Only for 2021 & 2022 AD admitted Students

TRIBHUVAN UNIVERSITY
FACULTY OF MANAGEMENT
Office of the Dean
May 2025

Full Marks: 60
Pass Marks: 30
Time: 3 Hrs.

BIM / Fifth Semester / IT 242: Software Design and Development

Candidates are required to answer the questions in their own words as far as practicable.

Group "A"

Brief Answer Questions: *[10 × 1 = 10]*

1. Mention any one advantage of adopting agile methodology for system development.
2. What is the use of Gantt Chart?
3. List any two characteristics of successful project.
4. What is Whitebox testing?
5. Define decision tables.
6. Mention any one difference between form and report.
7. List out any two UML Tools.
8. What is process modeling?
9. Define Tangible Cost.
10. What is Logical Design?

Group "B"

Short Answer Questions: (Attempt any FIVE Questions) *[5×3 = 15]*

11. Write down different stages of traditional system development life cycle.
12. Write steps to build baseline project plan.
13. Mention any three requirements for system maintenance.
14. List out any three factors that should be consider for scheduling project.
15. Explain any three types of anamolies.
16. Write down any three advantages of Phased Installation.

Group "C"

Long Answer Questions: (Attempt any THREE Questions) *[3 ×5 = 15]*

17. Draw an ER diagram for the Library Management System for following statement:

"A library system keeps track of books, members, and borrow transactions. Each member can borrow multiple books, and each book can be borrowed by multiple members over time". Assume your own attributes and relationship.

18. Illustrate and explain spiral development model.

19. How can Software Designer make software more User Friendly? Explain.

20. Draw a Level 1 DFD for a vehicle renting system that allow customer to search vehicle, select vehicle, book a vehicle and make payment.

Group "D"

Comprehensive Answer / Case / Situation Analysis Questions: *[2 × 10 = 20]*

21. Draw Use Case Diagram for Online Flight booking system assuming the following scenario.

Scenario: *If a user is non registered he / she can only view the flight details. If a user is registered he / she can view Flight details, select seats, and make payments. Additionally, there are admin users who manage Flight listings, add new flights, and monitor bookings. The system should notify the registered users about their booking status via email or SMS.*

22. What is Feasibility Study? Explain different types of feasibility studies performed during Project planning.

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BIM / Fifth Semester / IT 243: Programming with Python

Candidates are required to answer the questions in their own words as far as practicable.

Group "A"

Brief Answer Questions: *[10 × 1 = 10]*

1. How do you defiuc constant in python?
2. What is the task of match-case statement?
3. When do you use dictionary data type?
4. List any two benefits of using functions.
5. Define exception.
6. List the purpose of with statement.
7. Which python library is used for interactive visualization?
8. List any two names of Python GUI framework.
9. Define static method.
10. What do you mean by packing and unpacking the arguments?

Group "B"

Short Answer Questions: (Attempt any FIVE Questions) *[5×3 = 15]*

11. Write a program using function to find sum of any numbers passed to the function.
12. Write a program to add two, three and four integers using methods overloading.
13. What is lambda function, using lambda function create a function to add two values.
14. Illustrate the concept of multilevel inheritance with an example.
15. Write a program in Python, to join two sets.
16. Write a recursive program to reverse the given string.

Group "C"

Long Answer Questions: (Attempt any THREE Questions) *[3 ×5 = 15]*

17. Write a program in python to create a tuple of an integer number of 5 values, and find product of it.
18. Write a program in python to illustrate the example of duck typing inheritance.
19. Write a program in python to write a single sentence, then add two more sentence and show all the sentences on the screen using file handling.

20. Create a two dimensions matrix and implement magic methods to find sum of all elements and diagonal elements.

Group "D"

Comprehensive Answer / Case / Situation Analysis Questions: ***[2 × 10 = 20]***

21. Write a program in python to create two models of MathCalculation and Measurement, in MathCalculate model create three methods (sum, subtract, and division), in Measurement model create two methods area of circle and area of rectangle. Then using both models create an app to calculate sum, division and area of circle.

22. Assume a database named "TU" that has a table named COLLEGE (id, name, address, stream, location). Write a program to insert some records of college and update the location of college to "kirtipur" having "BIM" as stream.

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Pass Marks: 50
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BBM / BIM / Fifth Semester / MKT 201: Fundamentals of Marketing

Candidates are required to answer the questions in their own words as far as practicable.

Group "A"

Brief Answer Questions: *[10 × 2 = 20]*

1. What are the major types of buying situation?
2. Define marketing information system.
3. Write down the key factors to be considered in channel selection.
4. State the core concepts of marketing.
5. Differentiate between reactive and proactive marketing.
6. Give the concept of direct marketing.
7. Point out the factors affecting pricing decisions.
8. What do you understand by segment evaluation?
9. List down the major objectives of advertising.
10. State the levels of packaging.

Group "B"

Short Answer Questions:(Attempt any SIX Questions) *[6 ×5 = 30]*

11. Describe the components of promotion mix.
12. Briefly explain the types of brand.
13. Explain in brief the major sales promotion tools in promotion decision.
14. Differentiate between micro and macro environment with relevant examples.
15. Describe the areas of marketing research.
16. Elaborate on the pricing practices adopted by business hubs in Nepal.
17. Why is 'physical evidence' important in the context of service product? Give your views.

Group "C"

Long Answer Questions:(Attempt any THREE Questions) *[3 ×10 = 30]*

18. Enumerate the steps involved in the new product development process leading up to the commercialization phase.
19. Critically examine the components of marketing logistics.
20. Elucidate the factors influencing business buyer behavior.
21. Discuss the bases for segmenting consumer markets.

Group "D"

Comprehensive Answer / Case / Situation Analysis Questions: *[4 × 5 = 20]*

22. Analyze the following case carefully and answer the questions that follow:

Nepal's automotive landscape is undergoing a notable transformation as electric vehicles (EVs) has increasingly captured the market attention. This shift was prominently highlighted at the NADA Auto Show 2024, where electric vehicles outpaced traditional fuel-powered cars in bookings, illustrating a broader global trend towards sustainable energy solutions.

The NADA Auto Show 2024, one of Nepal's leading automotive exhibitions, showcased a dramatic surge in EV bookings. Out of the total vehicles reserved during the event, around 70% were electric, signaling a significant shift in consumer preference. According to Prabin Sharma, the organizer of the NADA Auto Show 2024, "Today's auto market is increasingly leaning towards alternatives to fuel-consuming vehicles."

Among the highlighted models were the Tata Punch EV and the Tiago EV, which collectively saw 700 units booked. The Tata Punch EV, an electric SUV, was offered in three variants, ranging in price from Rs 3.39 million to Rs 3.89 million. Additionally, the BYD ATTO 3, presented by Cimex Inc., garnered significant interest, with approximately 5,000 units sold to date. Other BYD models, such as the Dolphin and Seal, also attracted substantial buyer interest.

The shift in bookings from traditional fuel-powered vehicles to electric ones marks a pivotal change in Nepal's automotive sector. Historically, the Nepali market has been dominated by fuel-based vehicles, which have been burdened by high fuel costs and growing environmental concerns. In contrast, electric vehicles offer several advantages, including lower operating costs, reduced emissions, and a growing alignment with global sustainability trends.

Globally, there is a clear movement towards alternative energy sources, driven by the need to combat climate change. Countries around the world are heavily investing in renewable energy and electric mobility as part of their environmental strategies. Nepal's increasing adoption of EVs reflects this global trend, highlighting both a growing environmental consciousness and the practical benefits of reduced reliance on imported fuels.

The Nepalese government has supported this transition through various initiatives, including financial incentives, infrastructure development, policy support, and public awareness campaigns. These measures aim to lower the cost of EVs, improve charging infrastructure, and create a favorable regulatory environment, further accelerating the shift towards electric mobility.

Questions:

a. What factors in your opinion might be contributing to the high demand for electric vehicles at the NADA Auto Show 2024? Discuss.

b. In what ways do electric vehicles differ from traditional fuel-powered vehicles in terms of cost, environmental impact, and consumer preferences? Give your arguments.

c. What specific government policies and incentives in Nepal are designed to promote electric vehicle adoption, and how effective have these measures been? Explain.

d. How might the rising popularity of electric vehicles influence the future of fuel-based vehicles and the broader automotive industry in Nepal? Give your opinion.

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BIM / Fifth Semester / IT 244: Information Security

Candidates are required to answer the questions in their own words as far as practicable.

Group "A"

Brief Answer Questions: *[10 × 1 = 10]*

1. Define computer security.
2. Define stream cipher.
3. List any two uses of Hash function.
4. List any two services of PGP.
5. List any one issue of password base system.
6. List any two security issues for user Authentication.
7. What do you mean by misfeasor?
8. What do you understand by rootkit?
9. What is a VPN?
10. Define security policy.

Group "B"

Short Answer Questions: (Attempt any FIVE Questions) *[5×3 = 15]*

11. Perform encryption of plaintext "secure" using Caesar Cipher.
12. Explain network based intrusion detection techniques.
13. What is security risk analysis? Explain.
14. Explain Biba integrity model.
15. Test whether 2 is primitive root of 5 or not.
16. Explain any three countermeasures for malware.

Group "C"

Long Answer Questions: (Attempt any THREE Questions) *[3 ×5 = 15]*

17. How does Kerberos works? Explain.
18. What are the key consideration while designing a security audit trail? Explain.
19. Explain the differences between SHA 1 and SHA 2.
20. Define fire wall and explain its type.

Group "D"

Comprehensive Answer / Case / Situation Analysis Questions: ***[2 × 10 = 20]***

21. As a security software designer in your organization, what factors and design principles you need to consider while developing a security product? Explain in detail.

22. Explain RSA algorithm. Encrypt the message m = 10 using RSA algorithm for p = 3, q = 13, e = 5 and also show the decryption process.

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BIM / Fifth Semester / IT 228: Artificial Intelligence

Candidates are required to answer the questions in their own words as far as practicable.

Group "A"

[10 × 1 = 10]

Brief Answer Questions:

1. Give an example of acting rationally.
2. List any two types of deterministic environment.
3. Mention any two limitations of depth limited search.
4. Why do we need fuzzy set?
5. What is the task of activation function?
6. Define computer vision.
7. Write the function for sigmoid activation.
8. Distinguish between unification and lifting.
9. List the evaluation parameters for searching.
10. Define knowledge.

Group "B"

Short Answer Questions: (Attempt any FIVE Questions) *[5×3 = 15]*

11. Do AI ethics guarantee the human value? Justify.
12. Define constraint satisfaction problem. List any three types of primitive acts in conceptual dependency.
13. Differentiate between breadth first search and depth first search.
14. Why knowledge representation is important in artificial intelligence? Explain.
15. Give brief concept about semantic net as knowledge representation with example.
16. Describe the components of expert system.

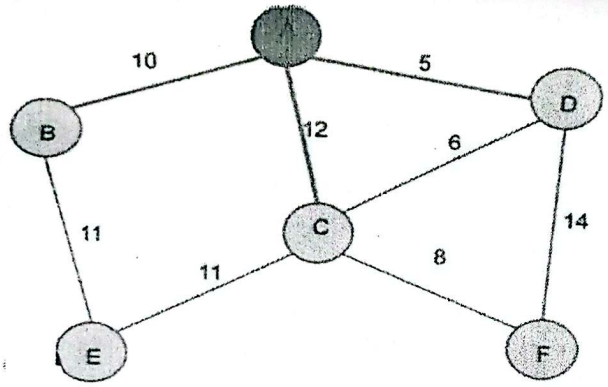
Group "C"

Long Answer Questions: (Attempt any THREE Questions) *[3 ×5 = 15]*

17. What do you mean by PEAS description of agents? Differentiate between goal-based and utility-based agents.
18. Describe fuzzy logic and its components, including fuzzy sets and membership functions. How does fuzzy logic differ from classical binary logic?

19. You have been planning a trip for your friends. You are trying to decide whether to postpone due to rain. The chance of rain on any days is 10%. The morning of the trip, its cloudy. The probability of it being cloudy is 30% and on days where it rains, it is cloudy in the morning 80% of the time. Should you postpone the trip?

20. Find the optimal path from A to F in following graph using A* search. Assume the heuristic value as h(A)= 5, h (B) = 6, h(C) = 4, h(D) = 3, h (E) = 3, h (F) = 0.



Group "D"

Comprehensive Answer / Case / Situation Analysis Questions: ***[2 × 10 = 20]***

21. Distinguish between CNN and RNN. Maximize the function $f(x) = x^2$, $0 \leq x \leq 15$ using genetic algorithm. Here assume the initial population as 1001, 1100, 1010, 1101. Apply 2 point crossover and bit flip mutation operation. Show the list of off springs after one iteration.

22. Discuss the different ambiguities in NLP. Describe the mathematical model of a neuron.

[5+5]