



PAN AFRICA CHRISTIAN UNIVERSITY
SCHOOL OF HUMANITIES AND SOCIAL SCIENCES
END OF SEMESTER EXAMINATION FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY IN MARRIAGE AND FAMILY
THERAPY

JANUARY-APRIL 2019 SEMESTER

CAMPUS: ROYSAMBU

DEPARTMENT: PSYCHOLOGY

COURSE CODE: PMFT111

COURSE TITLE: STATISTICS I

EXAM DATE: TUESDAY 9th APRIL 2019

DURATION: 3 HOURS

TIME: 5:30PM-8:30PM

INSTRUCTIONS

- Read the instructions and questions carefully before you write the answers.
- Write your **STUDENT NUMBER** in the Answer Booklet given
- *Write clearly and legibly.*
- Answer any THREE Questions out of the FIVE provided
- *ALL PAC University's examination rules and regulations apply*

QUESTION ONE

- a) Discuss the differences between statistics as numerical facts and statistics as a discipline or a field of study. **(10 Marks)**
- b) A PhD student is preparing a research instrument and is interested in some key characteristics of the respondent as follows:
- i) Age in years
 - ii) Respondent's gender
 - iii) Marital status
 - iv) Level of education
 - v) Health Status

Explain the nature of each of the variables and indicate the measurement scale appropriate for each. **(10 Marks)**

- c) The following information was gathered on the distribution of members of a church congregation by marital status:-

Married	320
Single	125
Widowed	92
Separated	50
Divorced	36
Others	5
<u>Total</u>	<u>628</u>

Present the above information using a bar chart.

(5 Marks)

QUESTION TWO

The following is a record of the ages in years of 100 widows in a church membership:

65	57	57	55	20	54	52	49	58	52
86	39	50	48	83	71	66	54	51	27
30	44	34	78	36	63	67	55	40	56
63	75	55	15	96	51	54	52	53	42
50	25	85	27	75	40	37	46	42	86
16	45	12	79	50	46	46	59	57	50
56	74	50	68	52	61	40	38	57	31
35	93	54	26	67	62	51	52	54	61
93	84	28	66	62	57	45	43	47	33
45	25	77	80	91	67	53	55	51	36

- a) Prepare a grouped frequency distribution for the widows' ages **(15 Marks)**
- b) Present the information using a stem-and-leaf diagram and interpret your results **(10 Marks)**

QUESTION THREE

A concern has been raised about the number of teenagers that are exposed to sex by the age of 15 years. A sample of 50 teenagers revealed the following results on the number of times in a year they engaged in sex.

No. of times engaged in sex	No. of teenagers
0-10	5
10-20	10
20-30	15
30-40	18
40-50	2

- a) Prepare a histogram and use it to estimate the mode frequency that teenagers engaged in sex.

(10 Marks)

- b) Construct the less- than and greater-than ogives and estimate the median number of times that the teenagers engaged in sex.

(15 Marks)

QUESTION FOUR

Domestic violence is a vice that has taken root in our society. As a PhD student you are asked to help establish the extent to which the vice is entrenched. You obtain the following data on the age distribution and the number of violence incidences reported.

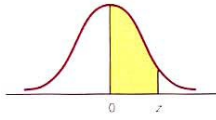
Age	No. of incidences
20-30	15
30-40	20
40-50	15
50-60	8
60-70	2

- a) Compute the average age of the number of domestic violence incidences and interpret your answer **(10 Marks)**
- b) Compute the variance and the standard deviation from the data. **(15 Marks)**

QUESTION FIVE

- a) Highlight the characteristics of a normal distribution **(5 Marks)**
- b) Assume that the test scores from a college admissions test are normally distributed, with a mean of 450 and a standard deviation of 100.
 - i. What percentage of the people taking the test score between 400 and 500? **(5 Marks)**
 - ii. Suppose someone receive a score of 630. Would you say the mark is unusually high? Explain your answer **(5 Marks)**
 - iii. If a particular university will not admit anyone scoring below 480, what percentage of the persons taking the test would be acceptable to the university? **(5 Marks)**
- iv. If the college awards the highest 10% a scholarship, what mark must one score to qualify for the scholarship? **(5 Marks)**

Table 3 Normal Probabilities



z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2517	.2549
0.7	.2580	.2611	.2642	.2673	.2704	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4429	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4761	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4979	.4980	.4981
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.4987	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990

SOURCE: Abridged from Table 1 of A. Hald, *Statistical Tables and Formulas* (New York: Wiley & Sons, Inc.), 1952. Reproduced by permission of A. Hald and the publisher, John Wiley & Sons, Inc.