



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF HEALTH AND APPLIED SCIENCES

DEPARTMENT OF MATHEMATICS AND STATISTICS

QUALIFICATION: Diploma in Business Process Management	
QUALIFICATION CODE: 06DBPM	LEVEL: 5
COURSE CODE: BST611C	COURSE NAME: BASIC STATISTICS
SESSION: NOVEMBER 2018	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 90

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
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MODERATOR:	Mr. R. Mumbuu

INSTRUCTIONS
<ol style="list-style-type: none">1. Answer ALL the questions in the booklet provided.2. Show clearly all the steps used in the calculations.3. All written work must be done in blue or black ink and sketches must be done in pencil.

PERMISSIBLE MATERIALS

1. Non-programmable calculator without a cover.

ATTACHMENTS

1. Standard Normal Distribution Table

THIS QUESTION PAPER CONSISTS OF 4 PAGES (Including this front page)

QUESTION 1 [22]

For each of the following random variables, determine whether the variable is **categorical or numerical**. If the variable is numerical, determine whether the phenomenon of interest is **discrete or continuous**.

- 1.1) Number of telephones per household (2)
- 1.2) Type of telephone primarily used (2)
- 1.3) Number of long –distance calls made per month (2)
- 1.4) Length (in minutes) of long –distance call made per month (2)
- 1.5) Colour of telephone primarily used (2)
- 1.6) Monthly charge (in dollars and cents) for long-distance calls made (2)
- 1.7) Ownership of a cellular phone (2)
- 1.8) Number of local calls made per month (2)
- 1.9) Length (in minutes) of longest local call per month (2)
- 1.10) Whether there is a telephone line connected to a computer modem in the household (2)
- 1.11) Whether there is a fax machine in the household (2)

Question 2 [30]

- 2.1) A discrete random variable can be described by the Binomial distribution if it satisfies four conditions. State any four of these conditions. (4)
- 2.2) A marketing research survey shows that approximately 80% of car owners indicate that their next car purchase would be an automatic car. If 5 prospective buyers are interviewed, determine the probability that:
 - 2.2.1) All 5 indicate that their next car will be an automatic car. (5)
 - 2.2.2) At most one indicates that his or her next purchase will be an automatic car. (7)
- 2.3) A survey conducted amongst recent graduates from the Namibia University of Science and Technology (NUST) has revealed that it takes on average thirteen weeks with a standard deviation of three weeks to find employment. Assume that the time taken for newly graduates to find employment is normally distributed.
 - 2.3.1) State four properties of the normal probability distribution function. [4]

2.3.2) What is the probability that it will take a newly graduate between thirteen and seventeen weeks to find employment? [5]

2.3.3) What is the probability that it will take a newly graduate between fourteen and eighteen weeks to find employment? [5]

QUESTION 3 [20]

The data below shows the weekly spending money (N\$) for a random sample of six children

(85 ; 120 ; 70 ; 55 ; 150 ; 95) N\$

Use the data provided to find the following:

3.1) The modal weekly spending money (N\$) (2)

- a) 95 b) 100 c) 90 d) none of the provided

3.2) The median weekly spending money (N\$) (3)

- a) 95.8 b) 70 c) 90 d) none of the provided

3.3) The range of the weekly spending money (N\$) (3)

- a) 100 b) 95 c) 90 d) none of the provided

3.4) The first quartile of the weekly spending money (N\$) (3)

- a) 70 b) 120 c) 85 d) none of the provided

3.5) The third quartile of the weekly spending money (N\$) (3)

- a) 50 b) 150 c) 120 d) none of the provided

3.6) The inter-quartile range for the weekly spending money (N\$) (3)

- a) 70 b) 50 c) 95 d) none of the provided

- 3.7) The quartile deviation for the weekly spending money (N\$) (3)
- a) 95 b) 100 c) 90 d) none of the provided

QUESTION 4 [18]

Two thousand randomly selected adults were asked whether or not they have ever shopped on the internet. The following table gives a two way classification of the responses.

	Shopped	Never Shopped
Male	400	800
Female	350	450

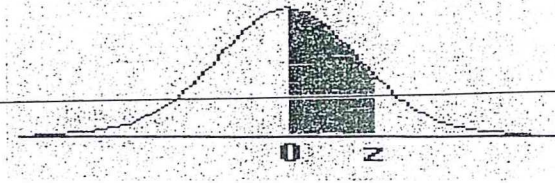
(N.B: to earn marks you must show full working, step by step, leading to the answer)

If one adult is selected at random from these 2000 adults, find the probability that this adult

- 4.1) Has never shopped on the Internet [3]
- 4.2) Is a male [3]
- 4.3) Has shopped on the Internet given that this adult is a female [5]
- 4.4) Is a male given that this adult has never shopped on the Internet [5]
- 4.5) Are the events "shopped" and "male" mutually exclusive? Why or why not? [2]

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APPENDIX C: The Standard Normal Distribution



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