

UNIVERSITY OF SWAZILAND**FACULTY OF EDUCATION****FINAL EXAMINATIONS 2005**

**TITLE OF PAPER : RESEARCH METHODS AND
EVALUATION**

PROGRAMME : BED III

COURSE NUMBER : EDF 320 PAPER 1

TIME ALLOWED : THREE (3) HOURS

INSTRUCTIONS:

1. **This paper is in two parts.**
2. **Answer all items in section one by putting a circle around the correct response on the answer card provided.**
3. **You are advised not to spend more than 45 minutes in this section.**
4. **Answer question one, and any TWO other questions from Section B.**
5. **Answer cards, formula sheets and the necessary tables are also provided.**

THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION TO DO SO, HAS BEEN GRANTED BY THE INVIGILATOR.

SECTION ONE

INSTRUCTION: ANSWER ALL ITEMS IN THIS SECTION BY PUTTING A CIRCLE AROUND THE CORRECT RESPONSE ON THE ANSWER CARD PROVIDED.

ITEM 1

A simple random sampling technique is one in which

- a. each member has a 100% chance of being included in the study sample
- b. alternate members of the population are included in the study sample
- c. everyone is included in the study sample
- d. the study is first stratified before the members of the study samples are selected.
- e. every member of the population has an equal chance of being included in the sample.

ITEM 2

In which research situation would the experiment be confounded?

- a. the dependent variable varies systematically with the independent variable
- b. the dependent variable fails to vary systematically with the independent variable.
- c. An extraneous variable varies systematically with the independent variable
- d. An extraneous variable fails to vary systematically with the independent variable.
- e. when the research is difficult.

ITEM 3

The significance of a study should point out

- a. the population of the study
- b. the method used in data collection
- c. who will benefit from the study
- d. what data will be collected
- e. who will collect the data

ITEM 4

What is the advantage of using the questionnaire in research?

- a. it is easy to construct
- b. it covers a wide geographical spread of the population sample
- c. it has a high response rate
- d. even those who cannot read can ask others to respond on their behalf
- e. you do not have to meet the person responding

ITEM 5

An important reason for a literature review is to

- a. obtain primary and secondary information of the data
- b. determine the statistical significance of previous studies
- c. search for information about virgin areas that need to be researched
- d. all of the above
- e. none of the above

ITEM 6

Which of these are the characteristics of a one shot case study?

- a. the dependent variable is measured before event
- b. the dependent variable is measured only after the event
- c. the dependent variable is measured during the event
- d. the dependent variable is measured before, during and after the event
- e. no variable is measured at all

ITEM 7

Which activity is a component of research problem development and refinement?

- a. data collection
- b. instrument selection
- c. literature review
- d. qualitative data analysis
- e. questionnaire design

ITEM 8

When a researcher lives with a group of people to observe them, it is called

- a. nature observation
- b. behavioural observation
- c. participant observation
- d. subjective observation
- e. informal observation

ITEM 9

Which of the following is true of a positively skewed curve? The

- a. mean is always larger than the median and the mode
- b. mode is larger than the median
- c. mean is smaller than the mode
- d. mode is larger than the mean
- e. mode and the mean are always equal.

ITEM 10

Which of these is an advantage of observation studies over experimental research?

- a. no experiment needed to be worked out
- b. more people are involved in the study
- c. the personal views of the observer are very important
- d. data are easy to quantify
- e. behaviour is recorded when it occurs

ITEM 11

What is the advantage of using questionnaires as compared to using interview for the same cost? With questionnaires the researcher can

- a. achieve a greater depth of information
- b. seek clarification of subjects' answers
- c. obtain a higher number of responses
- d. control the order in which subjects respond
- e. keep a record of responses by participants

ITEM 12

Which is the first step to take in identifying a research topic?

- a. work out specific questions that the research should address
- b. identify a general area the research should focus on
- c. ask your supervisor to help you identify a research topic
- d. define the problem
- e. all of the above

ITEM 13

“Going native” and “getting immersed” are phrases that are associated with

- a. historical research
- b. experimental research
- c. participatory research
- d. case study research
- e. descriptive research

ITEM 14

A research proposal must possess one of the following

- a. a questionnaire
- b. a conclusion
- c. an interpretation
- d. significance of the study
- e. an analysis

ITEM 15

In which model of hypothesis formation is the accumulation of data used to form general explanatory principles?

- a. oral tradition
- b. correlational
- c. deductive
- d. inductive
- e. scientific

ITEM 16

In most research it is usual to draw conclusion(s) about a larger group from a smaller group or group(s). What is the term for the larger group?

- a. statistics
- b. variable
- c. population
- d. parameter
- e. sample

ITEM 17

Which of these is true of the Ex post-factor research?

- a. the researcher is able to manipulate the independent variable
- b. the cause and effect factors are easy to differentiate
- c. there is always one cause factor
- d. the sample cannot be randomized
- e. the findings are easy to confirm

ITEM 18

A researcher is evaluating a set of research findings. Why would the researcher want to replicate the findings? Replication will promote the

- a. interaction of the variables
- b. reactivity of the participants
- c. internal validity of the study
- d. external validity of the study
- e. the truth of results

ANSWER QUESTIONS 19 TO 21 FROM THE INFORMATION STATED BELOW.

The following are scores for 10 pupils out of a possible 20 points in religious education:

12, 15, 9, 16, 8, 17, 6, 11, 17 and 13

ITEM 19

The mean for the test is

- a. 11.7
- b. 12.4
- c. 15.2
- d. 9.0
- e. 13.3

ITEM 20

What is the median for the distribution?

- a. 13
- b. 11.5
- c. 12
- d. 15.5
- e. 12.5

ITEM 21

What is the mode of the distribution?

- a. 12
- b. 15
- c. 11
- d. 17
- e. none of the above

QUESTION 22

In cluster sampling, the unit of the sample is the

- a. individual research participant
- b. target population
- c. naturally occurring groups of individuals
- d. stratified proportion of the population
- e. accessible population

ITEM 23

What can be concluded about the cause and effect relationship between two variables that have a highly significant correlation?

- a. no conclusion can be drawn about the cause and effect relationship
- b. the cause and effect relationship is significant if the correlation is positive
- c. the cause and effect relationship is significant if the correlation is negative
- d. there is significant cause and effect relationship between the two variables
- e. predictions made are very reliable

ITEM 24

Which of these is a major weakness of basic research

- a. it has no immediate or planned application
- b. it is usually carried out with animals and therefore has little relevance for humans
- c. it is concerned with extending the boundaries of knowledge
- d. the sample is limited
- e. none of the above

ITEM 25

In research, a factor that is manipulated by the researcher is called

- a. independent variable
- b. dependent variable
- c. intervening variable
- d. constant variable
- e. measurable

ITEM 26

A research method in which the investigation is done after the event has occurred is known as

- a. descriptive research
- b. experimental research
- c. correlational research
- d. ex post-factor research
- e. basic research

ITEM 27

If the author of a book reports results of his own experiments, that portion of the text would be considered a

- a. primary source
- b. secondary source
- c. preliminary source
- d. literature review
- e. generalisation of findings

ITEM 28

One of the characteristics of the ex post-factor research is that data are collected

- a. before the event
- b. during the event
- c. after the event
- d. both before and after the event
- e. both before and during the event

SECTION TWO

INSTRUCTION: (i) ANSWER QUESTION (1) ONE AND ANY 2 (TWO) OTHER QUESTIONS FROM THIS SECTION.

(ii) EACH QUESTION MUST BE ANSWERD IN A SEPARATE BOOKLET

QUESTION 1

The following are two sets of test scores for 10 B.Ed students in philosophy of education and educational psychology out of a possible score of 20 marks.

PHILOSOPHY	PSCHOLOGY	
10	3	
11	10	
10	9	
5	11	
9	7	3 marks for completing the table
11	13	
12	14	
9	10	
13	13	
8	11	

- (i) Declare a null hypothesis and its alternative hypothesis for the situation.
2 marks each = 4 marks
- (ii) Determine the relationship between the two variables, and test for significance at the 95% confidence level.
5 marks each = 10 marks
- (iii) What is the status of the null hypothesis? 4 marks
- (iv) Explain your result 4 marks

24 MARKS

QUESTION 2

Choose one ex-post factor research problem.

- | | | |
|----|--|---------|
| a. | briefly describe the problem | 8 marks |
| b. | identify the sample | 4 marks |
| c. | identify the independent variable | 4marks |
| d. | identify the dependent variable, and | 4 marks |
| e. | describe any two (2) problems that you might encounter | 4 marks |

24 MARKS

QUESTION 3

- (a) What are the main aims of science as a knowledge producing system? 12 marks
- (b) Outline science both as a cyclic process of reasoning and observation and as a social institution. 12 marks

24 MARKS

QUESTION 4

Describe in a logical manner at least four common errors, which a researcher may encounter in the formulation of a problem. 4x8 marks

24 MARKS

A P P E N D I X A

df	.1	.05	.01	.001
1	6.314	12.706	63.657	636.619
2	2.920	4.303	9.925	31.598
3	2.353	3.182	5.841	12.941
4	2.132	2.776	4.604	8.601
5	2.015	2.571	4.032	6.859
6	1.943	2.447	3.707	5.959
7	1.895	2.365	3.499	5.405
8	1.860	2.306	3.355	5.041
9	1.833	2.262	3.250	4.781
10	1.812	2.228	3.169	4.587
11	1.796	2.201	3.106	4.437
12	1.782	2.179	3.055	4.318
13	1.771	2.160	3.012	4.221
14	1.761	2.145	2.972	4.140
15	1.753	2.131	2.947	4.073
16	1.746	2.120	2.921	4.015
17	1.740	2.110	2.898	3.965
18	1.734	2.101	2.878	3.922
19	1.729	2.091	2.861	3.883
20	1.725	2.086	2.845	3.850
21	1.721	2.080	2.831	3.819
22	1.717	2.074	2.819	3.792
23	1.714	2.069	2.807	3.767
24	1.711	2.064	2.797	3.745
25	1.708	2.060	2.787	3.725
26	1.706	2.056	2.779	3.707
27	1.703	2.052	2.771	3.690
28	1.701	2.048	2.763	3.674
29	1.699	2.045	2.756	3.659
30	1.697	2.042	2.750	3.646
40	1.684	2.021	2.704	3.551
60	1.671	2.000	2.660	3.460
120	1.658	1.980	2.617	3.373
α	1.645	1.960	2.576	3.291

SOURCE: APPENDIX C from Downie, N.M., and Heath, R.M. Basic Statistical Methods, N.Y.; Harper & Row, Publishers, 1974.

STATISTICAL FORMULAE

$$(1) \bar{X} = \frac{\sum X}{N}$$

$$(2) \bar{X} = M' = \frac{\sum fx'}{N} (i)$$

$$(3) x = X - \bar{X}$$

$$(4) ss = \sqrt{\frac{\sum x^2}{N}} \text{ or } \sqrt{\frac{\sum x^2}{N-1}}$$

$$(5) s^2 = \frac{\sum x^2}{N} \text{ or } \frac{\sum x^2}{N-1}$$

$$(6) \sum x^2 = i^2 \left[\sum f(x')^2 - \frac{\sum (fx')^2}{N} \right]$$

$$(7) s = \sqrt{\frac{\sum X^2}{N} - (\bar{X})^2}$$

$$(8) s = \frac{1}{N} \sqrt{N \sum X^2 - (\sum X)^2}$$

$$(9) Q = \frac{(Q_3 - Q_1)}{2}$$

$$(10) z\text{-score} = X - \bar{X} / s$$

$$(11) T\text{-score} = 10z + 50$$

$$(12) r = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{[N \sum X^2 - (\sum X)^2][N \sum Y^2 - (\sum Y)^2]}}$$

$$(13) r = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$$

$$(14) r = \frac{\sum z_x z_y}{N}$$

$$(15) r_{pb} = \frac{\bar{X}_y - \bar{X}_t}{s_t} \left(\sqrt{\frac{p}{q}} \right)$$

$$(15) r_{12.3} = \frac{r_{12} - (r_{13}r_{23})}{\sqrt{(1-r_{13}^2)(1-r_{23}^2)}}$$

$$(16) b_{yx} = \frac{\sum XY - [(\sum X)(\sum Y)/N]}{\sum X^2 - [(\sum X)^2/N]}$$

$$(17) a_{yx} = \bar{Y} - b_{yx}\bar{X}$$

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$$(20) s_{xy} = \sqrt{(\sum Y - \bar{Y})^2 / (N-1)}$$

$$(21) \text{student } -t = \frac{r\sqrt{N-2}}{\sqrt{1-r^2}}$$

$$(22) Y' = a + b_1X_1 + b_2X_2 + b_3X_3$$

$$(23) F_{n_1-1, n_2-1} = \frac{S_g^2}{S_l^2}$$

$$(24) t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

$$(25) t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\left(\frac{\sum x_1^2 + \sum x_2^2}{n_1 + n_2 - 2}\right) \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

$$26. \chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

$$27. \text{TOTAL}_{ss} = \sum X^2 - \frac{(\sum X)^2}{n}$$

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$$31. df_t = (n-1)$$

$$32. df_b = (k-1)$$

$$33. df_w = (n-k)$$

$$MS_{SS} = \frac{SS_b}{df_b}$$

$$34. MS_b = \frac{SS_w}{df_w}$$

$$35. F = \frac{MS_b}{MS_w}$$

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APPENDIX A

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