NAMIBIA UNIVERSITY OF SCIENCE AND TECHNOLOGY | HP-GSB HAROLD PUPKEWITZ Graduate School of Business

FACULTY OF COMMERCE; HUMAN SCIENCES AND EDUCATION

HAROLD PUPKEWITZ GRADUATE SCHOOL OF BUSINESS

QUALIFICATION: DIPLOMA IN BUSINESS PROCESS MANAGEMENT	
QUALIFICATION CODE: 06DBPM	**LEVEL:** 6
COURSE CODE: BBS611C	**COURSE NAME:** BASIC BUSINESS STATISTICS
SESSION: JANUARY 2025	**PAPER:** PAPER 1
DURATION: 3 HOURS	**MARKS:** 90

SECOND OPPORTUNITY / SUPPLEMENTARY EXAMINATION – QUESTION PAPER

EXAMINER(S)	**Mr. A. Roux**
MODERATOR:	**Mr. J. Amunyela**

INSTRUCTIONS

1. Answer ALL the questions.
2. Write clearly and neatly.
3. Number the answers clearly.

PERMISSIBLE MATERIALS

1. Examination paper
2. Examination script
3. Scientific calculator

ATTACHMENTS

1. Standard Normal Probability Distribution Table
2. 1 x A4 Graph Sheet

THIS QUESTION PAPER CONSISTS OF 4 PAGES (INCLUDING THIS FRONT PAGE)

QUESTION 1 [10] – This is a multiple choice question. You only need to write down the letter indicating the answer to your choice to the question

1.1 Which of the following measures of central tendency can reliably be used when dataset has outliers?

a) Mean b) Median c) Mode d) All the above [2]

1.2 A sample is

a) An experiment in the population b) A subset of the population

c) A variable in the population d) An outcome of the population [2]

1.3 A parameter refers to

a) Calculation made from the population b) A measurement that is made from the population

c) A value observed in the experiment d) All of the above [2]

1.4 Weight is a _____ variable

a) Continuous b) Discrete c) Ordinal d) Interval [2]

1.5 Researchers do sampling because of all of the following reasons except

a) Reduce cost b) More time effective c) Sampling is interesting

d) Easy to manage due to manageable logistics requirements [2]

QUESTION 2 [20]

The Headmaster of Orion High School revealed the mathematics results of a Grade 12 class of 2014. The aim was to categorise the learners into five performance categories *A, B, C, D* and *E* respectively. The following table shows data that were collected from 50 learners.

A	C	E	B	D	C	D	B	D	C
D	*B*	*D*	*E*	*C*	*A*	*D*	*C*	*D*	*E*
D	C	A	B	D	C	B	E	C	D
B	*C*	*D*	*C*	*D*	*C*	*E*	*A*	*D*	*C*
C	*B*	*D*	*D*	*B*	*D*	*C*	*E*	*B*	*A*

2.1) Construct the absolute frequency distribution for the data set (10)

2.2) Construct the relative frequency distribution for the data set. (3)

2.3) Construct the bar chart for the absolute frequency distribution. (7)

QUESTION 3 [25]

3.1) The monthly rentals paid by 30 flat tenants (in N$) are

Rent (N$)	Number of Tenants
149.5 --- 249.5	11
249.5 --- 349.5	10
349.5 --- 449.5	4
449.5 --- 549.5	3
549.5 --- 649.5	2

From your frequency distribution table provided above, calculate and interpret the following:

3.1.1) Mean rental paid (5)
3.1.2) The modal rental paid. (5)
3.1.3) The median rental paid. (5)

3.2) The Office of The Bursar at The Namibia University of Science and Technology (NUST) revealed some information regarding method of payment for a group of 2000 students at different levels of study.

	Bursary	**Loan**	**Self**	**Totals**
Certificate	12	379	727	**1118**
Diploma	39	106	642	**787**
Degree	48	20	57	**95**
Totals	**69**	**505**	**1426**	**2000**

3.2.1) Find the probability of randomly selecting one student from this group who pays for him/herself? (2)

3.2.2) Find the probability of randomly selecting one student from this group who has a Diploma or a Degree? (4)

3.2.3) Find the probability of randomly selecting one student from this group who has a Bursary or Degree? (4)

QUESTION 4 [35]

4.1) The Office of the Registrar has revealed that only 12 out of every 20 students graduate. Based upon this assumption, determine the probability that out of a random sample of 5 students

4.1.1) None will graduate (4)
4.1.2) All will graduate. (4)
4.1.3) At most one student will graduate (5)
4.1.4) At least four will graduate (5)

4.2) A local ambulance service handles 0 to 5 service calls on any given day. The probability distribution for the number of service calls is as follows

Number of service calls (x)	Probability, p(x)
0	0.10
1	0.15
2	0.30
3	0.20
4	0.15
5	0.10

4.2.1) Find $P(1 \leq x \leq 3)$ (2)

4.2.2) What is the expected number of service calls? (5)

4.2.3) What is the variance in the number of service calls? (5)

4.2.4) What is the standard deviation? (2)

4.2.5) What is the coefficient of variation in the number of service calls (3)

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Z - Table

The table shows cumulative probabilities for the standard normal curve.

Cumulative probabilities for NEGATIVE z-values are shown first. SCROLL DOWN to the 2nd page for POSITIVE z

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
-3.4	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0002
-3.3	.0005	.0005	.0005	.0004	.0004	.0004	.0004	.0004	.0004	.0003
-3.2	.0007	.0007	.0006	.0006	.0006	.0006	.0006	.0005	.0005	.0005
-3.1	.0010	.0009	.0009	.0009	.0008	.0008	.0008	.0008	.0007	.0007
-3.0	.0013	.0013	.0013	.0012	.0012	.0011	.0011	.0011	.0010	.0010
-2.9	.0019	.0018	.0018	.0017	.0016	.0016	.0015	.0015	.0014	.0014
-2.8	.0026	.0025	.0024	.0023	.0023	.0022	.0021	.0021	.0020	.0019
-2.7	.0035	.0034	.0033	.0032	.0031	.0030	.0029	.0028	.0027	.0026
-2.6	.0047	.0045	.0044	.0043	.0041	.0040	.0039	.0038	.0037	.0036
-2.5	.0062	.0060	.0059	.0057	.0055	.0054	.0052	.0051	.0049	.0048
-2.4	.0082	.0080	.0078	.0075	.0073	.0071	.0069	.0068	.0066	.0064
-2.3	.0107	.0104	.0102	.0099	.0096	.0094	.0091	.0089	.0087	.0084
-2.2	.0139	.0136	.0132	.0129	.0125	.0122	.0119	.0116	.0113	.0110
-2.1	.0179	.0174	.0170	.0166	.0162	.0158	.0154	.0150	.0146	.0143
-2.0	.0228	.0222	.0217	.0212	.0207	.0202	.0197	.0192	.0188	.0183
-1.9	.0287	.0281	.0274	.0268	.0262	.0256	.0250	.0244	.0239	.0233
-1.8	.0359	.0351	.0344	.0336	.0329	.0322	.0314	.0307	.0301	.0294
-1.7	.0446	.0436	.0427	.0418	.0409	.0401	.0392	.0384	.0375	.0367
-1.6	.0548	.0537	.0526	.0516	.0505	.0495	.0485	.0475	.0465	.0455
-1.5	.0668	.0655	.0643	.0630	.0618	.0606	.0594	.0582	.0571	.0559
-1.4	.0808	.0793	.0778	.0764	.0749	.0735	.0721	.0708	.0694	.0681
-1.3	.0968	.0951	.0934	.0918	.0901	.0885	.0869	.0853	.0838	.0823
-1.2	.1151	.1131	.1112	.1093	.1075	.1056	.1038	.1020	.1003	.0985
-1.1	.1357	.1335	.1314	.1292	.1271	.1251	.1230	.1210	.1190	.1170
-1.0	.1587	.1562	.1539	.1515	.1492	.1469	.1446	.1423	.1401	.1379
-0.9	.1841	.1814	.1788	.1762	.1736	.1711	.1685	.1660	.1635	.1611
-0.8	.2119	.2090	.2061	.2033	.2005	.1977	.1949	.1922	.1894	.1867
-0.7	.2420	.2389	.2358	.2327	.2296	.2266	.2236	.2206	.2177	.2148
-0.6	.2743	.2709	.2676	.2643	.2611	.2578	.2546	.2514	.2483	.2451
-0.5	.3085	.3050	.3015	.2981	.2946	.2912	.2877	.2843	.2810	.2776
-0.4	.3446	.3409	.3372	.3336	.3300	.3264	.3228	.3192	.3156	.3121
-0.3	.3821	.3783	.3745	.3707	.3669	.3632	.3594	.3557	.3520	.3483
-0.2	.4207	.4168	.4129	.4090	.4052	.4013	.3974	.3936	.3897	.3859
-0.1	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4286	.4247
0.0	.5000	.4960	.4920	.4880	.4840	.4801	.4761	.4721	.4681	.4641

Cumulative probabilities for POSITIVE z-values are shown below.

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
0.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
0.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
0.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
0.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
0.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
0.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
0.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
0.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
0.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998