24MCAH201 Reg No : .....

**CHOICE BASED CREDIT SYSTEM**

**SECOND SEMESTER DEGREE EXAMINATION OCTOBER 2025**

**MASTER IN COMPUTER APPLICATIONS**

**Research Methodology**

**Duration:3 Hours** **Max Marks:70**

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**Part A**

**I. Answer any THREE of the following :** **3×4= 12**

1. Write a note on research methodology.
2. Explain convenience sampling with an example.
3. Explain the main aspects of formulating a questionnaire for data collection.
4. Explain the various categories of Intellectual Property.

**Part B**

**II. Answer any FOUR of the following :** **4×7= 28**

5. Compare and contrast Qualitative and Quantitative Research Design.
6. "Every research thesis should follow a particular format". Justify the statement.
7. "Every Literature review has a format". Justify the statement.
8. Give a comparison between surveys and experiments.
9. Enumerate on the types of marks used in IPR.

**Part C**

**III. Answer any THREE of the following :** **3×10= 30**

10. Explain the various types of research with examples.
11. Explain the essential features of an abstract and the components in an abstract.
12. Explain the significance of research report and explain the layout of a research report.
13. Explain the various types of plagiarism that could occur in research. Explain how it could be avoided.

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24MCAH202 Reg No : .....

**CHOICE BASED CREDIT SYSTEM**

**SECOND SEMESTER DEGREE EXAMINATION OCTOBER 2025**

**MASTER IN COMPUTER APPLICATIONS**

**Data Mining And Business Intelligence**

**Duration:3 Hours** **Max Marks:70**

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**Part A**

**I. Answer any THREE of the following :** **3×4= 12**

1. Define processing and its various activities in lifecycle of data.
2. Explain KDD in data mining.
3. Define lift in association rule mining.
4. Explain any four attributes in effective market segmentation.

**Part B**

**II. Answer any FOUR of the following :** **4×7= 28**

5. Differentiate between OLAP and OLTP systems.
6. Define OLAP cubes. Explain any two OLAP operations with examples.
7. Compare and contrast no coupling, loose coupling and semi tight coupling schemas.
8. Illustrate the architecture of ROLAP in detail.
9. Explain the steps involved in building a classifier.

**Part C**

**III. Answer any THREE of the following :** **3×10= 30**

10. Apply the Apriori algorithm on a dataset and derive frequent item sets with support and confidence.
11. Differentiate between star schema and snowflake schema with suitable diagrams.
12. Explain the functionalities of data mining with suitable examples.
13. Explain the Balanced Scorecard framework with its four perspectives and discuss how predictive analytics can enhance it.

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24MCAH203 Reg No : .....

**CHOICE BASED CREDIT SYSTEM**

**SECOND SEMESTER DEGREE EXAMINATION OCTOBER 2025**

**MASTER IN COMPUTER APPLICATIONS**

**Python Programming**

**Duration:3 Hours** **Max Marks:70**

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**Part A**

**I. Answer any THREE of the following :** **3×4= 12**

1. Explain the purpose of the break statement in Python programming.
2. Examine the functionality of the os module in Python.
3. Discuss different file formats supported by Pandas for loading and storing data.
4. Discuss the key features that distinguish Seaborn as a visualization library.

**Part B**

**II. Answer any FOUR of the following :** **4×7= 28**

5. Discuss the role of constants in improving code reliability.
6. Evaluate the importance of Boolean operators in Python programming.
7. Demonstrate commonly used string methods in Python and discuss their purpose with examples.
8. Compare the various aggregation functions in NumPy.
9. Demonstrate how histograms and KDE plots can be combined to study data distributions.

**Part C**

**III. Answer any THREE of the following :** **3×10= 30**

10. Explain how one value can be assigned to multiple variables in Python.
11. Evaluate a Pandas DataFrame by performing multiple operations including summarization, descriptive statistics, and filtering based on conditions. Interpret the results.
12. Demonstrate how formal arguments are used in Python functions and examine the various types with examples.
13. Assess how labels and annotations enhance data visualization.

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24MCAS204 Reg No : .....

**CHOICE BASED CREDIT SYSTEM**

**SECOND SEMESTER DEGREE EXAMINATION OCTOBER 2025**

**MASTER IN COMPUTER APPLICATIONS**

**Full Stack Web Development**

**Duration:3 Hours** **Max Marks:70**

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**Part A**

**I. Answer any THREE of the following :** **3×4= 12**

1. Compare and contrast the use of the Bootstrap container-fluid class and container class in web design.
2. Explain JSON.parse( ) with example.
3. What do you mean by promises in Node.js and how are they better than callback functions.
4. Create an associative array representing a book with keys "title," "author," and "year". Demonstrate how to add the key-value pair "genre" => "Mystery" to this array and remove the "year" key from it.

**Part B**

**II. Answer any FOUR of the following :** **4×7= 28**

5. Explain for-of loop of javascript with syntax and example.
6. Describe the usage of bootstrap cards for organizing content on a web page. Explain any three card elements with example.
7. Explain the features of Document Object Model with example.
8. What are filters in AngularJS? Explain uppercase, number and date filters with example.
9. Give any one significance of strings in PHP. Illustrate how to concatenate strings, find the length of a string, and replace substrings within a string with example.

**Part C**

**III. Answer any THREE of the following :** **3×10= 30**

10. What are AngularJS directives and how can it enhance HTML functionality? Explain ng-repeat and ng-click directive with examples.
11. Explain table, thead-dark, table-striped, table-bordered, and table-responsive bootstrap classes with example.
12. Explain the significance of jquery filter() method with example.
13. Write PHP code to perform the following database operations:
    a) Create a new record in MySQL table.
    b) Read and retrieve specific data from MySQL table.

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24MCAS205 Reg No : .....

**CHOICE BASED CREDIT SYSTEM**

**SECOND SEMESTER DEGREE EXAMINATION OCTOBER 2025**

**MASTER IN COMPUTER APPLICATIONS**

**Data Analytics**

**Duration:3 Hours** **Max Marks:70**

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**Part A**

**I. Answer any THREE of the following :** **3×4= 12**

1. Explain Interview method and Survey method of data collection with examples.
2. Explain any four importance of Tableau.
3. Describe the use of a Bullet Graph in Tableau with an example.
4. Describe the use of hierarchy in dashboard.

**Part B**

**II. Answer any FOUR of the following :** **4×7= 28**

5. Examine the significance of geographic roles and labels in Tableau for representing details location based information effectively.
6. Describe the various methods of Data Analytics with examples.
7. Elaborate inner join and full join in Tableau with examples. Explain the importance of data blending.
8. Describe the steps to create histogram and boxplot in Tableau using the "Show me" toolbar with an example.
9. Discuss the arrangement of multiple visualizations in dashboards.

**Part C**

**III. Answer any THREE of the following :** **3×10= 30**

10. Discuss the significance of dual-axis charts, trend lines, and dates in Tableau for effective analysis of relationships between two measures.
11. Differentiate structured & semi-structured data.
12. Analyse the various types of filters used in Tableau with an example.
13. Discuss the use of filter, highlight and URL actions in dashboards with examples.

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24MCADE214 Reg No : .....

**CHOICE BASED CREDIT SYSTEM**

**SECOND SEMESTER DEGREE EXAMINATION OCTOBER 2025**

**MASTER IN COMPUTER APPLICATIONS**

**Customer Relationship Management**

**Duration:3 Hours** **Max Marks:70**

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**Part A**

**I. Answer any THREE of the following :** **3×4= 12**

1. Describe any four benefits of data warehouse in CRM.
2. Explain Analytical and technology layer in CRM architecture.
3. Explain functional and emotional goals with an example.
4. Explain the architecture of e-CRM briefly.

**Part B**

**II. Answer any FOUR of the following :** **4×7= 28**

5. A provider offers Plan X (₹12,000 benefits, ₹6,500 cost) and Plan Y (₹10,000 benefits, ₹4,800 cost). Calculate their customer value and value percentage.
6. Discuss objectives of CRM.
7. Explain the IDIC model and QCI model in CRM.
8. Explain the importance of customer loyalty development in CRM with a suitable example.
9. Explain the scope of e-CRM with examples.

**Part C**

**III. Answer any THREE of the following :** **3×10= 30**

10. Analyse the concept of CRM implementation in Customer Relationship Management.
11. Describe customer data. Examine the different types of customer data in CRM.
12. Examine the purpose of customer Acquisition. Explain the advantages of CRM process.
13. Illustrate with examples how different types of CRM work together to enhance business performance.

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24MCADE215 Reg No : .....

**CHOICE BASED CREDIT SYSTEM**

**SECOND SEMESTER DEGREE EXAMINATION OCTOBER 2025**

**MASTER IN COMPUTER APPLICATIONS**

**Optimization Techniques**

**Duration:3 Hours** **Max Marks:70**

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**Part A**

**I. Answer any THREE of the following :** **3×4= 12**

1. Explain the core components of Optimization techniques.
2. Describe the basic components of solving an LPP problem.
3. Discuss the similarity between assignment problems and transportation problems.
4. Obtain initial feasible solution to the following Transportation problem using North West Corner Method.

| | A | B | C | Supply |
|---|---|---|---|---|
| P | 2 | 2 | 3 | 10 |
| Q | 4 | 1 | 2 | 15 |
| R | 1 | 3 | 1 | 40 |
| Demand | 20 | 15 | 30 | |

**Part B**

**II. Answer any FOUR of the following :** **4×7= 28**

5. Illustrate the steps in Optimization Techniques.
6. Solve the following LPP using graphical method

   Max Z = 3x+2y

   Subject to

   $-2x+3y \leq 9$

   $x-5y \geq 20$

   $x,y \geq 0$
7. Describe briefly the hungarian method of solving an assignment problem with an example.

8. Determine the initial feasible solution to the following Transportation problem using North West Corner Method and Least Cost Method. Which method is better?

| | A | B | C | D | Supply |
|---|---|---|---|---|---|
| P | 1 | 2 | 3 | 4 | 6 |
| Q | 4 | 3 | 2 | 0 | 8 |
| R | 0 | 2 | 2 | 1 | 10 |
| Demand | 4 | 6 | 8 | 6 | |

9. Explain the various methods and the steps in it to find the initial basic solution to a transportation problem.

**Part C**

**III. Answer any THREE of the following :** **3×10= 30**

10. Explain the formulation of LPP using mathematical model with an example.

11. Solve the following using Simplex method

Max Z = 20x+10y+15z

Subject to

$8x+6y+2z \leq 60$

$5x+y+6z \geq 40$

$2x+6y+3z \leq 30$

$x,y,z \geq 0$

12. A marketing manager has 5 salesmen and there are 5 districts. The sales per month for each salesman for each district is given below. Find assignment of salesmen to the districts that will maximize the sales.

| | D1 | D2 | D3 | D4 | D5 |
|---|---|---|---|---|---|
| M1 | 32 | 38 | 40 | 28 | 40 |
| M2 | 40 | 24 | 28 | 21 | 36 |
| M3 | 41 | 27 | 33 | 30 | 37 |
| M4 | 22 | 38 | 41 | 36 | 36 |
| M5 | 29 | 33 | 40 | 35 | 39 |

13. Describe the steps to determine optimal solution to a transportation problem using North West Corner Method and MODI method.

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