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(*University of Choice*)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

UNIVERSITY EXAMINATIONS
2022/2023 ACADEMIC YEAR
FIRST YEARS SECOND SEMESTER EXAMINATIONS

FOR THE DEGREE OF
MASTER OF EDUCATION IN PHILOSOPHY OF EDUCATION

COURSE CODE: **EDF 804**

COURSE TITLE: **COMPUTER APPLICATION IN RESEARCH**

DATE: Wednesday 12th April 2023 **TIME:** 8:00 - 11:00am

INSTRUCTIONS TO CANDIDATES

Answer four (4) questions.

MMUST observes ZERO tolerance to examination cheating

1a) Describe the steps of hypotheses testing (5mks)
b) Analysis the challenges facing researchers in Kenya (5mks)
c) Discuss the advantages of Nonparametric Tests (5mks)

2. Suppose we have the following dataset that shows the number of hours studied and the exam score received by 20 students:

SNO	HRS	SCORE
1	0	67
2	0	78
3	1	72
4	1	74
5	1	89
6	1	71
7	1	76
8	2	80
9	2	75
10	3	85
11	3	86
12	3	89
13	3	94
14	3	88
15	4	90
16	4	93
17	4	80
18	5	81
19	5	88
20	6	94

Find & Interpret

i) Regression equation
ii) R-Squared in R
iii) If I study for 2.5 hours what would be my score? (15mks)

3. Do identical twins, separated at birth and raised by different families, show similar IQ scores? Below are IQ scores for twins. (15mks)

IQ Scores	
Twin A	**Twin B**
103	107
92	90
108	105
129	128
114	112
121	118
86	90

4) In an intelligence test administered to 100 children, the mean of the test was 100 and standard deviation 20.

i) Find the number of children exceeding a score of 125. (5mks)

ii) Suppose 5% of the lower end of the distribution is to be selected for an enrichment program, what should be the cut off mark? (10mks)

5. A researcher in a survey wanted to find out whether views on abortion were dependent **on age of an individual. Polling were conducted** amongst senior citizens and teenagers on whether they were pro-life or pro-choice when it comes to abortion issues. The results of the survey are as follows

	Pro-life	Pro-choice	Total
seniors	196	199	395
Teenagers	239	249	488
Total	435	448	883

Test whether an individual's opinion regarding abortion is independent of age at 5 % level of significance. (15mks)

THE CRITICAL TABLES

Table 1.1 Table of the chi square distribution

		Table 1.1 Table of the chi square distribution							
				Level of Significance ®					
df	0.200	0.100	0.075	0.050	0.025	0.010	0.005	0.001	0.0005
1	1.642	2.706	3.170	3.841	5.024	6.635	7.879	10.828	12.116
2	3.219	4.605	5.181	5.991	7.378	9.210	10.597	13.816	15.202
3	4.642	6.251	6.905	7.815	9.348	11.345	12.838	16.266	17.731
4	5.989	7.779	8.496	9.488	11.143	13.277	14.860	18.467	19.998
5	7.289	9.236	10.008	11.070	12.833	15.086	16.750	20.516	22.106
6	8.558	10.645	11.466	12.592	14.449	16.812	18.548	22.458	24.104
7	9.803	12.017	12.883	14.067	16.013	18.475	20.278	24.322	26.019
8	11.030	13.362	14.270	15.507	17.535	20.090	21.955	26.125	27.869
9	12.242	14.684	15.631	16.919	19.023	21.666	23.589	27.878	29.667
10	13.442	15.987	16.971	18.307	20.483	23.209	25.188	29.589	31.421
11	14.631	17.275	18.294	19.675	21.920	24.725	26.757	31.265	33.138
12	15.812	18.549	19.602	21.026	23.337	26.217	28.300	32.910	34.822
13	16.985	19.812	20.897	22.362	24.736	27.688	29.820	34.529	36.479
14	18.151	21.064	22.180	23.685	26.119	29.141	31.319	36.124	38.111
15	19.311	22.307	23.452	24.996	27.488	30.578	32.801	37.698	39.720
16	20.465	23.542	24.716	26.296	28.845	32.000	34.267	39.253	41.309

Statistical Table 1.2 Spearman's rank-order correlation coefficient (r_s): Critical values of r_s for one- and two-tailed tests **(r_s is significant if it equals or exceeds the table value)**

N(num of pairs)	level of significance for a one-tailed test					
	.10	**.05**	**.025**	**.01**	**.005**	**.001**
	level of significance for a two-tailed test					
	.20	**.10**	**.05**	**.02**	**.01**	**.002**
4	1.0000	1.0000				
5	0.8000	0.9000	1.0000	1.0000		
6	0.6571	0.8286	0.8857	0.9429	1.0000	
7	0.6071	0.7143	0.7857	0.8929	0.9286	1.0000
8	0.5238	0.6429	0.7381	0.8333	0.8810	0.9524
9	0.4833	0.6000	0.6833	0.7667	0.8167	0.9167
10	0.4546	0.5636	0.6485	0.7455	0.7939	0.8788
11	0.4182	0.5273	0.6182	0.7091	0.7546	0.8364
12	0.3986	0.5035	0.5874	0.6713	0.7273	0.8252
13	0.3791	0.4780	0.5604	0.6484	0.7033	0.7967
14	0.3670	0.4637	0.5429	0.6308	0.6791	0.7670
15	0.3500	0.4429	0.5179	0.6036	0.6536	0.7464
16	0.3412	0.4265	0.5000	0.5765	0.6206	0.7294
17	0.3284	0.4167	0.4853	0.5662	0.6177	0.7132
18	0.3189	0.4014	0.4758	0.5542	0.6037	0.6925
19	0.3088	0.3912	0.4579	0.5351	0.5842	0.6737
20	0.2993	0.3805	0.4466	0.5203	0.5684	0.6602

***Source*:** The entries in this table were computed by Pat Dugard, a freelance statistician.

Statistical Table 1.3 Critical values of*t* (*t* **is significant when it equals or exceeds the table value)**

			level of significance for a one-tailed test				
	.10	**.05**	**.025**	**.01**	**.005**	**.001**	**.0005**
			level of significance for a two-tailed test				
df	**.20**	**.10**	**.05**	**.02**	**.01**	**.002**	**.001**
1	3.08	6.31	12.71	31.82	63.66	318.31	636.62
2	1.89	2.92	4.30	6.96	9.92	22.33	31.60
3	1.64	2.35	3.18	4.54	5.84	10.22	12.92
4	1.53	2.13	2.78	3.75	4.60	7.17	8.61
5	1.48	2.02	2.57	3.36	4.03	5.89	6.87
6	1.44	1.94	2.45	3.14	3.71	5.21	5.96
7	1.41	1.89	2.36	3.00	3.50	4.79	5.41
8	1.40	1.86	2.31	2.90	3.36	4.50	5.04
9	1.38	1.83	2.26	2.82	3.25	4.30	4.78
10	1.37	1.81	2.23	2.76	3.17	4.14	4.59
11	1.36	1.80	2.20	2.72	3.11	4.03	4.44
12	1.36	1.78	2.18	2.68	3.05	3.93	4.32
13	1.35	1.77	2.16	2.65	3.01	3.85	4.22
14	1.35	1.76	2.14	2.62	2.98	3.79	4.14
15	1.34	1.75	2.13	2.60	2.95	3.73	4.07
16	1.34	1.75	2.12	2.58	2.92	3.69	4.02
17	1.33	1.74	2.11	2.57	2.90	3.65	3.97
18	1.33	1.73	2.10	2.55	2.88	3.61	3.92
19	1.33	1.73	2.09	2.54	2.86	3.58	3.88
20	1.33	1.72	2.09	2.53	2.85	3.55	3.85
21	1.32	1.72	2.08	2.52	2.83	3.53	3.82
22	1.32	1.72	2.07	2.51	2.82	3.51	3.79
23	1.32	1.71	2.07	2.50	2.81	3.49	3.77
24	1.32	1.71	2.06	2.49	2.80	3.47	3.75
25	1.32	1.71	2.06	2.49	2.79	3.45	3.73
26	1.31	1.71	2.06	2.48	2.78	3.44	3.71
27	1.31	1.70	2.05	2.47	2.77	3.42	3.69
28	1.31	1.70	2.05	2.47	2.76	3.41	3.67
29	1.31	1.70	2.05	2.46	2.76	3.40	3.66
30	1.31	1.70	2.04	2.46	2.75	3.39	3.65
40	1.30	1.68	2.02	2.42	2.70	3.31	3.55
60	1.30	1.67	2.00	2.39	2.66	3.23	3.46
120	1.29	1.66	1.98	2.36	2.62	3.16	3.37
2000	1.28	1.65	1.96	2.33	2.58	3.09	3.30

***Source*:** The entries in this table were computed by Pat Dugard, a freelance statistician.For an independent groups (between Ss) test, ***df*=*N*− 2** (where *N* is the total number of scores in both groups)

For a related (within Ss or matched pairs) test, ***df*=*N*− 1** (where *N* is the number of pairs of scores)

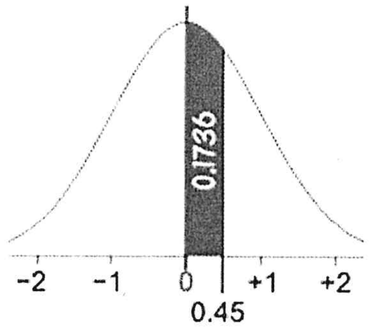
Table 1.4: Standard normal curve area table

The areas under the standard normal curve corresponding to distances on the baseline between the mean and each z

	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
0.7	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990

The table shows the area from 0 to Z. Instead of one LONG table, we have put the "**0.1**"s running down, then the "**0.01**"s running along. (Example of how to use is below)

Example: Percent of Population between 0 and 0.45



Start at the row for 0.4, and read along until 0.45: there is the value 0.1736
And 0.1736 is **17.36%.** So 17.36% of the population is between 0 and 0.45 Standard Deviations from the Mean.