

# UNIVERSITY OF ESWATINI



FACULTY OF EDUCATION

DEPARTMENT OF EDUCATIONAL FOUNDATIONS AND MANAGEMENT  
FACULTY OF EDUCATION AND THE INSTITUTE OF DISTANCE  
EDUCATION FULL TIME AND PART TIME PROGRAMMES

SUPPLEMENTRY EXAMINATION PAPER- JULY 2019

BACHELOR OF EDUCATION (B.Ed.) III Full-Time  
BACHELOR OF EDUCATION (B.Ed.) III Part-Time

COURSE CODE: EFM 314/EDF322

COURSE TITLE: EDUCATIONAL RESEARCH

TIME ALLOWED: THREE (3) HOURS

INSTRUCTIONS:

1. THIS PAPER IS OF TWO SECTIONS (A AND B).
2. ANSWER QUESTION **ONE** AND ANY OTHER **ONE** IN SECTION A WITH A TOTAL OF 50MARKS
3. ANSWER ANY **TWO** QUESTIONS IN SECTION B WITH A TOTAL OF 50MARKS
4. MAKE USE OF THE ATTACHED STATISTICAL FORMULAS AND TABLES WHERE NECESSARY

TOTAL MARKS: 100

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

## SECTION A

1a. Explain any four out of the following concepts listed below as it is applicable to research proposal in education:

- i. Research design
- ii. Literature review
- iii. Ethical considerations
- iv. Population
- v. Research questions
- vi. Problem statement

**(5 marks for each explanation =20marks)**

b. Explain any two methods for selecting samples from target population  
**(10 marks)**

**Total = 30 Marks**

2. Differentiate between the following pairs of research concepts

- a. "Null hypothesis" and "Alternative hypothesis" **(10 marks)**
- b. "Primary data" and "Secondary data" in educational research **(10 marks)**

**Total = 20 Marks**

3. Discuss any four research instruments suitable for collecting data when conducting educational research  
**Total = 20 marks**

### SECTION B

4. The following set of scores presented in Table 1 were obtained by students in Measurement and Evaluation test.

Table 1: students' scores in Measurement and Evaluation test

Scores	10	15	20	25	30	35	40
Frequency (F)	2	2	5	12	15	3	1

Use the data in Table 1 to:

- a. Construct a frequency distribution Table to show the following features:  
Cumulative frequency (Cf),  $\sum fx$ ,  $\sum f(X - \bar{X})^2$  **(16marks)**
- b. Compute the mean value of the scores **(3marks)**
- c. Calculate the standard deviation of the scores obtained by the students in Measurement and Evaluation **(6marks)**

**Total = 25 Marks**

5. A class teacher wanted to find out the degree of relationship between students' achievement in Physics practical and Chemistry practical. The scores obtained by the same set of students are as follows

Table 2: Students scores in Physics practical and Chemistry practical

Physics practical	32	20	35	24	27	28	31	33	26	41
Chemistry practical	41	35	34	40	33	42	37	42	30	43

Use the information in Table 2 to:

- a. Compute the mean score for "Physics practical" **(4marks)**
- b. If the mean score for chemistry is 37.7, in which of the practical's did the students perform better **(2 marks)**
- c. Compute the correlation coefficient value for the two sets of scores using Spearman's Rank formula **(16 marks)**
- d. State if there is relationship between the performances of students in Chemistry practical achievement test **(3marks)**

**Total = 25 Marks**

6. In a survey research, a group of students were classified by personality and colour preference as presented in Table 3.

Table 3: Personality and colour preference

Personality	Colour Preference			
	Red	Yellow	Green	Blue
Introvert	10	3	15	22
Extrovert	90	17	25	18

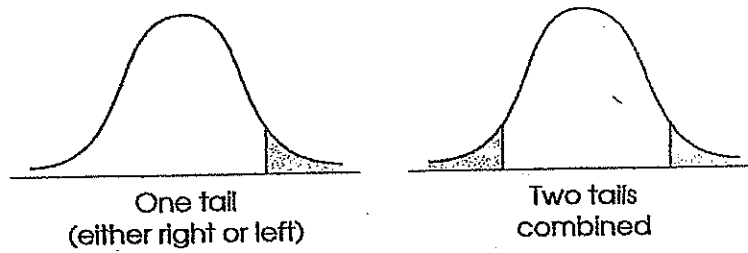
Use the information in Table 3 to:

- Calculate the chi-square value **(19marks)**
- Find degree of freedom (df) for the distribution **(3 marks)**
- Test whether or not there is significant predicable relationship between personality and colour preference **(3 marks)**

**Total = 25 Marks**

TABLE B.2 THE  $t$  DISTRIBUTION

Table entries are values of  $t$  corresponding to proportions in one tail or in two tails combined.



df	Proportion in One Tail					
	0.25	0.10	0.05	0.025	0.01	0.005
	Proportion in Two Tails Combined					
	0.50	0.20	0.10	0.05	0.02	0.01
1	1.000	3.078	6.314	12.706	31.821	63.657
2	0.816	1.886	2.920	4.303	6.965	9.925
3	0.765	1.638	2.353	3.182	4.541	5.841
4	0.741	1.533	2.132	2.776	3.747	4.604
5	0.727	1.476	2.015	2.571	3.365	4.032
6	0.718	1.440	1.943	2.447	3.143	3.707
7	0.711	1.415	1.895	2.365	2.998	3.499
8	0.706	1.397	1.860	2.306	2.896	3.355
9	0.703	1.383	1.833	2.262	2.821	3.250
10	0.700	1.372	1.812	2.228	2.764	3.169
11	0.697	1.363	1.796	2.201	2.718	3.106
12	0.695	1.356	1.782	2.179	2.681	3.055
13	0.694	1.350	1.771	2.160	2.650	3.012
14	0.692	1.345	1.761	2.145	2.624	2.977
15	0.691	1.341	1.753	2.131	2.602	2.947
16	0.690	1.337	1.746	2.120	2.583	2.921
17	0.689	1.333	1.740	2.110	2.567	2.898
18	0.688	1.330	1.734	2.101	2.552	2.878
19	0.688	1.328	1.729	2.093	2.539	2.861
20	0.687	1.325	1.725	2.086	2.528	2.845
21	0.686	1.323	1.721	2.080	2.518	2.831
22	0.686	1.321	1.717	2.074	2.508	2.819
23	0.685	1.319	1.714	2.069	2.500	2.807
24	0.685	1.318	1.711	2.064	2.492	2.797
25	0.684	1.316	1.708	2.060	2.485	2.787
26	0.684	1.315	1.706	2.056	2.479	2.779
27	0.684	1.314	1.703	2.052	2.473	2.771
28	0.683	1.313	1.701	2.048	2.467	2.763
29	0.683	1.311	1.699	2.045	2.462	2.756
30	0.683	1.310	1.697	2.042	2.457	2.750
40	0.681	1.303	1.684	2.021	2.423	2.704
60	0.679	1.296	1.671	2.000	2.390	2.660
120	0.677	1.289	1.658	1.980	2.358	2.617
$\infty$	0.674	1.282	1.645	1.960	2.326	2.576

Table III of R. A. Fisher and F. Yates, *Statistical Tables for Biological, Agricultural and Medical Research*, 6th ed. London: Longman Group Ltd., 1974 (previously published by Oliver and Boyd Ltd., Edinburgh). Adapted and reprinted with permission of the Addison Wesley Longman Publishing Co.

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STATISTICAL FORMULAE

$$\text{Variance } (S^2) = \frac{\sum f(X - \bar{X})^2}{\sum f}$$

$$\text{Variance } (S^2) = \frac{\sum (X - \bar{X})^2}{N - 1}$$

$$\text{Standard deviation (SD)} = \sqrt{\frac{\sum f(X - \bar{X})^2}{\sum f}}$$

$$\text{SD} = \sqrt{\frac{\sum (X - \bar{X})^2}{N - 1}}$$

$$\text{Z-score} = \frac{(X - \bar{X})}{SD}$$

The Independent-measures t-test =

$$\frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S^2}{n_1} + \frac{S^2}{n_2}}} \quad \text{OR} \quad \frac{M_1 - M_2}{\sqrt{\frac{S^2}{n_1} + \frac{S^2}{n_2}}}$$

$$PPMC(r_{xy}) = \frac{N\sum XY - \sum X\sum Y}{\sqrt{\{N\sum X^2 - (\sum X)^2\} \{N\sum Y^2 - (\sum Y)^2\}}}$$

$$\text{Spearman's Rank } (r_s) = 1 - \frac{6\sum D^2}{N(N^2 - 1)}$$

$$\text{Chi-square } (\chi^2) = \sum \frac{(f_o - f_e)^2}{f_e}$$

$$f_e = \frac{f_r \times f_c}{N}$$