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UNIVERSITY EXAMINATIONS 2023/2024

FIRST YEAR, SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
OF SCIENCE IN STATISTICS SCIENCE

SMS 3171: INTRODUCTION TO BUSINESS AND SOCIAL STATISTICS

DATE: APRIL 2024

TIME: 2 HOURS

INSTRUCTIONS: Answer Question ONE and any other TWO questions.

QUESTION ONE (30 MARKS)

- a) Define the following terms.
- Business statistics (1 Mark)
 - Social statistics (1 Mark)
- b) State and describe comprehensively the term "economically active population " defining all terms used. (1 Mark)
- c) You are given the following information on employment statistics of Country X.

Labor force: 3437992

Employed: 3252706 out of which 1217806 are under employed.

Unemployed: 185286

Economically inactive population: 2160980

Civilian/noninstitutional population: 5598972

Calculate the:



MUST is ISO 9001:2015 and



ISO/IEC 27001:2013 CERTIFIED

- i. Employment rate. (2 Marks)
 - ii. Unemployment rate. (2 Marks)
 - iii. Labor force participation rate. (2 Marks)
- d) Explain the difference between Gross National Product (GNP) and Gross Domestic Product (GDP). (2 Marks)
- e) Discuss the key components of the expenditure approach to calculating GNP as and state the formula used under this approach. (5 Marks)
- f) In county Y, nominal wage rate was 11 shillings per hour in the year 2000 and 15 shillings in the year 2010. The price index rose from 100 in 2000 to 150 in 2010. What is the real wage index in 2010 in terms of 2000 prices? (3 Marks)
- g) A market basket contains only two items, wine and cheese, and the quantities consumed in 2006 and 2007 were as follows:
- | | | |
|------|------------|------------|
| Wine | cheese | |
| 2006 | 50 bottles | 100 wheels |
| 2007 | 45 bottles | 150 wheels |

Suppose that the price of cheese increases from \$1.00 per wheel of cheese in 2006 to \$1.20 per wheel in 2007 and the price of wine increases from \$0.50 per bottle to \$2.00 per bottle. Calculate the rate of inflation for the Laspeyres (CPI) index and the Paasche Index

- h) Define the following terms: (7 Marks)
- i. Crude birth rate (1 Mark)
 - ii. Crude death rate (1 Mark)
- i) Discuss the importance of standardization of crude rates (2 Marks)

QUESTION TWO (20 MARKS)

- a) Discuss the following terms:
- i. Labour underutilization (1 Mark)
 - ii. Time related underemployment (1 Mark)
- b) What are the three criteria that must be met for an individual to be regarded as unemployed? (3 Marks)
- c) State and describe briefly the three types of unemployment (3 Marks)

Kenya has been facing the problem of unemployment and underemployment for many years, especially amongst the youth. You work as a statistician in the Ministry of Labour in Kenya. Your office has just received a report on the current labour situation in the country from the Kenya National Bureau of statistics describing the key labour market indicators in the country as listed in the snippet table 1.

Table I presents a summary of the Key Labour Market Indicators contained in this report.

Table I: Key labour Market Indicators

January -March 2019

Indicator	Quarter 1
Population (15-64).....	26,593,770
Labour Force.....	17,727,200
Employed.....	16,635,704
Employed/Population Ratio (%).....	62.6
Unemployed.....	1,091,496
Unemployment Rate (%).....	6.2
Long-Term Unemployed (%).....	3.3
Not in Labor Force (Inactive).....	8,866,570
Labour Force Participation (%).....	66.7
Labour Underutilization.....	2,115,500
Labour Underutilization rate (LU2).....	11.9

Describe each of these indicators and any other concepts/terminologies that would be relevant in providing a basis for understanding the labour statistics report. Include mathematical formulae where possible. (12 Marks)

QUESTION THREE (20 MARKS)

- a) State 3 sources of social and economic data (3 Marks)
- b) Discuss 2 uses of tourism statistics (2 Marks)
- c) State 4 factors to consider when construction index numbers. (4 Marks)
- d) The data below shows prices and quantities of commodities in the year 2010 and 2011

Commodity	Price		Quantity	
	2010	2011	2010	2011
Sugar	14	20	13	
Rice	12	14	20	5
Margarine	10	15	12	20
Cooking Oil	6	4	8	10
Maize Flour	8	6	5	5



Calculate the consumer price index for 2011 using 2010 as the base year using;

- i. Laspeyres Method (4 Marks)
- ii. Paasche's Method (3 Marks)
- iii. Fishers Method (2 Marks)
- iv. Marshall-Edgeworth's method (2 Marks)

QUESTION FOUR (20 MARKS)

- a) Social statistics are often collected through the population censuses and sample surveys. Give 4 reasons why a researcher may prefer to conduct a sample survey as opposed to a census (4 Marks)
- b) Define the following terms;
 - (i) Mortality rate (1 Mark)
 - (ii) Net migration rate (1 Mark)
 - (iii) Total fertility rate (1 Mark)
- c) Write down the basic demographic /book-keeping equation, explaining how a population changes over time. (3 Marks)
- d) Discuss how birth, death, and migration affect the demographic structure of a population. (5 Marks)
- e) You are given the following economic statistics for Country X in a certain year.
Consumption:

Durable goods.....	\$ 820
Nondurable goods.....	\$ 2,010
Services.....	\$ 3,929
• Investments:	
Plant & Equipment.....	\$ 1,361
Residential Housing.....	\$ 416
Inventory change.....	\$ 57
• Government Purchases:	
Federal	\$ 595
State and Local	\$1,148
• Total Imports and Exports	
Exports.....	\$ 1,099
Imports.....	\$- 1,466

Required:

Use these data to calculate Gross Domestic Product for Country X for that year. State clearly the approach and formula you will use. (5 Marks)



QUESTION FIVE (20 MARKS)

- a) With the help of a well-labelled diagram, briefly explain are the 4 stages of the business cycles in any economy, stating the defining characteristics of each stage. (9 Marks)
- b) Distinguish between a tourist and an excursionist. (2 Marks)
- c) What is the role of UNWTO in tourism statistics? (4 Marks)
- d) The following table represent as a summary of India Tourism Statistics over a 10-year period. Plot a trend line and discuss the trend in tourism in India during this period. (5 Marks)

Table 11.3: Foreign Tourist Arrivals / Foreign Earnings in India

Year	Foreign Tourist Arrivals (millions)	Percentage Change over Previous year	Foreign Exchange Earnings (US S million)	Percentage Change over Previous Year
1981	1.28	2.0	-	-
1991	1.68	-1.7	1861	-
2001	2.54	-4.2	3198	-706
2011	6.31	9.2	17707	22.2
2012	6.58	4.3	17971	1.5
2013	6.97	5.9	18397	2.4
2014	7.68	10.2	19700	7.1
2015	8.03	4.5	21013	6.7
2016	8.80	9.7	22923	9.1
2017	10.04	14.0	27310	19.1
2018	10.56	5.2	28586	4.7

Source: Bureau of Immigration, Government of India /India Tourist Statistics Report 2019

