POKHARA UNIVERSITY

Level: Bachelor | Semester: Spring | Year: 2025
Programme: BBA/BBA (Finance) | Full Marks: 100
Course: Basic Mathematics | Pass Marks: 45
Time: 3 hrs.

Candidates are required to answer in their own words as far as practicable. The figures in the margin indicate full marks.

Section "A"

Short Answer Questions [10×2= 20]

Attempt **all** questions. Give your answers in few lines/points.

1. Perform the indicated operations and simplify: $\frac{\sqrt[4]{96a^{17}b^5}}{\sqrt[4]{6ab}}$.
2. Rewrite $|2x + 7| < 3$ without absolute value sign.
3. Solve: $|2x + 3| = 7$.
4. Find the value of k if the roots of $2x^2 + 3x + k = 0$ are equal.
5. Form a quadratic equation whose one root is $2 + \sqrt{5}$.
6. Solve: $\ln(x + 20) = ln(x + 2) + ln\, x$.
7. Plot the graph of function $y = 2^x$.
8. Find the difference between compound interest and simple interest on the sum of Rs. 2000 if the sum is invested at 10 % per annum for 4 years.
9. If $A = \begin{pmatrix} 2 & -1 \\ -1 & 2 \end{pmatrix}$, show that $A^2 - 4A + 3I = 0$, where 0 and I are zero and identity matrix of order 2×2.
10. A new firm loses $2000 in its first month, but its profit increases by $400 in each succeeding month for the next year. What is the profit in twelfth month?

Section "B"

Analytical Answer Questions [6×10= 60]

Attempt **any six** questions.

11. a. In a group of 200 students, 100 are interested in music, 70 are interested in photography, and 40 are interested in swimming. Furthermore, 40 are interested in both music and photography, 30 are interested in both music and swimming, 20 are interested in both photography and swimming and 10 are interested in all the three activities. Find the numbers of students that are interested in:
    i. At least one activity.
    ii. Swimming only.
    iii. Photography and swimming only.
    iv. Exactly two activities.

    b. A student is required to answer 6 questions out of 10 questions which are divided into two groups each containing 5 questions, and that

student is not permitted to attempt more than 4 questions from any group. In how many different ways can the students make up choice questions?

12. a. find the domain and range of the following function $y = \sqrt{x^2 - 25}$.
    b. A company sells a product for \$150 per unit. Raw material costs are \$40 per unit, labor costs are \$55 per unit, shipping costs are \$15 per unit, and annual fixed cost are \$200,000.
        i. Determine the profit function $p = f(x)$, where x is the number of units sold.
        ii. What profit is earned if annual sales are 7000 units?
        iii. How many units must be sold in order to earn an annual profit of \$750,000?
13. a. If the roots of the equation:
    $(a^2 + b^2)x^2 - 2(ac + bd)x + (c^2 + d^2) = 0$ are equal, then:
    show that: $\frac{a}{b} = \frac{c}{d}$
    b. The monthly demand function for a particular product is $q = f(p) = 30000 - 25q$, where q is stated in units and p is stated in rupees. Determine the quadratic total revenue function R = g(p). What is the concavity of the function? What does total revenue equal at a price of Rs. 60? How many units will be demanded at this price? At what price total revenue be maximum?
14. a. The profit function for a certain commodity is $p = 110x - x^2 - 100$. find the level of production that yields maximum profit and find the maximum profit?
    b. A hospital administrator predicts that the growth in the number of hospital employee will follow the Gompertz equation $N = 2000(0.6)^{0.5^t}$ where t represents the number of years after the opening of a new facility.
        i. what is the number of employees when the facility opens?
        ii. How many employees are predicted after 1 years of operation?
        iii. What is the maximum value of N that the curve will approach?
15. a. For the past 3 years, real state price of one area of the country have been increasing at an exponential rate of 4% per year. A home was purchased 3 years ago for \$1, 20,000.
        i. What is the estimated value today?
        ii. Assuming appreciation (growth) continues at the same rate, what will be the value 6 years from now?
    b. If $A = [1,3]$ and $B = (-2,5]$, Are two intervals in real numbers then, find $A \cup B$, $A \cap B$ and $A - B$.

16. a. Prove that:

$$\begin{vmatrix} a & a^2 & a^3 \\ b & b^2 & b^3 \\ c & c^2 & c^3 \end{vmatrix} = abc(a-b)(b-c)(c-a)$$

b. Solve by Cramer's Rule:

$$5x - 2y + 3z = 16,$$
$$2x + 3y - 5z = 2,$$
$$4x - 5y + 6z = 7$$

17. a. If a saving account awards interest of 6% p.a. compounded quarterly, what amount must be deposited today in order to accumulate $20,000 after 10 years? How much interest will be earned during the period?

b. There are ten varieties of birds in a zoo, the number of each variety being double the number of another variety. If the number in first variety is 2, find the number in last variety and total number of all varieties of birds in the zoo.

Section "C"

Case Analysis / Application Based Questions [1×20= 20]

18. *Read the case situation given below and answer the questions that follow:*

a. PQR construction, one of the leading construction companies in Nepal is going to construct three types of apartments in Kathmandu. Currently, the managers and engineers of the company are analyzing the cost and the selling strategies of the apartments. For the Apartment of type1, all the raw materials except the sand and concrete will be imported from India. For types 2 and 3, local Nepali raw materials will be used and also consider the fact that the Nepali buyers believe that the imported things have better quality than the local things. The following table summarizes the requirements per unit of each type of Apartment.

Apartment	Cement (sacks)	Bricks (units)	Iron (kg)	Sand (trucks)	Concrete (trucks)	Labor (hours)
Type 1	650	50000	5000	50	35	8000
Type 2	500	40000	4000	45	30	6000
Type 3	1000	70000	7000	60	40	9000

If it is imported from India, Cement costs Rs. 600 per sack, Brick costs Rs.30 per unit, and Iron costs Rs. 200 per kg and the labor costs Rs.100 per hour. If it is not imported and all domestic products are used, then the cost of cement is Rs.450 per sack, bricks cost Rs.20 per unit, Iron costs Rs.180 per kg, Sand Rs.8000 per truck, concrete cost Rs.15000 per truck and the labor costs Rs.80 per hour. From the meeting of the board of directors, it is decided that they will construct 10 apartments of type1, 15 apartments of type 2 and 5 apartments of type 3.

i. Perform matrix multiplication to calculate the quantity of materials required for each type of apartment.
ii. Perform a matrix multiplication to calculate the cost of each type of apartment of type 1,2 and 3 and the total cost of the entire project.
iii. If the total area of the apartment of type1 is 1400 sq. feet, type2 is 1000 sq. feet and type3 is 2000 sq. feet respectively and if you were a buyer of the apartment, which apartment would you buy? Give logical reasons.
iv. If you were a sales manager of the company, depending on the information given above and the result which you have calculated, describe how would you promote your product?

b. Twins graduate from a college together and start their careers. Twin 1 invests $2,000 at the end of each of 8 years in an account that earns 10%, compounded annually. After 8 years, no additional contributions are made, but the investment continues to earn 10% compounded annually. Twin 2 Invests no money for 8 years but then contributes $2,000 at the end of each year for a period of 36 years (to age of 65) to an account that pays 10% compounded annually.
i. How much money does each twin contribute?
ii. How much money does each twin have at the age of 65?
iii. If you are supposed to choose one of these two schemes, which scheme will you choose? Explain with reason.

POKHARA UNIVERSITY

Level: Bachelor | Semester: Spring | Year: 2025
Programme: BBA/BBA-Finance/BBA-TT | Full Marks: 100
Course: Behavioral Science | Pass Marks: 45
Time: 3 hrs.

Candidates are required to answer in their own words as far as practicable. The figures in the margin indicate full marks.

Section "A"

Very Short Answer Questions

Attempt all the questions. [10×2]

1. Mention the key principles of behavioral science.
2. List down the categorization of self-concept by Carl Rogers.
3. Introduce the idea of self-fulfilling prophecy.
4. Explain the ASA model in terms of organizational behavior.
5. Differentiate between 'Pygmalion effect' and 'Golem effect'.
6. Write down some compliance techniques used in sales and marketing.
7. Enlist some examples of constructive and destructive workplace behavior.
8. What is meant by cyberloafing and how is it a negative deviant behavior?
9. What does affective events theory say about the effects of people's emotions on their behavior in organizations?
10. What is the key difference between emotional labor and emotional dissonance?

Section "B"

Descriptive Answer Questions

Attempt **any six** questions. [6×10]

11. Define behavioral business. Explain why behavioral science is important in understanding and improving business practices.
12. What is MARS model of individual behavior and Performance. Explain four MARS model and how each factor influence employee behavior and performance in an organization setting.
13. Explain the concept of Transactional Analysis (TA). Describe parent, adult and child ego state in transactional analysis.
14. How did Stanley Milgram's experiment contribute to the broader field of social psychology and our understanding of authority?
15. What is organizational citizenship behavior (OCB)? In what ways do you think organizations can encourage and recognize OCB among employees?
16. What are the primary causes and consequences of stress in the workplace? What steps can be taken to minimize the potentially harmful effects of stress on the job?

17. What is workplace diversity? Describe some of the things being done by today's organizations to manage diversity in their workforces and the effectiveness of these practices.

Section "C"

Case Analysis

18. *Read the case situation given below and answer the questions that follow:* [20]

Prejudice and Discrimination Case study

In a small town in Iowa in 1968, a few days after the assassination of Dr. Martin Luther King, Jr., a second-grade teacher named Jane Elliot tried to teach her students a lesson in prejudice and discrimination. She divided her students into two groups, those with blue eyes and those with brown eyes. On the first day of the lesson, the blue-eyed children were given special privileges, such as extra time at recess and getting to leave first for lunch. She also told the blue-eyed children that they were superior to the brown-eyed children, telling the brown-eyed children not to bother taking seconds at lunch because it would be wasted. She kept the blue-eyed children and the brown-eyed children apart (Peters, 1971).

Although Elliot tried to be critical of the brown-eyed out-group, she soon found that the blue-eyed children were also criticizing, belittling, and were quite vicious in their attacks on the brown-eyed children. By the end of the day, the blue-eyed children felt and acted superior, and the brown-eyed children were miserable. Even the lowered test scores of the brown-eyed children reflected their misery. Two days later, the brown-eyed children became the favored group and the effects from the first two days appeared again but in reverse this time: The blue-eyed children began to feel inferior and their test scores dropped.

The fact that test scores reflected the treatment received by the out-group is a stunning one, raising questions about the effects of prejudice and discrimination on the education of children who are members of stereotyped out-groups. That the children were so willing to discriminate against their own classmates, some of whom were their close friends before the experiment, is also telling. In his book about this classroom experiment, A Class Divided, Peters (1971) reported that the students who were part of the original experiment, when reunited 15 years later to talk about the experience, said that they believed that this early experience with prejudice and discrimination helped them to become less prejudiced as young adults.

Questions:

a. Based on the experiment, how does social categorization and the assignment of group status impact individual behavior and self-esteem? [5]
b. Discuss the ethical considerations of conducting such an experiment in an educational setting. How might this experiment have long-term psychological impacts on the participating students? [5]
c. How can the findings of this experiment be applied to understand and address workplace discrimination and prejudice in a business context? [5]
d. Examine the long-term effects of prejudice and discrimination on individual and organizational performance, drawing insights from the experiment and other relevant research. [5]

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Level: Bachelor | Semester: Spring | Year: 2025
Programme: BBA/BBA-Finance/BBA-TT | Full Marks: 100
Course: English (New) | Pass Marks: 45
Time: 3 hrs.

Candidates are required to answer in their own words as far as practicable. The figures in the margin indicate full marks.

Section "A"

Very Short Answer Questions

Attempt all the questions. [10×2]

1. Correct the following sentences:
   a. The driver was experience.
   b. The train departs at a reasonable early hour
2. What is the main theme of 'If Not Higher' by I. L. Peretz?
3. "Reading was like a drug, a dope." Explain this saying with reference to "The Library Card".
4. Why does the speaker appeal to woodcutter not to cut down the trees? (Don't Cut Down the Trees, Brother Woodcutter)
5. Why is Ariel Gore against the guidelines of AAPs in 'TV Can Be a Good Parent'?
6. Present some evidences of racial discrimination as mentioned in 'Then and Now: Finding My Voice' by Eliane H Kim.
7. Interpret the poem 'The Clock Tower' by Bhupi Sherchan.
8. How does Uncle Buscabeatas prove that the pumpkins being sold in Rota are his own? (The Stub-Book)
9. Assimilate the poem 'Piano' by D. H. Lawrence.
10. What is the central idea of the story 'A Tale' by B.P. Koirala?

Section "B"

Descriptive Answer Questions

Attempt **any six** questions. [6×10]

11. Apply the four levels of interacting with a text to the story 'The Brave Little Parrot'.
12. Make a list of advantages and disadvantages of university education Moti Nissani discusses in the essay 'Why Go to University?'
13. Critically examine the essay 'How Sane Are We?' by Anuradha Chaudhary and justify whether we are sane or insane based on the evidences from the essay.
14. How does the author portray the idea of 'degeneration' in 'The Wretched Stone' as a result of excessive television viewing? Select strong evidence from the text to support your analysis.

15. Compare and contrast between ‘Marriage Is a Private Affair’ by Chinua Achebe and ‘Arranging a Marriage in India’ by Serena Nanda.
16. Assuming that you are Max Kelada retell your perspective in *Mr. Know All.* In retelling the story, assume that, although you were perfectly aware of the fellow passenger's prejudices, you chose to ignore them.
17. Summarize the plot of “Stopping by woods on a snowy evening”.

Section “C”

Long Questions [20]

18. Apply the four levels of interacting with a text to the story “The Stub Book” or "A Painful Case".

OR

"King John and the abbot of Canterbury" recounts a conflict between the king and the abbot.

a. Describe this conflict
b. Explain the reasons for this conflict
c. How is it resolved?
d. Describe a similar conflict you may have had with a friend, stranger, child, or parent.

POKHARA UNIVERSITY

Level: Bachelor | Semester: Spring | Year: 2025
Programme: BBA/BBA-Finance/BBA-TT | Full Marks: 100
Course: IT for Business | Pass Marks: 45
Time: 3 hrs.

Candidates are required to answer in their own words as far as practicable. The figures in the margin indicate full marks.

Section "A"

Very Short Answer Questions

Attempt all the questions. [10×2]

1. Define Cloud computing.
2. What is static and dynamic IP addressing?
3. What is Structured Query Language? List any three SQL commands.
4. What do you mean by collaboration tools?
5. Why SSDs are faster than HDDs?
6. Define three core principles of data security: confidentiality, integrity and availability.
7. What is LAN. List its main advantages?
8. Define Firewall. Why is it used?
9. What is the difference between structured and unstructured data?
10. What is the purpose of a spreadsheet application? Give an example.

Section "B"

Descriptive Answer Questions

Attempt **any six** questions. [6×10]

11. Discuss the major roles and importance of Information Technology in modern businesses with relevant examples. [5+5]
12. Explain Brain-Computer Interface (BCI) including its working principle and applications? Also write the working principle and applications of Microphone. [6+4]
13. Why software needs to be updated periodically? Explain the purpose of an ERP system in business. Describe the difference between open-source and proprietary software licenses. [2+4+4]
14. a. Define network topology? Compare bus topology with star topology. [5]
    b. Discuss about various data transmission modes in brief. [5]
15. Define database and database management system. Mention the limitations of traditional file environment and explain how DBMS can solve these limitations in detail. [2+5+3]

16. What is data visualization? What are the benefits of using data visualization? Briefly explain the different types of data visualization techniques with schematic example. [2+3+5]
17. Explain the various types of memory (RAM and ROM) used in computer systems. List five important characteristics of good software? [5+5]

Section "C"

Case Analysis

18. *Read the case situation given below and answer the questions that follow:* [20]
Amazon's Customer Relationship Management (CRM) system is an integral part of its operations, enabling the company to maintain its competitive edge in the e-commerce sector. By utilizing cutting-edge CRM software, Amazon gathers vast amounts of customer data from various touchpoints, including browsing behavior, past purchases, and customer reviews. This data is processed and analyzed to deliver highly personalized experiences, such as tailored product recommendations and targeted marketing offers, ensuring high levels of customer satisfaction and loyalty.

Amazon's CRM system is powered by a robust hardware infrastructure that supports its massive data processing and storage needs. At the core of this infrastructure is Amazon Web Services (AWS), the company's cloud computing platform, which not only hosts the CRM system but also provides the computing power necessary to handle billions of customer interactions globally. AWS ensures that the CRM system is highly scalable, allowing Amazon to quickly adapt to changes in demand and customer behavior. The system also relies on high-performance servers, storage systems, and data centers spread across multiple regions to ensure data redundancy and minimal downtime. The hardware used in Amazon's data centers, including servers and storage devices, is specifically designed to handle the massive volume of transactions, real-time data processing, and analytics required for its CRM operations.

To complement its CRM software, Amazon uses various advanced computer tools to optimize customer engagement and business operations. The company employs machine learning algorithms to predict customer preferences and behavior, which are then integrated into its CRM system for personalized marketing. Additionally, Amazon's CRM is enhanced with data analytics tools, such as AWS tools like Amazon QuickSight, which allow for real-time insights into customer trends, sales patterns, and product performance. These tools help Amazon stay ahead of customer demands and provide a seamless, customized shopping experience. Amazon also uses

chatbots and AI-powered virtual assistants to streamline customer service, making it easier for customers to resolve issues quickly and efficiently.

The network infrastructure supporting Amazon's CRM system is equally crucial. With a global customer base, Amazon relies on a distributed network of high-speed fiber-optic connections, load balancers, and content delivery networks (CDNs) to ensure that customer data is transmitted quickly and securely across its global infrastructure. The CRM system is integrated across Amazon's international websites, ensuring consistent and reliable access for customers in different regions. Amazon also uses Virtual Private Networks (VPNs) and encryption protocols to ensure secure communication and protect sensitive customer information, complying with global data privacy regulations. In addition, Amazon's network infrastructure is built with redundancy and failover mechanisms, ensuring high availability and minimal service disruptions, even during periods of peak demand, such as the holiday shopping season or Prime Day.

While Amazon's CRM system is one of the most advanced in the world, it faces several challenges. Maintaining the accuracy and relevance of customer data is a continuous task, particularly as the company expands into new markets with varying customer behaviors. Additionally, ensuring the security and privacy of customer data is paramount, and Amazon must adhere to strict regulatory requirements in different countries. The vast scale of its CRM system also poses challenges related to system integration and synchronization, ensuring that all components—hardware, software, network, and tools—work in harmony to provide a seamless experience for customers.

Questions:

a. Explain how CRM system helps to maintain customer relationships. [5]
b. How does Amazon's hardware infrastructure support the real-time data processing required for personalized customer experiences? [5]
c. How does Amazon ensure its global CRM system is accessible with minimal latency, regardless of the customer's location? [5]
d. How do Amazon's computer tools, such as chatbots, improve customer interactions and reduce the need for human intervention? [5]