTER**
EXTERNAL: **PROF DJF MAREE (PRETORIA – UP)**

This paper consists of 18 pages plus 2 blank pages for rough work (pp 19 & 20) plus 1 page (i) of formulae and 4 pages of tables (ii-v) as well as instructions for the completion of a mark reading sheet

This examination paper remains the property of the University of South Africa and may not be removed from the examination room.

After completing your answers, you must hand in the following

(i) The mark reading sheet
(ii) The question paper. (All the pages must be handed in)

This exam paper consists of seventy items Your mark will be converted to a mark out of 80 and 20% of your year mark (from the assignments) will be added, to produce a mark out of 100 [Note however, that if your exam mark is less than 40% the year mark will not be added]

ENSURE THAT YOU HAVE WRITTEN YOUR **STUDENT NUMBER** AND **COURSE CODE** ON THE MARK READING SHEET

Please complete the attendance register on the back page, tear off and hand to the invigilator

[TURN OVER]

ANSWER THE FOLLOWING SEVENTY MULTIPLE CHOICE QUESTIONS ON THE MARK READING SHEET. READ THE ATTACHED INSTRUCTIONS AND FOLLOW THEM CAREFULLY.

Question 1

A psychological theory is best defined as - - - - -

1 a set of observations of human behaviour
2 postulated relationships among constructs
3 statistical inferences based on measurements

Question 2

A masters student in psychology plans to study human consciousness, following the recent publication of Watson's theory about the nature of consciousness The main aim of the research will probably be to empirically - - - - -

1 test predictions based on Watson's theory
2. test Watson's theory so that it can be accepted or rejected as a whole
3 study consciousness with a view to understanding, predicting and controlling it

Question 3

Which of the following best describes "latent"?

1 observable
2 manifest
3 hidden

Question 4

The (a) - - - - - variable has an effect on the (b) - - - - - variable

1 (a) dependent (b) independent
2 (a) operational (b) measured
3 (a) independent (b) dependent

Question 5

A psychologist conducts a study in which she measures the reaction times of students doing a psychometric test She proceeds from the assumption that good reaction time is an indication of intelligence In this study 'intelligence' is the - - - - - variable

1 operational
2 latent
3 manifest

Question 6

In a study, the relationship between anxiety (high and low) and test performance (measured in terms of pass and fail) is considered A suitable hypothesis for the study can be viewed as - - - - -

1 a rule suggesting how the values of 'anxiety' may be related to the values of 'test performance'
2 correlation which was found between the variables 'anxiety' and 'test performance'
3 rules which operationalize the values of the variables 'anxiety' and 'test performance'

Question 7

A psychologist is conducting a study about the self-concepts of university students She makes the assumption that students' concepts of themselves can be used to predict their willingness to participate in class discussions. In order to be able to do a scientific study of this (a) - - - - - question, she would have to provide a (an) (b) - - - - - definition of the (c) - - - - - called "self-concept"

1	(a) scientific	(b) experimental	(c) concept
2	(a) experimental	(b) research	(c) operational concept
3	(a) research	(b) operational	(c) construct

Question 8

A *construct* can be regarded as a - - - - -

1. quantitative measurement of an human characteristic as revealed in a psychometric test
2 hypothetical aspect of humans that we wish to investigate
3 testable prediction derived from a theory of human behaviour

Question 9

Which statement about the aims of psychological research is most accurate?

1 It is primarily aimed at gathering facts
2 It is mainly used to develop research hypotheses
3 Its goal is to test psychological theories

Question 10

Operational definitions enable us to - - - - -

(a) make observations of constructs
(b) link constructs to observable phenomena

1 (a) but not (b)
2 (b) but not (a)
3 both (a) and (b)

Question 11

A researcher studies the relationship between gender and salary in a selected random sample of employees of a computer company. Select the option that is most appropriate

The study is a (a) - - - - - design, because it (b) - - - - -

1	(a)	two-group	(b)	compares two samples of groups in a population
2	(a)	one-group	(b)	compares a single sample on two continuous variables
3	(a)	correlational	(b)	studies the correlation between two variables

Question 12

Assume that a researcher believes that education plays a role in promotion He decides to investigate this by using a sample of 100 employees at a company called Computer Solutions Inc Which one of the following is the most appropriate way to formulate the research hypothesis?

1 Education is related to the promotion of employees at Computer Solutions Inc
2 Employees with higher levels of education earn more than employees with lower levels of education at Computer Solutions Inc
3 Employees with higher levels of education are more likely to be promoted at Computer Solutions Inc than employees with lower education at corresponding post levels

Question 13

If 10 000 students wrote a university admission test, 7000 passed (obtained 50% or more) and 400 obtained exactly 50%, what is the probability that a randomly selected student will *fail* the test?

1 0 04
2 0 7
3. 0 3

Question 14

A class of 10 boys and 11 girls, including Lizzie and her friend Lebo, chooses a class representative by writing their names on slips of paper, putting these into one box and asking their teacher to draw one name blindly

Which of the following is closest to the probability that **EITHER** Lizzie **OR** Lebo will be selected?

1. 0 002
2. 0 095
3 0.182

Question 15

The table presents a frequency count of the number of items that each person can remember out of a list of items, for a random sample of research participants

Number of items remembered	2	3	4	5	6	7	8	9
Number of persons (frequency)	4	11	13	18	22	17	9	6

If X is the number of items likely to be remembered by a randomly selected person, what would $p(X > 7)$ be, if one calculated this probability using the relative frequency approach?

1 0 07
2 0 15
3 0.32

Question 16

What is the principal advantage of z scores? They enable one to - - - - -

1 compare a person's scores on tests with different means and standard deviations
2 transform a person's scores on different tests into comparable percentages
3 determine whether scores are normally distributed

Question 17

Consider the following Table

Subject	Mean for Student X	Mean for class	Standard deviation for class
A	50%	40%	5%
B	55%	50%	5%
C	60%	50%	10%

In which subject did a student (indicated as Student X in the second column) do best, relative to the class?

1 A
2 B
3 C

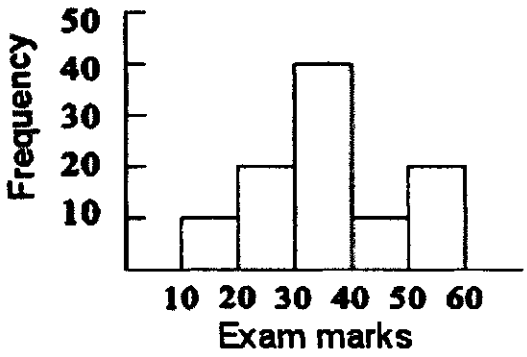
Question 18

The mean of the standard normal distribution equals - - - - - while its standard deviation equals - - - - -.

1 1, 0
2 0, 1
3 σ, μ

Question 19

Study the histogram below of the exam marks (out of 60) of a group of students in the same class. (Note that the values on the horizontal axis are the class limits)



Assume we use this histogram as a basis for making probability predictions Which of the following is the best estimate of the probability that a student's score will be between 40 and 60?

1 0 3
2 0 5
3 0 7

Question 20

When a sample is randomly selected from a population, the sampling error depends on the - - - - -

1 the size of the sample
2 the size of the population
3 the population mean

Question 21

The asymptotic property of the normal curve refers to the fact that - - - - -

1 the curve is bell-shaped
2 the endpoints of the normal curve never touches the horizontal axis
3 the left side of the curve is a mirror image of the right side

Questions 22 and 23 are based on the following scenario

The mean mark obtained for a psychology assignment by all the students who completed it is 35, and the standard deviation 15. John received a mark of 45 for this psychology assignment

Question 22

If the scores are transformed into a standard normal distribution, what would John's z-score for his assignment mark be? (Rounded to two places)

1. 0.67
2 0 34
3 0 16

Question 23

Referring to the scenario above, what is the probability of John receiving his score of 45 or better if we can assume that the assignment scores are more or less normally distributed? (Select the best answer out of the options).

1 0 7486
2 0 6667
3 0 2514

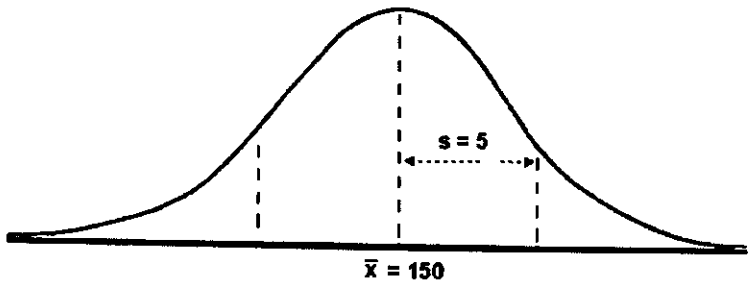
Question 24

Mary received 25 marks for her psychology assignment The mean mark for this assignment is 35, and the standard deviation is 10 What proportion of the students received higher marks than Mary?

1 0 16
2 0 84
3 0 34

Question 25

Study the following figure of a normal curve for the distribution of a specific set of data



For a random measurement x from this population, what is p(x<155)?

1 0 84
2 0 16
3 0.50

Question 26

Sibu is doing research on the IQ scores of the students Assuming that this IQ will on average be greater than that of the overall population, he states the following hypothesis

H_0 $\mu = 100$ H_1 $\mu > 100$

After drawing a random sample of 50 students, Sibu finds that they have a mean IQ score of 107 and a standard deviation of 5 If it was the case that *the null hypothesis is actually true*, what would the *expected mean* of the sample be?

1 Around 100
2 Around 107
3 More than 100

Question 27

The central limit theorem implies that, for large samples from non-normal populations, - - - - -

1 the sampling distribution of the mean across samples will be approximately normal
2 the distribution of sample values will be approximately normal
3 the observed relative frequency of an event will approach its theoretical probability

Question 28

When a statistical test yields a large p-value, which of the following statements is most likely to be correct?

1 The alternative hypothesis is probably true
2 The null hypothesis is probably true
3 The null hypothesis is probably false

Question 29

Which of the following is likely to be specified in advance by the researcher, before any actual data are collected?

1 The effect size
2 The level of significance
3. The expected p-value under H_0

Question 30

When two population means are compared, the p-value expresses the probability that a(n) - - - - -.

1 observed difference between the means is due to sampling error
2. difference found between the means is due to the alternative hypothesis
3 difference will be found between the means

Question 31

When doing a one-sample statistical test, the failure to reject H_0 implies that a difference between the calculated sample mean and its expected value as predicted under H_0 is due to - - - - -

1 the dependent variable
2 the independent variable
3 chance

Question 32

The level of significance is the - - - - -

1 maximum allowable probability of Type II error
2 maximum allowable probability of Type I error
3 probability that not rejecting the null hypothesis would be an error

Question 33

The null hypothesis is rejected if - - - - -

1 the p-value under H_0 is smaller than the level of significance
2 the p-value under H_1 is larger than the level of significance
3 the p-value is smaller than 0 5 or 0 1

Question 34

The *power* of a statistical test refers to the - - - - -

1 ability of the test to give small p-values
2 ability of the test to detect significant results
3 the sample size

Question 35

A Type I error occurs when - - - - -

1 the null hypothesis is wrongly rejected
2 the null hypothesis is wrongly not rejected
3 the alternative hypothesis is wrongly rejected

Question 36

It is found that the larger the $z_{\bar{x}}$ -test statistic value for a sample of a particular size, the smaller the p-value becomes - - - - -

1 as the standard error becomes smaller
2 but this would be merely as a consequence of a random effect
3 as the difference between the sample and population means becomes larger

Question 37

Suppose one wants to limit the risk of a type II error by increasing the power of the test after the level of significance is fixed at 0.05 Which of the following can we do?

(a) Increase the sample size
(b) Decrease sampling error, measurement error, etc

1 (a) but not (b)
2 (b) but not (a)
3 Both (a) and (b) are correct

Question 38

The size of the level of significance depends on - - - - -

1 the calculated value of the test statistic
2. a definite value determined by the researcher
3 the p-value under H_0

Questions 39 and 40 are based on the following scenario

Peter is a human resource consultant and his boss asks him to test the employees in their company to determine if the level of negative attitude towards people with AIDS of these workers in some way differs from that of the general worker in South Africa Suppose that on the basis of previous studies it is accepted that the mean negative attitude score on a particular scale of the population of workers in South Africa is 55 (the higher the score the more positive) and that the population standard deviation is 16

Question 39

Which of the following statements translates the research hypothesis into the appropriate statistical hypotheses?

1 H_0 $\mu = 55$ H_1 $\mu < 55$

2 H_0 $\mu = 55$ H_1 $\mu > 55$

3 H_0 $\mu = 55$ H_1 $\mu \neq 55$

Question 40

Peter finds that the workers in his company have a mean attitude score of 50 Which of the statistical test procedures below would be most appropriate to use?

1 A t-test for a single sample mean
2 A z-test for a single sample mean
3 A t-test for two sample means

Question 41

Statistical hypotheses are statements about - - - - -

1 population parameters
2 sample statistics
3 inferential statistics

Questions 42 and 43 are based on the following scenario

An educational psychologist compares two groups of schoolchildren from urban and semi-urban areas on a language comprehension test She manages to get a sample of 600 urban and 400 semi-urban children (matched for gender and age) to complete the test She finds mean language comprehension scores of $\overline{x}_1 = 32.5$ and $\overline{x}_2 = 30\ 7$ for the urban and semi-urban groups respectively

Question 42

The educational psychologist decides to do a t-test to compare the two sample means. Which of the following is the appropriate t-test statistic that she should calculate?

1 $t_{\overline{x}}$

2 t_d

3 t_c

Question 43

The psychologist calculates the appropriate t-test to compare the two means, and the result is a t-statistic value of 2 67 She determines that this is significant on the 1% level The researcher is however concerned that the actual difference between the two group means is fairly small, and that the significant result may be the consequence of the large sample sizes. What could she do to check whether this significant result is meaningful in a practical sense?

She should calculate the - - - - -

1 power of the test
2 effect size
3 standard error

Question 44

Which one of the following alternative hypotheses requires a non-directional test of significance?

1 The mean anxiety score for boys is greater than that of girls
2 The mean verbal ability score for boys does not exceed that of girls
3 The correlation between test marks and examination marks is not the same for boys and girls

Question 45

When applying a statistical test, if the p-value is smaller than the level of significance we - - - - - the null hypothesis

1 accept
2 do not reject
3 reject

Question 46

Consider the following statistical hypotheses

H_0 $\mu = 50$
H_1 $\mu > 50$

Suppose the two-tailed p-value is 0.0345 and the level of significance is set at 0 05 The sample mean was found to be 55 What is the value of the one-tailed or directional p-value?

1 0 0250
2 0 0690
3. 0.0173

Question 47

Suppose the level of significance is set at 0 05, and the appropriate p-value is calculated as 0 03 What is the probability that the researcher will be making a Type I error should he decide to reject H_0?

1 0 03
2 0 05
3 More information is needed to calculate it

Question 48

The p-value depends on - - - - -

1 the z-tables
2 the size of the test statistic
3 the null hypothesis statement

Question 49

The difference score ($d = x_2 - x_1$) is used in the calculation of the t_d-test statistic in the case of - - - - -

1 dependent samples
2 independent samples
3 both of the above

Question 50

When comparing two sample means from independent groups with a t-test, the size of the p-value will depend on the value of - - - - -

1 t_c
2 α
3 t_d

Question 51

Suppose you find that the value of a t-test statistic calculated for your research results when comparing two means is 3 0 and the appropriate p-value = 0 02. Which conclusion is appropriate?

1 Reject the null hypothesis if the level of significance was set at 0 01
2 Do not reject the null hypothesis if the level of significance was set at 0 05
3 Reject the null hypothesis if the level of significance was set at 0 05

Question 52

In which of the following cases can the scores on two variables not be regarded as independent?

(a) The variables represent scores from persons in a control group and an experimental group, where each member of the two groups was matched on the basis of demographic variables like age and gender
(b) The variables represent scores from the same persons measured on two occasions six months apart on the same test

1 (a) but not (b)
2 (b) but not (a)
3 Both (a) and (b)

Question 53

Cohen's d refers to a measure of the - - - - -

1 effect size
2. power of a test
3 difference between two means for dependent samples

Question 54

A large t-test statistic - - - - -

1 implies that the p-value will be large
2 implies that the p-value will be small
3 is unrelated to the size of the p-value

Questions 55 and 56 are based on the following scenario

An educational psychologist investigates what effect extra classes where learners are taught reasoning skills would have on the performance of pupils in mathematics The grade twelve learners in a specific school are divided into two groups One group of 20 pupils receives the extra classes in reasoning skills while a control group of 20 pupils receives singing lessons in the same period The teacher calculates the increase or decrease in his or her mathematics performance for each of the 40 pupils based on a mathematics test before the extra classes and a second mathematics test after the extra classes for both groups

Question 55

Which research design is the teacher most likely to use?

1 A matched-pairs design
2 A two-sample design with independent groups
3 A two-sample design with dependent groups

Question 56

The most appropriate statistical test to use to compare the two groups of learners with regard to the change in their mathematics test results would be the - - - - -

1 t-test for dependent groups
2 chi-square test
3 t-test for independent groups

Question 57

Which of the following assumptions are *sufficient* for a two-sample t-test (even if the samples are relatively small)?

1 The sample standard deviations must be equal but the distributions may be unknown
2 The data from both samples come from populations that are normally distributed so the standard deviations need not be considered
3 The data from both samples come from populations that are normally distributed and the sample standard deviations are equal

Question 58

A researcher suspects that social phobia is more common among females than among males She wants to test this by comparing the following hypotheses.

H_0 $\mu_1 = \mu_2$
H_1. $\mu_1 > \mu_2$

Here μ_1 indicates the average level of social phobia among females in the population (group 1) and μ_2 is the average level of social phobia among males in the population (group 2) The researcher uses a 7-point scale to measure social phobia where a higher score implies a greater level of phobia She draws random samples of females and males respectively, and gets the following average levels of social phobia scores for each group

Females· $\bar{x}_1 = 4\ 1$, Males· $\bar{x}_2 = 4\ 8$

What may she conclude?

1. H_0 can be rejected.
2 H_0 cannot be rejected.
3 No conclusion is possible before the relevant test statistic and p-value are calculated

Question 59

When would a statistician choose to do a t-test rather than a z-test to compare a sample mean with a given population mean?

1 The sample standard deviation is unknown
2 The standard error is unknown
3 The population standard deviation is unknown

Question 60

A researcher wants to determine whether the level of academic accomplishment that a student has reached is in any way related to the way in which the student approaches problem solving To do this, she plans to relate the exam marks of a group of undergraduate students to their results on a test that indicates problem-solving style Which is the *independent* variable?

1 problem-solving style
2 exam marks
3 accomplishment

Question 61

A politician asks his audience of 100 whether they will vote for him, and 60 say yes He then delivers his speech and repeats the question Now 70 persons say yes. When analysing these results the two sets of answers should be regarded as - - - - -

1 dependent
2 independent
3 normally distributed

Question 62

A researcher predicts that a motivational talk will improve the work performance of men. However, when testing this hypothesis, he finds that the mean work performance of his sample of 20 men is actually poorer after the motivational talk than before Based on these results, what statistical test should the researcher do to make a conclusion regarding the hypothesis possible?

1. A one-tailed statistical test is required
2 A two-tailed statistical test is required
3 No statistical test is required

Question 63

Which of the following does **not** represent a valid value for a Pearson's r?

1 0 00
2 1 09
3 - 0 99

Question 64

As the sample size (n) increases - - - - -

1 a smaller value of the Pearson's correlation coefficient r will reach significance
2 a larger value of the Pearson's correlation coefficient r is required before the result will be significant
3 there are no implications for the significance of the value of the Pearson's correlation coefficient r

Question 65

A researcher wants to establish whether the type of employment category that is filled by employees of a particular company (manager, middle manager, clerical worker, technical worker) is at all influenced by their gender (male or female) Which would be the most appropriate test to use?

1 The t-test for two independent samples
2 Pearson's correlation test statistic
3 The chi-square (χ^2) test statistic

Question 66

If there is no relationship at all between scores on two continuous variables, what would be the most the likely value of Pearson's correlation coefficient (r) be, out of the following?

1 -1 0
2 0 5
3. 0.0

Question 67

The chi-square (χ^2) test statistic is used to compare - - - - -

1 the distribution of frequency data which was observed with the distribution of the data that is expected if the null hypothesis is true
2 the mean of a number of measurements with the mean value of the measurement in the general population as expected if the null hypothesis is true
3 the relationship between two variables which represent continuous measurements on two different constructs for a sample of observations from the same population

Question 68

A Pearson correlation of r = 0 23 is found What kind of relationship between two variables X and Y does this represent?

1 As variable X grows smaller, variable Y gets smaller
2 As variable X grows larger, variable Y gets smaller
3 As variable X grows smaller, variable Y gets larger

Question 69

A researcher wants to determine whether a relationship exists between students' general level of anxiety and their exam results He presents each student from a sample of n = 150 students with a general anxiety scale just before they are to write an important exam The anxiety scale consists of 10 questions with 1 indicating low and 5 indicating high anxiety for each item, which are added together to produce an anxiety score The exam gives a percentage score. Which of the following is the most appropriate test statistic to use to determine whether a relationship exists between the two variables (anxiety level and exam results)?

1 t-test
2 Pearson's r test statistic
3 chi-square test (χ^2)

Question 70

The contingency table below indicates *observed* frequencies of gender (male or female) cross-classified with environment (urban or rural) of a particular sample of research participants What would the *expected* frequency for *rural males* be if the frequencies are evenly distributed (i e if the null hypothesis of a chi-square (χ^2) test were true)?

	Male	Female	**Row total**
Urban	*2*	*10*	**12**
Rural	*4*	*2*	**6**
Column total	**6**	**12**	**18**

1 4
2 2
3 8

[TOTAL: 70]

END OF EXAM PAPER

List of formulae:

$$\frac{\bar{x}-\mu_{\bar{x}}}{\sigma_{\bar{x}}}=\frac{(\bar{x}-\mu)}{\frac{\sigma}{\sqrt{n}}}$$

$$\frac{(\bar{x}-\mu)}{s_{\bar{x}}}=\frac{\bar{x}-\mu}{\frac{s}{\sqrt{n}}}$$

$$\frac{(\bar{x}_1-\bar{x}_2)}{\sqrt{\frac{s_1^2}{n_1}+\frac{s_2^2}{n_2}}}$$

$$\frac{\bar{d}-\bar{D}}{s_{\bar{d}}/\sqrt{n}}=\frac{\bar{d}}{s_{\bar{d}}/\sqrt{n}} \qquad (if\ \bar{D}=0)$$

$$\frac{cov(x,y)}{\sqrt{var(x)var(y)}}=\frac{n\Sigma xy-(\Sigma x)(\Sigma y)}{\sqrt{[n\Sigma x^2-(\Sigma x)^2][n\Sigma y^2-(\Sigma y)^2]}}$$

$$\sum_{ij}\frac{(O_{ij}-E_{ij})^2}{E_{ij}}$$

$$\frac{x-\bar{x}}{s} \quad or \quad \frac{x-\mu}{\sigma}$$

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

$$\frac{\bar{x}_1-\bar{x}_2}{s_p}$$

Appendix: Probabilities associated with the standard normal distribution (z)

z	Mean to z	Larger portion	Smaller portion	z	Mean to z	Larger portion	Smaller portion
0 00	0.0000	0.5000	0 5000	0.51	0.1950	0.6950	0.3050
0.01	0.0040	0 5040	0 4960	0.52	0.1985	0.6985	0.3015
0 02	0 0080	0 5080	0.4920	0.53	0.2019	0.7019	0.2981
0.03	0.0120	0.5120	0.4880	0.54	0.2054	0.7054	0.2946
0 04	0.0160	0.5160	0.4840	0.55	0.2088	0.7088	0.2912
0 05	0 0199	0.5199	0.4801	0.56	0.2123	0.7123	0.2877
0 06	0 0239	0.5239	0.4761	0.57	0.2157	0.7157	0.2843
0.07	0.0279	0.5279	0.4721	0.58	0.2190	0.7190	0.2810
0.08	0 0319	0.5319	0.4681	0.59	0.2224	0 7224	0.2776
0.09	0.0359	0.5359	0.4641	0.60	0 2257	0.7257	0.2743
0.10	0.0398	0.5398	0.4602	0.61	0.2291	0.7291	0.2709
0.11	0.0438	0.5438	0.4562	0 62	0.2324	0.7324	0.2676
0.12	0.0478	0.5478	0.4522	0.63	0 2357	0.7357	0.2643
0.13	0.0517	0.5517	0.4483	0 64	0 2389	0.7389	0.2611
0 14	0.0557	0 5557	0.4443	0.65	0.2422	0.7422	0.2578
0.15	0.0596	0.5596	0 4404	0.66	0.2454	0.7454	0.2546
0.16	0.0636	0 5636	0.4364	0.67	0.2486	0.7486	0.2514
0.17	0.0675	0.5675	0.4325	0.68	0.2517	0.7517	0.2483
0.18	0.0714	0.5714	0.4286	0.69	0 2549	0 7549	0.2451
0.19	0 0753	0.5753	0.4247	0.70	0.2580	0.7580	0 2420
0.20	0.0793	0.5793	0.4207	0.71	0.2611	0 7611	0.2389
0.21	0.0832	0.5832	0.4168	0 72	0 2642	0.7642	0.2358
0.22	0.0871	0 5871	0.4129	0.73	0.2673	0 7673	0.2327
0.23	0.0910	0.5910	0.4090	0.74	0.2704	0.7704	0.2296
0.24	0.0948	0.5948	0.4052	0.75	0.2734	0.7734	0.2266
0.25	0.0987	0 5987	0.4013	0.76	0.2764	0 7764	0.2236
0 26	0.1026	0.6026	0.3974	0.77	0.2794	0.7794	0.2206
0.27	0.1064	0.6064	0.3936	0.78	0.2823	0.7823	0.2177
0.28	0.1103	0.6103	0.3897	0.79	0.2852	0 7852	0.2148
0.29	0.1141	0.6141	0.3859	0.80	0.2881	0 7881	0.2119
0.30	0.1179	0.6179	0.3821	0.81	0.2910	0.7910	0.2090
0.31	0.1217	0.6217	0.3783	0.82	0.2939	0.7939	0.2061
0.32	0.1255	0 6255	0 3745	0.83	0.2967	0.7967	0.2033
0.33	0.1293	0 6293	0.3707	0.84	0.2995	0.7995	0 2005
0.34	0.1331	0.6331	0.3669	0.85	0 3023	0 8023	0.1977
0.35	0.1368	0.6368	0.3632	0.86	0 3051	0 8051	0.1949
0.36	0.1406	0.6406	0.3594	0.87	0.3078	0.8078	0.1922
0.37	0.1443	0.6443	0.3557	0.88	0.3106	0.8106	0.1894
0 38	0.1480	0.6480	0.3520	0.89	0.3133	0.8133	0.1867
0.39	0.1517	0 6517	0.3483	0.90	0.3159	0.8159	0.1841
0 40	0.1554	0 6554	0 3446	0.91	0.3186	0 8186	0.1814
0.41	0.1591	0 6591	0.3409	0 92	0 3212	0 8212	0.1788
0.42	0.1628	0.6628	0.3372	0.93	0 3238	0 8238	0.1762
0.43	0.1664	0.6664	0.3336	0.94	0.3264	0.8264	0.1736
0.44	0.1700	0.6700	0.3300	0.95	0.3289	0.8289	0.1711
0.45	0.1736	0.6736	0.3264	0.96	0.3315	0.8315	0.1685
0.46	0.1772	0 6772	0 3228	0.97	0.3340	0 8340	0.1660
0.47	0.1808	0.6808	0.3192	0.98	0.3365	0.8365	0.1635
0.48	0 1844	0.6844	0 3156	0.99	0 3389	0.8389	0.1611
0.49	0.1879	0.6879	0.3121	1.00	0 3413	0 8413	0.1587
0 50	0.1915	0.6915	0.3085	1.01	0.3438	0.8438	0.1562

Appendix: Probabilities associated with the standard normal distribution (z) continued

z	Mean to z	Larger portion	Smaller portion	z	Mean to z	Larger portion	Smaller portion
1.02	0.3461	0.8461	0.1539	1.53	0.4370	0.9370	0 0630
1.03	0.3485	0.8485	0 1515	1 54	0.4382	0.9382	0.0618
1.04	0 3508	0.8508	0.1492	1.55	0.4394	0.9394	0.0606
1.05	0.3531	0.8531	0.1469	1.56	0.4406	0.9406	0.0594
1.06	0 3554	0.8554	0.1446	1.57	0.4418	0.9418	0.0582
1.07	0 3577	0.8577	0.1423	1.58	0.4429	0 9429	0.0571
1.08	0.3599	0 8599	0.1401	1.59	0.4441	0.9441	0.0559
1.09	0.3621	0 8621	0.1379	1.60	0.4452	0.9452	0.0548
1.10	0.3643	0.8643	0.1357	1 61	0.4463	0.9463	0.0537
1.11	0.3665	0.8665	0.1335	1.62	0.4474	0.9474	0.0526
1.12	0.3686	0.8686	0.1314	1.63	0 4484	0.9484	0.0516
1.13	0.3708	0.8708	0.1292	1.64	0 4495	0 9495	0.0505
1.14	0.3729	0.8729	0.1271	1.65	0.4505	0.9505	0 0495
1.15	0.3749	0.8749	0.1251	1.66	0.4515	0.9515	0.0485
1 16	0.3770	0.8770	0 1230	1.67	0 4525	0.9525	0 0475
1.17	0.3790	0.8790	0 1210	1.68	0.4535	0.9535	0 0465
1.18	0.3810	0 8810	0 1190	1.69	0.4545	0.9545	0.0455
1.19	0.3830	0.8830	0.1170	1.70	0 4554	0.9554	0 0446
1.20	0 3849	0.8849	0 1151	1.71	0.4564	0.9564	0.0436
1.21	0 3869	0.8869	0.1131	1.72	0 4573	0.9573	0.0427
1.22	0.3888	0.8888	0.1112	1.73	0.4582	0.9582	0.0418
1.23	0.3907	0 8907	0.1093	1.74	0.4591	0 9591	0.0409
1.24	0.3925	0 8925	0.1075	1.75	0.4599	0.9599	0.0401
1.25	0.3944	0.8944	0 1056	1.76	0.4608	0 9608	0.0392
1.26	0 3962	0.8962	0.1038	1.77	0.4616	0.9616	0.0384
1.27	0.3980	0.8980	0.1020	1.78	0.4625	0 9625	0.0375
1 28	0.3997	0.8997	0.1003	1.79	0.4633	0 9633	0.0367
1.29	0.4015	0.9015	0.0985	1 80	0.4641	0.9641	0 0359
1.30	0.4032	0.9032	0.0968	1.81	0.4649	0.9649	0.0351
1.31	0.4049	0.9049	0.0951	1 82	0.4656	0.9656	0.0344
1.32	0 4066	0.9066	0.0934	1.83	0.4664	0.9664	0.0336
1.33	0.4082	0.9082	0.0918	1.84	0.4671	0.9671	0.0329
1.34	0.4099	0.9099	0.0901	1.85	0 4678	0.9678	0.0322
1.35	0.4115	0.9115	0.0885	1.86	0.4686	0 9686	0.0314
1.36	0.4131	0.9131	0.0869	1 87	0 4693	0.9693	0.0307
1.37	0.4147	0.9147	0.0853	1.88	0.4699	0.9699	0.0301
1.38	0.4162	0.9162	0.0838	1.89	0.4706	0 9706	0.0294
1.39	0.4177	0 9177	0.0823	1.90	0.4713	0.9713	0.0287
1.40	0.4192	0.9192	0.0808	1.91	0.4719	0.9719	0.0281
1 41	0.4207	0.9207	0.0793	1.92	0 4726	0.9726	0.0274
1.42	0.4222	0.9222	0.0778	1.93	0.4732	0.9732	0.0268
1.43	0.4236	0.9236	0.0764	1.94	0.4738	0.9738	0.0262
1.44	0.4251	0.9251	0.0749	1.95	0.4744	0.9744	0.0256
1.45	0.4265	0.9265	0.0735	1 96	0 4750	0.9750	0.0250
1.46	0.4279	0.9279	0.0721	1.97	0 4756	0 9756	0.0244
1.47	0.4292	0.9292	0.0708	1.98	0.4761	0.9761	0.0239
1 48	0.4306	0.9306	0.0694	1.99	0.4767	0.9767	0.0233
1.49	0.4319	0.9319	0.0681	2.00	0 4772	0.9772	0.0228
1.50	0.4332	0 9332	0.0668	2.01	0 4778	0.9778	0.0222
1.51	0 4345	0.9345	0 0655	2 02	0.4783	0 9783	0 0217
1.52	0.4357	0.9357	0.0643	2.03	0.4788	0.9788	0.0212

Appendix: Probabilities associated with the standard normal distribution (z) continued

z	Mean to z	Larger portion	Smaller portion	z	Mean to z	Larger portion	Smaller portion
2.04	0.4793	0.9793	0.0207	2 55	0 4946	0.9946	0.0054
2.05	0.4798	0.9798	0.0202	2.56	0.4948	0.9948	0.0052
2.06	0.4803	0.9803	0.0197	2 57	0.4949	0.9949	0.0051
2.07	0 4808	0 9808	0.0192	2.58	0.4951	0.9951	0.0049
2.08	0.4812	0.9812	0.0188	2.59	0 4952	0.9952	0.0048
2.09	0.4817	0.9817	0.0183	2.60	0.4953	0 9953	0.0047
2.10	0.4821	0.9821	0.0179	2.61	0.4955	0.9955	0.0045
2 11	0 4826	0.9826	0.0174	2.62	0 4956	0.9956	0.0044
2.12	0.4830	0.9830	0.0170	2.63	0 4957	0.9957	0.0043
2.13	0.4834	0.9834	0.0166	2.64	0.4959	0.9959	0.0041
2.14	0 4838	0.9838	0.0162	2.65	0.4960	0.9960	0.0040
2.15	0.4842	0.9842	0.0158	2.66	0.4961	0 9961	0.0039
2.16	0.4846	0.9846	0.0154	2 67	0 4962	0 9962	0.0038
2.17	0.4850	0.9850	0.0150	2.68	0.4963	0.9963	0.0037
2.18	0.4854	0.9854	0.0146	2.69	0.4964	0.9964	0.0036
2.19	0.4857	0 9857	0.0143	2.70	0.4965	0.9965	0.0035
2.20	0.4861	0.9861	0.0139	2.71	0.4966	0.9966	0 0034
2.21	0.4864	0.9864	0.0136	2.72	0.4967	0.9967	0.0033
2 22	0.4868	0.9868	0.0132	2.73	0 4968	0.9968	0.0032
2.23	0.4871	0.9871	0.0129	2.74	0.4969	0.9969	0.0031
2.24	0.4875	0.9875	0.0125	2.75	0.4970	0 9970	0.0030
2.25	0.4878	0.9878	0.0122	2.76	0.4971	0.9971	0 0029
2.26	0.4881	0.9881	0.0119	2.77	0.4972	0.9972	0.0028
2.27	0 4884	0.9884	0.0116	2.78	0.4973	0 9973	0.0027
2.28	0 4887	0.9887	0.0113	2.79	0.4974	0.9974	0.0026
2.29	0.4890	0.9890	0.0110	2.80	0.4974	0.9974	0.0026
2.30	0.4893	0.9893	0.0107	2.81	0.4975	0.9975	0.0025
2.31	0.4896	0.9896	0.0104	2.82	0.4976	0 9976	0.0024
2 32	0.4898	0.9898	0 0102	2.83	0 4977	0 9977	0.0023
2.33	0.4901	0.9901	0.0099	2.84	0.4977	0.9977	0.0023
2.34	0.4904	0.9904	0.0096	2.85	0.4978	0.9978	0.0022
2.35	0.4906	0.9906	0.0094	2.86	0.4979	0.9979	0.0021
2.36	0.4909	0.9909	0.0091	2.87	0 4979	0 9979	0.0021
2 37	0.4911	0.9911	0.0089	2.88	0.4980	0 9980	0.0020
2.38	0.4913	0.9913	0.0087	2.89	0.4981	0.9981	0.0019
2.39	0.4916	0.9916	0.0084	2.90	0.4981	0.9981	0.0019
2.40	0.4918	0 9918	0.0082	2.91	0.4982	0.9982	0.0018
2.41	0.4920	0.9920	0.0080	2.92	0.4982	0.9982	0.0018
2.42	0.4922	0.9922	0 0078	2.93	0.4983	0 9983	0.0017
2.43	0.4925	0.9925	0.0075	2.94	0.4984	0.9984	0.0016
2.44	0.4927	0.9927	0.0073	2.95	0.4984	0.9984	0.0016
2.45	0.4929	0.9929	0.0071	2.96	0 4985	0.9985	0.0015
2.46	0.4931	0.9931	0.0069	2.97	0.4985	0.9985	0.0015
2.47	0.4932	0.9932	0.0068	2.98	0.4986	0.9986	0.0014
2.48	0.4934	0.9934	0.0066	2.99	0.4986	0.9986	0.0014
2.49	0.4936	0 9936	0.0064	3.00	0.4987	0.9987	0 0013
2 50	0.4938	0.9938	0.0062	3.01	0 4987	0.9987	0.0013
2.51	0.4940	0.9940	0.0060	3 02	0.4987	0.9987	0.0013
2.52	0.4941	0.9941	0.0059	3.03	0.4988	0.9988	0.0012
2.53	0.4943	0.9943	0.0057	3.04	0 4988	0.9988	0.0012
2.54	0 4945	0.9945	0.0055	3.05	0 4989	0.9989	0.0011

Appendix: Probabilities associated with the standard normal distribution (z) continued

z	Mean to z	Larger portion	Smaller portion	z	Mean to z	Larger portion	Smaller portion
3.06	0.4989	0.9989	0 0011	3.19	0.4993	0.9993	0.0007
3.07	0.4989	0.9989	0 0011	3.20	0.4993	0.9993	0.0007
3.08	0.4990	0.9990	0.0010	3.21	0.4993	0.9993	0.0007
3.09	0.4990	0 9990	0.0010	3.22	0.4994	0.9994	0.0006
3.10	0.4990	0 9990	0.0010	3.23	0.4994	0.9994	0.0006
3.11	0.4991	0 9991	0.0009	3.24	0 4994	0 9994	0.0006
3.12	0.4991	0 9991	0.0009	3.25	0.4994	0.9994	0.0006
3.13	0.4991	0.9991	0 0009	...	...	...	. .
3.14	0.4992	0 9992	0.0008	3.50	0.4998	0.9998	0.0002
3.15	0.4992	0.9992	0.0008	. .	...	...	.
3.16	0.4992	0.9992	0.0008	3.75	0.4999	0.9999	0.0001
3.17	0.4992	0.9992	0.0008	...	...	.	...
3.18	0.4993	0.9993	0.0007	4.00	0.5000	1.000	0.0000

UNIVERSITY OF SOUTH AFRICA UNISA **UNIVERSITEIT VAN SUID-AFRIKA**

EXAMINATION MARK READING SHEET **EKSAMEN-MERKLEESBLAD**

PART 1 (GENERAL/ALGEMEEN) DEEL 1

STUDY UNIT e.g. PSY100-X
STUDIE-EENHEID bv. PSY100-X

1

PAPER NUMBER
VRAESTELNOMMER

2

INITIALS AND SURNAME
VOORLETTERS EN VAN

3

DATE OF EXAMINATION
DATUM VAN EKSAMEN

4

EXAMINATION CENTRE (E.G. PRETORIA)
EKSAMENSENTRUM (BV. PRETORIA)

5

STUDENT NUMBER
STUDENTENOMMER

6

7

UNIQUE PAPER NO.
UNIEKE VRAESTEL NR

8

9

For use by examination invigilator
Vir gebruik deur eksamenopsiener

IMPORTANT

1. USE ONLY AN HB PENCIL TO COMPLETE THIS SHEET
2. MARK LIKE THIS ➧
3. CHECK THAT YOUR INITIALS AND SURNAME HAS BEEN FILLED IN CORRECTLY
4. ENTER YOUR STUDENT NUMBER FROM LEFT TO RIGHT
5. CHECK THAT YOUR STUDENT NUMBER HAS BEEN FILLED IN CORRECTLY
6. CHECK THAT THE UNIQUE NUMBER HAS BEEN FILLED IN CORRECTLY
7. CHECK THAT ONLY ONE ANSWER PER QUESTION HAS BEEN MARKED
8. DO NOT FOLD

BELANGRIK

1. GEBRUIK SLEGS N HB POTLOOD OM HIERDIE BLAD TE VOLTOOI
2. MERK AS VOLG ➧
3. KONTROLEER DAT U VOORLETTERS EN VAN REG INGEVUL IS
4. VUL U STUDENTENOMMER VAN LINKS NA REGS IN
5. KONTROLEER DAT U DIE KORREKTE STUDENTENOMMER VERSTREK HET
6. KONTROLEER DAT DIE UNIEKE NOMMER REG INGEVUL IS
7. MAAK SEKER DAT NET EEN ALTERNATIEF PER VRAAG GEMERK IS.
8. MOENIE VOU NIE

PART 2 (ANSWERS/ANTWOORDE) DEEL 2

10

1	c1 c2 c3 c4 c5	36	c1 c2 c3 c4 c5	71	c1 c2 c3 c4 c5	106	c1 c2 c3 c4 c5
2	c1 c2 c3 c4 c5	37	c1 c2 c3 c4 c5	72	c1 c2 c3 c4 c5	107	c1 c2 c3 c4 c5
3	c1 c2 c3 c4 c5	38	c1 c2 c3 c4 c5	73	c1 c2 c3 c4 c5	108	c1 c2 c3 c4 c5
4	c1 c2 c3 c4 c5	39	c1 c2 c3 c4 c5	74	c1 c2 c3 c4 c5	109	c1 c2 c3 c4 c5
5	c1 c2 c3 c4 c5	40	c1 c2 c3 c4 c5	75	c1 c2 c3 c4 c5	110	c1 c2 c3 c4 c5
6	c1 c2 c3 c4 c5	41	c1 c2 c3 c4 c5	76	c1 c2 c3 c4 c5	111	c1 c2 c3 c4 c5
7	c1 c2 c3 c4 c5	42	c1 c2 c3 c4 c5	77	c1 c2 c3 c4 c5	112	c1 c2 c3 c4 c5
8	c1 c2 c3 c4 c5	43	c1 c2 c3 c4 c5	78	c1 c2 c3 c4 c5	113	c1 c2 c3 c4 c5
9	c1 c2 c3 c4 c5	44	c1 c2 c3 c4 c5	79	c1 c2 c3 c4 c5	114	c1 c2 c3 c4 c5
10	c1 c2 c3 c4 c5	45	c1 c2 c3 c4 c5	80	c1 c2 c3 c4 c5	115	c1 c2 c3 c4 c5
11	c1 c2 c3 c4 c5	46	c1 c2 c3 c4 c5	81	c1 c2 c3 c4 c5	116	c1 c2 c3 c4 c5
12	c1 c2 c3 c4 c5	47	c1 c2 c3 c4 c5	82	c1 c2 c3 c4 c5	117	c1 c2 c3 c4 c5
13	c1 c2 c3 c4 c5	48	c1 c2 c3 c4 c5	83	c1 c2 c3 c4 c5	118	c1 c2 c3 c4 c5
14	c1 c2 c3 c4 c5	49	c1 c2 c3 c4 c5	84	c1 c2 c3 c4 c5	119	c1 c2 c3 c4 c5
15	c1 c2 c3 c4 c5	50	c1 c2 c3 c4 c5	85	c1 c2 c3 c4 c5	120	c1 c2 c3 c4 c5
16	c1 c2 c3 c4 c5	51	c1 c2 c3 c4 c5	86	c1 c2 c3 c4 c5	121	c1 c2 c3 c4 c5
17	c1 c2 c3 c4 c5	52	c1 c2 c3 c4 c5	87	c1 c2 c3 c4 c5	122	c1 c2 c3 c4 c5
18	c1 c2 c3 c4 c5	53	c1 c2 c3 c4 c5	88	c1 c2 c3 c4 c5	123	c1 c2 c3 c4 c5
19	c1 c2 c3 c4 c5	54	c1 c2 c3 c4 c5	89	c1 c2 c3 c4 c5	124	c1 c2 c3 c4 c5
20	c1 c2 c3 c4 c5	55	c1 c2 c3 c4 c5	90	c1 c2 c3 c4 c5	125	c1 c2 c3 c4 c5
21	c1 c2 c3 c4 c5	56	c1 c2 c3 c4 c5	91	c1 c2 c3 c4 c5	126	c1 c2 c3 c4 c5
22	c1 c2 c3 c4 c5	57	c1 c2 c3 c4 c5	92	c1 c2 c3 c4 c5	127	c1 c2 c3 c4 c5
23	c1 c2 c3 c4 c5	58	c1 c2 c3 c4 c5	93	c1 c2 c3 c4 c5	128	c1 c2 c3 c4 c5
24	c1 c2 c3 c4 c5	59	c1 c2 c3 c4 c5	94	c1 c2 c3 c4 c5	129	c1 c2 c3 c4 c5
25	c1 c2 c3 c4 c5	60	c1 c2 c3 c4 c5	95	c1 c2 c3 c4 c5	130	c1 c2 c3 c4 c5
26	c1 c2 c3 c4 c5	61	c1 c2 c3 c4 c5	96	c1 c2 c3 c4 c5	131	c1 c2 c3 c4 c5
27	c1 c2 c3 c4 c5	62	c1 c2 c3 c4 c5	97	c1 c2 c3 c4 c5	132	c1 c2 c3 c4 c5
28	c1 c2 c3 c4 c5	63	c1 c2 c3 c4 c5	98	c1 c2 c3 c4 c5	133	c1 c2 c3 c4 c5
29	c1 c2 c3 c4 c5	64	c1 c2 c3 c4 c5	99	c1 c2 c3 c4 c5	134	c1 c2 c3 c4 c5
30	c1 c2 c3 c4 c5	65	c1 c2 c3 c4 c5	100	c1 c2 c3 c4 c5	135	c1 c2 c3 c4 c5
31	c1 c2 c3 c4 c5	66	c1 c2 c3 c4 c5	101	c1 c2 c3 c4 c5	136	c1 c2 c3 c4 c5
32	c1 c2 c3 c4 c5	67	c1 c2 c3 c4 c5	102	c1 c2 c3 c4 c5	137	c1 c2 c3 c4 c5
33	c1 c2 c3 c4 c5	68	c1 c2 c3 c4 c5	103	c1 c2 c3 c4 c5	138	c1 c2 c3 c4 c5
34	c1 c2 c3 c4 c5	69	c1 c2 c3 c4 c5	104	c1 c2 c3 c4 c5	139	c1 c2 c3 c4 c5
35	c1 c2 c3 c4 c5	70	c1 c2 c3 c4 c5	105	c1 c2 c3 c4 c5	140	c1 c2 c3 c4 c5