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: NOVEMBER 2023	**PAPER:** PAPER 1
DURATION: 3 HOURS	**MARKS:** 90

FIRST OPPORTUNITY 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 6 PAGES (INCLUDING THIS FRONT PAGE)

1.   A numerical value used as a summary measure for a sample, such as sample mean, is known as a
      A. population parameter

      B. sample parameter

      C. sample statistic

      D. population mean

      E. None of the above answers is correct.

2.   If a data set has an even number of observations, the median

      A. can not be determined
      B. is the average value of the two middle items
      C. must be equal to the mean
      D. is the average value of the two middle items when all items are arranged in ascending order
      E. None of the above answers is correct

3.   The standard deviation of a sample of 100 observations equals 64. The variance of the sample equals

      A. 8

      B. 10

      C. 6400

      D. 4096

      E. None of the above answers is correct.

4.   The variance of a sample of 81 observations equals 64. The standard deviation of the sample equals

      A. 0

      B. 4096

      C. 8

      D. 6,561

      E. None of the above answers is correct.

Case 1 : Consider the result of a fictional Stats final exam taken by 155 students, as given in the following relative frequency distribution:

Grade	Less than 50	50-59	60 - 69	70 - 79	80 - 89	90 - 100		
frequency	35	40	30	25	15	10		

5. Refer to Case 1 - How many students received at least a 70 in this exam?

   A. 25

   B. 50

   C. 25

   D. 30

   E. 40

6. Refer to Case 1 - How many students received at most a 59 on this exam?

   A. 10

   B. 45

   C. 75

   D. 40

   E. 66

Case 2 : The following data show the number of hours worked by 200 statistics students.

   Number of Hours Frequency

HOURS	# Students
0 --- 9	40
10 ---- 19	50
20 ---- 29	70
30 ---- 39	40

7.   Refer to Case 2. The class width for this distribution

A. 9

B. 10

C. 11

D. varies from class to class

E. None of the above answers is correct.

8.   Refer to Case 2. The number of students working 19 hours or less

A. 40

B. 50

C. 90

D. can not be determined without the original data

E. None of the above answers is correct.

9.   Refer to Case 2. The relative frequency of students working 9 hours or less

A. 0.2

B. 0.45

C. 40

D. can not be determined from the information given

E. None of the above answers is correct.

10.   Refer to Case 2. The cumulative relative frequency for the class of 10 - 19

A. 90

B. 0.25

C. 0.45

D. can not be determined from the information given

E. None of the above answers is correct.

QUESTION   2   [16]

The distance traveled (in kilometers) by a courier service motorcycle on 30 trips were recorded by the driver.

224	219	221	227	220	217	217	232	222	226
218	213	223	230	210	213	218	222	234	216
218	223	215	219	228	225	225	220	217	215

2.1)   Use the data provided above to construct a frequency distribution table with 210 as the lower limit of your first class interval and a constant width of four (4) units for all intervals.   (8)

2.2)   Construct a histogram and a polygon of the frequency distribution,   (8)

QUESTION   3   [24]

The Namibian Agricultural Union compiled a record of rainfall recorded over 56 farms over the past three months. The information is displayed in the table below:

Rainfall (mm)	Number of farms
3-<7	12
7-<11	24
11-<15	14
15-<19	9
19-<23	1

3.1   Find the mean rainfall   [5]

3.2   Find the median rainfall   [6]

3.2   Find the modal rainfall   [6]

3.4   Standard deviation in the rainfall   (7)

QUESTION   4   [30]

4.1)   Pulse rates of adult men are approximately normally distributed with a mean of 70 and a standard deviation of 8. What is the probability of selecting **only one** man with pulse rate of …..

4.1.1) 74.9 and higher   (4)

4.1.2) 64.1 and lower   (4)

4.1.3) 82.3 and lower   (4)

4.1.4) What is the probability that the average pulse rate for a sample of **four** men will be between 66.8 and 72.7 (inclusive)   (8)

4.2)   Three airlines serve a small town. Airline A has 50% of all the scheduled flights, where-as airline B has 30% and airline C has the remaining 20% of all scheduled flights. Their on-time rates are 80%, 65% and 40% respectively. An airplane has just left on time.

Let A={airline A}, B={airline B}, C={airline C}.
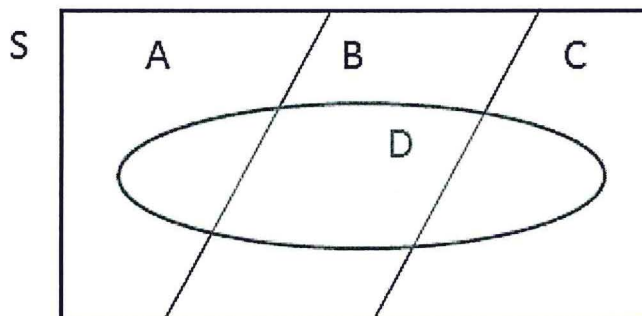
4.2.1) What is the probability that an airplane has left on time?   (6)

4.2.2) If an airplane left on time what is the probability that it belonged to airline A (4)

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

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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