

**PYC3704**

( 480880) October/November 2013

**PSYCHOLOGICAL RESEARCH**

Duration 2 Hours

70 Marks

EXAMINATION PANEL AS APPOINTED BY THE DEPARTMENT

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Use of a non-programmable pocket calculator is permissible

Closed book examination

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**EXAMINERS:**

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This paper consists of 19 pages plus 2 blank pages for rough work (pp 20 & 21) plus 1 page (i) of formulae and tables( i-v) as well as instructions for the completion of a mark reading sheet

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 90 and 10% of your assignment mark will be added, to produce a mark out of 100 [Note that if your exam mark is less than 40% the assignment 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**

Research is called *empirical* research when - - - - -

- 1 descriptive statistics are calculated from data
- 2 use is made of inferential statistics
- 3 hypotheses are carefully formulated and tested using statistical tests
- 4 observations or measurements are made of objects or entities being studied

**Question 2**

In science, including social science, the word 'theory' refers to - - - - -

- 1 a plausible guess based on one's previous knowledge about a phenomenon
- 2 an explanation of why a phenomenon appears as it is observed to be
- 3 an explanation of the procedure by which a construct should be measured
- 4 the process where independent variables are varied to see how they affect the dependent variables

**Question 3**

Inferential statistics refer to - - - - -

- 1 calculating statistics which summarises the data
- 2 using probability theory to make conclusions based on observations of data
- 3 the process of converting general research questions into specific formal hypotheses
- 4 the process of finding a way to measure an abstract construct

**Question 4**

When doing research, the term 'operationalisation' is used to refer to the process of - - - - -

- 1 calculating a test statistic to test a particular hypothesis
- 2 converting a general research question into a formal statistical hypothesis
- 3 determining a way to get a numeric measurement of a construct which is being measured
- 4 converting a calculated test statistic into a probability value called the p-value

**Question 5**

In social science research, the total collection of measurements across a group of research participants is referred to as - - - - -

- 1 descriptive statistics
- 2 parameters
- 3 sample statistics
- 4 data

[TURN OVER]

**Question 6**

Psychological measurements are always imperfect. The way in which a measurement varies around its 'true' value is referred to as - - - - -

- 1 measurement error
- 2 variance
- 3 hidden variables
- 4 standard deviation

**Question 7**

A social science researcher is told by a grade 1 teacher that some children are terribly shy while other children seem to be quite comfortable in the social group. The researcher decides to investigate, using a test for shyness which was developed especially for young children.

In this study, 'shyness' would be a - - - - - while the measurement of it is referred to as a - - - - -

- 1 variable, construct
- 2 construct, test
- 3 construct, variable
- 4 concept, scale

**Question 8**

A researcher wants to study the attitude to safety of workers in the construction industry. She randomly selects 200 workers from the employment records of 10 major construction companies in the Gauteng Province of South Africa. The group which was selected is referred to as the - - - - - and the general group of construction workers is the - - - - -

- 1 population, sample
- 2 dependent variable, independent variable
- 3 independent variable, dependent variable
- 4 sample, population

**Question 9**

Numeric values which represent some kind of psychological measurement and which can change from one measurement to the next are referred to as - - - - -

- 1 statistics
- 2 variables
- 3 parameters
- 4 constructs

**Question 10**

A psychologist is conducting research into hypnosis. She believes that a relationship exists between a person's suggestibility (susceptibility to hypnosis) and his or her level of self esteem.

In this design, 'suggestibility' is the - - - - variable and 'level of self esteem' is the - - - - variable.

- 1 dependent, independent
- 2 latent, manifest
- 3 independent, dependent
- 4 hidden, operational

**Question 11**

The symbol - - - - is usually used to indicate the mean of a sample, while the mean of the population from which the sample comes is indicated by the symbol - - - -.

- 1  $\bar{x}$ ,  $\mu$
- 2  $s$ ,  $\sigma$
- 3  $\alpha$ ,  $\bar{x}$
- 4  $\mu$ ,  $\sigma$

**Question 12**

Which best describes "research hypothesis"?

- 1 A proven relation between two constructs
- 2 A proposed relation between two or more variables
- 3 A network of all the possible relations between constructs
- 4 A scientific theory

**Question 13**

Which of the following does **NOT** represent a possible value for a probability?

- 1 99%
- 2 0
- 3 -0.05
- 4 1.0

**Question 14**

A jar contains 5 red, 8 blue, 3 green and 4 yellow marbles. What is the probability that a person who is blindfolded will choose a *blue* marble purely at random?

- 1 0.20
- 2 0.25
- 3 0.50
- 4 0.40

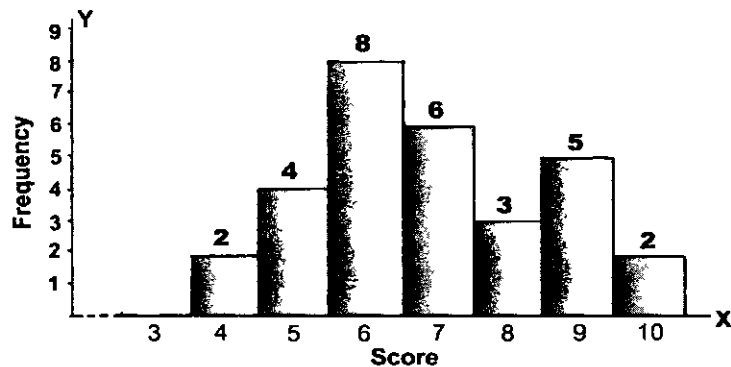
**Question 15**

Consider the same jar, filled with the same number of marbles than in the previous question. What is the probability that a person would choose **either a red marble or a yellow one?**

- 1 0.50
- 2 0.45
- 3 0.25
- 4 0.90

**Question 16**

A researcher applies a test of *creativity* on a sample of fine arts students. She creates the following graph based on the results, where the horizontal (x) axis represents the scores on the creativity test and the vertical axis (Y) are frequencies (counts for each score are indicated on top of the bars in the graph)



Based on this information, what is the probability that a particular art student, chosen at random, would get a score of 8 or greater on this test?

- 1 0.33
- 2 0.25
- 3 About 50%
- 4 More information is needed, the p-value will have to be calculated from the raw data

**Question 17**

The expression " $0.05 \leq p \leq 0.10$ " denotes a probability value which is -----

- 1 a number halfway between 0.05 and 0.10
- 2 larger than or equal to 0.10 or smaller than or equal to 0.05
- 3 larger than 0.05 and smaller than 0.10
- 4 larger than or equal to 0.05 and smaller than or equal to 0.10

Use the scenario below to answer Questions 18 and 19

A researcher is studying post-traumatic stress among a number of soldiers who recently returned from a peace-keeping mission. She applies a psychometric instrument which measures stress on each of a sample of 100 soldiers. She finds that their scores are approximately normally distributed with a mean of 3.5 and a standard deviation of 2.0.

**Question 18**

What would the z-score be for a soldier with a score of 5.5?

- 1 -0.25
- 2 0
- 3 0.5
- 4 1

**Question 19**

What would the probability be of a soldier getting a score of greater than 5.5?

- 1 0.84
- 2 0.16
- 3 0.34
- 4 The p-value will have to be calculated using the raw data

**Question 20**

A variable X is found to be normally distributed. If the probability distribution of this variable is plotted, what would the total size of the area under the curve be, to the left side of the sample mean?

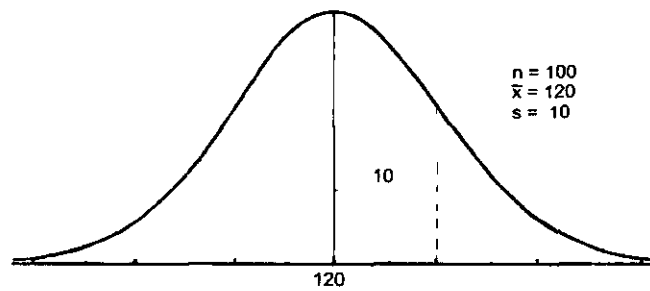
- 1 100%
- 2 0.5
- 3 1
- 4 0

Questions 21 to 24 are based on the scenario below

An psychologist is conducting research on xenophobia (hatred of foreigners). She makes use of a Xenophobia Scale which measures attitudes towards foreign language speakers and which consists of 60 items, each one scored 0 – 4. This scale is applied to a random sample of n=100 citizens. The results for each research participant are added to produce an overall xenophobia score which falls in a range from a minimum score of 0 to a maximum score of 240.

The researcher calculates descriptive statistics for this sample, and finds a mean of  $\bar{x} = 120$  and a standard variation of 10. Since the sample data is roughly normally distributed, she draws the graph below.

[TURN OVER]

**Question 21**

Based on the data in the scenario, what would the *variance* of the distribution of the scores be?

- 1 100
- 2 10
- 3 12
- 4 1

**Question 22**

What would the z-score be for a xenophobia score of 130?

- 1 0.0
- 2 1.0
- 3 0.5
- 4 It cannot be calculated based on given information

**Question 23**

If  $x$  is taken to represent a score on the xenophobia scale, which of the values below is the closest to the value of  $p(x < 100)$ ?

- 1 0.500
- 2 0.159
- 3 0.977
- 4 0.023

**Question 24**

The way in which the mean is distributed can be estimated by finding *the standard error*. What would the standard error of the distribution of means be, based on the information in the scenario?

- 1 120
- 2 10
- 3 1
- 4 It is the range of values between 110 and 130

**Question 25**

Which of the following expressions of the rule for combining *mutually exclusive* probabilities is correct?

$P(A \text{ or } B) =$

- 1  $P(A) / P(B)$
- 2  $P(A) + P(B)$
- 3  $P(A) \times P(B)$
- 4  $P(A) - P(B)$

**Question 26**

Which of the following statements are true?

- 1 Parameters describe sample characteristics and statistics describe population characteristics
- 2 Statistics describe significance tests while parameters are measurements of samples or populations
- 3 Parameters describe population characteristics and statistics describe sample characteristics
- 4 Statistics describe measurements of independent variables while parameters are measurements of dependent variables

**Question 27**

A researcher in social science wants to compare a sample mean to a known population mean and chooses to calculate the value of  $z_x$ . What do we call this calculated value?

- 1 A test statistic
- 2 A sample statistic
- 3 A population parameter
- 4 An inferential statistic

**Question 28**

When a statistical test is performed, the size of the p-value will be a consequence of - - - - -

- 1 the value of the test statistic
- 2 a choice made by the researcher
- 3 the null hypothesis
- 4 the level of significance at which the test is performed

**Question 29**

When a researcher sets the level of significance to  $\alpha = 0.01$  during hypothesis testing, it implies that the probability of making an error of - - - - - will be at - - - - - 1%

- 1 Type I, most
- 2 Type I, least
- 3 Type II, most
- 4 Type II, least

[TURN OVER]

**Question 30**

Before doing statistical testing, a researcher sets the level of significance to 0.05. This is the - - - - -

- 1 minimum probability of making an error of Type I
- 2 p-value at which the test is to be performed
- 3 maximum probability of making an error of Type I
- 4 probability of rejecting  $H_0$

**Question 31**

Which of the statements below are *true*?

A test statistic - - - - -

- (a) is used to determine a p-value
- (b) is used to determine the value of  $\alpha$
- (c) shows how far an observed measurement deviates from what can be expected by chance
- (d) indicates the probability of making an error if the null hypothesis is rejected

- 1 Only (a)
- 2 Only (b)
- 3 Both (c) and (d)
- 4 Both (a) and (c)

**Question 32**

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

- 1 The alternative hypothesis is probably true
- 2 The null hypothesis is probably false
- 3 The null hypothesis is probably true
- 4 The alternative hypothesis cannot be rejected

**Question 33**

When applying a t-test to compare a sample mean calculated from a measurement to a known population mean, the p-value represents - - - - -

- 1 the probability of correctly rejecting the null hypothesis
- 2 the probability of obtaining the sample mean under the alternative hypothesis
- 3 the probability of obtaining the sample mean under the null hypothesis
- 4 the largest risk of making an error by rejecting the null hypothesis that one is willing to take

**Question 34**

Under which of the circumstances below would you make use of a t-test statistic?

- 1 When comparing from two independent variables
- 2 The sample standard deviation(s) is unknown
- 3 The population standard deviation(s) is unknown
- 4 The sample is not known to be normally distributed

[TURN OVER]

**Question 35**

When a statistical test yields a very small p-value, we know that the sample result is very - - - -

- 1 likely under the null hypothesis
- 2 unlikely under the alternative hypothesis
- 3 likely at a specific level of significance
- 4 unlikely under the null hypothesis

**Question 36**

A type I error occurs when the - - - -

- 1 null hypothesis is wrongly rejected
- 2 null hypothesis is not rejected when it should be
- 3 alternative hypothesis is wrongly rejected
- 4 p-value exceeds the level of significance

**Question 37**

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 is lower than that of girls
- 3 There is no correlation between the test marks and examination marks for a group of boys and girls
- 4 There is not a significant correlation between the anxiety scores of boys and those of girls

**Question 38**

Which of the following statements about the p-value are *true*?

- (a) It gives the probability of making an error of Type I
- (b) It should exceed the level of significance
- (c) If it is relatively large the null hypothesis will probably have to be rejected
- (d) If it is less than or equal to the level of significance,  $H_0$  should be rejected

- 1 (d) and none of the others
- 2 (b) and (c)
- 3 (a) and (b)
- 4 (a) and (d)

**Question 39**

Which of the following are appropriate ways to express an alternative hypothesis when a formal statistical hypotheses is being formulated?

- (a)  $\mu_1 = \mu_2$
- (b)  $\mu_1 \neq \mu_2$
- (c)  $\mu_1 > \mu_2$
- (d)  $\mu_1 < \mu_2$

- 1 Only (a)
- 2 Only (b)
- 3 Both (c) and (d) only
- 4 (b), (c) and (d)

**Question 40**

During statistical hypothesis testing, a p-value is calculated based on a test statistic. If this p-value is ----- than the level of significance, the ----- hypothesis should be -----

- 1 greater, null, rejected
- 2 less, alternative, rejected
- 3 less, null, rejected
- 4 less, null, accepted

**Question 41**

An error of Type II is committed when -----

- 1  $H_0$  is rejected in error
- 2  $H_0$  is not rejected when it should be
- 3 the p-value is found to exceed  $\alpha$
- 4 the rejection  $H_0$  is rejected based only on the p-value without looking at the effect size

**Question 42**

The size of the p-value depends on the -----

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

**Question 43**

A failure to reject  $H_0$  implies that a difference between the calculated sample mean and its expected value under  $H_0$  is due to - - - - -

- 1 the dependent variable
- 2 the independent variable
- 3 chance
- 4 the test statistic

*Base your answers to Questions 44 to 47 on the following scenario*

Based on her experience, a developmental psychologist formulates a hypothesis that infants of younger than four months old tend to look at their mothers' faces for *longer periods of time than* at the faces of strangers. She also knows that past research has established that an infant will look at a picture of a random human face for an average of ten seconds before looking away. To test her hypothesis, the psychologist selects a sample of  $n = 25$  infants of between one and four months old. She presents each infant with a picture of their mother on a video screen and records for how long each infant attends to the image before looking away. After collecting the data, she calculates that the infants in her sample spend a mean of  $\bar{x} = 12.5$  seconds looking at the images before looking away, with a standard deviation of  $s = 5.5$  seconds.

**Question 44**

Which research design is the most appropriate?

- 1 Correlational design
- 2 Single sample group design
- 3 Two-groups design for dependent samples
- 4 Two-groups design with a known population mean

**Question 45**

Which are the most appropriate way of formulating the relevant statistical hypotheses?

- 1  $H_0: \mu = 10, H_1: \mu > 10$
- 2  $H_0: \mu = 10, H_1: \mu < 10$
- 3  $H_0: \mu \neq 10, H_1: \mu > 10$
- 4  $H_0: \mu = 10, H_1: \mu \neq 20$

**Question 46**

Based on the information presented in the scenario, which would be the most appropriate test statistic to use out of the following?

- 1 The z-statistic for the mean of a single sample ( $z_{\bar{x}}$ )
- 2 The t-statistic for the difference between the means of two independent samples ( $t_c$ )
- 3 The t-statistic for the difference between the means of two dependent samples ( $t_d$ )
- 4 The t-statistic for the mean of a single sample ( $t_{\bar{x}}$ )

[TURN OVER]

**Question 47**

Given the scenario above, what would the calculated value of the standard deviation of the distribution of the means (the standard error) be?

- 1 5.5
- 2 1.1
- 3 0.2
- 4 There is insufficient information to calculate it

**Question 48**

The standard error of the mean for samples of a specific size is the - - - - -

- 1 standard deviation of the population mean
- 2 mean of the standard deviations of repeated samples of this specific size
- 3 standard deviation of the sampling distribution of the mean
- 4 standard deviation of the sample mean

**Question 49**

During the process of using statistical procedures to establish whether a relationship exists between the variables  $x$  and  $y$ , a researcher considers the *effect size* of the findings. What does this refer to?

- 1 It indicates the extent of a relationship among variables irrespective of the significance of the statistical test
- 2 It is another way of saying that the statistical test was significant
- 3 It refers to the probability of making an error of Type II if the null hypothesis is not rejected
- 4 It refers to the extent to which the obtained  $p$ -value differs from the chosen level of significance

**Question 50**

Suppose a test statistic is calculated, and based on this the  $p$ -value is determined to be 0.03. Which of the following decisions should the researcher make?

- 1 Reject  $H_0$  if the level of significance was set in advance at 0.01
- 2 Since  $p = 0.03$ , set the level of significance to 0.05 to make it possible to reject  $H_0$
- 3 Reject  $H_0$  if the level of significance was set in advance at 0.05
- 4 Do not reject  $H_0$  if the level of significance was set in advance at 0.05

Base your answers Questions 51 to 53 on the following scenario

A researcher in educational psychology wants to investigate the possibility that primary school children who regularly watch educational programmes on television get better general grades in primary school than those who do not. She draws a random sample of 100 children from a specific primary school and after investigation of their histories of television watching, allocates them into two groups, a TV-Group of 45 children with a history of watching educational programmes and a Non-TV Group of 55 children with no such history. At the end of the school year, she compares the final year marks of the two groups.

### Question 51

Considering the scenario above, which of the following statements are *true*?

- (a) The two groups are dependent because they come from the same school
- (b) Watching television is the dependant variable and year mark is the independent variable
- (c) A one-tailed test would be required

- 1 (a) and none of the others
- 2 (a) and (c)
- 3 (b) and (c)
- 4 (c) and none of the others

### Question 52

Which of the following is an appropriate description of the research population in the scenario?

- 1 Primary school children
- 2 Primary school children who watch educational television
- 3 Children in general
- 4 100 children from a specific school

### Question 53

When comparing the year marks of the two groups of children (using 'TV' and 'NoTV' to indicate the group that watches educational TV and the one that does not watch it, respectively) which is of the options below are the most appropriate way to express the formal alternative hypothesis suggested by this scenario?

- 1  $\mu_{TV} < \mu_{NoTV}$
- 2  $\mu_{TV} > \mu_{NoTV}$
- 3  $\mu_{TV} \neq \mu_{NoTV}$
- 4  $\bar{X}_{TV} > \bar{X}_{NoTV}$

**Question 54**

A psychotherapist wants to test the effectiveness of a programme of cognitive behavioural therapy on clients who were diagnosed as suffering from high social anxiety. She uses a sample of 50 persons who were diagnosed as persons with high anxiety and tests them on a Social Anxiety Scale before the commencement of the series of therapy sessions, and again afterwards. The two sets of measurements should be regarded as - - - - -

- 1 dependent
- 2 independent
- 3 drawn from a single population
- 4 highly correlated

**Question 55**

A researcher wants to compare two group means by testing the following hypotheses at a significance level of  $\alpha = 0.05$

$$H_0: \mu_1 = \mu_2$$

$$H_1: \mu_1 > \mu_2$$

On the basis of data provided, the output from a computer program indicates that a t-value of  $t = -1.9$  was found. The computer program also indicates that a p-value for a non-directional (two-tailed) t-test would be  $p = 0.07$ . What conclusion can the researcher make, and why?

- 1  $H_0$  can be rejected because  $\alpha < p$ -value
- 2  $H_0$  cannot be rejected because  $\alpha < p$ -value
- 3  $H_0$  can be rejected because  $\alpha/2 < p$ -value
- 4  $H_0$  cannot be rejected because  $\alpha \times 2 > p$ -value

**Question 56**

Two samples can be considered *independent* when - - - - -

- 1 care was taken that there were no hidden variables that could affect them
- 2 care was taken that the samples are drawn under different experimental or treatment conditions
- 3 the samples are drawn from more than a single population of subjects
- 4 there is no systematic matching of individuals of one sample with individuals from the other one

**Question 57**

A researcher wants to test the hypothesis that girls are generally less assertive than boys. He draws a sample of 100 boys and a sample of 100 girls, and gives each child a test that measures their general level of assertiveness. Which would be the most appropriate statistical test to use, out of the following?

- 1 The t-test for independent samples
- 2 The chi-square ( $\chi^2$ ) test
- 3 The t-test for dependent samples
- 4 The test statistic based on the Pearson product-moment correlation ( $r$ )

**Question 58**

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

- (a) dependent samples
- (b) independent samples
- (c) random samples

- 1 only (a)
- 2 only (b)
- 3 both (a) and (b)
- 4 (c)

**Question 59**

Which of the following statements about the relationship between the value of a t-test statistic and the p-value is true, if the sample size ( $n$ ) remains constant?

- 1 The larger the value of the t-test statistic, the smaller p will be
- 2 The smaller the value of the t-test statistic, the smaller p will be
- 3 If the sample size  $n$  remains the same, the relationship between the test statistic and the p-value will remain constant
- 4 There is no specific relationship between the p-value and the t-test statistic

**Question 60**

Which of the following gives the best description of a *null hypothesis*?

The null hypothesis is the hypothesis that - - - - -

- 1 expresses the research hypothesis through the use of appropriate symbols
- 2 indicates the direction of the difference that is expected between two groups
- 3 expresses the probability that observed relationship will be significant
- 4 states that there is no relationship between the variables

**Question 61**

In correlational research one investigates the relation between - - - - -

- 1 the mean of a single sample of subjects and a population mean
- 2 two groups of subjects, with respect to a single variable
- 3 two variables measured on the same group of subjects
- 4 the difference scores of two groups of test measurements

**Question 62**

A researcher hypothesizes that the greater the number of books read by pupils over a specific school year, the greater their language comprehension will be at the end of that year. He studies a random sample of 100 pupils in grades 10 – 12 in a specific school, collecting information on the number of books they read in a specific year and letting them do a reading comprehension test at the end of the year.

Which is an appropriate formal expression of the alternative hypothesis for this research?

- 1  $\rho > 0$
- 2  $\mu > 0$
- 3  $r > 0$
- 4  $\rho \neq 0$

**Question 63**

Which of the following can never be exactly zero?

- 1 a probability
- 2 a level of significance
- 3 a correlation coefficient
- 4 a t-test statistic

**Question 64**

A graph showing the position of each of a number of measurements on each of two variables is called a  
-----

- 1 histogram
- 2 contingency table
- 3 scatter plot
- 4 correlation coefficient

**Question 65**

For a larger sample size (n) -----

- 1 a smaller value of a Pearson's correlation coefficient  $r$  will reach significance
- 2 a larger value of a Pearson's correlation coefficient  $r$  is required before the result will be significant
- 3 the size of Pearson's correlation coefficient  $r$  is likely to increase
- 4 the size of Pearson's correlation coefficient  $r$  is likely to move closer to zero

**Question 66**

A Pearson correlation of  $r = -0.71$  is found when the linear correlation between two variables is calculated. What kind of relationship between two variables  $X$  and  $Y$  does this represent?

- 1 As one variable grows larger, so the other gets larger
- 2 As one variable grows smaller, so the other gets smaller
- 3 As one variable grows larger, the other grows smaller
- 4 A correlation coefficient cannot get smaller than 0, since it implies a relationship of less than nothing

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**Question 67**

After finding the correlation of  $r = -0.71$  (as indicated in the previous question), the researcher decides to also calculate the size of the effect of one variable on the other. Given the information at his disposal, what is he likely to conclude?

- 1 About half of the variance in one of the variables is accounted for by the other one
- 2 About a quarter of the variance in one of the variables is accounted for by the other
- 3 About three quarters of the variance in one of the variables is accounted for by the other one
- 4 He decides that before he can find the size of the effect between the two variables, the two group means and standard variations will first have to be calculated

*Base your answers to Questions 68 to 70 on the following scenario*

A sample of clients are drawn from three community welfare centres (indicated as A, B and C). Based on interviews, the clients are categorised into one of four categories:

- Those that have psychological problems, that is, they may require intervention by psychotherapists,
- Those that have welfare problems, that is, those who may require intervention by social workers,
- Those with health-related problems, who may require interventions by health care givers
- Others: these are clients who do not fit into any of the other three groups

Counts are made of those clients from the different centres who fit into each of these categories, and this is reflected in the contingency table below:

<b>Mental Health Centre (columns) by Type of Problem (rows)</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>Row totals</b>
'Psychological'	27	35	32	<b>94</b>
'Welfare'	16	28	22	<b>66</b>
'Health-related'	16	20	34	<b>70</b>
Other	29	17	24	<b>70</b>
<b>Column totals</b>	<b>88</b>	<b>100</b>	<b>112</b>	<b>300</b>

**Question 68**

Which of the following is an appropriate null hypothesis to test relationships given the data above?

- 1 There is a correlation between the type of intervention which the clients need and the particular community mental health centres that they visit
- 2 The particular community mental health centres that the clients visit have no relationship to the type of intervention which the clients may require
- 3 There are no significant differences among clients needing psychological, welfare, health-related or those with other problems
- 4 There is no correlation between the type of intervention which the clients need and the particular community mental health centres that they visit

[TURN OVER]

**Question 69**

Given the data above, which of the options below would be the most appropriate test statistic to use to test the null hypothesis above against an appropriate alternative hypothesis?

- 1 The test statistic for the Pearson product-moment correlation coefficient ( $r$ )
- 2 The t-test statistic for two independent samples ( $t_c$ )
- 3 The t-test statistic for two dependent samples ( $t_d$ )
- 4 The chi-square ( $\chi^2$ ) test statistic

**Question 70**

Given the data above, what would be the expected value (if the null hypothesis is true) for health-related problems in community centre B?

- 5 20
- 6 23.3
- 7 70
- 8 100

**END OF EXAM PAPER**

[TURN OVER]





PART 1 (GENERAL/ALGEMEEN) DEEL 1

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

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PAPER NUMBER  
VRAESTELNOMMER

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INITIALS AND SURNAME  
VOORLETTERS EN VAN

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DATE OF EXAMINATION  
DATUM VAN EKSAMEN

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

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STUDENT NUMBER  
STUDENTENOMMER

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UNIQUE PAPER NO  
UNIEKE VRAESTEL NR

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For use by examination invigilator  
Vir gebruik deur eksamenopsiener

IMPORTANT

- USE ONLY AN HB PENCIL TO COMPLETE THIS SHEET
- MARK LIKE THIS ➡
- CHECK THAT YOUR INITIALS AND SURNAME HAS BEEN FILLED IN CORRECTLY
- ENTER YOUR STUDENT NUMBER FROM LEFT TO RIGHT
- CHECK THAT YOUR STUDENT NUMBER HAS BEEN FILLED IN CORRECTLY
- CHECK THAT THE UNIQUE NUMBER HAS BEEN FILLED IN CORRECTLY
- CHECK THAT ONLY ONE ANSWER PER QUESTION HAS BEEN MARKED
- DO NOT FOLD

BELANGRIK

- GEBRUIK SLEGS N HB POTLOOD OM HIERDIE BLAD TE VOLTOOI
- MERK AS VOLG ➡
- KONTROLEER DAT U VOORLETTERS EN VAN REG INGEVUL IS
- VUL U STUDENTENOMMER VAN LINKS NA REGS IN
- KONTROLEER DAT U DIE KORREKTE STUDENTENOMMER VERSTREK HET
- KONTROLEER DAT DIE UNIEKE NOMMER REG INGEVUL IS
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PART 2 (ANSWERS/ANTWOORDE) DEEL 2

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