

UNIVERSITY OF SWAZILAND



INSTITUTE OF POST-GRADUATE STUDIES

DEPARTMENT OF EDUCATIONAL FOUNDATIONS AND MANAGEMENT

NOVEMBER/DECEMBER 2011

FINAL EXAMINATION PAPER

MASTER OF EDUCATION (M.ED.)

COURSE CODE : EDF 650

TITLE OF PAPER : QUANTITATIVE METHODS OF RESEARCH

TIME ALLOWED : THREE (3) HOURS

INSTRUCTIONS : ANSWER ALL QUESTIONS

TOTAL MARKS : 100

SPECIAL CONDITION: SCIENTIFIC CALCULATORS ARE REQUIRED.

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

QUESTION 1

A Lecturer hypothesises that there would be a difference in the performance of students taught using the traditional lecture method and those taught using computer programmed method. She then divided the class into two (2) groups of ten (10) students each and taught them Research Methods and Statistics using the two (2) methods. She then tested them at the end of the semester and obtained the following results:

Lecture Scores	Group	65	60	85	80	55	60	50	75	90	40
Computer Scores	Group	80	100	100	50	70	90	70	70	70	30

- (a) Name and state the hypothesis the lecturer was going to formulate. (3 marks)
- (b) For each set of scores, compute:
- (i) the mean (5 marks)
 - (ii) the variance (10 marks)

Given that

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S^2_1}{N_1} + \frac{S^2_2}{N_2}}}$$

- (i) Find the t value for the variables. (10 marks)
- (ii) Deduce degrees of freedom from the above information. (5 marks)
- (iii) Find critical value of t for a one-tailed test at 0.05 significance level from the statistical table attached at the back. (2 marks)
- (iv) What conclusions would the lecturer reach? (5 marks)

QUESTION 2

Giving examples where applicable, differentiate between:

- (a) Nominal and ordinal scales. (10 marks)
- (b) Parametric and non-parametric statistics. (10 marks)
- (c) Statistic and statistics. (10 marks)

QUESTION 3

- (a) Complete the following frequency distribution table.

Class Interval	Frequency	Exact Upper Limit	Mid-point	Cumulative Frequency
1 - 4	2	-	-	-
5 - 8	6	-	-	-
9 - 12	3	-	-	-
13 - 16	2	-	-	-
17 - 20	4	-	-	-

(15 marks)

- (b) Find the mean for the above grouped data. (5 marks)
- (c) Is it possible to draw a bar graph from the above data? Explain your answer fully. (4 marks)
- (d) State two (2) major differences between bar graphs and histograms. (6 marks)

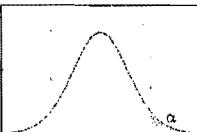
END OF EXAMINATION PAPER

	Smaller p	Larger p	Mean to z	z	Smaller p	Larger p	Mean to z	z	Smaller p	Larger p	Mean to z	z	Smaller p	Larger p	Mean to z	z
1.95	0.02559	0.97441	0.47441	2.6	0.00455	0.99544	0.49534	3.3	0.00048	0.99952	0.49952	4.0	0.00034	0.99966	0.49966	4.7
1.96	0.02500	0.97500	0.47500	2.61	0.00453	0.99547	0.49547	3.4	0.00034	0.99966	0.49966	4.8	0.00023	0.99977	0.49977	4.9
1.97	0.02442	0.97558	0.47558	2.62	0.00440	0.99560	0.49560	3.5	0.00023	0.99977	0.49977	4.9	0.00016	0.99984	0.49984	5.0
1.98	0.02385	0.97615	0.47615	2.63	0.00427	0.99573	0.49573	3.6	0.00016	0.99984	0.49984	5.0	0.00011	0.99989	0.49989	5.1
1.99	0.02330	0.97670	0.47670	2.64	0.00415	0.99585	0.49585	3.7	0.00011	0.99989	0.49989	5.1	0.00007	0.99993	0.49993	5.2
2.00	0.02275	0.97725	0.47725	2.65	0.00402	0.99598	0.49598	3.8	0.00007	0.99993	0.49993	5.2	0.00005	0.99995	0.49995	5.3
2.01	0.02222	0.97778	0.47778	2.66	0.00391	0.99609	0.49609	3.9	0.00005	0.99995	0.49995	5.3	0.00003	0.99997	0.49997	5.4
2.02	0.02169	0.97831	0.47831	2.67	0.00379	0.99621	0.49621	4.0	0.00003	0.99997	0.49997	5.4	0.00002	0.99998	0.49998	5.5
2.03	0.02118	0.97882	0.47882	2.68	0.00368	0.99632	0.49632	4.1	0.00002	0.99998	0.49998	5.5	0.00001	0.99999	0.49999	5.6
2.04	0.02068	0.97932	0.47932	2.69	0.00357	0.99643	0.49643	4.2	0.00001	0.99999	0.49999	5.6				
2.05	0.02018	0.97982	0.47982	2.7	0.00347	0.99653	0.49653	4.3								
2.06	0.01970	0.98030	0.48030	2.71	0.00336	0.99664	0.49664	4.4								
2.07	0.01923	0.98077	0.48077	2.72	0.00326	0.99674	0.49674	4.5								
2.08	0.01876	0.98124	0.48124	2.73	0.00317	0.99683	0.49683	4.6								
2.09	0.01831	0.98169	0.48169	2.74	0.00307	0.99693	0.49693	4.7								
2.1	0.01786	0.98214	0.48214	2.75	0.00298	0.99702	0.49702	4.8								
2.11	0.01743	0.98257	0.48257	2.76	0.00289	0.99711	0.49711	4.9								
2.12	0.01700	0.98300	0.48300	2.77	0.00280	0.99720	0.49720	5.0								
2.13	0.01659	0.98341	0.48341	2.78	0.00272	0.99728	0.49728	5.1								
2.14	0.01618	0.98382	0.48382	2.79	0.00264	0.99736	0.49736	5.2								
2.15	0.01578	0.98422	0.48422	2.8	0.00256	0.99744	0.49744	5.3								
2.16	0.01539	0.98461	0.48461	2.81	0.00248	0.99752	0.49752	5.4								
2.17	0.01500	0.98500	0.48500	2.82	0.00240	0.99760	0.49760	5.5								
2.18	0.01463	0.98537	0.48537	2.83	0.00233	0.99767	0.49767	5.6								
2.19	0.01426	0.98574	0.48574	2.84	0.00226	0.99774	0.49774	5.7								
2.2	0.01390	0.98610	0.48610	2.85	0.00219	0.99781	0.49781	5.8								
2.21	0.01355	0.98645	0.48645	2.86	0.00212	0.99788	0.49788	5.9								
2.22	0.01321	0.98679	0.48679	2.87	0.00205	0.99795	0.49795	6.0								
2.23	0.01287	0.98713	0.48713	2.88	0.00199	0.99801	0.49801	6.1								
2.24	0.01255	0.98745	0.48745	2.89	0.00193	0.99807	0.49807	6.2								
2.25	0.01222	0.98778	0.48778	2.9	0.00187	0.99813	0.49813	6.3								
2.26	0.01191	0.98809	0.48809	2.91	0.00181	0.99819	0.49819	6.4								
2.27	0.01160	0.98840	0.48840	2.92	0.00175	0.99825	0.49825	6.5								
2.28	0.01130	0.98870	0.48870	2.93	0.00169	0.99831	0.49831	6.6								
2.29	0.01101	0.98899	0.48899	2.94	0.00164	0.99836	0.49836	6.7								
2.3	0.01072	0.98928	0.48928	2.95	0.00159	0.99841	0.49841	6.8								
2.31	0.01044	0.98956	0.48956	2.96	0.00154	0.99846	0.49846	6.9								
2.32	0.01017	0.98983	0.48983	2.97	0.00149	0.99851	0.49851	7.0								
2.33	0.00990	0.99010	0.49010	2.98	0.00144	0.99856	0.49856	7.1								
2.34	0.00964	0.99036	0.49036	2.99	0.00139	0.99861	0.49861	7.2								
2.35	0.00939	0.99061	0.49061	3	0.00135	0.99865	0.49865	7.3								
2.36	0.00914	0.99085	0.49085	3.01	0.00131	0.99869	0.49869	7.4								
2.37	0.00889	0.99111	0.49111	3.02	0.00126	0.99874	0.49874	7.5								
2.38	0.00866	0.99134	0.49134	3.03	0.00122	0.99878	0.49878	7.6								
2.39	0.00842	0.99158	0.49158	3.04	0.00118	0.99882	0.49882	7.7								
2.4	0.00820	0.99180	0.49180	3.05	0.00114	0.99886	0.49886	7.8								
2.41	0.00798	0.99202	0.49202	3.06	0.00111	0.99889	0.49889	7.9								
2.42	0.00776	0.99224	0.49224	3.07	0.00107	0.99893	0.49893	8.0								
2.43	0.00755	0.99245	0.49245	3.08	0.00104	0.99896	0.49896	8.1								
2.44	0.00734	0.99266	0.49266	3.09	0.00100	0.99899	0.49899	8.2								
2.45	0.00714	0.99286	0.49286	3.1	0.00097	0.99903	0.49903	8.3								
2.46	0.00695	0.99305	0.49305	3.11	0.00094	0.99906	0.49906	8.4								
2.47	0.00676	0.99324	0.49324	3.12	0.00090	0.99910	0.49910	8.5								
2.48	0.00657	0.99343	0.49343	3.13	0.00087	0.99913	0.49913	8.6								
2.49	0.00639	0.99361	0.49361	3.14	0.00084	0.99916	0.49916	8.7								
2.5	0.00621	0.99379	0.49379	3.15	0.00082	0.99918	0.49918	8.8								
2.51	0.00604	0.99396	0.49396	3.16	0.00079	0.99921	0.49921	8.9								
2.52	0.00587	0.99413	0.49413	3.17	0.00076	0.99924	0.49924	9.0								
2.53	0.00570	0.99430	0.49430	3.18	0.00074	0.99926	0.49926	9.1								
2.54	0.00554	0.99446	0.49446	3.19	0.00071	0.99928	0.49928	9.2								
2.55	0.00539	0.99461	0.49461	3.2	0.00069	0.99931	0.49931	9.3								
2.56	0.00523	0.99477	0.49477	3.21	0.00066	0.99934	0.49934	9.4								
2.57	0.00508	0.99492	0.49492	3.22	0.00064	0.99936	0.49936	9.5								
2.58	0.00494	0.99506	0.49506	3.23	0.00062	0.99938	0.49938	9.6								
2.59	0.00480	0.99520	0.49520	3.24	0.00060	0.99940	0.49940	9.7								

All values calculated by the authors of this text.



Table A1.2: *t*-table – values of the *t* distribution for varying degrees of freedom (df) and α

α for two-tailed test	0.001	0.01	0.02	0.05	0.1	0.2	0.3
α for one-tailed test	0.0005	0.005	0.01	0.025	0.05	0.1	0.15
							
1	636.5776	63.6559	31.8210	12.7062	6.3137	3.0777	1.9626
2	31.5998	9.9250	6.9645	4.3027	2.9200	1.8856	1.3862
3	12.9244	5.8408	4.5407	3.1824	2.3534	1.6377	1.2498
4	8.6101	4.6041	3.7469	2.7765	2.1318	1.5332	1.1896
5	6.8685	4.0321	3.3649	2.5706	2.0150	1.4759	1.1558
6	5.9587	3.7074	3.1427	2.4469	1.9432	1.4398	1.1342
7	5.4081	3.4995	2.9929	2.3646	1.8946	1.4149	1.1192
8	5.0414	3.3554	2.8965	2.3060	1.8595	1.3968	1.1081
9	4.7809	3.2498	2.8214	2.2622	1.8331	1.3830	1.0997
10	4.5868	3.1693	2.7638	2.2281	1.8125	1.3722	1.0931
11	4.4369	3.1058	2.7181	2.2010	1.7959	1.3634	1.0877
12	4.3178	3.0545	2.6810	2.1788	1.7823	1.3562	1.0832
13	4.2209	3.0123	2.6503	2.1604	1.7709	1.3502	1.0795
14	4.1403	2.9768	2.6245	2.1448	1.7613	1.3450	1.0763
15	4.0728	2.9467	2.6025	2.1315	1.7531	1.3406	1.0735
16	4.0149	2.9208	2.5835	2.1199	1.7459	1.3368	1.0711
17	3.9651	2.8982	2.5669	2.1098	1.7396	1.3334	1.0690
18	3.9217	2.8784	2.5524	2.1009	1.7341	1.3304	1.0672
19	3.8833	2.8609	2.5395	2.0930	1.7291	1.3277	1.0655
20	3.8496	2.8453	2.5280	2.0860	1.7247	1.3253	1.0640
21	3.8193	2.8314	2.5176	2.0796	1.7207	1.3232	1.0627
22	3.7922	2.8188	2.5083	2.0739	1.7171	1.3212	1.0614
23	3.7676	2.8073	2.4999	2.0687	1.7139	1.3195	1.0603
24	3.7454	2.7970	2.4922	2.0639	1.7109	1.3178	1.0593
25	3.7251	2.7874	2.4851	2.0595	1.7081	1.3163	1.0584
26	3.7067	2.7787	2.4786	2.0555	1.7056	1.3150	1.0575
27	3.6895	2.7707	2.4727	2.0518	1.7033	1.3137	1.0567
28	3.6739	2.7633	2.4671	2.0484	1.7011	1.3125	1.0560
29	3.6595	2.7564	2.4620	2.0452	1.6991	1.3114	1.0553
30	3.6460	2.7500	2.4573	2.0423	1.6973	1.3104	1.0547
31	3.6335	2.7440	2.4528	2.0395	1.6955	1.3095	1.0541
32	3.6218	2.7385	2.4487	2.0369	1.6939	1.3086	1.0535
33	3.6109	2.7333	2.4448	2.0345	1.6924	1.3077	1.0530
34	3.6007	2.7284	2.4411	2.0322	1.6909	1.3070	1.0525
35	3.5911	2.7238	2.4377	2.0301	1.6896	1.3062	1.0520
36	3.5821	2.7195	2.4345	2.0281	1.6883	1.3055	1.0516
37	3.5737	2.7154	2.4314	2.0262	1.6871	1.3049	1.0512
38	3.5657	2.7116	2.4286	2.0244	1.6860	1.3042	1.0508
39	3.5581	2.7079	2.4258	2.0227	1.6849	1.3036	1.0504
40	3.5510	2.7045	2.4233	2.0211	1.6839	1.3031	1.0500
45	3.5203	2.6896	2.4121	2.0141	1.6794	1.3007	1.0485
50	3.4960	2.6778	2.4033	2.0086	1.6759	1.2987	1.0473
55	3.4765	2.6682	2.3961	2.0040	1.6730	1.2971	1.0463
60	3.4602	2.6603	2.3901	2.0003	1.6706	1.2958	1.0455
100	3.3905	2.6259	2.3642	1.9840	1.6602	1.2901	1.0418
1000	3.3002	2.5807	2.3301	1.9623	1.6464	1.2824	1.0370