

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

DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination

Winter Semester, A. Y. 2018-2019

Course No. : BTM 4101

Time : 1.5 Hours

Course Title : Principles of Management

Full Marks : 75

There are **4 (four)** questions. Answer **any 3 (three)** questions. All questions carry equal marks. Marks in the margin indicate full marks. Do not write on this question paper.

1. a) Managers are responsible for combining and coordinating various resources to achieve organization's goal. A manager at a company uses talents of its executives and platform of workers, profit earmarked for reinvestment, existing refineries and office facilities and sales forecasts to make decisions regarding the amount of wastage to be refined and distributed during the next quarter. Define the term 'manager' in your own words. How do managers combine and coordinate various kinds of resources? 8

- b) Consider the management process of Google. Surgery Brin and Larry Page, Google's founder and top managers, must first create goals and plans that articulate what they want the company to become. Then they rely on effective organization to help make those goals and plans reality. Brin and Page also pay close attention on to the people who work for the company. And they keep a close eye on how well the company is performing. Each of these activities represents one of the four basic managerial functions. Discuss about four managerial functions for achieving organizational goal and how are they related with one another? 8

- c) Jeff Bezos, CEO of Amazon.com schedules all his meetings on three days a week but insist on keeping the other two days clear so that he can peruse his own ideas and maintain the flexibility to interact with his employees informally. If the managers can't manage time effectively sometimes more pressing and higher priority work may be neglected. In this scenario which type of skills manager should have for effectively running an organization and illustrate the importance of this skill. 4

- d) Henry Mintzberg closely observed day to day activities of a group of CEOs by literally following them around and taking notes on what they did. From his observations, Mintzberg concluded that managers play ten different roles. Identify those roles with relevant examples. 5

2. a) Douglas McGregor developed the theory "X" and theory "Y". He argued that theory "X" best represented the views of scientific management and theory "Y" represented the human relations approach. McGregor believed that theory Y was the best philosophy for all managers. Do you agree? Illustrate your answer. 10

- b) The quantitative management perspective focuses on decision making, economic effectiveness, mathematical models and the use of computers. Specifically quantitative management perspective includes two branches management science and operations management. Explain these two branches with relevant examples. 8

- c) Consider a new distribution manager of a large wholesale firm whose job is to manage 100 truck drivers and to coordinate standard truck routes in the most efficient fashion. How does this distribution manager ensure productivity of the firm focusing on system and contingency perspective? 7
3. a) Michael E. Porter, Harvard professor and expert in strategic management, has proposed a more refined way to assess environments. In particular he suggested that managers view the environments of their organization in terms of five competitive forces. Explain these five competitive forces with examples. 10
- b) Develop a model of organizational effectiveness that can adapt to its environmental change. 7
- c) James D. Thompson recognized the importance of organizations environment. Thompson suggested that the environment can be described along two dimensions and developed a matrix for measuring the environmental change, complexity and uncertainty. Briefly describe about this matrix and how does this matrix help the organization to cope up with the environmental change? 8
4. a) How many ways can an organization maintain organizational justice? Explain. 5
- b) Ethics are related to individuals, their decisions and behaviors. Organizations themselves do not have ethics, but they do relate to their environment in ways that often involve ethical dilemmas and decisions. These situations are generally referred to within the context of the organization's "social responsibility." Some organizations acknowledge their responsibilities in all three areas. Identify these three areas with proper explanation. 10
- c) Give three specific examples through which the government has influenced an organization. Then, give three specific examples through which an organization has influenced the government. Do you think the government's and organization's actions were ethical? Explain. 10

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DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination

Winter Semester, A. Y. 2018-2019

Course No. : BTM 4103

Time : 1.5 hours

Course Title : Financial Accounting I

Full Marks : 75

There are **4 (four)** questions. Answer **any 3 (three)** questions. All questions carry equal marks. Marks in the margin indicate full marks. Programmable calculators are not allowed. Do not write on this question paper.

1. a) Farlin company hired an employee for salary \$800. Will it be a transaction? 3
Briefly explain the reason.
- b) "Pacioli described a unique system to ensure that financial information was recorded efficiently and accurately"-Explain. 4
- c) Indicate whether each of the following items is an asset (A), liability (L), or part of owner's equity (OE). 4
- i) Unearned Revenue
 - ii) Accrued Expense
 - iii) Utility Expense
 - iv) Salaries Payable
 - v) Prepaid Rent Expense
 - vi) Notes Payable
 - vii) Service Revenue
 - viii) Accrued Revenue
- d) Answer each of the following questions by using the expanded accounting equation. 4
- i) The liabilities of Cai Company are \$90,000. Meiyu Cai's capital account is \$150,000; drawings are \$40,000; revenues, \$450,000; and expenses, \$320,000. What is the amount of Cai Company's total assets?
 - ii) The total assets of Pereira Company are \$57,000. Karen Perry's capital account is \$25,000; drawings are \$7,000; revenues, \$50,000; and expenses, \$35,000. What is the amount of the company's total liabilities?

- e) The following information is related to the sole proprietorship of Leonard Mac, 10 attorney.

Legal service revenue, 2018	\$350,000
Total expenses, 2018	211,000
Assets, January 1, 2018	85,000
Liabilities, January 1, 2018	62,000
Assets, December 31, 2018	168,000
Liabilities, December 31, 2018	85,000
Drawings—2018	?

Required:

Prepare the 2018 **Owner's Equity Statement** for Leonard Mac's legal practice.

2. a) Your friend Shawon is asking you the debit and credit procedure of three different types of accounts. Which chart will you show him? 5
- b) "Each transaction must affect two or more accounts." Explain with example. 5
- c) Josie Micheals is a licensed CPA. During the first month of operations of her business, the following events and transactions occurred. 15

May 1: Josie invested \$25,000 cash in her business.

May 2: Hired a secretary-receptionist at a salary of \$2,000 per month.

May 3: Purchased \$2,500 of supplies on account from Barry Supply Company.

May 7: Paid office rent of \$900 cash for the month.

May 11: Completed a tax assignment and billed client \$2,100 for services provided.

May 12: Received \$3,500 advance on a management consulting engagement.

May 17: Received cash of \$1,200 for services completed for Max Company.

May 31: Paid secretary-receptionist \$2,000 salary for the month.

May 31: Paid 40% of balance due Barry Supply Company.

Josie 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 Josie Micheals, 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) "Efforts should be matched with accomplishments"—this statement indicates a principle of accounting. Explain the statement. 5
- b) Which items are included in Deferrals and Accruals? 2
- c) Joe Edmonds started his own consulting firm, Edmonds Consulting, on May 1, 2017. The trial balance at May 31 is as follows. 18

EDMONDS CONSULTING

Trial Balance

May 31, 2017

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
Joe Edmonds, 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 Edmonds 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, 2017, \$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. Edmonds 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, 2017.

Required 2: Prepare an adjusted trial balance at May 31, 2017.

4. a) Draw the Accounting Cycle. 3
- b) What is the use of worksheet in accounting? 2
- c) The trial balance columns of the worksheet for Porter Company at March 31, 2018, are as follows.

PORTER COMPANY

Worksheet

For the Month Ended March 31, 2018

Account Titles	Trial Balance	
	Dr.	Cr.
Cash	\$ 4,500	
Accounts Receivable	3,200	
Roofing Supplies	2,000	
Equipment	11,000	
Accumulated Depreciation-Equipment		\$ 1,250
Accounts Payable		2,500
Unearned Revenue		550
M. Porter, Capital		12,900
M. Porter, Drawing	1,100	
Service Revenue		6,300
Salaries Expense	1,300	
Miscellaneous Expense	400	
	<u>\$ 23,500</u>	<u>\$ 23,500</u>

Other data:

- i) A physical count reveals only \$650 of roofing supplies on hand.
- ii) Depreciation for March is \$250.
- iii) Unearned revenue amounted to \$170 at March 31.
- iv) Accrued salaries are \$600.

Required:

Required 1: Enter the trial balance on a worksheet and complete the worksheet.

Required 2: Journalize the closing entries from the financial statement columns of the worksheet.

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DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination

Winter Semester, A.Y. 2018-2019

Course No. : Math 4161

Time : 1.5 Hours

Course Title : Mathematics-I

Full Marks : 75

There are **4 (four)** questions. Answer **any 3 (three)** questions. All questions carry equal marks. Marks in the margin indicate full marks. Programmable calculators are not allowed. Do not write on this question paper.

1. a) If by the rotation of the rectangular coordinate axes about the origin, the equation $ax^2 + 2hxy + by^2 = 0$ changes to $a'x'^2 + 2h'x'y' + b'y'^2 = 0$, then prove that $a' + b' = a + b$ and $a'b' - h'^2 = ab - h^2$. 13
- b) Show that the equation $6x^2 - 5xy - 6y^2 + 14x + 5y + 4 = 0$ represents a pair of straight lines. Find the separate equations of the straight lines. 12
2. a) Identify the curve $3x^2 + 2xy + 3y^2 - 18x - 22y + 50 = 0$. Reduce the equation to its standard form. 15
- b) A father is 22 years older than his son. In 10 years, the father will be twice as old as his son. How old are they? Illustrate the problem on the associated plot of the equations. 10
3. a) What do you mean by an inequality? Solve $8(x+1)+1 < 3(2x)+1$ and give your answer in interval notation. 08
- b) Find the solution of $5x^2 + 6 \geq 13x$, using sign chart at suitable test points. 07
- c) Draw the graph of natural logarithmic función. Solve $\log_x(16 - 4x - x^2) = 2$. 10
4. a) In a competition, a school awarded medals in different categories, 36 medals in dance, 12 medals in drama and 18 medals in music. If these medals went to a total of 45 persons and only 4 persons got medals in all the three categories, how many received medals in exactly two of these categories? 12
- b) If $A = \begin{bmatrix} 1 & 2 & 3 \\ -2 & 5 & -1 \\ 2 & 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 5 & 3 \\ 7 & -2 & 1 \\ 2 & 0 & -3 \end{bmatrix}$, then prove that $(AB)^T = B^T A^T$. 13

BBA in TM, 1st Sem.

Date: March 08, 2019 (Morning)

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DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination

Winter Semester, A.Y. 2018-2019

Course No. : Hum 4161

Time : 1.5 Hours

Course Title : Sociology

Full Marks : 75

There are **4 (Four)** questions. Answer **any 3 (Three)** questions. All questions carry equal marks. Marks in the margin indicate full marks. Do not write on this question paper.

1. a) Briefly discuss the nature of sociology. 12
- b) Classify and explain the family with examples from your own society. 13
2. a) Define culture. Describe the major elements of culture with examples. 13
- b) Elaborate the followings: 12
 - i. Globalization;
 - ii. Discovery;
 - iii. Invention;
 - iv. Innovation.
3. a) Briefly examine the existing social stratification and social class pattern in the contemporary urban society of Bangladesh. 12.5
- b) Discuss the existing social stratification and social class pattern in the contemporary rural society of Bangladesh. 12.5
4. a) Define socialization. Briefly discuss the importance of socialization in your society. 12
- b) Examine the agents of socialization with examples from your own society. 13

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DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination

Winter Semester, A.Y. 2018-2019

Course Code : Hum 4163

Time : 1.5 Hours

Course Title : Business English

Full Marks : 75

There are **4 (Four)** questions. Answer **any 3 (Three)** questions. All questions carry equal marks. Marks in the margin indicate full marks. Do not write on this question paper.

1. Paraphrase the following paragraphs except the topic.

25

Topic: Customers Don't Want More Features

There is a common myth about product development: the more features we put into a product, the more customers will like it. Product-development teams seem to believe that adding features creates value for customers and subtracting them destroys it. This attitude explains why products are so complicated: Remote controls seem impossible to use, computers take hours to set up, cars have so many switches and knobs that they resemble airplane cockpits, and even the humble toaster now comes with a manual and LCD displays.

Companies that challenge the belief that more is better create products that are elegant in their simplicity. Bang & Olufsen, the Danish manufacturer of audio products, televisions, and telephones, understands that customers don't necessarily want to fiddle with the equalizer, balance, and other controls to find the optimum combination of settings for listening to music. Its high-end speakers automatically make the adjustments needed to reproduce a song with as much fidelity to the original as possible. All that's left for users to select is the volume.

Getting companies to buy into and implement the principle that less can be more is hard because it requires extra effort in two areas of product development:

i) Defining the problem: Articulating the problem that developers will try to solve is the most underrated part of the innovation process. Too many companies devote far too little time to it. But this phase is important because it's where teams develop a clear understanding of what their goals are and generate hypotheses that can be tested and refined through experiments. The quality of a problem statement makes all the difference in a team's ability to focus on the few features that really matter.

When Walt Disney was planning Disneyland, he didn't rush to add more features (rides, kinds of food, amount of parking) than other amusement parks had. Rather, he began by asking a much larger question: How could Disneyland provide visitors with a magical customer experience? Surely, the answer didn't come overnight; it required painstakingly detailed research, constant experimentation, and deep insights into what "magical" meant to Disney and its customers. IDEO and other companies have dedicated phases in which they completely immerse

themselves in the context in which the envisioned product or service will be used. Their developers read everything of interest about the markets, observe and interview future users, research offerings that will compete with the new product, and synthesize everything that they have learned into pictures, models, and diagrams. The result is deep insights into customers that are tested, improved, or abandoned throughout the iterative development process.

ii) Determining what to hide or omit: Teams are often tempted to show off by producing brilliant technical solutions that amaze their peers and management. But often customers would prefer a product that just works effortlessly. From a customer's point of view, the best solutions solve a problem in the simplest way and hide the work that developers are so proud of.

One company that has understood this is Apple. It is known for many things—innovative products, stylish designs, and savvy marketing—but perhaps its greatest strength is its ability to get to the heart of a problem. As the late Steve Jobs once explained, “When you start looking at a problem and it seems really simple, you don't really understand the complexity of the problem. And your solutions are way too oversimplified.”

Development teams often assume that their products are done when no more features can be added. Perhaps their logic should be the reverse: Products get closer to perfection when no more features can be eliminated. As Leonardo da Vinci once said, “Simplicity is the ultimate sophistication.”

2. Write 2 sentences for each of the given words.

25

- | | | |
|--------------------|------------------|----------------|
| i. Oaken | xi. Tenuous | xxi. Untenable |
| ii. Observant | xii. Tipple | xxii. Upshot |
| iii. Prefatory | xiii. Titanic | xxiii. Vacuous |
| iv. Privy | xiv. Transcend | xxiv. Wont |
| v. Prodigious | xv. Transmute | xxv. Zenith |
| vi. Progenitor | xvi. Trepidation | |
| vii. Prognosticate | xvii. Truculent | |
| viii. Psyche | xviii. Umbrage | |
| ix. Tacit | xix. Unctuous | |
| x. Tentative | xx. Unfeigned | |

3. Write approximate 400 words on the following topic.

25

Having more money and less free time is better than earning less money and having more free time.
Discuss both views and state your opinion.

4. Some people believe the aim of university education is to help graduates get better jobs. Others believe there are much wider benefits of university education for both individuals and society. Write your arguments on this issue.

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DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination

Winter Semester, A.Y. 2018-2019

Course No. : Hum 4301

Time : 1.5 Hours

Course Title : Management Accounting

Full Marks : 75

There are **4 (Four)** questions. Answer **any 3 (Three)** questions. All questions carry equal marks. Marks in the margin indicate full marks. Programmable calculators are not allowed. Do not write on this question paper.

1. Ferris Corporation makes a single product—a fire-resistant commercial filing cabinet—that it sells to office furniture distributors. The company has a simple ABC system that it uses for internal decision making. The company has two overhead departments whose costs are as follows:

Manufacturing overhead	\$ 500,000
Selling and administrative overhead	<u>300,000</u>
Total overhead costs	<u>\$ 800,000</u>

The company's ABC system has the following activity cost pools and activity measures:

<u>Activity Cost Pool</u> -----	<u>Activity Measure</u>
Assembling units	Number of units
Processing orders	Number of orders
Supporting customers	Number of customers
Other	Not applicable

Costs assigned to the "Other" activity cost pool have no activity measure; they consist of organization-sustaining costs and unused capacity costs—neither of which are assigned to orders, customers, or the product. Ferris Corporation distributes the costs of manufacturing overhead and selling and administrative overhead to the activity cost pools based on employee interviews, the results of which are reported below:

Distribution of Resource Consumption Across Activity Cost Pools					
	Assembling Units	Processing Orders	Supporting Customers	Other	Total
Manufacturing overhead (%)	50	35	5	10	100
Selling & admin overhead (%)	10	45	25	20	100
Total activity	1,000 units	250 orders	100 customers		

- Required**
- i) Perform the first-stage allocation of overhead costs to the activity cost pools. 7
 - ii) Compute activity rates for the activity cost pools. 6
 - iii) OfficeMart is one of Ferris Corporation's customers. Last year, OfficeMart ordered filing cabinets four different times. OfficeMart ordered a total of 80 filing cabinets during the year. Construct a table showing the overhead costs attributable to OfficeMart. 6
 - iv) The selling price of a filing cabinet is \$595. The cost of direct materials is \$180 per filing cabinet, and direct labor is \$50 per filing cabinet. What is the customer margin of OfficeMart? 6

2. Hogle Corporation is a manufacturer that uses job-order costing. On January 1, the company's inventory balances were as follows:

Raw materials	\$20,000
Work in process	\$15,000
Finished goods	\$30,000

The company applies overhead cost to jobs on the basis of machine-hours worked. For the current year, the company's predetermined overhead rate was based on a cost formula that estimated \$450,000 of total manufacturing overhead for an estimated activity level of 75,000 machine hours.

The following transactions were recorded for the year:

- a. Raw materials were purchased on account, \$410,000.
- b. Raw materials were used in production, \$380,000 (\$360,000 direct materials and \$20,000 indirect materials).
- c. The following costs were accrued for employee services: direct labor, \$75,000; indirect labor, \$110,000; sales commissions, \$90,000; and administrative salaries, \$200,000.
- d. Sales travel costs (on account) were \$17,000.
- e. Utility costs (on account) in the factory were \$43,000.
- f. Advertising costs (on account) were \$180,000.
- g. Depreciation was recorded for the year, \$350,000 (80% relates to factory assets, and 20% relates to selling and administrative assets).
- h. Insurance expired during the year, \$10,000 (70% relates to factory operations, and the remaining 30% relates to selling and administrative activities).
- i. Manufacturing overhead was applied to production. Due to greater than expected demand for its products, the company worked 80,000 machine-hours on all jobs during the year.
- j. Jobs costing \$900,000 to manufacture according to their job cost sheets were completed during the year.
- k. Jobs were sold on account to customers during the year for a total of \$1,500,000. The jobs cost \$870,000 to manufacture according to their job cost sheets.

- Required**
- i) Prepare journal entries to record the preceding transactions. 11
 - ii) Post the entries in (i) above to T-accounts (don't forget to enter the beginning balances in the inventory accounts). 5

- iii) Is Manufacturing Overhead underapplied or overapplied for the year? Prepare a journal entry to close any balance in the Manufacturing Overhead account to Cost of Goods Sold. Do not allocate the balance between Work in Process, Finished Goods, and Cost of Goods Sold. 5
- iv) Prepare an income statement for the year. 4
3. i) Why do companies use predetermined overhead rates rather than actual manufacturing overhead costs to apply overhead to jobs? 5
- ii) What factors should be considered in selecting an allocation base to be used in computing a predetermined overhead rate? 5
- iii) If a company fully allocates all of its overhead costs to jobs, does this guarantee that a profit will be earned for the period? 5
- iv) Would you expect the amount of applied overhead for a period to equal the actual overhead costs of the period? Why or why not? 5
- v) What is a plantwide overhead rate? Why are multiple overhead rates, rather than a plantwide overhead rate, used in some companies? 5

4. Oslo Company prepared the following contribution format income statement based on a sales volume of 1,000 units (the relevant range of production is 500 units to 1,500 units):

Sales	\$ 20,000
Variable expenses	<u>12,000</u>
Contribution margin	8,000
Fixed expenses	<u>6,000</u>
Net operating income	<u>\$ 2,000</u>

Required

- i) If sales increase to 1,001 units, what would be the increase in net operating income? 2.5
- ii) If sales decline to 900 units, what would be the net operating income? 2.5
- iii) If the selling price increases by \$2 per unit and the sales volume decreases by 100 units, what would be the net operating income? 2.5
- iv) If the variable cost per unit increases by \$1, spending on advertising increases by \$1,500, and unit sales increase by 250 units, what would be the net operating income? 2.5
- v) How many units must be sold to achieve a target profit of \$5,000? 2.5
- vi) What is the margin of safety in dollars? What is the margin of safety percentage? 2.5
- vii) What is the degree of operating leverage? 2.5
- viii) Using the degree of operating leverage, what is the estimated percent increase in net operating income of a 5% increase in sales? 2.5
- ix) Assume that the amounts of the company's total variable expenses and total fixed expenses were reversed. In other words, assume that the total variable expenses are \$6,000 and the total fixed expenses are \$12,000. Under this scenario and assuming that total sales remain the same, what is the degree of operating leverage? 2.5
- x) Using the degree of operating leverage that you computed in the previous question, what is the estimated percent increase in net operating income of a 5% increase in sales? 2.5

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DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination

Course No. : BTM 4303

Course Title : Human Resources Management

Winter Semester, A. Y. 2018-2019

Time : 1.5 Hours

Full Marks : 75

There are **4 (four)** questions. Answer any **3 (three)** questions. All questions carry equal marks. Marks in the margin indicate full marks. Do not write on this question paper.

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1. a) Human resource management (HRM) is the process of acquiring, training, appraising, and compensating employees, and of attending to their labor relations, health and safety, and fairness concerns. Identify how HRM relates to the management process. Why is HRM important for companies today to make their human resources into a competitive advantage? 10
 - b) Businesses are becoming more than slim and anorexic in 21st century. Discuss about the challenges and solutions of human resource management (HRM) in 21st century. 10
 - c) How far do you think it is possible to agree with both the 'best fit' and 'best practice' perspectives on HRM? In what ways are they compatible with each other? 5
 2. a) Human resource managers are working co-operatively with line managers, help employers to hire and fire employees, administer benefits and conduct appraisals. Now a day some trends are occurring in the environment of human resource management that can shape human resource management (HRM) procedure. Identify those trends with their impact on human resource management. 10
 - b) Employee engagement refers to being psychologically involved in, connected to, and committed to getting one's jobs done. Engaged employees experience a high level of connectivity with their jobs and work hard to accomplish their task-related goals. How does HR department of an organization improve performance through employee engagement? 5
 - c) How do managers use evidence to make better human resource management decisions? 5
 - d) Talent analytics tool can produce striking profitability results. The Best Buy used talent analytics to discover that 0.1% increase in employee engagement led to more than \$100000 rise in annual operating income. Define talent analytics and discuss how does this tool improve organizational performance and increase profit? 5
 3. a) Suppose you are working in a successful company that has a high business profile, successful brand name and a reputation for good working conditions. Unemployment rates are high and, therefore, you think it will be relatively easy to attract candidates while maintaining the company's high caliber recruitments. Explain why it is difficult to attract such candidate's. What actions can you take to try to improve the situation? 5

- b) Web based recruiting replaces traditional help wanted ads; a glance at almost any paper will confirm that print ads are still popular. How does employer make web based advertisement more attractive through AIDA (attention, interest, desire, action)? 5
- c) The former chief HR officer of IBM needed \$100 million to reorganize IBM's HR operations several years ago, he told to top management that "I am going to deliver talent that's skilled and on time and ready to be deployed, I will be able to measure the skill to tell you what skills we have, what skills we don't have then to show you how to fill the gaps or enhance our training". Human resource manager uses metrics to valid the claims. Explain with examples why are metrics essential for identifying and creating high-performance human resource policies and practices? 8
- d) How will you align HR strategy and actions with business strategy for achieving competitive advantage in the marketplace? Develop a basic model. 7
4. a) Why strategic planning is important to all managers for human resource management? Explain with relevant examples of each of the seven steps in the strategic planning process of human resource management. 10
- b) Qualitative method of job analysis technique is not always suitable when you want to compare jobs for pay purposes a mere listing of duties may not suffice. At that time, you have to apply quantitative method for job analysis. Mention different types of quantitative method of job analysis technique with example. 10
- c) Many employers are therefore using a newer job analysis approach. Instead of listing the job's duties, they are listing in competency models, the knowledge skills and experience someone needs to do the job. Explain how to write competencies job description through job competency model. 5

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DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Mid-Semester Examination
Course Code : Math 4361
Course Title : Mathematics II

Winter Semester, A.Y. 2018-2019
Time : 1.5 Hours
Full Marks : 75

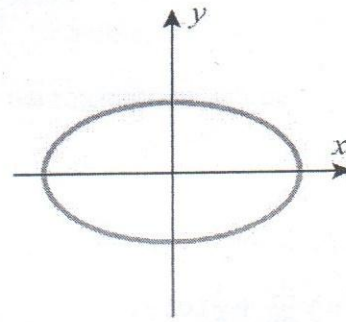
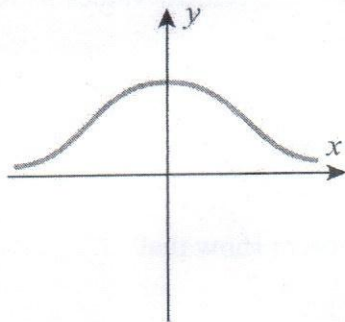
There are **4 (Four)** questions. Answer **any 3 (Three)** questions. All questions carry equal marks. Marks in the margin indicate full marks. Programmable calculators are not allowed. Do not write on this question paper. The symbols have their usual meaning.

1. a) Find the natural domain and range of the following functions: 6

$$(i) F(x) = \sqrt{\frac{x^2 - 4}{x - 2}}$$

$$(ii) G(x) = 3 + \sqrt{x - 2}$$

- b) In each part of the accompanying figure, determine whether the graphs define y as a function of x using vertical line test. 4



- c) Suppose that the profit received from the sale of x tons of a product is given (in terms of thousands of Taka) by 7

$$p(x) = \begin{cases} 3x^2 - 18 & \text{for } 0 \leq x < 3 \\ 3x & \text{for } x > 3 \end{cases}$$

- (i) Define limit of a function
(ii) Find $\lim_{x \rightarrow 3} p(x)$

- d) Find values of the constants k and m , if possible, that will make the function f continuous everywhere. 8

$$f(x) = \begin{cases} x^2 + 5, & x > 2 \\ m(x + 1) + k, & -1 < x \leq 2 \\ 2x^3 + x + 7, & x \leq -1 \end{cases}$$

2. a) Evaluate the following limits: 8

$$(i) \lim_{x \rightarrow 0} \frac{e^x - e^{-x} - 2x}{x - \sin x}$$

$$(ii) \lim_{x \rightarrow 0} \left(\frac{1}{x^2} - \frac{1}{\sin^2 x} \right)$$

b) Differentiate the following functions with respect to its independent variable: 6

$$(i) g(x) = (7x^3 - 6x^2 + 2)^{1/3} \quad (ii) C(t) = e^t \ln(2t^2 + 3) \quad (iii) p(s) = \sqrt{\frac{as - 4}{s + 11}}$$

c) If $f(x) = |x - 2|$ then discuss the differentiability of the function at $x = 2$. 5

d) If $y = \sin^{-1} x$ then show that 6

$$(1 - x^2)y_{n+2} - (2n + 1)xy_{n+1} - n^2y_n = 0.$$

3. a) If $V = \sqrt{x^2 + y^2 + z^2}$ then show that $V_{xx} + V_{yy} + V_{zz} = 2/V$. 9

b) For the function $f(x) = 3x^{5/3} - 15x^{2/3}$ show that f has a relative maximum at $x = 0$ and a relative minimum at $x = 2$ using the first derivative test. 8

c) If $y = f(x) = x^3 + 3x^2 - 9x + 2$ is a function, where is this function increasing and where is it decreasing? Locate and classify the critical values as relative maxima, relative minima or neither. 8

4. a) Verify Euler's Theorem for the function 10

$$u = \frac{x^{1/4} + y^{1/4}}{x^{1/5} + y^{1/5}}$$

b) If $u = \cos^{-1} \frac{x+y}{\sqrt{x} + \sqrt{y}}$ then using Euler's theorem show that 7

$$x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y} + \frac{1}{2} \cot u = 0.$$

c) If $f(x) = x^3 - 3x^2 + 1$ then use the first and second derivatives of f to determine the intervals on which f is increasing, decreasing, concave up, and concave down. Also locate all the inflection points. 8