

MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS) BCA EXAMINATION
Fourth SEMESTER
MG4CCRBCA200 - ARTIFICIAL INTELLIGENCE
(2024 ADMISSION ONWARDS)

Duration: 2 Hours

Maximum Marks: 70

*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create(C), Skill(S),
Interest (I) and Appreciation (Ap)*

Students should attempt at least one question from each course outcome to enhance their overall
outcome attainability.

Part A

Very Short Answer Questions

Answer all questions

Each question carries 2 marks

1. Define an intelligent agent. [K] / [CO1]
2. Explain how a knowledge-based agent uses knowledge to make decisions? [U] / [CO1]
3. Describe how a genetic algorithm works. [U] / [CO2]
4. Explain propositional logic and its role in artificial intelligence. [U] / [CO3]
5. State the main goal of machine learning. [K] / [CO4]
[2x5 = 10]

Part B

Short Answer Questions

Answer any 5 questions

Each question carries 6 marks

6. Explain the structure of an intelligent agent with a neat diagram. [U] / CO1
7. Define a problem-solving agent and state its role in artificial intelligence. [K] / CO1
8. Explain the percepts available to an agent in the Wumpus World and their
significance in decision-making. [U] / CO1

9. Analyze the efficiency of alpha–beta pruning compared to the standard minimax algorithm. [An] / [CO2]
 10. Explain the role of unification in the resolution process. [U] / CO3]
 11. Illustrate how conditional independence reduces complexity in probabilistic reasoning. [U] / [CO3]
 12. Outline the key differences between supervised and unsupervised learning with examples. [U] / [CO4]
- [6x5 = 30]**

Part C
Essay Questions
Answer any 2 questions
Each question carries 15 marks

13. Explain the AO* algorithm with an example. Discuss the handling of AND/OR nodes cost updating, and backtracking. [U] / [CO2]
 14. Describe the forward chaining inference mechanism with a suitable example. [U] / [CO3]
 15. Analyze the strengths and limitations of expert systems in real-world applications. [An] / [CO4]
- [15x2 = 30]**

MAHATMA GANDHI UNIVERSITY, KOTTAYAM

MGU-UGP (HONOURS)

FOURTH SEMESTER EXAMINATION

(2024 ADMISSION ONWARDS)

MG4DSCCMA200 – Data Analytics Using R

Duration:1.5 hrs

Maximum Marks: 50

Students should attempt at least one question from each Course Outcome (CO) to enhance their overall outcome attainability.

Part A

Very Short Answer Questions

(Answer all questions, each question carries 2 marks.)

1. Which function is used to list variables in R? [U] [CO1]
2. How will you create a matrix in R? [U] [CO1]
3. What is the purpose of edit() function in R? [U] [CO2]
4. What is the use of melt() function in R? [U] [CO2]
5. How will you calculate frequencies of a vector in R? [U] [CO3]

(5X2=10 Marks)

Part B

Short Answer Questions

(Answer 5 out of 7 questions, each question carries 5 marks.)

6. What is R and why is it widely used in data analytics? [U] [CO1]
7. Discuss relational operators in R. [U] [CO1]
8. What is the difference between **break** and **next** statements in R loops? [U] [CO1]
9. What is a data frame in R? [U] [CO2]
10. Differentiate between rbind() and cbind(). [U] [CO2]
11. Define correlation and state its significance in data analysis. [An] [CO3]
12. How is mean calculated in R with the trim option? [An] [CO3]

(5X5=25 Marks)

Part C

Essay Questions

(Answer 1 out of 2 questions, each question carries 15 marks.)

13. Explain the creation of data frames, methods of accessing data, and the use of functions such as dim(), str(), summary(), head(), and tail() for data analysis. [U] [CO2]
14. Describe the data visualization techniques available in R. [An] [CO3]

(1X15=15 Marks)

MAHATMA GANDHI UNIVERSITY, KOTTAYAM

MGU-UGP (HONOURS)

FOURTH SEMESTER EXAMINATION

(2024 ADMISSION ONWARDS)

MG4DSCCMA201 - Digital Tools for Business and Research

Duration: 1.5 hrs

Maximum Marks: 50

Students should attempt at least one question from each Course Outcome (CO) to enhance their overall outcome attainability.

Part A

Very Short Answer Questions

(Answer all questions, each question carries 2 marks.)

1. Mention any two uses of data analytics in business. [K] [CO1]
2. List the three main views in SPSS/PSPP. [K] [CO1]
3. Give any two summary measures used to describe data numerically. [U] [CO2]
4. Cross tab is a way to bring out the relationship between variables. Justify the statement. [U] [CO2]
5. Differentiate between a paired sample t-test and an independent sample t-test. [U] [CO3]
[5 x 2 = 10]

Part B

Short Answer Questions

(Answer 5 out of 7 questions, each question carries 5 marks.)

6. Explain the importance of information in business decision-making. [K] [CO1]
7. Explain the steps involved in creating a data file and defining variables in SPSS/PSPP. [U] [CO1]
8. Explain the process of computing a new variable in SPSS/PSPP with an example. [U] [CO2]
9. Describe the purpose and use of scatter diagrams, P-P plots, and Q-Q plots. [K] [CO2]
10. Explain the procedure for conducting Explore command and interpreting the results. [U] [CO3]
11. A researcher wants to study the effect of two factors (e.g., teaching method and gender) on student performance. Explain how two-way ANOVA can be applied, including assumptions and steps. [A] [CO3]

12. Describe when and why nonparametric tests like Chi-square and Kruskal-Wallis are used. Explain with an example. [A] [CO3]

[5 x 5 = 25]

Part C

Essay Questions

(Answer 1 out of 2 questions, each question carries 15 marks.)

13. Illustrate the methods of presenting data graphically in SPSS with examples. [U] [CO2]
14. Explain correlation and regression analysis with assumptions and the step-by-step procedure to analyze the relationship between two variables in SPSS/PSPP. [U] [CO3]

[1 x 15 = 15]

MAHATMA GANDHI UNIVERSITY, KOTTAYAM

MGU-UGP (HONOURS)

FOURTH SEMESTER EXAMINATION

(2024 ADMISSION ONWARDS)

MG4DSCCMA200 – Data Analytics Using R

Duration:1.5 hrs

Maximum Marks: 50

Students should attempt at least one question from each Course Outcome (CO) to enhance their overall outcome attainability.

Part A

Very Short Answer Questions

(Answer all questions, each question carries 2 marks.)

1. Which function is used to list variables in R? [U] [CO1]
2. How will you create a matrix in R? [U] [CO1]
3. What is the purpose of edit() function in R? [U] [CO2]
4. What is the use of melt() function in R? [U] [CO2]
5. How will you calculate frequencies of a vector in R? [U] [CO3]

(5X2=10 Marks)

Part B

Short Answer Questions

(Answer 5 out of 7 questions, each question carries 5 marks.)

6. What is R and why is it widely used in data analytics? [U] [CO1]
7. Discuss relational operators in R. [U] [CO1]
8. What is the difference between **break** and **next** statements in R loops? [U] [CO1]
9. What is a data frame in R? [U] [CO2]
10. Differentiate between rbind() and cbind(). [U] [CO2]
11. Define correlation and state its significance in data analysis. [An] [CO3]
12. How is mean calculated in R with the trim option? [An] [CO3]

(5X5=25 Marks)

Part C

Essay Questions

(Answer 1 out of 2 questions, each question carries 15 marks.)

13. Explain the creation of data frames, methods of accessing data, and the use of functions such as dim(), str(), summary(), head(), and tail() for data analysis. [U] [CO2]
14. Describe the data visualization techniques available in R. [An] [CO3]

(1X15=15 Marks)

MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS)
FOURTH SEMESTER EXAMINATION
(2024 Admission Onwards)

MG4DSCCSC200 - OOPs Concepts using JAVA

Duration: 1.5 hours

Maximum Marks: 50

Students should attempt at least one question from each Course Outcome (CO) to enhance their overall outcome attainability

Part A

Very Short Answer Questions

(Answer **all** questions, each question carries **2** marks.)

- | | |
|--|-----------|
| 1. State the role of Java Virtual Machine. | [U][CO1] |
| 2. Identify the use of the super keyword. | [U][CO2] |
| 3. Analyze how dynamic method dispatch supports runtime polymorphism. | [An][CO2] |
| 4. Define exception handling. | [K][CO3] |
| 5. Apply multithreading to execute two independent tasks simultaneously in Java. | [A][CO3] |

[5 × 2 = 10]

Part B

Short Answer Questions

(Answer **5** out of **7** questions, each question carries **5** marks.)

- | | |
|--|-----------|
| 6. Explain the concepts and benefits of Object Oriented Programming. | [U][CO1] |
| 7. Apply different types of Java operators to evaluate an arithmetic and logical expression. | [A][CO1] |
| 8. Describe the structure of a Java class and its components. | [U][CO2] |
| 9. Illustrate how Java resolves method overloading at compile time by analyzing a suitable program. | [An][CO2] |
| 10. Use inheritance and method overriding in Java to demonstrate runtime polymorphism with a suitable program. | [A][CO2] |
| 11. Discuss Java API packages and their significance. | [U][CO3] |
| 12. Write a Java program to create multiple threads and demonstrate the thread life cycle. | [A][CO3] |

[5 × 5 = 25]

Part C

Essay Questions

(Answer **1** out of **2** questions, each question carries **15** marks.)

- | | |
|---|----------|
| 13. Explain Java control statements with suitable programs and examples. | [U][CO1] |
| 14. Explain Swing components and event handling mechanism using the Delegation Event Model. | [A][CO3] |

[1 × 15 = 15]

MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS)
FOURTH SEMESTER EXAMINATION
(2024 ADMISSION ONWARDS)
MG4DSCCSC201- Computer Networks

Duration: 2hrs

Maximum Marks: 70

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

Part A

Very Short Answer Questions.

Answer **All** Questions. Each question carries **2** marks

- | | |
|--|----------|
| 1. Describe network topology with example. | [K][CO1] |
| 2. Explain classful Addressing. | [A][CO3] |
| 3. Define VCI. | [U][CO2] |
| 4. Describe Hamming distance. | [A][CO3] |
| 5. Define Telnet. | [U][CO4] |
- (5*2=10 Marks)

Part B

Short Answer Questions

Answer any **6** questions. Each question carries **5** marks

- | | |
|--|----------|
| 11. Explain the differences between IPV4 and IPV6. | [A][CO3] |
| 12. Explain UDP. | [U][CO4] |
| 13. Differentiate between Connection Oriented and Connectionless services. | [U][CO2] |
| 14. Explain Stop and Wait ARQ. | [A][CO3] |
| 15. Explain various components of the Data Communication System. | [K][CO1] |
| 16. Explain FTP. | [U][CO4] |
| 17. Explain CRC with Example. | [A][CO3] |
- (6*5=30 Marks)

Part C

Essay Questions

Answer any **2** questions. Each question carries **15** marks

- | | |
|--|----------|
| 18. Explain Any three Application Layer Protocols. | [K][CO1] |
| 19. Explain about Virtual Circuit Switched Network. | [U][CO2] |
| 20. Explain OSI Reference model with a neat diagram. | [K][CO1] |
- (2*15=30 Marks)

MAHATMA GANDHI UNIVERSITY, KOTTAYAM

MGU-UGP (HONOURS)

FOURTH SEMESTER EXAMINATION

(2024 ADMISSION ONWARDS)

MG4DSCCSC202 - Introduction to Database Management System

Duration: 1.5 hrs

Maximum Marks: 50

Students should attempt at least one question from each Course Outcome (CO) to enhance their overall outcome attainability.

Part A

Very Short Answer Questions

(Answer all questions, each question carries 2 marks.)

1. Define a Database Management System and compare DBMS with RDBMS. [K] [CO1]
2. Explain the relationship between character, field, record, and file. [K] [CO1]
3. Write the difference between single-valued and multi-valued attributes. [U] [CO2]
4. Distinguish between a candidate key and a primary key. [U] [CO2]
5. Define a table and a view in MySQL. [K] [CO3]

[5 x 2 = 10]

Part B

Short Answer Questions

(Answer 5 out of 7 questions, each question carries 5 marks.)

6. Discuss the ACID properties of a DBMS. [U] [CO1]
7. Explain the role of a Database Administrator (DBA). [K] [CO1]
8. Explain the difference between one-to-one, one-to-many, and many-to-many relationships. [U] [CO2]
9. Explain how functional dependency is used in normalization and describe First, Second, and Third Normal Forms. [U] [CO2]
10. Describe different MySQL data types with examples. [U] [CO3]
11. Write MySQL queries to demonstrate the use of aggregate functions such as COUNT, SUM, and AVG. [A] [CO3]
12. Create a table EMPLOYEE with suitable fields and demonstrate the use of INSERT, UPDATE, and DELETE commands. [A] [CO3]

[5 x 5 = 25]

Part C

Essay Questions

(Answer 1 out of 2 questions, each question carries 15 marks.)

13. Explain the Entity-Relationship (ER) model used in database design and illustrate it using a suitable ER diagram. [U] [CO2]
14. Describe various MySQL command types used for database definition (DDL), manipulation (DML), and control (DCL). [U] [CO3]

[1 × 15 = 15]

MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS)
FOURTH SEMESTER

Discipline Specific Elective Course (DSE)

MG4DSEBCA200- Data Visualization

(2024 ADMISSION ONWARDS)

Duration : 1 Hour

Maximum Marks : 35

*Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C),
Skill (S), Interest (I) and Appreciation (Ap)*

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

PART A

Very Short Answer Questions

Answer any **Five** questions

Each question carries **Three** marks

1. Define data visualization and state its importance in decision making. [A][1]
2. List the different types of data used in data visualization with one example each. [K][1]
3. Explain any three stages in the data visualization process. [U][1]
4. Identify and briefly explain any two challenges of data visualization. [An][1]
5. List any three popular data visualization tools and mention one use case for each. [K][2]
6. Explain the role of narrative in data storytelling. [U][2]
7. Explain the importance of color usage in visualizations. [U][2]

PART B

Short Answer Questions

Answer any **Four** questions

Each question carries **Five** marks

8. Analyze the role of data visualization in effective decision making using suitable examples. [U][1]
9. Explain the complete data visualization process from data collection to interpretation. [An][1]
10. Analyze the major challenges and limitations of data visualization and suggest possible solutions. [An][1]
11. Compare and contrast Excel, Tableau, and Power BI as data visualization tools with respect to features and use cases. [An][2]
12. Explain the principles of good visualization design and their significance in dashboard creation. [K][2]
13. Analyze how effective dashboard layout and interactivity enhance data storytelling. [An][2]

MAHATMA GANDHI UNIVERSITY, KOTTAYAM

MGU-BCA (HONOURS)

FOURTH SEMESTER EXAMINATION

(2024 ADMISSION ONWARDS)

MG4DSEBCA201: INTRODUCTION TO MACHINE LEARNING

MODEL QUESTION PAPER

Duration: 1hr

Maximum Marks: 35

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

Part A. Very Short Answer Questions.

Answer Any Five Questions. Each question carries 3 marks.

1. Differentiate between labelled and unlabelled data? [U] [CO1]
2. Explain reinforcement learning with its basic components. [U][CO1]
3. Distinguish between regression and classification. [U][CO1]
4. Define confusion matrix? List its components. [K][CO1]
5. Define logistic regression? State one application. [U][CO2]
6. State the basic principle of the Naïve Bayes classifier? [U][CO2]
7. What is a perceptron in Artificial Neural Networks? [U][CO2]

(5 X 3= 15 Marks)

Part B. Short Answer Questions.

Answer any 4 Questions. Each question carries 5 marks.

8. Describe the different types of Machine Learning with suitable examples. [U][CO1]
9. Explain the K-Nearest Neighbors (KNN) algorithm. Discuss the impact of the value of k. [A][CO2]
10. Discuss Decision Tree classification. Explain how decision trees are constructed. [An][CO2]
11. Describe Support Vector Machine (SVM) for linearly separable data with a suitable diagram. [U][CO2]
12. Explain the K-Means clustering algorithm. Discuss its advantages and disadvantages. [U][CO2]
13. Discuss the ethical considerations in Machine Learning with suitable real-world examples. [U][CO2]

(4 X 5= 20 Marks)

QPCode

Reg.No :

Name :

MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS) EXAMINATION
THIRD SEMESTER
MG4DSEBCA202 Web Programming –II
(2024 ADMISSION ONWARDS)

Duration: 1 Hour

Maximum Marks: 35

Remember(K), Understand(U), Apply(A), Analyse(An), Evaluate(E), Create(C), Skill(S), Interest(I) and Appreciation(Ap)

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

Part A

Answer any 5 questions. Each question carries 3 marks

1. List any three features of Node.js K /CO 1
2. Define asynchronous programming in Node.js K /CO 1
3. How to adding dependency in package.json A /CO 1
4. Write the code to send an HTTP GET request to "http://mgu.ac.in/api/data" using the built-in http module in Node.js A /CO 2
5. What is the role of the EventEmitter class in Node.js? U /CO 3
6. What is Express framework? Give two advantages of using Express. U /CO 3
7. Explain Route handler/callback functions U /CO 3

[5 x 3 = 15]

Part B

Short Answer Questions

Answer any 4 questions. Each question carries 5 marks

8. Describe asynchronous programming in Node.js with the help of the event loop. Explain why Node.js is suitable for real-time applications U /CO 1
9. Explain Node Package Manager (NPM). Describe installing packages locally and globally and updating packages U /CO 1
10. Explain the difference between fs.writeFile() and fs.appendFile() with respect to handling existing files U /CO 2
11. Write a complete but simple Node.js program using the File System module that does the following using asynchronous methods (callbacks) A /CO 2
12. Explain how to establish a database connection to mysql in Node.js is it ok U /CO 3
13. Explain Express framework in detail. Discuss routing, route parameters, response methods and sending static files. U /CO 3

[4 x 5 = 20]

MAHATMA GANDHI UNIVERSITY, KOTTAYAM

MGU- UGP (HONOURS)

FOURTH SEMESTER EXAMINATION (2024 ADMISSION ONWARDS)

MG4DSECSC200: DATA MINING

MODEL QUESTION PAPER

Duration: 1.5 hrs

Maximum Marks: 50

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

Part A. Very Short Answer Questions.

Answer all Questions. Each question carries 2 marks.

1. List any two data mining functionalities. [CO1][U]
2. Differentiate between OLTP and OLAP systems in one point each. [CO2][U]
3. State the two primary measures used to evaluate association rules. [CO2][U]
4. What is the primary purpose of data preprocessing in the KDD process? [CO1][U]
5. What is the role of a decision tree in classification? [CO3][U]

(5 X 2= 10 Marks)

Part B. Short Answer Questions.

Answer any 5 Questions. Each question carries 5 marks.

6. Compare and contrast the Apriori and FP-Growth algorithms. [CO2][A]
7. Explain the step-by-step process of the K-Means clustering algorithm. [CO3][A]
8. Classify the major issues in data mining into technical and application-oriented challenges. [CO1][U]
9. Construct a simple decision tree for a binary classification problem. [CO3][An]
10. Elaborate on the multidimensional data model (dimensions, facts, cubes). [CO2][A]
11. Describe the architecture of a typical data warehouse. [CO2][A]
12. Describe the steps involved in the Data Reduction process. Why is it necessary before mining? [CO1][U]

(5 X 5= 25 Marks)

Part C. Essay Questions.

Answer any 1 Questions. Each question carries 15 marks.

13. Explain constraint based association rule mining with suitable examples. [CO2][A]
14. Design a comparative framework to assess the suitability of three classification algorithms—Decision Tree, Bayesian Classification, and Support Vector Machine—for a real-world problem. [CO3][An]

(1 X 15 = 15 marks)

MAHATMA GANDHI UNIVERSITY, KOTTAYAM

**MGU-UGP (HONOURS) FOURTH SEMESTER EXAMINATION
(2024 ADMISSION ONWARDS)**

MG4DSECSC201 - Mobile App Development

Duration: 1.5 hrs

Maximum Marks: 50

Students should attempt at least one question from each Course Outcome (CO) to enhance their overall outcome attainability.

Part A

Very Short Answer Questions

*Answer **all** questions. Each question carries 2 marks.*

1. List any two mobile application device platforms. [R] [CO1]
2. Define a Content Provider. [U] [CO3]
3. Explain programmatic UI creation. [U] [CO2]
4. Explain the purpose of the onCreate() method. [R] [CO2]
5. Define an Intent. [R] [CO2]

[5 x 2 = 10]

Part B

Short Answer Questions

Answer any 5 questions. Each question carries 5 marks.

6. Compare Native and Hybrid mobile applications. [U] [CO1]
7. Describe the front-end and back-end of a mobile application. [U] [CO1]
8. Explain the role of Activities and Intents in Android. [U] [CO2]
9. Explain OnClickListener and OnLongClickListener. [U] [CO2]
10. Explain Basic Views used in Android with examples. [U] [CO2]
11. Describe event handling mechanism in Android. [U] [CO2]
12. Explain Explicit and Implicit Intents with examples. [U] [CO2]

[5 x 5 = 25]

Part C

Essay Questions

Answer any 1 question. Carries 15 marks.

13. Explain in detail the Mobile Application Development Lifecycle. Discuss the role of front-end, back-end, and mobile application services. [U] [CO1]
14. Explain Fragments in Android. Discuss their types, lifecycle, and advantages. [U] [CO2]

[1 x 15 = 15]

MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS) FOURTH SEMESTER EXAMINATION
(2024 ADMISSION ONWARDS)

MG4DSECSC202 - SYSTEM PROGRAMMING

Duration: 1.5 hrs

Maximum Marks: 50

Students should attempt at least one question from each Course Outcome (CO) to enhance their overall outcome attainability.

Part A

Very Short Answer Questions

(Answer all questions, each question carries 2 marks.)

- | | |
|--|-----------|
| 1. Define system software. | [U] [CO1] |
| 2. Indicate the use of debug monitors in program development. | [U] [CO2] |
| 3. Distinguish between linking and loading. | [U] [CO3] |
| 4. Indicate where code optimization is applied in compilation. | [U] [CO2] |
| 5. State the purpose of overlays in linking. | [U] [CO3] |

[5 x 2 = 10]

Part B

Short Answer Questions

(Answer any 5 questions, each question carries 5 marks.)

- | | |
|--|------------|
| 6. Explain the major functions of system software with suitable examples. | [U] [CO1] |
| 7. Explain the process of parsing and discuss its role in language processing. | [U] [CO1] |
| 8. Demonstrate macro definition and macro call using a suitable example. | [A] [CO2] |
| 9. Illustrate how control structures are translated during compilation. | [A] [CO2] |
| 10. Analyze the working of different types of loaders. | [An] [CO3] |
| 11. Examine the role of a linker in resolving external references. | [An] [CO3] |
| 12. Explain the design and working of a Two-Pass Assembler. | [U] [CO1] |

[5 x 5 = 25]

Part C
Essay Questions

(Answer any 1 question, each question carries 15 marks.)

13. Apply macro processing concepts to design a Macro Preprocessor, explaining parameter handling and expansion mechanisms. [A] [CO2]
14. Analyze the design of Linkers and Loaders, and evaluate their role in relocation, linking, and program execution. [An] [CO3]

[1 x 15 = 15]

MAHATMA GANDHI UNIVERSITY
BCA (HONOURS) FOURTH SEMESTER EXAMINATION
(2024 ADMISSION ONWARDS)
MG4SECBCA200 - Object Oriented Programming using Java
Model Question Paper

Max. Marks: 50

Time 1.5 Hours

Part A: Very Short Answer Questions (Answer all) - (5*3=15 Marks)

- 1 Write a class Student and create an object of it using Java. [U][CO 1]
- 2 Describe decision making and branching in Java? [U][CO 1]
- 3 What is the difference between one-dimensional and two-dimensional arrays in Java? [An][CO 2]
- 4 Differentiate between primitive data types and wrapper classes. [U][CO 2]
- 5 What is a user-defined package? How is it created? [R][CO 3]

Part B: Short Answer Questions (4 out of 5 Questions) - (4*5=20 Marks)

- 6 Explain constructor overloading using a suitable example. [An][CO 1]
- 7 Write a Java program to demonstrate the use of command line arguments. [An][CO 1]
- 8 Write any two methods of the String class with their uses. [U][CO 2]
- 9 Compare single inheritance and multilevel inheritance in Java. Analyze their impact on program design. [An][CO 2]
- 10 Examine the advantages and limitations of using multiple catch statements instead of a single generic catch block. [An][CO 3]

Part C: Essay Questions (1 out of 2 Questions) - (1*15=15 Marks)

- 11 Analyze and compare the roles of interfaces and abstract classes in achieving abstraction and runtime polymorphism in Java. [An][CO 2]
- 12 Analyze the differences between creating a thread by extending the Thread class and implementing the Runnable interface. Justify when each approach is preferred. [An][CO 3]

MAHATMA GANDHI UNIVERSITY

BCA (HONOURS) FOURTH SEMESTER EXAMINATION
(2024 ADMISSION ONWARDS)

MG4SECBCA202 - Design Thinking and Innovation
Model Question Paper

Max. Marks: 35

Time 1 Hour

Short Answer Questions each question carries 5 marks (Answer any 7 questions)

- 1 What is innovation? Write the Significance of Innovation in Business. [An][CO 1]
 - 2 Explain any two real-world customer challenges and explain how Design Thinking can be used to enhance customer experience in such cases. [An][CO 1]
 - 3 Write the four stages of Design Thinking Process. Explain with global success story of Airbnb. [An][CO 1]
 - 4 Explain the importance of empathy in the innovation process. How does it help in defining the right problem? [An][CO 2]
 - 5 How group-based exercises help students appreciate uniqueness. Give suitable example. [An][CO 2]
 - 6 What are wicked problems? Identifying wicked problems around us and the potential impact of their solution [An][CO 2]
 - 7 Explain in detail brainstorming method in ideation for solving wicked problems. [An][CO 2]
 - 8 What is rapid prototyping? Explain its purpose and importance in innovation. [An][CO 3]
 - 9 Explain the process of re-design and re-creation in terms of the success of the product development process in design thinking. [An][CO 3]
 - 10 Explain the steps involved in testing and presenting a design solution.. [An][CO 3]
- (7*5=35 Marks)**

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MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS) EXAMINATION – MARCH 2026
Semester IV
Course Code: MG4SECCSC200
Course Name: FOUNDATIONS OF DATA SCIENCE
(2024 Admission onwards)

Duration: 1 Hour 30 Minutes

Maximum Marks: 50

Remember(K), Understand(U), Apply(A), Evaluate(E), Create(C), Skill(S), Interest(I) and Appreciation(Ap)

Students should attempt at least one question from each Course Outcome.

Part A

Very Short Answer Questions

Answer all questions

Each question carries **2 marks**

1. Define the term data collection.
2. What is meant by primary data?
3. State the meaning of classification of data.
4. Define arithmetic mean as a measure of central tendency.
5. What is a random experiment in probability?

[2 X 5 = 10]

Part B

Short Answer Questions

Answer any **5 questions**

Each question carries **5 marks**

6. Distinguish between primary data and secondary data with suitable examples.
7. Explain the various methods of collecting primary data.
8. What is tabulation? Explain the objectives of tabulation in data presentation.
9. Explain the characteristics of a good average.
10. Calculate the arithmetic mean of the following observations: 5, 7, 9, 11, 13.
11. Define median as a measure of central tendency. Mention any two merits.
12. Explain mutually exclusive events with an appropriate example.

[5 X 5 = 25]

Part C

Essay Questions

Answer any **1 question**

The question carries **15 marks**

13. Explain the process of collection of data. Describe primary and secondary data with methods.

OR

14. Explain measures of central tendency. Discuss arithmetic mean, median, and mode with examples.

[15 X 1 = 15]

MGU-UGP (HONOURS) THIRD SEMESTER EXAMINATION
(2024 ADMISSION ONWARDS)

MG4SECCSC201 – Computer Hardware Maintenance

Duration: 1.5 Hrs

Maximum Marks: 50

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

Part A

Very Short Answer Questions

Answer All Questions

Each question carries 2 marks

1. What is a motherboard? Name two main parts found on it. (K, CO1)
2. What does a CMOS battery do in a computer? (K, CO1)
3. What is the purpose of CPU cache memory? (U, CO1)
4. What is the first step a technician should take when troubleshooting? (K, CO2)
5. What does the beep code "1 Long, 2 Short" usually mean? (K, CO2)
6. Name one tool used to check if a computer's power supply is working. (K, CO2)
7. Why is it important to clean your computer regularly? (U, CO3)
8. Why should you not use a regular vacuum cleaner to clean computer parts? (U, CO3)
9. How does a heat sink help keep a computer cool? (U, CO3)
10. Name one physical security measure to protect a computer from theft. (K, CO3)

[10x2 = 20]

Part B

Short Answer Questions

Answer any 6 Questions

Each question carries 5 marks

11. How does an optical mouse work? How is it different from an old mechanical mouse? (U, CO1)
12. What are the main differences between VGA and HDMI cables? (K, CO1)
13. If your computer won't start after an update, what simple steps can you try to fix it? (A, CO2)
14. What is a backup? Why is it important to keep a copy of your data in a different place? (U, CO2)
15. How can you help someone fix their internet connection remotely? (A, CO2)
16. Name three ways to keep your computer safe from theft or damage. (K, CO3)
17. What does "real-time protection" mean in antivirus software? (U, CO3)
18. What is ransomware? How can you protect your computer from it? (U, CO3)

[6x5 = 30]

MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP (HONOURS)
FOURTH SEMESTER
MG4SECCSC202- Visualization Tools for Data Analytics
(2024 ADMISSION ONWARDS)

Duration: 1.5 Hours

Maximum Marks: 50

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

PART A

Very Short Answer Questions

Answer All

Each question carries **Two** marks

1. Define Data Visualization and mention any two benefits of using data visualization tools. [U][1]
2. 2. What is Descriptive Analytics? Give one example. [U][1]
3. 3. List any two popular data visualization tools. [U][1]
4. 4. Mention any two common features of data visualization tools. [U][1]
5. 5. What is Tableau Product Suite? Name any two Tableau products. [U][2]
6. 6. Define a Time Series Chart in Tableau. [U][2]
7. 7. What is a Heat Map? Mention one use. [U][2]
8. 8. What is Power BI? [U][3]
9. 9. What is Map Visualization in Power BI? [U][3]
10. 10. What is a Dashboard in Power BI? [U][3]

[10 x 2 =20 Marks]

PART B

Short Answer Questions

Answer any **Six** questions

Each question carries **Five** marks

11. Explain the kinds of data analytics: Descriptive, Diagnostic, Predictive. [U][1]
12. Discuss the common features of data visualization tools and explain the salient features of any one popular tool. [U][1]
13. Compare Tableau and Power BI as data visualization tools. [U][1]
14. Explain the Tableau interface and describe how to connect to a data source using Tableau. [U][2]
15. Describe the steps to create a Heat Map in Tableau and explain its applications. [U][2]
16. Explain the process of building an interactive dashboard in Tableau. [U][2]
17. Explain the data preparation process in Power BI. [U][3]
18. Describe the steps involved in creating and sharing a dashboard in Power BI, including the role of tiles. [U][3]

[6 x 5 =30 Marks]

QpCode :

Reg. No... ..

Name... ..

**MAHATMA GANDHI UNIVERSITY, KOTTAYAM
MGU-UGP BCA (HONOURS) Examination March 2026
Model Question Paper**

MG4VACBCA200- Entrepreneurship and Startup Ecosystem

Duration: 1 hours

Maximum Marks: 35

**Remember (K), Understand (U) , Apply(A), Analysis (An), Evaluate(E), Create(C),
Skill(S), Interest (I) and Application(Ap)**

*Students should attempt at least one question from each course outcome to enhance their
overall outcome attainability.*

Part A

Very Short Answer Questions

Answer any **5** Questions

Each question carries **3** marks

1. Why is innovation important in entrepreneurship? [K]/[1]
 2. Who is novice entrepreneur? [K]/[1]
 3. Explain the political action and regulatory changes in determining business area.[U]/[1]
 4. What is management prowess? [U]/[1]
 5. Explain referral marketing. [K]/[2]
 6. What is supply chain? [K]/[2]
 7. Describe MUDRA yogana. [U]/[2]
- 5*3=15

Part B

Short Answer Questions

Answer any **4** Questions

Each question carries **5** marks

8. Discuss about “ bottom-up” approach to guesstimate market potential. [K]/[1]
 9. Explain organizational feasibility analysis. [K]/[1]
 10. Discuss on Dabour business. [U]/[1]
 11. What are the funding options. Discuss personal funding option. [K]/[2]
 12. Explain “incubators”. [U]/[2]
 13. How does email marketing help small businesses? [A]/[2]
- 4*5=20

MAHATMA GANDHI UNIVERSITY, KOTTAYAM

MGU-UGP (HONOURS) BCA EXAMINATION

IV SEMESTER

MG4VACBCA201 - IT AND ENVIRONMENTAL SUSTAINABILITY

(2024 ADMISSION ONWARDS)

Duration: 1 Hours

Maximum Marks: 35

Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create(C), Skill(S), Interest (I) and Appreciation (Ap)

Students should attempt at least one question from each course outcome to enhance their overall outcome attainability.

Part A

Short Answer Questions

Answer any 7 questions

Each question carries 5 marks

1. Describe the classification of natural resources with examples. [U] / [CO1]
2. Explain how deforestation affects ecological balance and biodiversity. [U] / [CO1]
3. List the major challenges in implementing sustainable ecosystem management practices in India. [K] / [CO1]
4. What is meant by sustainable ecosystem management? [K] / [CO1]
5. What are the major causes of air pollution? [K] / [CO2]
6. Explain the term e-waste with two examples. [U] / [CO2]
7. State the principles of the 3Rs in waste management. [K] / [CO2]
8. Analyze the cause-and-effect relationship between ozone layer depletion and environmental imbalance. [An] / [CO2]
9. Analyze the effectiveness of the Environment Protection Act, 1986, in managing industrial pollution. [An] / [CO3]
10. Compare the roles of the judiciary and the legislature in implementing environmental laws. [An] / [CO3]

[5x7 = 35]

MAHATMA GANDHI UNIVERSITY, KOTTAYAM

**MGU-UGP (HONOURS) FOURTH SEMESTER EXAMINATION
(2024 ADMISSION ONWARDS)**

MG4VACCSC200 - Green Computing Techniques

Duration: 1.5 hrs

Maximum Marks: 50

Students should attempt at least one question from each Course Outcome (CO) to enhance their overall outcome attainability.

Part A

Very Short Answer Questions

Answer **all** questions. Each question carries **2** marks.

1. Define Green Computing. [R] [CO1]
2. State the meaning of carbon footprint in IT systems. [U] [CO1]
3. List any two drivers of Green IT strategies. [U] [CO2]
4. Define paperless billing. [R] [CO1]
5. Define Electronic Data Interchange (EDI) [R] [CO3]
6. Identify Green IT assets. [U] [CO3]
7. Define Green Enterprise Architecture. [R] [CO2]
8. State the meaning of Restriction of Hazardous Substances (RoHS). [R] [CO3]
9. Expand EPEAT. [R] [CO3]
10. State the purpose of the ISO 14000:2004 family of standards [R] [CO3]

[10 x 2 = 20]

Part B

Short Answer Questions

Answer any **6** questions. Each question carries **5** marks.

11. Describe the concept of Green Computing and its significance. [U] [CO1]
12. Explain the impact of carbon footprint in IT systems. [U] [CO1]
13. Briefly discuss the drivers of Green IT strategies. [U] [CO2]
14. Describe the environmental and cost benefits of paperless billing. [U] [CO1]
15. Outline the role of Electronic Data Interchange (EDI) in Green IT. [U] [CO3]
16. Describe the major Green IT assets used in organizations. [U] [CO3]
17. Explain the concept of Green Enterprise Architecture. [U] [CO2]
18. Explain the role of Unified Communications and Intranets in reducing paper usage. [A] [CO2]

[6 x 5 = 30]