

277

BBA in TM, 1st Sem.

Date: September 29, 2022 (Morning)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination
Course No. : BTM 4101
Course Title : Principles of Management

Winter Semester, A. Y. 2021-2022
Time : 1.5 hours
Full Marks : 75

Answer **all 3 (three)** questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

1. a) Identify and briefly explain the four basic management functions in organizations. 10 (CO1)
(PO1)
- b) Can a manager be called a leader? Is it true that planning without controlling is useless? Discuss. 10 (CO2)
(PO2)
- c) Employ your theoretical knowledge of management, draw an organization chart. 5 (CO3)
Locate top, middle, and first-line managers on the chart. (PO3)
2. a) What do you mean by managerial skill? Explain with examples the different types of skills required by a successful manager. 10 (CO1)
(PO1)
- b) Do you agree with the view that social factors are as powerful determinant of worker productivity as financial motives? Explain. 10 (CO2)
(PO2)
- c) Can a manager use both classical and behavioral perspectives? Give an example of a time when a manager did this and explain how it enabled him or her to be effective. 5 (CO3)
(PO3)
3. a) Define scientific management. Discuss the background and focus of scientific management. 10 (CO1)
(PO1)
- b) Briefly describe the principles of management by Henri Fayol. 8 (CO2)
(PO2)
- c) Recall an interaction you have had with a manager, or teacher. In that interaction, how did the manager, or teacher use science? In that interaction, how did the manager, or teacher use art? 7 (CO3)
(PO4)

BBA in TM, 1st Sem.

Date: October 03, 2022 (Morning)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)

DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination
Course No. : BTM 4103
Course Title : Financial Accounting-I

Winter Semester, A. Y. 2021-2022
Time : 1.5 hours
Full Marks : 75

Answer **all 3 (three)** questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

1. a) Farlin company hired an employee for salary \$800. Will it be a transaction? 5 (CO1, PO1)
Briefly explain the reason.
- b) On May 1, Mark Miller started Skyline Flying School, a company that provides flying lessons, by investing \$45,000 cash in the business. Following are the assets and liabilities of the company on May 31, 2021, and the revenues and expenses for the month of May. 20 (CO2, PO2)

Cash	\$5,600
Accounts Receivable	7,200
Equipment	64,000
Accounts Payable	800
Notes Payable	30,000
Lesson Revenue	7,500
Rent Expense	1,200
Repair Expense	400
Fuel Expense	2,500
Insurance Expense	400
Advertising Expense	500

Mark made no additional investment in June, but withdrew \$1,500 in cash for personal use during the month.

Required:

Prepare an **Income Statement** and **Owner's Equity Statement** for the month of May and a **Balance Sheet** at May 31, 2021.

279

2. a) Sameer Ahmed, a beginning accounting student, believes that double-entry system means each transaction must be recorded twice. Is Sameer correct? Explain. 5 (CO1) (PO1)
- b) Maya Hasan is a licensed dentist. During the first month of the operation of her business, the following events and transactions occurred. 20 (CO2, PO2)
- April 1:** Invested \$40,000 cash.
April 1: Hired a secretary-receptionist at a salary of \$600 per week payable monthly.
April 2: Paid office rent for the month \$1,000.
April 3: Purchased dental supplies on account from Smile Company \$4,000.
April 10: Provided dental services and billed insurance companies \$5,100.
April 11: Received \$1,000 cash advance from Trudy Borke for an implant.
April 20: Received \$2,100 cash for services completed and delivered to John Stanley.
April 30: Paid secretary-receptionist for the month \$2,400.
April 30: Paid \$1,600 to Smile Company for accounts payable due.

Maya uses the following chart of accounts: No. 101 Cash, No. 112 Accounts Receivable, No. 126 Supplies, No. 201 Accounts Payable, No. 205 Unearned Revenue, No. 301 M. Hasan, Capital; No. 400 Service Revenue, No. 726 Salaries Expense, and No. 729 Rent Expense.

Required:

- i) Journalize the transactions.
- ii) Post to the ledger accounts.
- iii) Prepare a trial balance on May 31, 2018.

3. a) A Mobile Phone shop makes a sale of mobile phones for \$1,000 on June 30. The customer is sent a statement on July 5 and a cheque is received on July 10. The Mobile Phone shop follows Revenue Recognition Principle. When is the \$1,000 considered to be earned? Explain the reason. 5 (CO1) (PO1)
- b) Sara Woods started his own consulting firm, Woods Consulting, on May 1, 2020. The trial balance at May 31 is as follows. 20 (CO2, PO2)

WOODS CONSULTING

Trial Balance

May 31, 2020

Accounts Title	Debit	Credit
Cash	\$ 5,700	
Accounts Receivable	6,000	
Supplies	1,900	
Prepaid Insurance	3,600	
Office Furniture	10,200	

Accounts Payable		\$ 4,500
Unearned Service Revenue		2,000
S. Woods, Capital		17,700
Service Revenue		7,500
Salaries Expense	3,400	
Rent Expense	900	
	<u>\$31,700</u>	<u>\$31,700</u>

In addition to those accounts listed on the trial balance, the chart of accounts for Woods Consulting also contains the following accounts and account numbers: No. 150 Accumulated Depreciation—Office Furniture, No. 212 Salaries Payable, No. 229 Travel Payable, No. 631 Supplies Expense, No. 717 Depreciation Expense, No. 722 Insurance Expense, and No. 736 Travel Expense.

Other data:

- i) \$900 of supplies have been used during the month.
- ii) Travel expense incurred but not paid on May 31, 2020, \$250.
- iii) The insurance policy is for 2 years.
- iv) \$400 of the balance in the unearned service revenue account remains unearned at the end of the month.
- v) May 31 is a Wednesday, and employees are paid on Fridays. Woods Consulting has two employees, who are paid \$800 each for a 5-day work week.
- vi) The office furniture has a 5-year life with no salvage value. It is being depreciated at \$170 per month for 60 months.
- vii) Invoices representing \$1,200 of services performed during the month have not been recorded as of May 31.

Required:

Required 1: Prepare the Adjusting Entries for the month of May, 2020.

Required 2: Prepare an Adjusted Trial Balance at May 31, 2020.

ISLAMIC UNIVERSITY OF TECHNOLOGY(IUT)
ORGANISATION OF ISLAMIC COOPERATION(OIC)
DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

Mid-Semester Examination

Winter Semester A.Y. 2021-2022

Course No.: EEE 4161

Full Marks: 75

Course Title: Electrical and Electronic Technology I

Time: 90 Minutes

There are **03 (three)** questions. Answer **all 03 (three)** of them. The symbols have their usual meanings. Marks of each question and corresponding CO and PO are written in the brackets.

1. a) How many basic S.I. units are there? List them.

(05)
(CO1,
PO1)

- b) i. Establish the relation between electric charge and electric current by using definitions and relevant equations. Illustrate (show graphs) the difference between alternating current and direct current.

(20)
(CO2,
PO2)

- ii. The current flowing through an element is

$$i = \begin{cases} 4 \text{ A.} & 0 < t < 1 \\ 4t^2 \text{ A.} & t > 1 \end{cases}$$

Calculate the charge entering the element from $t=0$ s to $t=2$ s.

- iii. How much energy does a 100 W electric bulb consume in two hours?

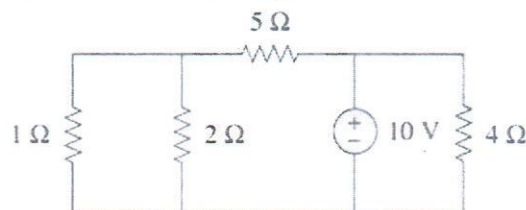
2. a) What do you understand by the resistance of a material? List out the factors that affect the resistance of a material.

(05)
(CO1,
PO1)

State Ohm's law. Illustrate Ohm's law for a linear resistor.

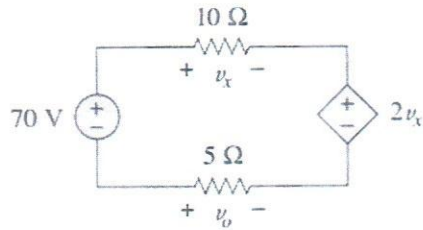
- b) i. Identify the nodes in the following circuit

(20)
(CO2,
PO2)

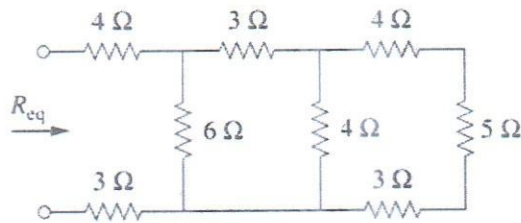


- ii. For the circuit given above, find out the potential difference across each of the linear resistors using voltage division method.

iii. Find v_x and v_o from the following circuit.

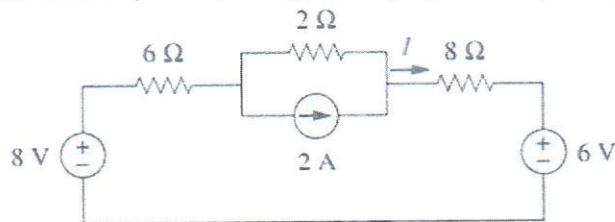


iv. Find the equivalent resistance (R_{eq}) for the following circuit.



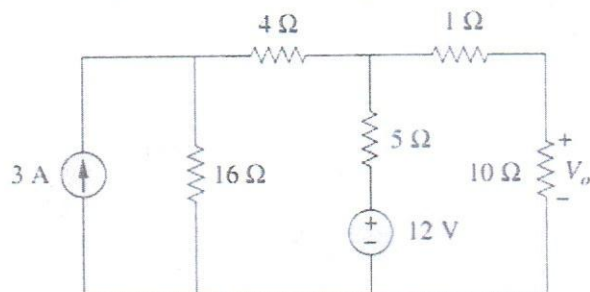
3. a) What makes a circuit linear? What do you understand by Thevenin's theorem? You may use circuit diagrams for reference. (5) (CO1, PO1)

b) i. Find I in the circuit (below) using the superposition principle. (20) (CO2, PO2)



ii. Assume the terminals across the 10 ohm resistor, in the figure below, to be a and b respectively. Apply Thevenin's theorem to find V_o from the following circuit.

What would the Thevenin's resistance be, as seen from terminals a-b, if the 10 ohm resistance, in the figure below, is changed to 20 ohm?



ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
 ORGANISATION OF ISLAMIC COOPERATION (OIC)
 DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination
 Course No. : Hum 4161
 Course Title : Sociology

Winter Semester, A. Y. 2021-2022
 Time : 1.5 hours
 Full Marks : 75

Answer **all 3 (three)** questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

1.	a) What do you mean by sociology? Describe various concerns of sociology in the 21 st century.	10	(CO1) (PO1, PO9)
	b) Explain the implications of butterfly effect. How would you differentiate between social structures and social process?	05	(CO1) (PO1, PO9)
	c) What is mechanical solidarity? Describe the notable contributions of Karl Mark as a classical sociological theorist.	10	(CO1) (PO1, PO9)
2.	a) What is the difference between cultural relativism and cultural ethnocentrism? Describe the various basic elements of culture. Put examples where it seems relevant.	13	(CO2) (PO2)
	b) What do you mean by identity politics? Describe the various unique aspects of Bengali culture.	12	(CO2) (PO2)
3.	a) What is impression management? Describe the difference between (i) Mind and Self; and (ii) "I" and "Me".	05	(CO1) (PO1, PO9)
	b) Describe the various agents for childhood socialization along with their implications.	10	(CO2) (PO2)
	c) "Role and status significantly influence your behavior"- Do you agree with the statement? Why or why not. Explain.	10	(CO2) (PO2)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination
Course No. : MATH 4161
Course Title : Mathematics I

Winter Semester, A. Y. 2021-2022
Time : 1.5 hours
Full Marks : 75

Answer all 3 (three) questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

1. a) Solve the following linear inequalities and show the results on the real axis $\frac{2}{x} < \frac{3}{x-4}$. 5 (CO1) (PO1)
- b) Define domain co-domain and range of a function $f(x)$. Sketch the following functions and find the domain and range: 12 (CO1) (PO1)
 - (i) $y = x^2 - 4x + 5$ (ii) $y = \sqrt{1-x^2}$ (iii) $y = \ln x$
- c) In a class of 25 students, 12 students have taken economics, 8 have taken economics but not politics. Find the number of students who have taken economics and politics and those who have taken politics but not economics. 8 (CO1) (PO1)

2. a) Find the new coordinates of (3, 5) when 10 (CO2) (PO2)
 - (i) the origin is shifted to (4, -2)
 - (ii) the axes are rotated by an angle θ where $\tan \theta = \frac{2}{5}$.
 - (iii) the origin is shifted to (2, -2) and the axes are rotated by an angle $\theta = 90^\circ$ at the same time .
- b) Determine the equation of the curve, $2x^2 + 3y^2 - 8x + 6y - 7 = 0$, when the origin is transited to the point (2, -1) 7 (CO2) (PO2)
- c) Determine the angle through which the axis must be rotated to remove the xy-term in the equation $7x^2 - 6\sqrt{3}xy + 13y^2 = 16$ and also determine the equation. 8 (CO2) (PO2)

3. Reduce the equation $8x^2 + 4xy + 5y^2 - 24x - 24y = 0$ to its standard form. Sketch and indicate all of its properties. 25 (CO2) (PO2)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination
Course No. : HUM 4163
Course Title : Business English

Winter Semester, A. Y. 2021-2022
Time : 1.5 hours
Full Marks : 75

Answer **all 3 (three)** questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

1. a) **Read the article carefully and answer the questions:**

10 (CO2,
CO3)
(PO2,
PO5)

Over the last three centuries the world economy has evolved from a predominantly agriculture-based system to a digital economic system. The earlier economies were mainly agrarian. In this era, capital did play a role as did technological innovations such as the plough, the steamboat or the train. But land and labour were more critical. With the service economy, the wealth creates by services exceeded the wealth created through manufacturing. Here the ability of the service provider to establish a sound business gave him access to additional capital. This evolved into a global economy where goods and services were traded across international borders with little restriction. In this period, capital started flowing across borders on a large scale for the first time.

The last five years have seen the **advent** of the digital economy where technology is becoming the driving force. With information being the driver of value and wealth creation, information technology is becoming the key to success in a growing number of industries. In the digital economy, the power of **innovation** and ideas have gained the upper hand over direct access to capital. The Indian economy is in a unique position in terms of its economic evolution. While manufacturing and service industries in India cannot freely access capital, the new breed of IT based industries have access to venture capital and private equity. The country's potential in this emerging sector has opened the doors to capital inflows that are still not available to **traditional** industries. There are two key trends which will boost the democratization of capital, either directly as funding sources or indirectly. More effective capital market routes especially for information based and software companies.

This is already happening rapidly. A market that was supposed to be **stagnating** with no public offering from the manufacturing sector in the first quarter of the fiscal year, may see as many as 20-25 new software issues this year. Numerous Internet and e-commerce companies are tapping funds through the capital market. For the financial intermediaries as well as for the investing public, dot com or 'info' initial public offerings are fast becoming attractive investment alternatives to traditional manufacturing or financial sector offers.

286

With more effective capital markets, for high potential IT stocks, 'critical mass', which in the industrial economy was primary in ensuring as company's ability to raise capital, will cease to matter. This underlines the manner in which a **burgeoning** digital economy has led to a redeployment of capital from a concentrated segment to the smaller knowledge entrepreneur.

Answer the following questions briefly in your own words:

- i. Which has been rated as the most crucial in the agro-based economy?
- ii. How did the service economy evolve into a global economy?
- iii. What does the phrase "critical mass" mean as used in the passage?
- iv. According to the passage, what is seen as catalyst of digital economy?
- v. Which trend can boost capital growth in the modern era?

b) Choose the nearest meaning of the given words from the passage above. 5 (CO3)
(PO4,PO5)

- a) Advent (nearest meaning): i. arrival ii. force iii. power iv. departure
- b) Traditional (nearest meaning): i. excessive ii. Customary
iii. old iv. religious
- c) Burgeon (nearest meaning): i. bend ii. lose iii. retard iv. grow
- d) Stagnate (nearest meaning): i. fix ii. develop iii. forsake iv. shrink
- e) Innovate (nearest meaning): i. unveil ii. ignore iii. destroy iv. abort

c) Summaries the above article in your own words (100 words) 10 (CO2)
(PO2)

2. a) **Rewrite the passage correctly. Underline your corrections.** 10 (CO1)
(PO5)

Cooperation mean working together for the benefit of all. Without cooperation modern society could not be exist. Cooperation has seen at its good among farmers in the dry regions of certain parts of Australia and America. The fields have been irrigate in these regions. Crops can not grown without water. Water cannot be brought to the fields without streams be tapped higher up. From this purpose canals and dams have been build. The canals have cut through the fields of more to one farmer. Those who lives higher up the valley than the others have allow canals to be build through their land in order to carry water to the fields of farmers lower down. In times of drought all able to sharing the water.

b) **Correct the following run-ons (i to iv) and fragments (v to viii):** 8 CO1,

- i. Alex can play football outside he has to finish his dinner. (PO2,
- ii. Rina needed to tell him the truth she refused to speak a word. PO5)
- iii. Laiba picked up the new vampire romance book from the library she read it as soon as she got home.
- iv. Toni Morrison is a professor at Princeton University, she wrote the novel The Bluest Eye
- v. Our new landlord was expected to make changes. Such as fixing the plumbing, installing a new washer, and replacing the security gate.
- vi. Walking to the store. I realized I forget my wallet.
- vii. Buy me some cabbages. Three or four.
- viii. While we have the chance.

- c) Make sentences using the following phrasal verbs and words: 7 (CO4)
break in, get over, doze off, accumulate, efficacy, disseminate, frugality, (PO2, PO6)
3. a) Transcribe the following words phonemically: 7 (CO2)
Teacher, pleasure, church, tuition, cricket, Monday, American (PO2)
- b) Write down the words for the following transcriptions: 8 (CO2)
/ə,kɒmə'deɪʃn/, /,æbə'rɪdʒəni/, /,ædə'lesəns/, /'bægɪdʒ/, /'bɔ:ʒwɑ:/, (PO2, PO5)
/,kɒnəs'ɜ:/, /dɪs'leksiən/, /'vi:əmənt/
- OR**
- 'Listening and speaking skills co-occur in real-life discourse and they are not mutually exclusive.' Accept or refute the statement.
- OR**
- List the conversational fillers (sounds, phrases and words) and make sentences using five phrases and five words.
- c) Write a paragraph with an outline within 130 words on the following topic: 2+8 (CO2)
i. Compare and contrast between E-books vs. print books (PO5)
OR
ii. An event that changed your life (Narrative)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)

DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination

Winter Semester, A. Y. 2020-2021

Course No. : BTM 4301

Time : 1.5 hours

Course Title : Management Accounting

Full Marks : 75

Answer **all 3 (three)** questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

1. a) Write short notes of the following with example: 10 (CO1)
(PO1)
- i) Product Cost
 - ii) Sunk Cost
 - iii) Selling and Distribution Cost
 - iv) Factory Overhead
 - v) Conversion Cost

- b) Does Total Fixed Cost always remain same? Explain with graphical example. 5 (CO1)
(PO1)

- c) 10 (CO2,
PO2)

Opening stock of raw material	62,500
Purchases of raw material	1,00,000
Closing stock of raw material	8,500
Direct wages	54,000
Direct expenses	12,000
Factory overheads	50% of direct wages
Office and administrative overheads	10% of works cost
Selling and distribution overheads	26,000
Cost of opening stock of finished goods	12,000
Cost of Closing stock of finished goods	15,000
Profit on Selling Price	20%

Required:

From the above information, prepare a Cost Sheet for the period ended on 31st March, 2021.

2. a) "Operating Leverage acts as a multiplier." Explain with example. 5 (CO1)
(PO1)

289

- b) Motorola Company manufactures and sells a specialized cordless telephone for high electromagnetic radiation environments. The company's contribution format income statement for the most recent year is given below: 20 (CO2, PO2)

	Total	Per Unit
Sales (30,000 units)	\$1,500,000	\$50
Less: Variable expenses	<u>1,050,000</u>	<u>35</u>
Contribution margin	450,000	<u>\$15</u>
Fixed expenses	<u>300,000</u>	
Net operating income	<u>\$ 150,000</u>	

Management is willing to increase the company's profit and has asked for an analysis of a number of items.

Required:

- i) Compute the company's break-even point in both units and sales dollars. [Use the Formula Method]
- ii) Refer to the original data. Assume that next year management wants the company to earn a profit of at least \$180,000. How many units will have to be sold to meet this target profit? [Use the Equation Method]
- iii) Refer to the original data. Compute the company's margin of safety in dollar.
- iv) Compute the company's degree of operating leverage at the present level of sales.
- v) Assume that through a more intense effort by the sales staff, the company's sales increase by 10% next year. By what percentage would you expect net operating income to increase?
- vi) Verify your answer (v) by preparing a new contribution format income statement showing a 10% increase in sales.
- vii) In an effort to increase sales and profits, management is considering the use of a higher quality speaker. The higher-quality speaker would increase variable costs by \$3 per unit, but management could eliminate one quality inspector who is paid a salary of \$30,000 per year. The sales manager estimates that the higher-quality speaker would increase annual sales by at least 20%.
 - Assuming that changes are made as described above, prepare a projected contribution format income statement for the next year.
 - Compute the company's new break-even point in dollars of sales. [Use the formula method]
 - Would you recommend that the changes be made?

- 3. a) Do both Management Accounting and Financial Accounting follow GAAP? Is there any other differences between these two accounting disciplines? Explain. 5 (CO1) (PO1)

- b) Flavor House is a family-owned restaurant that specializes in Scandinavian-style seafood. Data concerning the restaurant's monthly revenues and costs appear below (q refers to the number of meals served): 20 (CO2, PO2)

	Formula
Revenue	\$18q
Cost of ingredients	\$6.25q
Wages and salaries	\$10,000
Utilities	\$800 + \$0.20q
Rent	\$3,000
Miscellaneous	\$600 + \$0.80q

Required:

- i) Prepare the restaurant's planning budget for April assuming that 2,000 meals are served.
- ii) Assume that 1,900 meals were actually served in April. Prepare a flexible budget for this level of activity.
- iii) The actual results for April appear below. Prepare a flexible budget performance report for the restaurant for April.

Revenue	\$35,000
Cost of ingredients	\$11,110
Wages and salaries	\$10,130
Utilities	\$1,080
Rent	\$3,000
Miscellaneous	\$2,240

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination
Course No. : BTM 4303
Course Title : Human Resources Management

Winter Semester, A. Y. 2021-2022
Time : 1.5 hours
Full Marks : 75

Answer all 3 (three) questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

1. a)	What Is Human Resource Management?	5	(CO1) (PO1)
b)	Name the seven categories of HR functions.	7	(CO1) (PO1)
c)	Identify how human resource management and employees can be core competencies for organizations.	13	(CO2) (PO2)
2. a)	List the components of job descriptions.	5	(CO1) (PO1)
b)	For many individuals, the nature of work and jobs is changing. Describe these changes, some reasons for them, and how they are affecting both human resource management and individuals	10	(CO2) (PO3)
c)	Describe job analysis and the stages in the process.	10	(CO2) (PO2)
3. a)	List components of workflow analysis.	7	(CO1) (PO1)
b)	Describe job analysis and the stages in the process.	12	(CO2) (PO2)
c)	Define job design and identify common approaches to job design.	6	(CO1) (PO1)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)

DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination
Course No. : MATH 4361
Course Title : Mathematics II

Winter Semester, A. Y. 2021-2022
Time : 1.5 hours
Full Marks : 75

Answer all 3 (three) questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

1. a) Define limit of $f(x)$ at x_0 . Evaluate $\lim_{x \rightarrow x} (\sqrt{x^6 + 5x^3} - x^3)$. 5.0 (CO1)
(PO1)
- b) Discuss the continuity at $x = 1$ and differentiability at $x = 2$ of the following function 7.0 (CO1)
(PO1)
 $f(x)$ where $f(x) = \begin{cases} 1+x & \text{if } x \leq 0 \\ x & \text{if } 0 < x < 1 \\ 2-x & \text{if } 1 \leq x \leq 2 \\ 2x-x^2 & \text{if } x > 2 \end{cases}$
- c) Find the derivative of (i) $y = \frac{\sin x \cos x \tan^3 x}{\sqrt{x}}$ (ii) $y = (2x^2 - 1)^{\sin x}$ 13 ((CO1)
(PO1)
2. a) Find the area of the triangle formed by the coordinate axes and the line tangent to the curve $y = \frac{3}{x} - \frac{x}{3}$ at the point $(3, 0)$. 10 (CO1)
(PO1)
- b) Find the intervals where $f(x) = 3x^4 + 4x^3 - 12x^2 + 2$ is increasing/ decreasing and concave up /down. 7.0 (CO1)
(PO1)
- c) Show that $f(x) = \sin x (1 + \cos x)$ has a relative maximum at $x = \frac{\pi}{3}$. 8.0 (CO1)
(PO1)
3. a) State L Hospital's rule. Evaluate (i) $\lim_{x \rightarrow \infty} \left(1 - \frac{3}{x}\right)^x$ (ii) $\lim_{x \rightarrow 0} (1 + \sin x)^{\frac{1}{x}}$ 10 (CO1)
(PO1)
- b) State Taylor's theorem with remainder. Expand $f(x) = \cos x$ in power of $\left(x - \frac{\pi}{4}\right)$ with remainder term. 8.0 (CO1)
(PO1)
- c) Define successive differentiation. Find the nth derivative of $f(x) = e^{3x} \cos 4x$. 7.0 (CO1)
(PO1)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
DEPARTMENT OF MECHANICAL AND PRODUCTION ENGINEERING

Mid Semester Examination
Course Code: **MCE 4361**
Course Title: **Mechanical Technology I**

Winter Semester : A.Y. 2021-2022
Time : **1.5 Hours**
Full Marks : 75

There are 03 (three) Questions. Answer all of them.
Figures in the Margin indicate the Full Marks.

-
- 1 a) What is Fuel? What are the requirements of good fuel? 7

 - b) What are the processes of Coal Mining? Give an overview of Coal Based Power Production with necessary diagrams. 10

 - c) What is the significance of the Valve Timing Diagram in a four stroke IC Engine? Draw the actual valve timing diagram of a 4-Stroke Petrol and Diesel Engine with proper labeling. 8

 - 2 a) State and explain the First and Second Laws of Thermodynamics. What is a Heat Engine? Find out an expression for thermal efficiency of a Heat Engine. 10

 - b) What are the impracticalities associated with Carnot Vapor Cycle? How does the Rankine Cycle address these impracticalities? Describe with necessary diagrams. 10

 - c) What are the main differences between the working principles of a Refrigerator and a heat pump? Explain with necessary diagrams. 5

 - 3 a) What is a Boiler? Write down the differences between boiler accessories and mountings with examples. 10

 - b) Explain the working principle of SI Engines using the actual otto cycle (T-S Diagram) and necessary valve and piston positions diagrams. 10

 - c) What is a thermo-siphon effect? Explain the system with water-steam circuit diagram of a boiler. 5

294

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)

Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION

WINTER SEMESTER, 2021-2022

DURATION: 1 HOUR 30 MINUTES

FULL MARKS: 75

CSE 4361: Computer Science and Technology I

Programmable calculators are not allowed. Do not write anything on the question paper.

Answer all **3 (three)** questions. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

-
- | | | |
|-------|---|-------------------------|
| 1. a) | Perform the following conversions: | 5x2 |
| | i. $(10101100100100)_2 = (?)_{16}$ | (CO1) |
| | ii. $(251)_{10} = (?)_2$ | (PO1) |
| | iii. $(DAB)_{16} = (?)_8$ | |
| | iv. $(10011011)_2 = (?)_{10}$ | |
| | v. $(1968)_{10} = (?)_8$ | |
| b) | Differentiate between the followings: | 3x2 |
| | i. Analog and Digital Computer | (CO1) |
| | ii. RAM and ROM | (PO1) |
| | iii. RISC and CISC | |
| c) | Write a 'C' program to determine all prime numbers within the range $[a \dots b]$ where a and b are taken as input from user. | 8
(CO2)
(PO2) |
| 2. a) | Define Microprocessor. List five important registers of the CPU. Also state the purpose of each register. | 2+2+3
(CO1)
(PO1) |
| b) | There are many different CPU scheduling algorithms. There are five processes P1, P2, P3, P4, and P5 having CPU time 7, 3, 2, 10 and 8 respectively. Show the CPU execution of these processes using 3 CPU scheduling algorithms. Also, calculate the waiting time for each process. | 10
(CO1)
(PO1) |
| c) | Write a 'C' program that reads the temperature for each day of a month and then reports the average temperature for that month, as well as its hottest and coolest days. | 8
(CO2)
(PO2) |
| 3. a) | Explain the need of cache memory? Name the four steps involved in an instruction cycle and Explain the steps. | 2+2+6
(CO1)
(PO1) |
| b) | i. Deduce the statement - "Two processors are compatible". | 5+5 |
| | ii. Describe the necessity of memory management. Describe the multiple partition allocation memory management scheme. | (CO1)
(PO1) |
| c) | List the main function of the operating system? How does Round Robin algorithm overcome the drawback of First-Come and First-Serve and Shortest Job First? | 3+3
(CO1)
(PO1) |

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
 ORGANISATION OF ISLAMIC COOPERATION (OIC)
DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination
 Course No. : BTM 4501
 Course Title : Research Method

Winter Semester, A. Y. 2021-2022
 Time : 1.5 hours
 Full Marks : 75

Answer **all 3 (three)** questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

- | | | | |
|-------|---|----|-----------------|
| 1. a) | List and briefly describe trends affecting business research. | 5 | (CO1)
(PO1) |
| b) | If you have to conduct some business research now, what would be the topic, and what factors would influence your choice? How important is the theory in your consideration? Discuss. | 10 | (CO2)
(PO2) |
| c) | A coworker of yours wishes to generate a research idea in the area of international trade. He has examined his own strengths and interests on the basis of his assignments and has read some review articles, but has failed to find an idea about which he is excited. He comes and asks you for advice. Suggest two techniques that your colleague could use, and justify your choices. | 10 | (CO3)
(PO3) |
| 2. a) | Why is a literature review important when conducting business research? | 5 | (CO1)
(PO1) |
| b) | Suppose, you wish to start a venture involving the manufacture of smartwatches in Bangladesh for export to the United States. List at least five areas in which business research could provide information allowing for better decision-making as you begin this venture. | 10 | (CO2)
(PO2) |
| c) | Why is research often considered a process— and not just an outcome? And what is a research process? | 10 | (CO1)
(PO1) |
| 3. a) | Briefly discuss different types of research strategies. | 5 | (CO1)
(PO1) |
| b) | Assume, you have decided to undertake a project and have defined the research aim, objectives, and main research questions. Write a hypothetical research proposal by following standard guidelines. | 20 | (CO3)
(PO10) |

BBA in TM, 5th Sem.

Date: September 28, 2022 (Morning)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)

DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination
Course No. : BTM 4505
Course Title : Marketing Management

Winter Semester, A. Y. 2021-2022
Time : 1.5 hours
Full Marks : 75

Answer **all 3 (three)** questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

1.	a) What do you mean by “Holistic Marketing concept”? Describe- how you can predict irrational consumer behavior.	12	(CO2) (PO2)
	b) “Marketing has always been defined as demand management strategies.”-Based on the statement, describe different types of demand and demand management strategies with real life examples.	13	(CO2) (PO2)
2.	a) What do you mean by market penetration? Define and demonstrate the relationship between mission, vision, goals, and objectives.	07	(CO1) (PO1)
	b) Think about a company of your choice. Identify SBUs of that company and develop GE/McKinsey Matrix. Describe how you can allocate resources among those SBUs using	13	(CO1) (PO1)
	c) Critically evaluate the statement- “Customer satisfaction cannot alone generate true customer loyalty.”	05	CO1 (PO1)
3.	a) Describe different types of market targeting strategies and identify market targeting strategies for each of the following companies:	15	(CO3) (PO3, PO4)
	i. Coca-Cola		
	ii. Pran Food ltd.		
	iii. Proctor and Gamble		
	iv. Armani Tailors		
	v. Dell Computer		
	vi. Tata Nano Car.		
	b) Identify the value proposition of “We-Phone”. Develop positioning statement and brand mantra for it.	05	(CO2) (PO2)
	c) Xerox can define their business by saying- “We make copying equipment” or “We help improve office productivity”. Which of these two definitions would be better for them and why? Explain.	05	(CO1) (PO1)

L

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination
Course No. : BTM 4523
Course Title : Logistics and Supply Chain Management

Winter Semester, A. Y. 2021-2022
Time : 1.5 hours
Full Marks : 75

Answer **all 3 (three)** questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

-
1. a) Describe lean production system and bull-whip effects of supply chain with example. 9 (CO2)
How lean production system can reduce bull-whip effects of supply chain? (PO3)
- b) What is implied demand uncertainty? Briefly illustrate the impacts of customer needs on implied demand uncertainty. 9 (CO1)
(PO1)
- c) Fragmentation of supply chain ownership and shrinking product life cycle act as challenges of achieving and maintaining strategic fit. Do you agree with this statement? Describe with example. 7 (CO2)
(PO3)
2. a) "It is said that sourcing decisions are always an important factor affecting the supply chain performance of all industries." 10 (CO1)
How do sourcing decisions affect both the responsiveness and efficiency of a supply chain? Analyze with example. (PO1)
- b) What do you mean by zone of strategic fit? How zone of strategic fit can be achieved by integrating implied demand uncertainty and responsiveness of the supply chain? Explain with example. 10 (CO1)
(PO1)
- c) Differentiate between logistics and supply chain. 5 (CO1)
(PO1)
3. a) How do you evaluate and select your supplier? Is weighted criteria evaluation system of supplier selection give you best result all the time? Analyze with example. 10 (CO2)
(PO3)
- b) You are given the following information to estimate the decision options. 15 (CO2)
(PO3)

Cost	Make option	Buy option
Fixed Cost	\$25,000	\$3,000
Variable cost	\$8	\$12

2078

- i. Find the break-even quantity and the total cost at the break-even point.
- ii. If the requirement is 4,500 units, is it more cost-effective for the firm to buy or make the components? What is the cost saving for choosing the cheaper option?
- iii. If the requirement is 6,000 units, is it more cost-effective for the firm to buy or make the components? What is the cost saving for choosing the cheaper option?

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination

Course No. : BTM 4531

Course Title : Product and Service Development

Winter Semester, A. Y. 2021-2022

Time : 1.5 hours

Full Marks : 75

Answer **all 3 (three)** questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

1. a) What is process innovation? How does a firm increase its market share through process innovation? Analyze with example. 10 (CO2, PO3)
- b) What do you mean by market uncertainty and technical uncertainty? Briefly explain with examples. 8 (CO1, PO1)
- c) Demonstrate the relationship among creativity, innovation and invention. 7 (CO1, PO1)
2. a) Define the strategy of locating in an unoccupied space for new product development. Why might a firm end up choosing an interior position in the unoccupied space region. 8 (CO2, PO3)
- b) Briefly explain the concept of perceptual mapping. Using perceptual mapping, how can a firm add value to its existing product? Analyze with examples. 9 (CO2, PO3)
- c) What do you mean by leap-frogging and step by step innovation? Briefly explain with example. 8 (CO3, PO6)
3. a) What do you mean by Technology? Briefly explain Porters' Technology Strategy. 8 (CO3, PO6)
- b) How does product cannibalization help in new product launch and customer retention? What role does technological innovation play in this battle plan? Critically analyze with example. 9 (CO3, PO9)
- c) What are the implications of technology throughout the product life cycle? Analyze with example. 8 (CO3, PO6)

300

BBA in TM, 5th Sem

30 September 2022 (Morning)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)

ORGANISATION OF ISLAMIC COOPERATION (OIC)

Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION

WINTER SEMESTER, 2021-2022

DURATION: 1 HOUR 30 MINUTES

FULL MARKS: 75

CSE 4561: Computer Science and Technology III

Programmable calculators are not allowed. Do not write anything on the question paper.

Answer **all 3 (three)** questions. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

-
1. a) Describe the *process* component of an information system. 4
(CO1)
(PO1)
- b) Differentiate between a *spreadsheet* and a *database*? List three differences between them. 6
(CO1)
(PO1)
- c) What do you understand by the term *Business Intelligence*? 5
(CO1)
(PO1)
- d) Answer the following questions: 10
i. What task do the following lines of code perform? (CO1)
(PO1)
- ```
avg=df['horsepower'].mean(axis=0)
df['horsepower'] = df['horsepower'].replace(np.nan, avg)
```
- ii. What is the terminology for the data that does not fit within the context of the use case?
- iii. Who is a data analyst? Does a data analyst need to recognize and understand the organization's goal?
- iv. When we analyze data to understand why an event occurred, which type of data analytics are we performing? Give an example.
- v. What is the Pearson Correlation between variables  $X$  and  $Y$ , if  $X = -Y$ ?
2. a) A modern data ecosystem includes a network of continually evolving entities. Describe those entities. Describe the three emerging technologies that are shaping today's data ecosystem 7  
(CO1)  
(PO1)
- b) Choose the valid observation (smallest, smaller, equal, larger, largest) about the set of box plots below to fill in the blanks in the subsequent sentences: 8  
(CO1)  
(PO1)

301

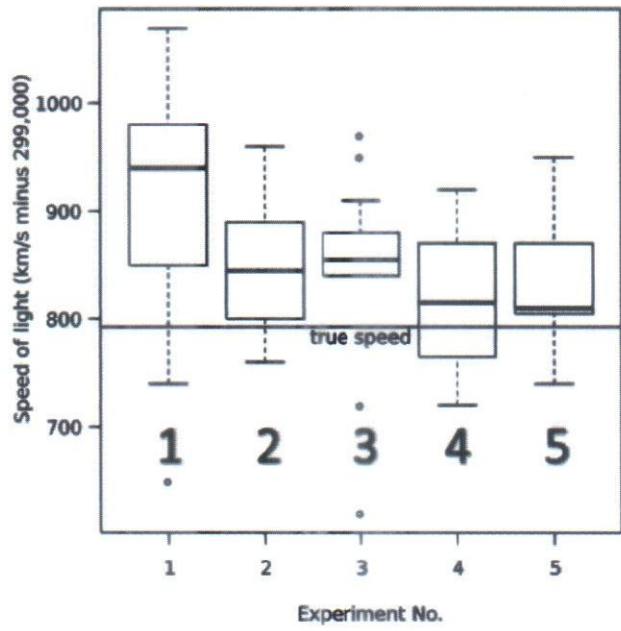


Figure 1: Box plot for Question 2.(b).

The minimum of Box 4 is \_\_\_ than the minimum of Box 5.  
The median of Box 1 is \_\_\_ than the median of all other boxes.  
Box 3 has a \_\_\_ median than Box 4.  
Box 3 has the \_\_\_ range of all boxes.

c) List three examples of each of the following:

- Data Type
- Data Analytics Tool
- Business issue that can be addressed with data
- Career paths that use data analytics

4  
(CO1)  
(PO1)

d) Describe primary data, secondary data, and third-party data.

6  
(CO1)  
(PO1)



3. a) The sinking of the Titanic is one of the most infamous shipwrecks in history. On April 15, 1912, during her maiden voyage, the widely considered “unsinkable” RMS Titanic sank after colliding with an iceberg. Unfortunately, there were not enough lifeboats for everyone onboard, resulting in the death of 1502 out of 2224 passengers and crew. While there was some element of luck involved in surviving, it seems some groups of people were more likely to survive than others. You are required to build a predictive model that answers the question: “what sorts of people were more likely to survive?” using passenger data (i.e. name, age, gender, socio-economic class, etc.).

6  
(CO2)  
(PO2)

**Table 1: Data Dictionary for Question 3.**

| Variable | Definition                    | Key                                      |
|----------|-------------------------------|------------------------------------------|
| survival | Survival                      | 0 = No, 1 = Yes                          |
| pclass   | Ticket class/Economic status  | 1 = 1st, 2 = 2nd, 3 = 3rd                |
| sex      | Sex                           |                                          |
| Age      | Age in years                  |                                          |
| sibsp    | # spouses aboard the Titanic  |                                          |
| parch    | # children aboard the Titanic |                                          |
| ticket   | Ticket number                 |                                          |
| fare     | Passenger fare                |                                          |
| cabin    | Cabin number                  |                                          |
| embarked | Port of Embarkation           | C=Cherbourg, Q=Queenstown, S=Southampton |

**Some additional information regarding the variables are as follows:**

**sibsp:** The dataset defines family relations as following:

Sibling = brother, sister, stepbrother, stepsister

Spouse = husband, wife (mistresses and fiancés were ignored)

**parch:** The dataset defines family relations as following:

Parent = mother, father

Child = daughter, son, stepdaughter, stepson

Some children traveled only with a nanny, therefore parch=0 for them.

- i. Give an overview of variable datatypes (i.e. qualitative, quantitative, ordinal, etc.)

10  
(CO2)  
(PO2)

303

ii. Consider the following Table 2 containing the Pearson Correlation of features:

8  
(CO2)  
(PO2)

**Table 2:** Pearson Correlation of features for Question 3.(b)

|               |          |        |        |        |       |        |            |         |             |               |            |
|---------------|----------|--------|--------|--------|-------|--------|------------|---------|-------------|---------------|------------|
| Survived      | 1        | -0.34  | -0.065 | -0.035 | 0.082 | 0.26   | 0.017      | -0.2    | -0.54       | -0.17         | -0.083     |
| Pclass        | -0.34    | 1      | -0.34  | 0.083  | 0.018 | -0.55  | 0.066      | 0.55    | 0.13        | 0.16          | -0.036     |
| Age           | -0.065   | -0.34  | 1      | -0.23  | -0.17 | 0.097  | -0.25      | 0.17    | 0.081       | -0.019        | 0.37       |
| SibSp         | -0.035   | 0.083  | -0.23  | 1      | 0.41  | 0.16   | 0.89       | -0.58   | -0.11       | 0.068         | -0.24      |
| Parch         | 0.082    | 0.018  | -0.17  | 0.41   | 1     | 0.22   | 0.78       | -0.58   | -0.25       | 0.04          | -0.12      |
| Fare          | 0.26     | -0.55  | 0.097  | 0.16   | 0.22  | 1      | 0.22       | -0.27   | -0.18       | -0.22         | -0.029     |
| FamilySize    | 0.017    | 0.066  | -0.25  | 0.89   | 0.78  | 0.22   | 1          | -0.69   | -0.2        | 0.067         | -0.23      |
| IsAlone       | -0.2     | 0.14   | 0.17   | -0.58  | -0.58 | -0.27  | -0.69      | 1       | 0.3         | 0.064         | 0.049      |
| Gender_Code   | -0.54    | 0.13   | 0.081  | -0.11  | -0.25 | -0.18  | -0.2       | 0.3     | 1           | 0.11          | -0.027     |
| Emberked Code | -0.17    | 0.16   | -0.019 | 0.068  | 0.04  | -0.22  | 0.067      | 0.064   | 0.11        | 1             | 0.03       |
| Title Code    | -0.083   | -0.036 | 0.37   | -0.24  | -0.12 | -0.029 | -0.23      | 0.049   | -0.027      | 0.03          | 1          |
|               | Survived | Pclass | Age    | SibSp  | Parch | Fare   | FamilySize | IsAlone | Gender_Code | Emberked Code | Title Code |

**Gender\_Code:** Female=0, Male=1

**Emberked\_Code:** C=0, Q=1, S=2

**Title\_Code:** Master=0, Misc=1, Miss=2, Mr=3, Mrs=4

From the Pearson Correlation of features above give insight into the sorts of people who survived and about the sorts of people who did not survive.

b) What is the significance of Exploratory Data Analysis (EDA)?

7  
(CO1)  
(PO1)

BBA in TM, 5<sup>th</sup> Semester

October 5, 2022 (Morning)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)

ORGANISATION OF ISLAMIC COOPERATION (OIC)

**DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT**

Mid Term Examination

Winter Semester, A. Y. 2021-2022

Course No. : HUM 4561

Time : 1.5 hours

Course Title : Introduction to Psychology

Marks : 75

Answer all **3 (three)** questions. All questions carry equal marks. Marks in the margin indicate full marks.

- 
- |    |    |                                                                                                                                                                                                                                                      |      |            |
|----|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------------|
| 1. | a) | What were the basic ideas and who were the important people behind the early approaches known as Gestalt, psychoanalysis, and behaviorism? What assumptions about human nature underlie the various historical approaches to psychology?             | 12.5 | CO1<br>PO1 |
|    | b) | Briefly discuss the theory of motor stage development of infant and Kohlberg's stages of moral reasoning.                                                                                                                                            | 12.5 | CO1<br>PO1 |
| 2. | a) | Explain the following term of psychological development of child:<br>I. Easy temperament, difficult temperament and slow to warm temperament.<br>II. Securely Attached, avoidant and ambivalent.                                                     | 10   | CO1<br>PO1 |
|    | b) | Briefly discuss the Piaget's stages of cognitive development. Explain the alternative approaches to Piaget's theory.                                                                                                                                 | 15   | CO1<br>PO1 |
| 3. |    | Describe the following foundational principles of consumer psychology with proper examples-<br>I. Transfer.<br>II. The bandwagon effect.<br>III. The 6 weapons of influence.<br>IV. Transtheoretical model.<br>V. The elaboration likelihood method. | 25   | CO2<br>PO2 |



305

BBA in TM, 7<sup>th</sup> Sem.

Date: September 28, 2022 (Afternoon)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)  
ORGANISATION OF ISLAMIC COOPERATION (OIC)  
DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination

Course No. : BTM 4701

Course Title : Operations Research

Winter Semester, A. Y. 2021-2022

Time : 1.5 hours

Full Marks : 75

Answer **all 3 (three)** questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

- |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |    |                         |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------------------|
| 1. a) | “Operations research is all about ensuring efficiency and optimization”-Describe the statement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 10 | (CO1)<br>(PO1,<br>PO9)  |
| b)    | Describe the advantages and limitations of queuing theory.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 08 | (CO3,<br>PO3,<br>PO10)  |
| c)    | A road transport authority has one reservation clerk on duty at a time. She handles information of bus schedules and makes reservations. Customers arrive at a rate of 8 per hour and the clerk can service 12 customers on an average per hour. The management is contemplating to install a computer system to handle the information and reservation. This is expected to reduce the service time from 5 to 2 minutes. The additional cost of having the new system works out to taka 50 per day. The cost of goodwill of having a customer to wait is estimated to be 12 paisa per minute spent waiting before being served. Should the company install the computer system? Assume 8 hours working day.                                                                                                                                                                  | 07 | (CO3)<br>(PO3,<br>PO10) |
| 2. a) | How would you differentiate between assignment and transportation problem?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 05 | (CO2)<br>(PO2)          |
| b)    | An electronics firm is undecided as to the most profitable mix for its products. The products now manufactured are transistors, resistors, and carbon tubes with a profit (per 100 units) of taka 10, taka 6, and taka 4 respectively. To produce a shipment of transistors containing 100 units requires 1 hours of engineering, 10 hours of direct labor, and 2 hours of administration service. To produce 100 resistors are required 1 hour, 4 hours, and 2 hours of engineering, direct labor, and administration time respectively. To produce one shipment of the tubes (100 units) requires 1 hour of engineering, 5 hours of direct labor and 6 hours of administration. There are 100 hours of engineering services available, 600 hours of direct labor and 300 hours of administration. What is the most profitable mix? Use simplex method to solve the problem. | 20 | (CO1)<br>(PO1,<br>PO9)  |

308

3. A manufacturer has 3 distribution centers located at Dhaka, Tangail, and Sirajgonj and five retail outlets: A, B, C, D, and E. The demand and supply capacity and associated cost is given in the following table:

25 (CO2)  
(PO2)

|           | Retail Outlet |    |     |    |    | Supply |
|-----------|---------------|----|-----|----|----|--------|
|           | A             | B  | C   | D  | E  |        |
| Dhaka     | 55            | 30 | 40  | 50 | 40 | 8      |
| Tangail   | 35            | 30 | 100 | 45 | 60 | 4      |
| Sirajganj | 40            | 60 | 95  | 35 | 30 | 8      |
| Demand    | 5             | 2  | 4   | 6  | 3  |        |

- i. Determine whether this problem is unbalanced or not.
- ii. Use VAM method to determine the initial feasible solution and determine whether there is any degeneracy problem.
- iii. Determine the optimum shipping cost from distribution centers to the retail outlets. Use MODI method.
- iv. Interpret the result.



307

BBA in TM, 7<sup>th</sup> Sem.

Date: October 04, 2022 (Afternoon)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)  
ORGANISATION OF ISLAMIC COOPERATION (OIC)

DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination  
Course No. : BTM 4705  
Course Title : Entrepreneurship

Winter Semester, A. Y. 2021-2022  
Time : 1.5 hours  
Full Marks : 75

Answer **all 3 (three)** questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

- 
1. a) On December 17, 1903, Wilbur and Orville Wright made four brief flights at Kitty Hawk with their first powered aircraft. The Wright brothers had invented the first successful airplane. 10 (CO2)  
(PO2,  
PO11)  
Group Captain Mofizur Rahman is a unique personality known for his checkered twenty-five years long career with Bangladesh Air Force (BAF) as a pilot. He is the founder of NOVOAIR which launched commercial operation on 9 January 2013 with Embraer 145 jet aircraft.  
What will be the differences between the nature of Wright brothers and Group Captain Mofizur Rahman?
  - b) The first modern air conditioner was invented in 1902 by Willis Haviland Carrier, a skilled engineer who began experimenting with the laws of humidity control to solve an application problem at a printing plant in Brooklyn, New York. Borrowing from the concepts of mechanical refrigeration established in earlier years, Carrier's system sent air through coils filled with cold water, cooling the air while at the same time removing moisture to control room humidity. In 1933, the Carrier Air Conditioning Company of America developed an air conditioner using a belt-driven condensing unit and associated blower, mechanical controls, and evaporator coil, and this device became the model in the growing U.S. marketplace for air-cooling systems. Today's air conditioners, while operating on the same fundamental science as Carrier's 1933 system, incorporate advancements in vapor compression, diagnostics and controls, electronic sensors, materials, and energy efficiency. What do you think "Air Conditioner" falls in which type of innovation and why? Also explain other types of innovation with examples. 15 (CO3)  
(PO4)
  2. a) When an explosion threatened the survival of the three astronauts onboard Apollo 13, the solution was found not according to contingency plans but in engaging in the act of bricolage: piecing available materials together creatively, leading to an unconventional but effective solution. Explain "Bricolage" with practical example. 10 (CO1)  
(PO1)
  - b) Forming opportunity beliefs often requires creative mental leaps. These creative mental leaps are launched from a source—one's existing knowledge. In the case of entrepreneurial opportunities, an example of a creative mental leap is from knowledge about existing markets to a new technology that could lead to products/services that satisfy that market. Alternatively, the creative mental leap could be from knowledge about a 15 (CO2)  
(PO2,  
PO11)



308

technology to a new market that could benefit from its introduction. Making these connections between a new product (or new service, new business model, or new technology) and a target market where it can be introduced is aided by the superficial and structural similarities between the source (e.g., the market) and the destination (e.g., technology). Explain superficial similarities and structural similarities with practical examples.

3. a) No one starts a business expecting to fail. Starting a business can be a lot of fun and excitement. Success requires a lot of planning and starting the business the right way. One of the great mysteries of entrepreneurship is why businesses fail. Some people start business successfully one after another while others fail to succeed. In your opinion, what factors can be liable for failing a business plan? 10 (CO1) (PO1)
- b) The Walkman was first created because Sony co-founder Masaru Ibuka wanted to be able to listen to music on long flights. The first model of Sony Walkman, the TPS-L2, was released in 1979, and it proved to be a huge hit. The Sony Walkman cassette player revolutionised the way that we listen to music. It enabled people to create soundtracks to their lives in ways that hadn't been possible before. The fact that you could use your Walkman anywhere changed that; music had never been so personal. It was the first in a long line of portable audio players, and without it, we might not have the same objects such as iPods and MP3 players that we do today. From a consumer's viewpoint, product such as Sony Walkman tend toward which portion of the continuum for classifying new products? What are the other portions of the continuum? Explain with examples. 10 (CO3) (PO4)
- c) Suppose a company produced toothpaste and distributed the product samples to the potential customers. This incident falls in which stage of the product planning and development process? What are the other stages of the product planning and development process? 5 (CO1) (PO1)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)  
ORGANISATION OF ISLAMIC COOPERATION (OIC)  
DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination  
Course No. : BTM 4707  
Course Title : Technology Management

Winter Semester, A. Y. 2021-2022  
Time : 1.5 hours  
Full Marks : 75

Answer all 3 (three) questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

1. a) "In management of technology, the style of management adopted in an organization requires adjustment according to the different phases of technology life cycle" Do you agree or disagree with this statement. Justify your position. 7 (CO2) (PO6)
- b) How has the evolution of production and product technology influenced the national economy of Bangladesh? 8 (CO1) (PO8)
- c) "There is no doubt that improvement in productivity is vitally important to an economic system. It provides relief from inflationary pressures and permits real improvement in the standard of living. Technology is the driver for such improvement. Technology also triggers another mechanism for economic growth that is yet to be fully appreciated, one whose effect has not been quantitatively measured. Through this mechanism, emerging and new technology spurs economic expansion." 10 (CO2) (PO6)  
What is this other mechanism? Explain it.
2. a) "Many companies and leaders have embraced the idea of being a "fast follower," essentially meaning that they wait for other organizations to try something first, and then imitate their success. Whether it's the latest software package, or new office designs, some subset of companies pride themselves on trying the latest and greatest, while a larger set waits in the wings to see how it turns out, presumably adopting what works and abandoning what doesn't." Using appropriate and relevant examples, argue the above stem from a technology management point of view. 13 (CO2) (PO3)
- b) "Creativity depends on both people and environment."- Explain this statement. Also discuss why creativity is essential in a technology driven company? 12 (CO3) (PO10)
3. a) "The personal computer market began in the mid-1970s. Adam Osborne, the founder of a start-up company, decided to package all the PC components together (computer, monitor, and software) as a portable computer. This was the first truly portable personal computer, an innovation that permitted researchers and businesspeople to take their office work home and vice versa. It became an immensely popular idea with the computer-literate population. Osborne shipped his first computer in July 1981. In two months the company had its first \$1 million in sales, and by the second year its net revenues reached \$100 million. Six months later the company was bankrupt. What went wrong? There were several major problems associated with the way this innovation was managed: Osborne used a 5-inch display screen to keep the computer compact, but this size allowed only 60 print columns instead of the 80 commonly used by people migrating from 15 (CO5) (PO6)



310

punched-card mainframe computers to PCs. It is important to remember, however, that product design inevitably requires a tradeoff among desirable features. To achieve portability of the product, Osborne settled on the technology available to the firm at the time and introduced the small screen. Consumers were interested in a larger, more standard, 80-character display. Osborne lagged in its R&D efforts and was late in introducing a larger screen that would meet consumer demands. This delay eventually proved fatal to the company. Osborne also delayed the generation of needed capital through public offering from the summer of 1982 to early 1983. While this was only about six months, in the dynamic market it proved to be a significant delay.

Kaypro, a competitor company, took advantage of Osborne's weak points and delays. Kaypro introduced improved technology-a portable computer with an 80-character screen. To counter Kaypro's new technological advantage, Osborne announced that it would introduce new technology that would meet consumers' demand for a better display. The timing of the announcement was another major mistake, for Osborne had a large inventory. Many potential customers, knowing that a newer, better model was about to be launched, decided not to buy from the current inventory but to wait and buy the new model."

What was the main reason for Osborne's spectacular success and then sudden demise? What are the lessons from the above case?

- b) Discuss the progress of technology in relation to product and process innovation.

10 (CO4)  
(PO4)



ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)  
 ORGANISATION OF ISLAMIC COOPERATION (OIC)

**DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT**

Mid Term Examination

Winter Semester, A. Y. 2021-2022

Course No. : BTM 4721

Time : 1.5 hours

Course Title : Corporate Finance

Marks : 75

Answer all **3 (three)** questions. All questions carry equal marks. Marks in the margin indicate full marks.

1. a) ABC Corporation's accountants prepared the following financial statements for year-end 2021: 15 CO3  
PO3
- I. Prepare cash flow statement for 2021.
  - II. Determine the change in net working capital in 2021.

| <b>ABC Corporation<br/>Income Statement 2021</b> |      |
|--------------------------------------------------|------|
| Revenue                                          | 750  |
| Expenses                                         | -565 |
| Depreciation                                     | -90  |
| Net Income                                       | 95   |
| Dividends                                        | 75   |

| <b>Balance Sheet 2021</b>     |             |             |
|-------------------------------|-------------|-------------|
|                               | <b>2021</b> | <b>2020</b> |
| <b>Assets</b>                 |             |             |
| Cash                          | 65          | 55          |
| Account receivables           | 170         | 165         |
| Net fixed assets              | 390         | 370         |
| Total Assets                  | <b>625</b>  | <b>590</b>  |
| <b>Liabilities and Equity</b> |             |             |
| Accounts payable              | 125         | 115         |
| Long-term debt                | 145         | 140         |
| Stockholder's equity          | 355         | 335         |
|                               | <b>625</b>  | <b>590</b>  |

- b) Describe the elements that need to be covered under industry analysis. 10 CO1  
PO1
2. a) Describe the basic principles of capital budgeting. 7.0 CO1  
PO1
- b) Explain how the evaluation and selection of capital projects is affected by mutually exclusive projects, project sequencing, and capital rationing. 7.0 CO1  
PO1
- c) Describe the use of target capital structure in estimating WACC and how target capital structure weights may be determined. 7.0 CO2  
PO2

3/2

- d) Explain pure-play method in estimating beta. 4.0 C02  
PO2
- 3. a) Describe uses of country risk premiums in estimating the cost of equity. Explain and demonstrate the correct treatment of flotation costs. 7.0 CO1  
PO1
- b) Evaluate the choices of short-term funding available to a company. 7.0 CO1  
PO1
- c) Describe the principles of strategic analysis of an industry. 7.0 CO2  
PO2
- d) Explain uses of industry analysis and the relation of industry analysis to company analysis. 4.0 CO2  
PO2

313

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)  
ORGANISATION OF ISLAMIC COOPERATION (OIC)  
DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination  
Course No. : BTM 4749  
Course Title : Negotiation and Conflict Management

Winter Semester, A. Y. 2021-2022  
Time : 1.5 hours  
Full Marks : 75

Answer all 3 (three) questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

- 
- 1. a) What would be the possible advantages of making first concession by a negotiating party? Briefly illustrate the concept of concession making to reach a settlement point in negotiation with a hypothetical example. 9 (CO2 PO2)
  - b) What is pareto efficient frontier in negotiation? How both parties can create and claim more value in integrative situation through identifying pareto efficient solutions? 10 (CO2 PO2)
  - c) Define anchoring bias in negotiation and give an example. 6 (CO2 PO2)
  - 2. a) When you should not negotiate? Briefly illustrate the situations. 7 (CO1 PO1)
  - b) What do you mean by depersonalizing the problem? What might be the probable solutions when there is a number of conflicting points among negotiators? Explain. 10 (CO2 PO2)
  - c) "Non-zero-sum games don't have to create a net positive result – it could also be negative as well." Do you believe this statement? Why or why not? Analyze with example. 8 (CO1 PO1)
  - 3. a) What are the ethically ambiguous tactics? 10 (CO3 PO7)  
Is it all right to use ethically ambiguous tactics?
  - b) Consider the following situations of ethical dilemma involving selling an audio system and the statement to a prospective buyer about the existence of another potential buyer: you are trying to sell your audio system (an amplifier and speakers) to raise money for an upcoming trip overseas. The system works great, and an audiophile friend tells you that if he were in the market for this kind of equipment (which he isn't), he'd give you \$500 for it. A few days later the first potential buyer comes to see the system. The buyer looks it over and asks a few questions about it. You assure the buyer that the system works well. When asked how much, you tell the buyer that you 15 (CO3 PO3 PO6)



314

have already had an offer for \$500. The buyer purchases the system for \$550. Is it ethical to have said what you said about having another offer?

**Requirements:**

Apply the four standards of evaluating tactics of ethical reasoning to negotiation on this given situation.

315

BBA in TM, 7<sup>th</sup> Semester

October 6, 2022 (Afternoon)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)

ORGANISATION OF ISLAMIC COOPERATION (OIC)

**DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT**

Mid Term Examination

Winter Semester, A. Y. 2021-2022

Course No. : HUM 4761

Time : 1.5 hours

Course Title : Business Ethics and Leadership

Marks : 75

Answer all 3 (three) questions. All questions carry equal marks. Marks in the margin indicate full marks.

- 
- |       |                                                                                                                                                                                                                                                           |     |            |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------------|
| 1. a) | Distinguish between assigned and emergent leaders. Give an example of an instance in which you "emerged" as a leader.                                                                                                                                     | 05  | CO2<br>PO9 |
| b)    | Describe each of French and Raven's bases of social power. Now, give a personal example of each as you have experienced or applied them in your life.                                                                                                     | 10  | CO2<br>PO9 |
| c)    | Explain the five major leadership traits.                                                                                                                                                                                                                 | 10  | CO1<br>PO1 |
| 2. a) | What are the "Big Five" personality factors? How do they affect your leadership abilities and capabilities? Discuss which of these personality traits you feel you possess and give a personal example of how they benefited you in a leadership context. | 7.5 | CO2<br>PO9 |
| b)    | What is the skills approach? What are the three basic personal skills that Katz outlines? Define and describe each of these skills.                                                                                                                       | 7.5 | CO1<br>PO1 |
| c)    | Briefly explain the situational leadership II model.                                                                                                                                                                                                      | 10  | CO1<br>PO1 |
| 3. a) | Explain each of the elements and components of the Mumford Skills Model.                                                                                                                                                                                  | 15  | CO1<br>PO1 |
| b)    | Compare and contrast Blake and Mouton's managerial grid theory to the Ohio State and Michigan studies.                                                                                                                                                    | 10  | CO1<br>PO1 |

316

BBA in TM, 7<sup>th</sup> Sem.

Date: September 29, 2022 (Afternoon)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)  
ORGANISATION OF ISLAMIC COOPERATION (OIC)  
DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination

Course No. : Hum 4763

Course Title : Science, Technology and Islam

Winter Semester, A. Y. 2021-2022

Time : 1.5 hours

Full Marks : 75

Answer **all 3 (three)** questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

- |       |                                                                                           |    |                         |
|-------|-------------------------------------------------------------------------------------------|----|-------------------------|
| 1. a) | Discuss scientific indications in the Holy Quran on the Big Bang theory.                  | 10 | (CO1)<br>(PO9<br>PO10)  |
| b)    | What are the Quranic indications on force of Gravitation and force of expansion?          | 10 | (CO1)<br>(PO9,<br>PO10) |
| c)    | Explain the importance of Business, science, Technology in Islam.                         | 05 | (CO1)<br>(PO9,<br>PO10) |
| 2. a) | Describe in the light of Al- Quran on mass energy theory and matter of transmission.      | 10 | (CO1)<br>(PO9,<br>PO10) |
| b)    | Write Quranic indications on Chemistry.                                                   | 10 | (CO1)<br>(PO1,<br>PO10) |
| c)    | What is the scientific indications in the Holy Quran on $H_2 + O_2 = H_2O = \text{life?}$ | 05 | (CO1)<br>(PO9,<br>PO10) |
| 3. a) | Write at least five Quranic verses with appropriate meaning on Meteorology.               | 10 | (CO5)<br>(PO8,<br>PO11) |
| b)    | Describe Quranic indications on clouds and the rain laden clouds.                         | 5  | (CO5)<br>(PO8,<br>PO11) |
| c)    | Discuss scientific indications in the Holy Quran on earth's motion. The Sun and the Moon. | 15 | (CO5)<br>(PO8,<br>PO11) |



ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)  
ORGANISATION OF ISLAMIC COOPERATION (OIC)  
**DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT**

Mid-Semester Examination  
Course No. : BTM 4763  
Course Title : System Analysis

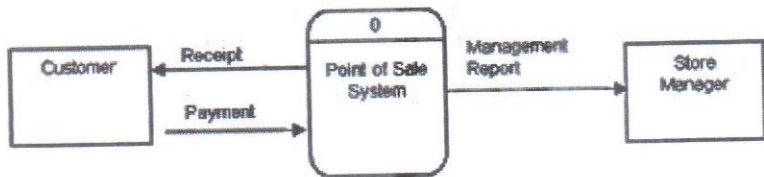
Winter Semester, A. Y. 2021-2022  
Time : 1.5 hours  
Full Marks : 75

Answer **all 3 (three)** questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

1. a) Why do you think it is important for a system analyst to understand the business for the successful implementation of an information system? 7 (CO1)  
(PO1)
- b) Give your analysis on why the definition of project scope and constraints important? 8 (CO3)  
How is a project feasibility evaluated? (PO2)
- c) "In the past, IT managers divided systems into categories based on the user group the system served. Today, traditional labels no longer apply. As business changes, information use also changes in most companies. Today, it makes more sense to identify a system by its functions and features, rather than by its users." 10 (CO2)  
Explain the above paragraph and list a new set of system definitions. (PO2)
  
2. a) Handbook of Business and Technology Management (BTM) Department of IUT reads as follows: "To enroll in BTM 4807 (Advanced Financial Accounting), which is an advanced course, a student must complete two prerequisites: BTM 4103 (Financial Accounting I) and BTM 4201 (Financial Accounting II). A student who completes either one of these prerequisites and obtains the instructor's permission, however, will be allowed to take BTM 4807." 15 (CO2)  
First construct a decision table that describes the Handbook of Business and Technology Management (BTM) Department of IUT regarding eligibility for BTM 4807. (Show all possible rules.) (PO3)  
Then Simplify the table you just created. Finally draw a simplified decision tree to represent the course enrollment process for BTM 4807.
- b) Do you think it is better to use a decision tree rather than a decision table? 10 (CO3)  
Refer to Fig. for Q. No 3. b), which contains drafts of a context and Level-0 DFD for a Point of Sales System. Examining the figure, identify and explain the possible violations of rules and guidelines on these diagrams. (PO2)

348

### Context Diagram



### Level-0 Diagram

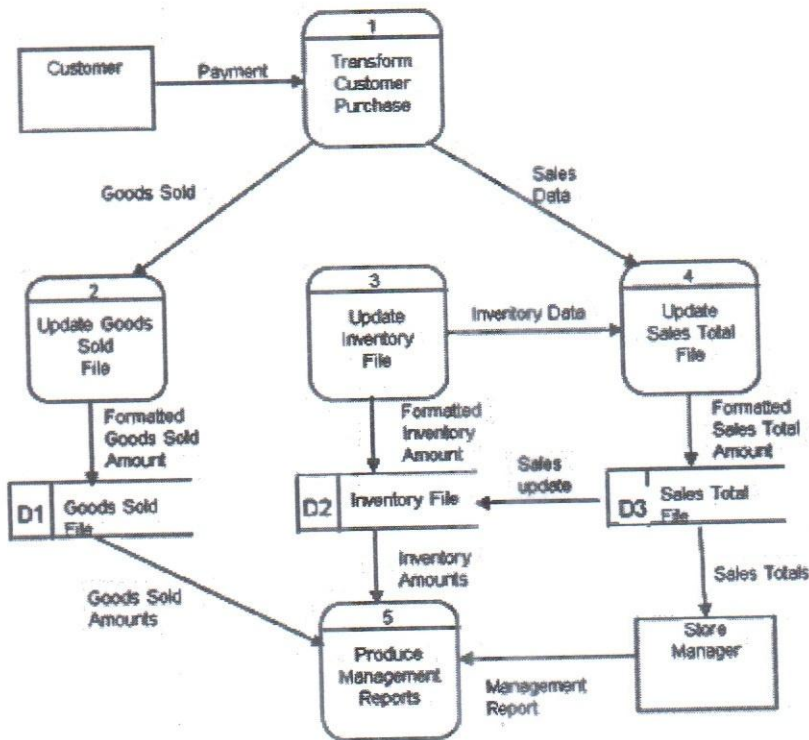


Fig. For Q. No 2. b)

3. a) Aarong is a chain of Bangladeshi department stores specializing in Bengali ethnic wear and handicrafts. It is owned by the non-profit development agency BRAC, and employs thousands of rural artisans across the country. It currently operates twenty-one outlets in nine Bangladeshi metropolitan cities. With an unparalleled motto of making shopping 'inclusive,' Aarong has given up its iconic Gulshan outlet and has now set up shop in a new location to enthrall and excite swarms of shoppers in the capital's Tejgaon. 10 (CO2)  
(PO3)
- If you worked as an executive for Aarong tasked with briefing a new vendor tasked with developing a new POS for the new outlet, on what factors would you brief the developing team, so that the project moves efficiently?

b) A project has been defined to contain the following list of activities along with predecessor(s) of each task and the time (in weeks) that might take to complete each activity.

15 (CO2)  
(PO10)

| Activity | Optimistic Time | Most Likely Time | Pessimistic Time | Predecessor |
|----------|-----------------|------------------|------------------|-------------|
| A        | 3               | 7                | 11               | -           |
| B        | 5               | 9                | 13               | A           |
| C        | 1               | 2                | 9                | B           |
| D        | 2               | 3                | 16               | B           |
| E        | 2               | 4                | 18               | C           |
| F        | 3               | 4                | 11               | C,D         |
| G        | 1               | 4                | 7                | D,E         |
| H        | 3               | 4                | 5                | F,G         |
| I        | 2               | 4                | 12               | G           |
| J        | 5               | 7                | 9                | H,I         |

Calculate the earliest expected completion time. Determine the critical path.  
During the project activity F took 8 weeks to complete. What would be the new completion time? Would the critical path be affected by this delay?