UNIVERSITY OF SWAZILAND

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EXAMINATION PAPER 2005

TITLE OF PAPER	: DESCRIPTIVE STATISTICS
COURSE CODE	: ST 132
TIME ALLOWED	: TWO (2) HOURS
REQUIREMENTS	: CALCULATOR AND GRAPH PAPER
INSTRUCTIONS	: ANSWER QUESTION ONE AND ANY OTHER THREE QUESTIONS

Question 1

60

The following scores were obtained by a UNISWA first year class on an Academic Communication Skills' test:

60 94 75 82 72 57 92 75 85 77 91 72 85 64 78 75 62 49 70 94 72 84 55 90 88 81 64 91 79 66 68 67 74 45 76 73 68 85 73 83 85 71 87 57 82 78 68 70 71 78 69 98 65 61 83 84 69 77 81 87 79 64 72 55 76 68 93 56 67 71 83 72 82 78 62 82 49 63 73 89 78 81 93 72 76 73 90 76.

a) Calculate the inter-quartile range of these scores. (20 Marks)

b) Using coefficient of skewness determine whether the distribution of the scores is symmetrically shaped? (20 Marks)

Question 2

a) A community in Mbabane has a population 900 economically active people. 460 males and 140 females are employed. 40 males and 260 females are unemployed. One of these individuals is selected at random for a tour throughout the community to publicize the advantages of establishing new industries in the community.
   i) What is the probability of selecting an employed male?
   ii) What is the probability of selecting an unemployed female? (8 Marks)

b) In a lottery 3 numbers are drawn from a total 10 numbers (listed from 1 to 10) and a fourth bonus number is also drawn without replacement. What is the probability that this sequence of numbers is drawn; 1, 7, 3, 6. (5 Marks)

c) Three cards are drawn in succession, without replacement, from an ordinary deck of playing cards. Find the probability that the first card is a red ace, the second card is a ten or jack, and the third card is greater than 3 and less than 7. (7 Marks)

Question 3

A statistics lecturer conducted a study to investigate the relationship between performance of his students on exams and their anxiety. Ten students from his class were selected for the experiment. Just prior to taking the final exam, the 10 students were given an anxiety questionnaire. Here are final exam and anxiety scores for the 10 students:

Anxiety	28	41	35	39	31	42	50	46	45	37
Final exam	82	58	63	89	92	64	55	70	51	72

a) Determine the strength of the relationship between exam scores and anxiety. (8 marks)

b) Construct a regression equation for predicting the dependent variable, and calculate the standard error. (12 Marks)

Question 4

The table below gives quarterly data of food consumer price indices for Swaziland - 1997-1999:

	Quarter			
Year	**1**	**2**	**3**	**4**
1997	113.5	117.6	119.0	124.2
1998	128.0	129.4	130.7	134.3
1999	137.3	140.5	142.2	143.8

Using the method of moving averages, find the average seasonal variations, and estimate the food consumer price indices for the first two quarters of 2000. (20 Marks)

Question 5

a) In 1984, Florida had 13.8% Blacks voting for Ronald Reagan. Florida's percent for Reagan was 65%. The mean for all states was 60% with standard deviation of 8.8%. Make an assessment of the relative performance of Reagan in Florida's Black community. (4 Marks)

b) An motor vehicle salesman made a profit of E 2, 450 on a subcompact model for which the average profit has been E 2, 000 with standard deviation of E 500. Later on the same day he made a profit of E 6, 200 on a large luxury model for which the average profit has been E 5, 000 with a standard deviation of E 1, 500. For which of these two models is the profit relatively higher?

(4 Marks)

c) The minimum temperatures for three widely separated locations across Swaziland on 1st January 2004 were recorded as 15°F at location A, 62°F at location B, and 3°C at location C. A check with the meteorology department produced the following data for these three locations for the last 20 years:

	A	B	C
Mean temperature	20.0°F	71.0°F	5.0°C
Standard deviation	4.5°F	6.9°F	2.3°C

Relatively speaking, which location on 1st January 2004, experienced the coolest day?

(6 Marks)

d) Different typing skills are required for secretaries depending whether one is working in a law office, an accounting firm, or for a research mathematical group at a major university. In order to evaluate candidates for these positions, an employment agency administers three distinct standardized typing samples. A time penalty has been incorporated into the scoring of each sample based on the number of typing errors. The mean and standard deviation for each test, together with score achieved by a recent applicant, are given as follows:

Sample	**Score**	**Mean**	**S.D**
Law	141 sec	180 sec	30 sec
Accounting	7 min	10 min	2 min
Scientific	33 min	26 min	5 min

Where should this candidate get a placement? **(6 Marks)**