

PAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Faculty of Health, Applied Sciences and Natural Resources

Department of Mathematics and Statistics

QUALIFICATIONS: B. Business Admin, B. Marketing, B. Human Resource Management, B. Public Management and B. Logistics and Supply Chain Management	
QUALIFICATION CODES: 21BBAD / 07BMAR / 07BHR / 24BPN / 07BLSM	LEVEL: 6
COURSE: BASIC BUSINESS STATISTICS 1A	COURSE CODE: BBS111S
DATE: JULY 2022	SESSION: 2
DURATION: 3 HOURS	MARKS: 100

SUPPLEMENTARY/SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	MR EM MWAHI, MR S KASHIHALWA, DR G DIBABA, MR J AMUNYELA, MR G TAPEDZESA, DR J MWANYEKANGE, MR A ROUX
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THIS QUESTION PAPER CONSISTS OF 6 PAGES

(Including this front page)

INSTRUCTIONS

1. Answer all the questions and number your solutions correctly.
2. **Question 1** of this question paper entails multiple choice questions with options A to D. Write down the letter corresponding to the best option for each question.
3. For **Question 2 & 3** you are required to show clearly all the steps used in the calculations.
4. All written work **MUST** be done in blue or black ink.
5. Untidy/ illegible work will attract no marks.

PERMISSIBLE MATERIALS

1. Non-Programmable Calculator without the cover

ATTACHMENTS

1. Standard normal Z-table

QUESTION 1 [30 MARKS]

Write down the letter corresponding to the best answer for each question.

1.1 If you have a digital scale in your home that only reads in integers, is your weight a discrete variable? [2]

- A. It depends on the accuracy of the scale.
- B. It depends on your weight.
- C. No because weight is still a continuous variable regardless of the ability to measure it.
- D. Yes because the scale reports integers.

1.2 A student goes to the library. The probability that she checks out (a) a work of fiction is 0.40, (b) a work of non-fiction is 0.30, and (c) both fiction and non-fiction is 0.20. What is the probability that the student checks out a work of fiction, non-fiction, or both? [2]

- A. 0.50 B. 0.70 C. 0.40 D. 0.60

1.3 The number of adults living in homes on a randomly selected city block is described by the following probability distribution.

Number of adults	1	2	3	4 or more
Probability	0.25	0.5	0.15	???

What is the probability that 4 or more adults reside at a randomly selected home? [2]

- A. 0.10 B. 0.9 C. 0.35 D. 0.65

1.4 If two events are collectively exhaustive, what is the probability that both occur at the same time? [2]

- A. 0
- B. 0.50
- C. 1.00
- D. Cannot be determined from the information given

- 1.11 Which of the following variables gives you continuous data? [2]
A. Gender B. Height C. Number of people D. None
- 1.12 A student is chosen at random from a class of 5 girls and 20 boys. What is the probability that the student chosen is a boy? [2]
A. 0.8 B. 0.20 C. 0.50 D. 0
- 1.13 Fill in the blank to make the following sentence true. "The _____ of a particular outcome is the number of times it occurs within a specific sample of a population." [2]
A. Frequency B. Variance
C. Mean deviation D. Distribution
- 1.14 Primary data are collected by: [2]
A. Primary school children B. People doing it for the first time
C. The actual people who will be using it D. Mainly elderly people
- 1.15 Measures of variation include: [2]
A. mean, range and skewness
B. mean, median, mode and range
C. range, variance and standard deviation
D. mean, median, mode and variance

QUESTION 2 [26 MARKS]

2.1 Twenty first graders were asked which colour they liked best - red, green, or blue. Their responses appear below:

red, green, green, blue, red, blue, red, red, blue, red, red, blue, red, red, blue, red, blue, green, green, red

2.1.1 Construct a frequency distribution table for the data. [6]

2.1.2. What percentage of grades liked colour red or blue? [2]

2.2 A restaurant owner randomly selected and recorded the value of meals enjoyed by 15 diners on a given day. The values of meals in N\$ were:

25 80 34 26 65 28 25 39 25
30 34 25 28 40 32

2.2.1 Calculate the mean. [3]

2.2.2 Find the median. [3]

2.2.3 Find the mode. [1]

2.3 The human resource department of a company analysed the level of absenteeism of 56 employees who reported ill over the past year.

Absenteeism level	Number of employees (f_i)
3 - < 7	14
7 - < 11	22
11 - < 15	11
15 - < 19	6
19-<23	3

2.3.1 Calculate the mean level of absenteeism. [3]

2.3.2 Compute the variance. [4]

2.3.3 Calculate the modal level of absenteeism. [4]

QUESTION 3 [44 MARKS]

3.1 There are 12 boys and 9 girls in a class. The teacher chooses two students at random.

3.1.1 Construct a probability tree diagram of the problem. [4]

3.1.2 What is the probability that the teacher picks a boy and a girl? [3]

3.1.3 What is the probability that the teacher chooses two students of the same sex? [3]

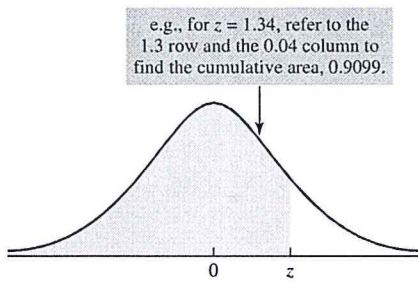
- 3.2 A company has 1 000 credit customers. They are classified according to the *size* of the *account balance* and the *timeliness* of their payments. The following table shows some of the number of customers being in various categories.

Last payment	Account balance			Total
	<N\$100	N\$100 to N\$500	>N\$500	
On time	.....	450	.....	850
Late	.....	.....	30	.....
Total	200	500	.....	.....

- 3.2.1 Copy the table and fill in all the missing numbers [7]
- 3.2.2 How many customers have a balance of less than N\$100 or made their last payment late? [3]
- 3.3 Among Namibian registered voters, 30% are RDP, 50% are SWAPO, and 20% are Others. The percentages that support (S) the president among these groups are respectively 0.10, 0.80 and 0.20.
- 3.3.1 If a person is picked at random, what is the probability that he/she support (S) the president? [5]
- 3.3.2 If one supports the president, what is the chance that he/she is SWAPO? [4]
- 3.4 A company which supplies ready-mix concrete receives, on average, 6 orders per day.
- 3.4.1 What is the probability that on a given day, no order will be received? [3]
- 3.4.2 What is the probability that on a given half-day less than two orders will be received? [4]
- 3.5 The mean mass of 500 kudu at a private game park is known to be normally distributed with a mean of 151 kg and the standard deviation of 15 kg.
- 3.5.1 How many kudu have a mass between 120 kg and 155 kg? [5]
- 3.5.2 How many kudu have a mass more than 185 kg? [3]

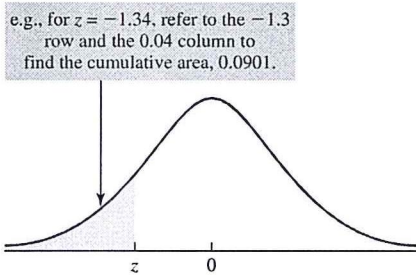
=====END OF EXAMINATION=====

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	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990

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
-3.0	0.0013	0.0013	0.0013	0.0012	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010
-2.9	0.0019	0.0018	0.0018	0.0017	0.0016	0.0016	0.0015	0.0015	0.0014	0.0014
-2.8	0.0026	0.0025	0.0024	0.0023	0.0023	0.0022	0.0021	0.0021	0.0020	0.0019
-2.7	0.0035	0.0034	0.0033	0.0032	0.0031	0.0030	0.0029	0.0028	0.0027	0.0026
-2.6	0.0047	0.0045	0.0044	0.0043	0.0041	0.0040	0.0039	0.0038	0.0037	0.0036
-2.5	0.0062	0.0060	0.0059	0.0057	0.0055	0.0054	0.0052	0.0051	0.0049	0.0048
-2.4	0.0082	0.0080	0.0078	0.0075	0.0073	0.0071	0.0069	0.0068	0.0066	0.0064
-2.3	0.0107	0.0104	0.0102	0.0099	0.0096	0.0094	0.0091	0.0089	0.0087	0.0084
-2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110
-2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143
-2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183
-1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233
-1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294
-1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367
-1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455
-1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559
-1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681
-1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823
-1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985
-1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170
-1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379
-0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611
-0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867
-0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148
-0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451
-0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776
-0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121
-0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483
-0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859
-0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247
-0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641

Source: Cumulative standard normal probabilities generated by Minitab, then rounded to four decimal places.