MUNHUMUTAPA SCHOOL OF COMMERCE

DEPARTMENT OF ECONOMICS AND FINANCE

BACHELOR OF COMMERCE DEGREE

LEVEL 2 SEMESTER 2

EXAMINATION QUESTION PAPER

MODULE CODE	**HEC229**
MODULE NARRATION	**COMPUTER AND STATISTICAL ANALYSIS**
DATE	**2024**
DURATION	**3 HOURS**

INSTRUCTIONS TO CANDIDATES:

1. Answer any four questions
2. Start each answer on a fresh page
3. All questions carry equal marks
4. Show all workings, where applicable

QUESTION 1

For each of the following, identify and justify a statistical test that would be suitable;

(a) A group of customers who patronize a local supermarket were identified and their shopping habits were noted. Are shopping habits for female and male customers different? (6 marks)

(b) Does a high school student's decision to apply for college admission (yes or no) differ depending upon whether that student's mother attended college (yes or no)? (6 marks)

(c) For a group of workers (females and males) current salaries are given in thousands of ZWL$. Is the average current salary different for females and male workers? (6 marks)

(d) The central bank has observed that money supply, interest rates, wages and inflation have steadily increased over the years. What has been the impact of money supply, interest rates, and wages on inflation over the period in question? (7 marks)

[Total 25 marks]

QUESTION 2

(a) Explain the determinants of the choice between parameter and non-parametric tests. (8 marks)

(b) Examine the importance of normality assumptions in data analysis and how it is tested in SPSSS. (10 marks

(c) How can a researcher proceed when the normality assumption is violated? (6 marks)

Total 25 marks]

QUESTION 3

(a) Scores in mathematics obtained by 20 students were recorded. The scores were subjected to two tests: (1) whether they are normally distributed; and (2) whether the sample has been selected from a population having a mean of 8. The following tests results were obtained;

Tests of normality for the data on student's marks

	Kolmogorov-Smirnov			**Shapiro-Wilk**		
	Statistics	df	Sig. (p-value)	Statistics	df	Sig. (p-value)
Mathematics	0.264	20	0.001	0.823	20	0.002

T-table for the data on marks in mathematics

t	**df**	**Sig. (p-value)**	**Mean difference**
-1.464	19	0.160	-.1.1500
Test value = 8			

(i) Are the scores in mathematics normally distributed? (6 marks)

(ii) Is there sufficient statistical evidence to conclude that the sample on scores was drawn from a population whose mean is not 8? (8 marks)

(b) A professor was interested in examining whether students prefer to take classes face to face or online. A poll was taken with 100 students to determine their preference for learning. The data collected was analysed using a Chi-Square goodness -of-it test and the following results were achieved through SPSS;

Delivery Model

	Observed N	Expected	Residual
Face to Face	39	50	-11.0
Online	61	50	-11.0
Total	100		

Test Statistics

	Delivery Model
Chi-Square	4.840
df	1
Asymp. Sig	0.28

Is there sufficient statistical evidence to conclude that students who prefer to take classes face to face is equal to the number of students who prefer to take classes online? (11 marks)

[Total 25 marks]

QUESTION 4

A study was conducted for the IQ scores of students (out of 60) from 3 groups of undergraduates (15 in each group) of different disciplines Economics, Maths and Finance. The raw data was entered in SPSS and the results of the tests carried out are presented in the following tables:

Tests for normally

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistics	df	Sig. (p-value)	Statistics	df	Sig. (p-value)
Economics IQ	0.259	15	0.008	0.846	15	0.015
Maths IQ	0.184	15	0.185	0.910	15	0.135
Finance IQ	0.225	15	0.040	0.917	15	0.174

The Analysis of Variance (ANOVA) Test results

	Sum of Squares	**df**	**Mean Square**	**F**	**Sig. (p-value)**
Between group	1529.378	2	764.689	20.016	0.000
Within group	1604.533	42	38.203		
Total	3133.911	44			

(a) Are the IQ scores in 3 subjects normally distributed? (12 marks)

(b) Is there sufficient statistical evidence to conclude that the IQ average scores in the 3 subjects are equal? (13 marks)

[Total 25 marks]

QUESTION 5

The results below were generated from quantitative data analysis software package, EVIEWS 7. The results are based on the study to examine the impact of domestic and external debt on a particular economy.

Dependent Variable: GDP
Method: Least Squares
Sample (adjusted): 1981Q2 1988Q3
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.001557	0.001983	-0.785207	0.4397
DODEBT	-0.017489	0.038342	-0.456129	0.6522
EXDEBT	-0.659846	0.184305	-3.580187	0.0014
INVEST	0.319789	0.116443	2.746319	0.0110
LABOR	0.041902	0.012852	3.260445	0.0032

R-squared	0.814040	Mean dependent var	0.006803
Adjusted R-squared	0.552287	S.D. dependent var	0.008709
S.E. of regression	0.005828	Akaike info criterion	-7.301414
Sum squared resid	0.000849	Schwarz criterion	-7.067881
Log likelihood	114.5212	Hannan-Quinn criter.	-7.226705
F-statistic	9.943409	Durbin-Watson stat	2.352489
Prob(F-statistic)	0.000059		

Where:

GDP=Log of gross domestic product

DODEBT=Log of domestic debt

EXDEBT=Log of external debt

INVEST= Log of investment

LABOR= log of labour

REQUIRED

Interpret the results considering that GDP is the dependent variable.

[Total 25 marks]

END OF EXAMINATION