

UGANDA MARTYRS UNIVERSITY

FACULTY OF BUSINESS ADMINISTRATION AND MANAGEMENT

UNIVERSITY EXAMINATION

SEMESTER ONE 2013/2014

FIRST YEAR EXAMINATION FOR BACHELOR OF BUSINESS
ADMINISTRATION AND MANAGEMENT

BUSINESS STATISTICS

DATE: 11TH DECEMBER, 2013

TIME: 3 HOURS

Instructions:

- i. Attempt question one in PART A and any other three question in PART B
- ii. Question one is compulsory
- iii. Show all workings and they have to be clear and tidy

Question: 1(Compulsory)

1. a) Define the following concepts giving appropriate examples

i. Conditional probability

(1 mark)

ii. Classical probability

(1 mark)

iii. Binomial distribution

(1 mark)

b) Explain the basic steps in statistical analysis from a business point of view and its relevance in the private sector

(6 marks)

c) The table below shows the number of cars imported and registered in Uganda by Uganda Revenue Authority (URA) during a certain week.

Car sizes in tonnage	1.0-1.9	2.0-2.9	3.0-3.9	4.0-4.9	5.0-5.9	6.0-6.9	7.0-7.9
Number of cars	30	16	24	32	28	12	8

i. Calculate the approximate mean and modal number of cars imported (5 marks)

ii. Plot an Ogive curve for the data. (2 marks)

Use the Ogive to estimate

i.i Median and

(2 marks)

i.ii interquartile range for the number of car imports

(2 marks)

Question: 2

2. The table below shows the summary of amounts of MTN airtime cards in millions of shillings sold per month in selected regional outlet shops in Uganda

24	60	59	30	89	70	89	26	66	81
67	32	62	60	71	94	71	38	96	96
82	60	44	70	89	74	66	70	77	92
60	08	97	68	28	70	72	60	77	56
97	90	70	75	80	90	62	95	67	70

- Present the above information in a distribution table and represent it graphically using a histogram for reproduction in Uganda's leading daily The New vision (10 marks)
- What is the mean and modal amount of airtime cards sold in the given month (10 marks)
- Compute the standard deviation of this data (5 marks)

Question: 3

3. Uganda National Road Authority (UNRA) has invited students of BAM 1 to participate in the assessment and payments of compensation to land owners whose property and land will be affected in the process of constructing new feeder roads in Mpigi district.

A consultant valuer has provided you with the following data to determine the relationship between the land size and the amount of money in millions of shillings to be paid

Land size (km ²)	1.0	2.5	2.8	3.5	3.8	4.5	5.1
Amount (Shs. millions)	4.0	12.5	12.8	13.5	13.8	14.5	15.0

- Plot a scatter diagram for the data and comment on it (6 marks)
- Using least squares method determine the regression equation for the data and comment on the payment schedule (12 marks)
- Using the regression equation obtained above predict the compensation for the land measuring 1km², 2.8km² and 2.5km² and compute the error associated with predicting both areas (7 marks)

Question: 4

4. a) A new advert by MTN has been developed with a goal of obtaining 90% new simcard connections among students in Universities. To evaluate the simcard sales, 20 are sold to students in UMU nkonzi. If the 90% sales rate is correct, what is the probability that 18 or more of the simcards will be sold to UMU students. (7 marks)
- b) The life time of pens produced by Nice House of plastics is normally distributed. The probability that a pen drawn from a box of pens is defective is 0.1 and the success is 0.9, if a sample of 6 pens is taken, Find the probability that it will contain;
- i. No defective pens (3 marks)
 - ii. 5 or 6 defective pens (6 marks)
 - iii. Less than 3 defective pens (6 marks)
- c) Using a relevant example explain the Bernoulli trial (3 marks)

Question: 5

5. a) Explain what is meant by significance level $\alpha\%$. (5 marks)
- b) The times taken by a salesman to travel between two shops on 50 occasions averaged 64 minutes with a standard deviation of 10 minutes. He claims that this provided evidence that the journey takes longer since he changed to a smaller car, as before he averaged 60 minutes. As his supervisor, do you agree with the sales man? (8 marks)
- c) A carton containing breakfast cereal has been impounded by Uganda Bureau of Standards (UNBS) after the manufacturer's claim that the net minimum weight of the contents is 450gms.

The weights of the contents of the seven packets picked from the carton are;

445,453,447,451,440,460,449

As a prosecution witness, is there any evidence at the 5% significance level that the packets are underweight? (12 marks)

Question: 6

6. The business community in Kampala under their umbrella Kampala City Traders Association (KACITA) have contacted the Faculty of BAM to help them assess their businesses for improvements in service delivery and you have been selected to be on the team of assessors. As a member of the team you have been tasked to

- a) Explain the relevant techniques that can be possibly used in the survey (8 marks)
- b) Determine the procedure in carrying out the survey (8 marks)
- c) Design a suitable form for collecting this information stating in it any five critical areas that can be of concern in improving service delivery by the business community (9 marks)

Merry Christmas and Happy New Year!!!

STANDARD NORMAL DISTRIBUTION: Table Values Represent AREA to the LEFT of the Z score.

Z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
-3.9	.00005	.00005	.00004	.00004	.00004	.00004	.00004	.00004	.00003	.00003
-3.8	.00007	.00007	.00007	.00006	.00006	.00006	.00006	.00005	.00005	.00005
-3.7	.00011	.00010	.00010	.00010	.00009	.00009	.00008	.00008	.00008	.00008
-3.6	.00016	.00015	.00015	.00014	.00014	.00013	.00013	.00012	.00012	.00011
-3.5	.00023	.00022	.00022	.00021	.00020	.00019	.00019	.00018	.00017	.00017
-3.4	.00034	.00032	.00031	.00030	.00029	.00028	.00027	.00026	.00025	.00024
-3.3	.00048	.00047	.00045	.00043	.00042	.00040	.00039	.00038	.00036	.00035
-3.2	.00069	.00066	.00064	.00062	.00060	.00058	.00056	.00054	.00052	.00050
-3.1	.00097	.00094	.00090	.00087	.00084	.00082	.00079	.00076	.00074	.00071
-3.0	.00135	.00131	.00126	.00122	.00118	.00114	.00111	.00107	.00104	.00100
-2.9	.00187	.00181	.00175	.00169	.00164	.00159	.00154	.00149	.00144	.00139
-2.8	.00256	.00248	.00240	.00233	.00226	.00219	.00212	.00205	.00199	.00193
-2.7	.00347	.00336	.00326	.00317	.00307	.00298	.00289	.00280	.00272	.00264
-2.6	.00466	.00453	.00440	.00427	.00415	.00402	.00391	.00379	.00368	.00357
-2.5	.00621	.00604	.00587	.00570	.00554	.00539	.00523	.00508	.00494	.00480
-2.4	.00820	.00798	.00776	.00755	.00734	.00714	.00695	.00676	.00657	.00639
-2.3	.01072	.01044	.01017	.00990	.00964	.00939	.00914	.00889	.00866	.00842
-2.2	.01390	.01355	.01321	.01287	.01255	.01222	.01191	.01160	.01130	.01101
-2.1	.01786	.01743	.01700	.01659	.01618	.01578	.01539	.01500	.01463	.01426
-2.0	.02275	.02222	.02169	.02118	.02068	.02018	.01970	.01923	.01876	.01831
-1.9	.02872	.02807	.02743	.02680	.02619	.02559	.02500	.02442	.02385	.02330
-1.8	.03593	.03515	.03438	.03362	.03288	.03216	.03144	.03074	.03005	.02938
-1.7	.04457	.04363	.04272	.04182	.04093	.04006	.03920	.03836	.03754	.03673
-1.6	.05480	.05370	.05262	.05155	.05050	.04947	.04846	.04746	.04648	.04551
-1.5	.06681	.06552	.06426	.06301	.06178	.06057	.05938	.05821	.05705	.05592
-1.4	.08076	.07927	.07780	.07636	.07493	.07353	.07215	.07078	.06944	.06811
-1.3	.09680	.09510	.09342	.09176	.09012	.08851	.08691	.08534	.08379	.08226
-1.2	.11507	.11314	.11123	.10935	.10749	.10565	.10383	.10204	.10027	.09853
-1.1	.13567	.13350	.13136	.12924	.12714	.12507	.12302	.12100	.11900	.11702
-1.0	.15866	.15625	.15386	.15151	.14917	.14686	.14457	.14231	.14007	.13786
-0.9	.18406	.18141	.17879	.17619	.17361	.17106	.16853	.16602	.16354	.16109
-0.8	.21186	.20897	.20611	.20327	.20045	.19766	.19489	.19215	.18943	.18673
-0.7	.24196	.23885	.23576	.23270	.22965	.22663	.22363	.22065	.21770	.21476
-0.6	.27425	.27093	.26763	.26435	.26109	.25785	.25463	.25143	.24825	.24510
-0.5	.30854	.30503	.30153	.29806	.29460	.29116	.28774	.28434	.28096	.27760
-0.4	.34458	.34090	.33724	.33360	.32997	.32636	.32276	.31918	.31561	.31207
-0.3	.38209	.37828	.37448	.37070	.36693	.36317	.35942	.35569	.35197	.34827
-0.2	.42074	.41683	.41294	.40905	.40517	.40129	.39743	.39358	.38974	.38591
-0.1	.46017	.45620	.45224	.44828	.44433	.44038	.43644	.43251	.42858	.42465
-0.0	.50000	.49601	.49202	.48803	.48405	.48006	.47608	.47210	.46812	.46414

Z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.50000	.50399	.50798	.51197	.51595	.51994	.52392	.52790	.53188	.53586
0.1	.53983	.54380	.54776	.55172	.55567	.55962	.56356	.56749	.57142	.57535
0.2	.57926	.58317	.58706	.59095	.59483	.59871	.60257	.60642	.61026	.61409
0.3	.61791	.62172	.62552	.62930	.63307	.63683	.64058	.64431	.64803	.65173
0.4	.65542	.65910	.66276	.66640	.67003	.67364	.67724	.68082	.68439	.68793
0.5	.69146	.69497	.69847	.70194	.70540	.70884	.71226	.71566	.71904	.72240
0.6	.72575	.72907	.73237	.73565	.73891	.74215	.74537	.74857	.75175	.75490
0.7	.75804	.76115	.76424	.76730	.77035	.77337	.77637	.77935	.78230	.78524
0.8	.78814	.79103	.79389	.79673	.79955	.80234	.80511	.80785	.81057	.81327
0.9	.81594	.81859	.82121	.82381	.82639	.82894	.83147	.83398	.83646	.83891
1.0	.84134	.84375	.84614	.84849	.85083	.85314	.85543	.85769	.85993	.86214
1.1	.86433	.86650	.86864	.87076	.87286	.87493	.87698	.87900	.88100	.88298
1.2	.88493	.88686	.88877	.89065	.89251	.89435	.89617	.89796	.89973	.90147
1.3	.90320	.90490	.90658	.90824	.90988	.91149	.91309	.91466	.91621	.91774
1.4	.91924	.92073	.92220	.92364	.92507	.92647	.92785	.92922	.93056	.93189
1.5	.93319	.93448	.93574	.93699	.93822	.93943	.94062	.94179	.94295	.94408
1.6	.94520	.94630	.94738	.94845	.94950	.95053	.95154	.95254	.95352	.95449
1.7	.95543	.95637	.95728	.95818	.95907	.95994	.96080	.96164	.96246	.96327
1.8	.96407	.96485	.96562	.96638	.96712	.96784	.96856	.96926	.96995	.97062
1.9	.97128	.97193	.97257	.97320	.97381	.97441	.97500	.97558	.97615	.97670
2.0	.97725	.97778	.97831	.97882	.97932	.97982	.98030	.98077	.98124	.98169
2.1	.98214	.98257	.98300	.98341	.98382	.98422	.98461	.98500	.98537	.98574
2.2	.98610	.98645	.98679	.98713	.98745	.98778	.98809	.98840	.98870	.98899
2.3	.98928	.98956	.98983	.99010	.99036	.99061	.99086	.99111	.99134	.99158
2.4	.99180	.99202	.99224	.99245	.99266	.99286	.99305	.99324	.99343	.99361
2.5	.99379	.99396	.99413	.99430	.99446	.99461	.99477	.99492	.99506	.99520
2.6	.99534	.99547	.99560	.99573	.99585	.99598	.99609	.99621	.99632	.99643
2.7	.99653	.99664	.99674	.99683	.99693	.99702	.99711	.99720	.99728	.99736
2.8	.99744	.99752	.99760	.99767	.99774	.99781	.99788	.99795	.99801	.99807
2.9	.99813	.99819	.99825	.99831	.99836	.99841	.99846	.99851	.99856	.99861
3.0	.99865	.99869	.99874	.99878	.99882	.99886	.99889	.99893	.99896	.99900
3.1	.99903	.99906	.99910	.99913	.99916	.99918	.99921	.99924	.99926	.99929
3.2	.99931	.99934	.99936	.99938	.99940	.99942	.99944	.99946	.99948	.99950
3.3	.99952	.99953	.99955	.99957	.99958	.99960	.99961	.99962	.99964	.99965
3.4	.99966	.99968	.99969	.99970	.99971	.99972	.99973	.99974	.99975	.99976
3.5	.99977	.99978	.99978	.99						