



PAST PAPERS

<i>Faculty</i>	<i>Department / Section/Division</i>
<i>Not Applicable</i>	<i>Learning Resource Centre</i>

Past Papers

Faculty of Management & social Sciences
Department of Management and Business Studies

**BSc (Hons) in Industrial and Business
Mathematics**

End Semester Examination

(Year 1 – Semester II)

<i>Document Control & Approving Authority</i>	<i>Senior Director – Quality Management & Administration</i>
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<i>1st Issue Date: 2017.011.30</i>	<i>Revision No.00</i>	<i>Revision Date: 17.08.2022</i>	<i>Validated by: Librarian</i>
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Department of Management & Business Studies

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Mathematics**

End Semester Examination

Year 1 semester 2

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<i>1st Issue Date: 2017.011.30</i>	<i>Revision No.00</i>	<i>Revision Date: 20.05.2022</i>	<i>Validated by: Librarian</i>
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Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc Hons in Industrial and Business Mathematics
Course CODE: BSc 562

Year I Semester II
SEMESTER END EXAMINATION
Business Accounting – BBIM 1311

- This paper consists of EIGHT (08) questions on SEVEN (07) pages.
- Answer FIVE (05) questions including question 01.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.
- Write legibly.

Date: 2022.03.29

Pass mark: 40%

Time: 03 Hours

Scenario

Chaya (Pvt) Ltd is a leading private limited company in Sri Lanka. Its Trail balance as at 31.03.2021 is given below.

(Whenever required logical assumptions are allowed)

	Debit	Credit
Revenue		50,000,000
Inventory as at 01st April 2020	6,500,000	
Purchases	18,000,000	
Sales returns	3,000,000	
Purchase Returns		2,000,000
Carriage inwards	3,700,000	
Import taxes	3,600,000	
Dividends Income		4,500,000
Legal & Consultation charges	3,600,000	
Cost :		

Furniture & Fittings	25,000,000	
Motor vehicles	18,500,000	
Land	16,500,000	
Buildings	17,000,000	
Accumulated Depreciation as at 01.04.2020		
Furniture & Fittings		6,000,000
Motor vehicles		4,725,000
Buildings		3,500,000
Fixed Deposit @ 8 % p.a	8,500,000	
Goodwill	13,000,000	
Salaries & wages	12,000,000	
Miscellaneous Expense	1,050,000	
Repairs & maintenance	2,350,000	
Advertising & Promotion	2,500,000	
Courier charges	1,400,000	
Auditors remuneration	1,800,000	
Utility expenses	500,000	
Insurance expenses	850,000	
Bank Loan @ 16 % interest rate per annum		6,500,000
Cash & Bank	13,000,000	
Debentures @ 15% interest		18,000,000
Stated Capital(Rs. 10 each)		40,000,000
Retained earnings		45,000,000
Trade Receivables	18,375,000	
Trade Payables		4,000,000
Other Payables		6,500,000
Total	190,725,000	190,725,000

Following are the adjustments which should be made in the financial statements for 2020/2021 financial year.

- (1) Inventory as at 31st March 2021 amounting to Rs.1,200, 000.
- (2) Following expenses are accrued as at 31st March 2021.
 - Utilities Rs.300, 000
 - Courier Charges Rs.200, 000
- (3) For 2020/2021 depreciation expenses has not been charged. All fixed assets are depreciated based on the straight-line basis.
 - Buildings - Cost 10 % per annum.
 - Motor vehicles- Cost 12% per annum.
 - Furniture and Fittings- Cost 18% per annum.
- (4) Loans and debentures interest not adjusted for the year 2020/2021.
- (5) Fixed Deposits interest not adjusted for the year 2020/2021.
- (6) Corporate tax rate imposed by Inland Revenue Department (IRD) of Sri Lanka is 25% Per annum. For 2020/2021 year of assessment income tax has not been adjusted.

Question No: 01- COMPULSORY

By using the information presented in above scenario candidates are required to Prepare **Income statement** for the financial year 2020/2021. (20 Marks)

Note: Related working and notes should be shown by the candidates clearly.

Question No: 02

By using the information presented in above candidates are required to prepare the **statement of financial position** as at 31st March 2021. (20 Marks)

Note: Related working and notes should be shown by the candidates clearly.

Question No: 03

Define the below terms with examples.

- (a) Cost Center
- (b) Overheads
- (c) Direct Cost
- (d) Fixed Cost

- (e) Variable Cost
- (f) Cost Objects
- (g) Production Overheads
- (h) Administrative Overheads

(20 Marks)

Question No: 04

Identify five different stakeholders who required financial information and explain the types of the financial information they require. (20 Marks)

Question No: 05

Define the below terms with examples.

- (a) Intangible assets
- (b) Retained profits
- (c) Debentures
- (d) Dividends
- (e) Current Liabilities

(20 Marks)

Question No: 06

Use the following information to complete the ratio analysis calculations:

Gerry's Jarmies

Income Statement for the year ended June 30 2021

	2020	2021
	\$	\$
Sales (all credit)	3 000 000	3 400 000
Less Cost of Sales		
Opening Stock	90 000	110 000
Plus Purchases	1 260 000	1 400 000
	1 350 000	1 510 000

Less Closing Stock	110 000	150 000
Cost of Sales	1 240 000	1 360 000
Gross Profit	1 760 000	2 040 000
Less Operating Expenses		
Selling and Administration Expenses	1 050 000	1 050 000
Net Profit before Interest	710 000	990 000
Interest Paid	(25 000)	(22 000)
Net Profit after Interest	685 000	968 000

Gerrys' Jarmies-

Statement of Financial Position as at June 30 2020 and 2021

	2020	2021		2020	2021
Assets	\$	\$	Liabilities	\$	\$
Current Assets					
Cash at Bank	40 000		Bank Overdraft		80 000
Debtors	100 000	160 000	Creditors	107 000	100 000
Stock	110 000	150 000	Total Current Liabilities	107 000	180 000
Prepaid Insurance		10 000			
Total Current Assets	250 000	320 000	Non-Current Liabilities		
			Mortgage Loan - The XYZ Bank	255 000	140 000
Non-Current Assets			Total Liabilities	362 000	320 000
Equipment	20 000	60 000	Owners Equity		

Buildings	600 000	700 000	Paid-Up capital	1 020 000	1 020 000
Vehicles	120 000	120 000			
Plant	1 000 000	1 000 000	Retained Profits	448 000	860 000
Total NCA	1 740 000	1 880 000	Total O.E.	1 628 000	1 880 000
Total Assets	1 990 000	2 200 000	Totals	1 990 000	2 200 000

Additional Information

- opening debtors 2020 was \$150 000
- opening total assets 2020 was \$1 500 000

Calculate the following ratios for 2020 and 2021

- current ratio
- quick asset ratio
- return on equity
- net profit margin before tax
- gross profit margin
- stock turnover (times per year)
- stock turnover (in days)
- debtors collection (times per year)
- debtors collection (in days)

(20 Marks)

Question No: 07

- Explain the difference between the financial accounting and Cost and Management Accounting.
- What is the importance of cost and management accounting discipline for a business.
- How to classify cost in a business? (provide examples)
- Explain the methods business can implement to control cost.

(5 Marks × 4 = 20 Marks)

Question No: 08

Analyse the effect of each transaction and prove that the accounting equation ($A = L + C$) always remains balanced.

- (a) Introduced Rs 4,00,000 as cash and Rs 25,000 by stock.
- (b) Purchased plant for Rs 1,50,000 by paying Rs 7,500 in cash and balance at a later date.
- (c) Purchased office furniture for Rs 50,000 and made payment by cheque.
- (d) Purchased goods worth Rs 40,000 for cash and for Rs 17,500 on credit.
- (e) Goods amounting to Rs 22,500 was sold for Rs 30,000 on cash basis.
- (f) Goods costing to 1 40,000 was sold for 1 62,500 on credit basis.
- (g) Cheque issued to the supplier of goods worth Rs 17,500.
- (h) Cheque received from customer amounting to Rs 37,500.
- (i) Withdrawn by owner for personal use Rs 12,500

(20 Marks)

-----END OF THE QUESTION PAPER-----

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Faculty of Management and Social Sciences
Department of Management and Business Studies
BSc. Business and Industrial mathematics
Course CODE: COM 562

Year I Semester II

SEMESTER END EXAMINATION

Business Economics II -BBIM 1310

- This paper consists of EIGHT questions on NINE (09) pages.
- Answer FIVE (05) Questions including Question No: 01.
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.

Date: 2022.03.18

Pass mark: 40%

Time: 03 Hours

Question 01 (Compulsory)

The paragraphs below were extracted from an e-newspaper and are an economic idea by Dr. W.A Wijewardena, a former deputy governor of the Central Bank of Sri Lanka.

"When the foreign exchange is short, a country cannot import essential raw materials and food items. As a result, the local production gets disadvantaged. For instance, if a country cannot import essential fuel, it cannot maintain its transportation sector, produce electricity, and keep businesses and factories running. It adversely affects domestic production. When the domestic production is low, incomes are low, and as a result, government's revenue generation is also low.

With low income and stubborn expenditure, the high budget deficit must be financed by the government through borrowings. When the borrowing options are limited due to the contraction of the domestic economy, the only available option is to print money and



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 Course CODE: COM 562

finance the budget. The increase in money supply will generate inflation and it will reactivate the whole cycle of economic downturn in an uncontrollable manner."

- a) What is mean by budget deficit? (01 Marks)
- b) What is the current foreign exchange rate system of Sri Lanka? (01 Marks)
- c) Why foreign exchange reserves are important to a country. (03 Marks)
- d) "The government must cover the budget shortfall by borrowing. However, because rating agencies such as Fitch and Standard & Poor's have downgraded Sri Lanka, it has suffered when borrowing from outside of the country". Elaborate this statement. (04 Marks)
- e) Do you agree with the last statement of the paragraph, "The increase in money supply will generate inflation and it will reactivate the whole cycle of economic downturn in an uncontrollable manner"? Justify your answer. (06 Marks)
- f) Full employment, keeping inflation under control and economic growth are among major macroeconomic goals of all societies. Why is keeping inflation under control regarded as a major macroeconomic goal? Explain the costs and benefits of inflation. (5 Marks)

Question 02

Fill in the blanks

- a) The fact that money can be immediately used in exchange, whereas valuable jewelry cannot, illustrates the fact that money is very_____.



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- b) The measure of the money supply that includes currency of commercial bank and public, deposits with the Central Bank and deposits of other institutions with the Central Bank is called _____.
- c) The portion of bank deposits that a bank must keep on reserve are known as _____.
- d) The portion of bank reserves that banks are permitted to lend or invest are known as _____.
- e) The rate at which the Central Bank provides credit to commercial banks _____.
- f) _____ and _____ rates provide a lower bound and upper bound respectively, to call rates.
- g) Under expansionary monetary policy by open market operations, Central Bank _____ treasury bills in the secondary market in order to inject liquidity to the market.
- h) Under contractionary monetary policy by open market operations, Central Bank _____ treasury bills in the secondary market in order to reduce liquidity in the market.
- i) The theory that assumes that the velocity of money is constant in the equation $M \times V = P \times Y$ is the _____.
- j) The three motives to hold money are _____, _____, _____.
- k) The two primary functions of a commercial bank are _____, _____.



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- l) In a commercial bank balance sheet the bank's _____ are its sources of funds and _____ are its uses of funds.
- m) At the start of the twenty-first century, Zimbabwe experienced _____ inflation so that economists had difficulty measuring it.
- n) Phillips curve is a historical inverse relationship between _____ and _____ in an economy.

(20 Marks)

Question 03

- a) A set of macroeconomic data relating to a hypothetical economy is set out below (values are in Rs. Billion)

Salaries and wages	500
Personal income tax	370
Interest income	50
Government transfer payments	350
Corporate profit taxes	20
Undistributed company profit	10
Net income earned from self-employment	30
Net foreign primary income earnings	30

- i. Calculate the National Income (02 Marks)
- ii. Calculate the Disposable Household Income (04 Marks)



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- b) Describe the three approaches to measuring national income. Will they give identical results? (05 Marks)
- c) "Macroeconomics and Microeconomics are different approaches to a common objective" Explain. (05 Marks)
- d) Determine the effect on country GDP for each of the following transactions. Explain your answers. (04 Marks)
- i. A domestic telecom store that imports smart phones from a foreign country at the cost of \$900 per piece and sells them to students at \$1,000 per piece.
 - ii. An old apartment is transferred from a father to his daughter.

Question 04

Following information are provided for a 3-sector economy. Values are indicated in Rs. Millions.

$$C = 25 + 0.8Y_d$$

$$T = 0.15Y$$

$$I = 200$$

$$G = 75$$

- a) Calculate equilibrium income (value of output) of the economy algebraically. (06 Marks)
- b) The function $C = C_0 + C_i Y$ is used to calculate the amount of total consumption in an economy. Where C is consumption expenditure and Y is national income.
- i. What is C_0 and C_i ? (02 Marks)
 - ii. Explain their specification. (04 Marks)



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- c) The income-consumption schedule of a hypothetical economy has given as below.

Table 4:1 - Income-Consumption shedule

National Income (Rs. Million)	Consumption (Rs. Million)
200	160
300	230

- i. Derive the consumption function of this economy
- ii. Derive the savings function of this economy (08 Marks)

Question 05

- a) Explain demand pull and cost push inflation. (04 Marks)
- b) "Unemployment poses great costs to the economy", Discuss. (04 Marks)
- c) Explain what you understand by the term "equilibrium unemployment". (02 Marks)
- d) Discuss the two types of disequilibrium unemployment. Use diagrams in your answers. (10 Marks)

Question 06

- a) Assume a closed economy with government which suffers from the lack of business confidence. As a result, private investment does not rise, nor does it respond to the changes in interest rate. The government keeps spending to compensate for lack of private spending. But After a change in government



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business confidence was restored, private investment begins to rise and becomes highly sensitive to changes in interest rate. Analyze the economic impact of this change. If this change is accompanied by a monetary expansion, then how does your answer change? (15 Marks)

- b) Central Bank of Sri Lanka is using different types of instruments under its monetary management as quantitative and qualitative credit controls. What are they? (05 Marks)

Question 07

- a) Following balance sheet is given for a commercial bank in the banking system.

Assets (Rs. Mn)		Liabilities (Rs. Mn)	
Reserves	22,000	Deposits	100,000
Securities	38,000		
Loans	40,000		
Total	100,000	Total	100,000

- i. If the SRR is 20%, calculate the maximum amount of new loans? (02 Marks)
- ii. If the written cheques for the loans are deposited in other banks, show the new balance sheet. (03 Marks)
- b) Explain how changes in Statutory Reserve Requirement (SRR) is controlling money supply of an economy. Explain using an example. (04 Marks)



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c) Answer the questions below.

Table 7:1 - Components

Components	Rs. Billion
Currency used by public	170
Peoples' Demand deposits in commercial banks	120
Commercial banks' deposits in Central bank	80
Time and savings deposits of people in commercial banks	600
Adjusted foreign deposits	75
Deposits of people in licensed finance companies	200
Currency used by commercial banks	20

Based on the above information, find

- i. Value of Reserve money
- ii. M1
- iii. M2
- iv. M2b
- v. M4
- vi. Based on M1, calculate money multiplier (11 Marks)

(Total Marks 20)

Question 08

- a) Provide short answers for part (a)
 - i. Discuss two functions of the Central Bank of Sri Lanka (02 Marks)
 - ii. List down four limitations of currency board system (04 Marks)



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- iii. What are the two main objectives of handling monetary policy by Central Bank of Sri Lanka (02 Marks)
 - iv. Why commercial banks are required to keep a reserve? (02 Marks)
- b) Select any two and write short notes. (05 Marks*2 = 10 Marks)
- i. Monetary policy and Fiscal policy.
 - ii. Interest rate corridor
 - iii. Credit creation by commercial banks.

-----END OF THE QUESTION PAPER-----

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Faculty of Management and Social Sciences
Department of Management & Business Studies
BSc(Hons) in Business and Industrial Mathematics
Course CODE: BSc 562

Year I Semester II
End Semester Examination
Business Statistics- BBIM 1307

- This paper consists of EIGHT (08) questions on THIRTEEN (13) pages.
- Answer FIVE (05) questions including question 01.
- Only non-programmable calculators are allowed.
- You may use appropriate graphs, diagrams, equation/s to prove or justify the answers.
- If you have any doubt as to the interpretation of the wording of a question, make your own decision, but clearly state it on the script.

Date: 2022.03.27

Pass mark: 40%

Time: 03 Hours

Question 01: (Compulsory)

- 1) Sampling is simply a process of learning about the on the basis of a sample drawn from it.
- A. Census
 - B. Population
 - C. Group
 - D. Area
 - E. Research

2) The variance of 10 observation is 2. If each observation is increased by 6, variance of the resulting observation is,

- A. 2
- B. 36
- C. 4
- D. 5
- E. 6

Question no 3, 4, and 5 are based on the 3 data sets A, B and C given below.

Data set A: 2 3 7 1 3 2 3

Data set B: 7 5 9 12 5 3 8

Data set C: 4 4 11 7 2 3 4

3) Which one of the following statement/s true?

- A. Mean of data set A = Mode of Data set C
- B. Mean of data set C = Median of data set B
- C. Mean of data set B = Median of data set B
- D. Median of data set B = Mode of data set A
- E. Mean, median and mode of data set A is equal to 4

4) Which one of the following statement/s true?

- A. Mean of Data set A = Mean of Data set B
- B. Mean of Data set B = Mean of Data set C
- C. Mean of data set C = Mean of Data set A
- D. Mean of Data set A = Median of Data set A
- E. Mean of Data set C = Median of data set C

5) Which one of the following statement/s true?

- A. Mean, Median and mode of data set A is equal to 3
- B. Mean, Median and mode of data set A is equal to 4

- C. Mean, Median and mode of data set B is equal to 7
- D. Mean, Median and mode of data set C is equal to 4
- E. Mean, Median and mode of data set A is not equal

6) In a moderately symmetric distribution, what is the relationship between mean, median and mode?

- A. Mode = 2 median - 3 mean
- B. Mode = 3 median - mean
- C. Mode = 3 median - 2 mean
- D. Mode = 3 median + 2 mean
- E. Mode = 2 median + 3 mean

7) If $E(X) = 2$, what is the value of $E(3X + 2)$

- A. 2
- B. 8
- C. 6
- D. 4
- E. 5

8) If $V(X) = 3$, what is the value of $V(3X + 2)$?

- A. 11
- B. 9
- C. 29
- D. 27
- E. 20

9) The mean of a distribution is 33, the median is 34, and the mode is 35.5. it is most likely that this distribution is

- A. Positively skewed

- B. Symmetric
- C. Negatively skewed
- D. Asymptotic
- E. Right skewed

10) The sample space for a certain random experiment is $S = \{a_1, a_2, a_3, a_4\}$

- A. $P(a_1) = \frac{1}{2}, P(a_2) = \frac{1}{2}, P(a_3) = \frac{1}{4}, p(a_4) = \frac{1}{5}$
- B. $P(a_1) = \frac{1}{2}, P(a_2) = 0, P(a_3) = \frac{1}{4}, p(a_4) = \frac{1}{4}$
- C. $P(a_1) = \frac{3}{2}, P(a_2) = \frac{1}{2}, P(a_3) = (-\frac{1}{4}), p(a_4) = \frac{1}{5}$
- D. $P(a_1) = \frac{1}{2}, P(a_2) = \frac{5}{2}, P(a_3) = \frac{1}{4}, p(a_4) = \frac{1}{5}$
- E. $P(a_1) = \frac{1}{2}, P(a_2) = \frac{1}{2}, P(a_3) = \frac{1}{4}, p(a_4) = (-\frac{1}{5})$

Answer Question 11 to 14 using below.

If A and B are two events with $P(X) = \frac{1}{2}, P(Y) = \frac{5}{8}$ and $P(X \cap Y) = \frac{3}{4}$

11) What is the value of $P(X \cap Y)$

- A. $\frac{3}{8}$
- B. $\frac{5}{8}$
- C. $\frac{1}{8}$
- D. $\frac{7}{8}$
- E. $\frac{1}{4}$

12) What is the value of $P(X' \cap Y')$

- A. $\frac{1}{4}$
- B. $\frac{1}{2}$
- C. $\frac{2}{3}$
- D. $\frac{1}{3}$
- E. $\frac{3}{4}$

13) What is the value of $P(X'UY')$

- A. $3/8$
- B. $5/8$
- C. $1/8$
- D. $7/8$
- E. $1/4$

14) What is the value of Find $P(X' \cap Y)$

- A. $1/2$
- B. $1/4$
- C. $3/4$
- D. $1/8$
- E. $3/8$

15) 'Parameter' refers to the characteristics of the

- A. Population
- B. Sample
- C. Mean
- D. All of the above
- E. None of the above

16) The measures used to calculate the variation present among the observations in the unit of the variable is called

- A. Relative measures of dispersion
- B. Absolute measures of dispersion
- C. Coefficient of Skewness
- D. Coefficient of variance
- E. Kurtosis

17) Given below the four sets of observations. Which set has the minimum variation?

- A. 36, 38, 40, 42, 44
- B. 20, 30, 40, 50, 60
- C. 30, 40, 50, 60, 70
- D. 38, 39, 40, 41, 42
- E. 38, 39, 42, 44, 45

18) If the observations of a variable X are, -4, -20, -30, -44 and -36, then the value of the range will be:

- A. 44
- B. 48
- C. -40
- D. 40
- E. -48

19) Half of the difference between upper and lower quartiles is called

- A. Interquartile range
- B. Variance
- C. Quartile deviation
- D. Mean deviation
- E. Standard deviation

20) $S.D(X) = 6$ and $S.D(Y) = 8$. If X and Y are independent random variables, then $S.D(X-Y)$ is

- A. 2
- B. 4
- C. 10
- D. 14
- E. 100

(20 Marks)

Question 02

- (a) Explain whether or not a Binomial Distribution can be used to model the following situations. In case Binomial Distribution can be used, give a definition of the random variable and suggest suitable values for 'n' and 'p'.
- (i) Number of Boys in a family of 5 children
 - (ii) The number of throws in a die until 5 is observed
 - (iii) The number of white balls selected when 3 balls are drawn from a bag which consists of 13 white balls and 7 red balls.

(4*3 Marks)

- (b) Paul believes that 40% of people in his town will vote for him in the next provincial council election. He decided to conduct a survey to verify this.
Find the minimum number of people the survey should ask to have a mean number of 100 voting for Paul.

(08 Marks)

Question 03

The lifetime of an electric component is normally distributed with mean 800 hours and standard deviation of 60 hours.

Find,

- (a) The percentage that the electric component fails before 680 hours
- (b) The percentage of electric component with a lifetime of at most 980 hours
- (c) The percentage of electric component with a lifetime between 680 hours and 920 hours
- (d) If the standard deviation remains 60 hours what would have been the mean to ensure that not more than 10% of the components before 800 hours

(5*4 Marks)

Question 04

- (a) If $P(X) = 2/3$, $P(X \cup Y) = 3/4$ and $P(Y) = 3/8$
- (i) Find $P(X' \cap Y')$
 - (ii) Find $P(X' \cup Y')$

- (iii) Find $P(X' \cap Y)$
- (iv) State whether event X and Y are independent

(2*4 Marks)

(b) Statistics class for first years consists of 5 Marketing graduands and 3 HR graduands. Statistics class for second years consists of 4 Marketing graduands and 5 HR graduands. One graduand needs to be selected from both years to form a committee of 2 graduands for special purpose.

Find the probability that one of them would be a Marketing graduand and the other person would be a HR graduand.

(04 Marks)

(c) The following table classifies 1000 persons by their sex and by whether or not they favour a certain developmental proposal.

	Male	Female	TOTAL
Favour a proposal	250	450	700
Oppose to proposal	170	130	300
TOTAL	420	580	1000

If a person is selected at random, find the probabilities that,

- (i) The selected person favours the development proposal. (02 Marks)
- (ii) The selected person is a male given that the person favours the proposal (03 Marks)
- (iii) The selected person oppose the proposal given that the person is a male (03 Marks)

Question 05

- (a) State whether the following could be modelled by a Poisson distribution or not. Justify your answer.
 - (i) The number of misprints on a page in the first draft of a book.

(ii) Number of bacteria in 1m^3 of water.

(04 Marks)

(b) The number of accidents per week at a certain road has a Poisson Distribution with parameter 2.5.

Find the probability that,

(i) Exactly 5 accidents will occur in a particular week

(04 Marks)

(ii) More than 14 accidents will occur in a 4 week period

(05 Marks)

(c) Chamal is an Inter-university basketball player. He is a 70% free throw shooter. That means his probability of making a free throw is 0.70. Mark is the coach of Chamal, need to calculate the probability that Chamal makes his first free throw on his fifth shot.

(i) Write the suitable probability distribution to model the above case

(02 Marks)

(ii) Write the Probability density function of the above suggested model

(02 Marks)

(iii) Calculate the probability that Chamal makes his first free throw on his fifth shot. (03 Marks)

Question 06

In a comparison of the workloads of two warehouses, the number of sales orders received per week recorded over a 15 weeks period and the results are shown in the table given below.

Table 1: Weekly orders received by the Warehouse A and B

Week	Warehouse A	Warehouse B
1	583	455
2	518	508
3	574	498
4	572	519
5	591	568
6	556	571
7	602	591

8	578	603
9	598	621
10	506	605
11	548	592
12	523	634
13	539	629
14	541	635
15	575	589

- a) Calculate the descriptive statistics given below for Warehouse A and Warehouse B.
- i. Range
 - ii. Median
 - iii. Mean
 - iv. First quartile
 - v. Third quartile
 - vi. Standard Deviation
- (12 Marks)
- b) Write a short description comparing the workloads of Warehouse A and B, by using the descriptive statistics calculated in 'part a)' above.
- (03 Marks)
- c) Suggest the best possible graph to illustrate these data, indicating the important aspects that should be considered when creating the graph. (Constructing exact measurements given in the table 1 is not required, but a sketch can be drawn.)
- (05 Marks)

Question 07

- a) State clearly the mistakes and issues that should be considered in each of the following situations.

- (i) In a market research survey, 85% of the people state that they prefer Product A than Product B. (03 Marks)
- (ii) Learning methods of undergraduates those who are following BSc ITML were examined by visiting only the University Library. (03 Marks)
- (iii) ICT (Information Communication Technology) based learning methods used by the DAIs (Degree Awarding Institutes) in Sri Lanka are assessed by considering CINEC Maritime Campus only. (03 Marks)
- b) In each of the following situations, explain what graphical display you would use to present the information most appropriately. Do a sketch of the display highlighting the important aspects that should be considered in those graphs.
- (i) Student Coordinator of the Faculty of Management at CINEC Campus should present the number of students recruited for the Logistics Degree programme for the period of 2012 to 2022. (02 Marks)
- (ii) Student Coordinator of the Faculty of Management at CINEC Campus needs to present, the number of male and female students eligible for the undergraduate programme from each of the streams: Mathematics, Bio-Sciences, Commerce and Arts. (03 Marks)
- (iii) Course Coordinator of the Faculty of Management at CINEC Campus needs to compare marks obtained by first year undergraduate students for Mathematics and Business English modules. (03 Marks)
- (iv) CINEC Marketing team wants to compare the number of students registered for THREE departments (Department of Logistics, Department of Management and Department of Law) of the Management Faculty by their gender (03 Marks)

Question 08

- (a) Registrar office of CINEC campus is interested in measuring the Students' satisfaction survey of undergraduates of CINEC. All undergraduates of CINEC will be taken into consideration in conducting this survey.

Research Team wants to check the impact of below factors on the students' satisfaction.

- Academic related activities
- Recreational Activities and Leisure
- Lecture Halls
- Availability of Teaching aids
- Students' welfare activities

- (i) Identify TWO demographic variables needed to be collected from the respondents of the above study. (02 Marks)
- (ii) Write the measurement scale of the above identified variables. (02 Marks)
- (iii) Identify the population of the above study. (02 Marks)
- (iv) Assume that this research proposal is approved by the Board of Directors on 27th March 2022, and research team needs to complete the survey and submit Student Satisfaction survey report on or before 31st May 2022.

Suggest a suitable data collection method for the above study, justify your answer.

(03 Marks)

- (v) Explain TWO challenges that the research team face in data collection process (04 Marks)

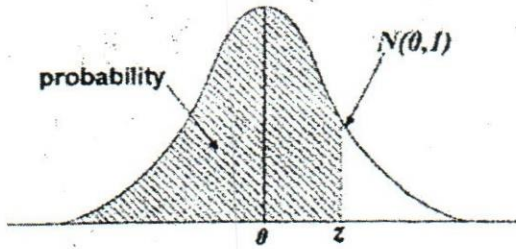
- (b) Identify the variable type (Categorical, Numerical Discrete or Numerical Continuous) and the suitable measurement scale for the following variables (07 Marks)

Table 8:1 - Variables

#	Name of the variable	Type of the Variable	Measurement Scale
(i)	Age		
(ii)	Gender		
(iii)	Number of members in the family		
(iv)	Gross monthly income in LKR		
(v)	Ethnicity		
(vi)	Area of the Dean's Office		
(vii)	Living district		

-----END OF THE QUESTION PAPER-----

The Standardised Normal Distribution Table



The distribution tabulated is that of the normal distribution with mean zero and standard deviation 1. For each value of Z , the standardized normal deviate, (the proportion P , of the distribution less than Z) is given. For a normal distribution with mean μ and variance σ^2 the proportion of the distribution less than some particular value X is obtained by calculating $Z = (X - \mu) / \sigma$ and reading the proportion corresponding to this value of Z .

Z	P	Z	P	Z	P
-4.00	0.00003	-1.00	0.1587	1.05	0.8531
-3.50	0.00023	-0.95	0.1711	1.10	0.8643
-3.00	0.0014	-0.90	0.1841	1.15	0.8749
-2.95	0.0016	-0.85	0.1977	1.20	0.8849
-2.90	0.0019	-0.80	0.2119	1.25	0.8944
-2.85	0.0022	-0.75	0.2266	1.30	0.9032
-2.80	0.0026	-0.70	0.2420	1.35	0.9115
-2.75	0.0030	-0.65	0.2578	1.40	0.9192
-2.70	0.0035	-0.60	0.2743	1.45	0.9265
-2.65	0.0040	-0.55	0.2912	1.50	0.9332
-2.60	0.0047	-0.50	0.3085	1.55	0.9394
-2.55	0.0054	-0.45	0.3264	1.60	0.9452
-2.50	0.0062	-0.40	0.3446	1.65	0.9505
-2.45	0.0071	-0.35	0.3632	1.70	0.9554
-2.40	0.0082	-0.30	0.3821	1.75	0.9599
-2.35	0.0094	-0.25	0.4013	1.80	0.9641
-2.30	0.0107	-0.20	0.4207	1.85	0.9678
-2.25	0.0122	-0.15	0.4404	1.90	0.9713
-2.20	0.0139	-0.10	0.4602	1.95	0.9744
-2.15	0.0158	-0.05	0.4801	2.00	0.9772
-2.10	0.0179	0.00	0.5000	2.05	0.9798
-2.05	0.0202	0.05	0.5199	2.10	0.9821
-2.00	0.0228	0.10	0.5398	2.15	0.9842
-1.95	0.0256	0.15	0.5596	2.20	0.9861
-1.90	0.0287	0.20	0.5793	2.25	0.9878
-1.85	0.0322	0.25	0.5987	2.30	0.9893
-1.80	0.0359	0.30	0.6179	2.35	0.9906
-1.75	0.0401	0.35	0.6368	2.40	0.9918
-1.70	0.0446	0.40	0.6554	2.45	0.9929
-1.65	0.0495	0.45	0.6736	2.50	0.9938
-1.60	0.0548	0.50	0.6915	2.55	0.9946
-1.55	0.0606	0.55	0.7088	2.60	0.9953
-1.50	0.0668	0.60	0.7257	2.65	0.9960
-1.45	0.0735	0.65	0.7422	2.70	0.9965
-1.40	0.0808	0.70	0.7580	2.75	0.9970
-1.35	0.0885	0.75	0.7734	2.80	0.9974
-1.30	0.0968	0.80	0.7881	2.85	0.9978
-1.25	0.1056	0.85	0.8023	2.90	0.9981
-1.20	0.1151	0.90	0.8159	2.95	0.9984
-1.15	0.1251	0.95	0.8289	3.00	0.9986
-1.10	0.1357	1.00	0.8413	3.50	0.99977
-1.05	0.1469			4.00	0.99997