Roll No. | | | | | | | | | | | | |

Total No. of Pages: 01 **Total No. of Questions: 05**

BBA/ B.Com. (Hons.)/B.SC (AIML), Semester-1st

ENGLISH

Subject Code: 25C2CCU-103/BTHU103/18

M. Code: 96502/ 75085

Date of Examination: 07-05-2026

Time: 3 Hrs. **Max. Marks: 60**

INSTRUCTIONS TO CANDIDATES:

1. **All questions are compulsory.**
2. **Question no. 1, 2 & 3 carries TEN marks each.**
3. **Question no. 4 & 5 carries FIFTEEN marks each.**

Q. No.	Question	Course Outcome	Bloom's Level
1.	Identify the process of communication with a relevant diagram.	CO1	L3
2.	Explain the different modes of communication along with a suitable example.	CO2	L5
3.	Construct the precis writing of the given paragraph: Climate change is an urgent global threat driven by greenhouse gas emissions from fossil fuels, deforestation, and industrial activity. Its impacts—melting ice caps, rising seas, severe heat waves, unpredictable rainfall, and stronger storms—are unevenly distributed, with coastal, island, and low lying areas suffering worst, while arid zones face increasing water scarcity. Agriculture, infrastructure, and public health are disrupted even in temperate regions. Developing countries are particularly vulnerable due to limited adaptive capacity. Although solutions such as renewable energy, reforestation, climate smart agriculture, water management, and pollution regulation exist, progress has been hampered by weak political will, inadequate funding, and lack of international cooperation. To avoid ecosystem collapse, species extinction, and human displacement, all stakeholders—governments, businesses, local communities, and individuals—must act decisively in mitigation and adaptation.	CO3	L6
4.	Illustrate the common barriers to business communication with suitable examples.	CO4	L2
5.	Write a letter to the editor of a newspaper about the problems faced by commuters due to the reckless driving of the vehicles.	CO5	L3

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. | | | | | | | | | | | | |

Total No. of Pages: 01 **Total No. of Questions: 05**

BBA/ B.Com. (Hons.)/B.SC (AIML), Semester-1st

ENGLISH

Subject Code: 25C2CCU-103/BTHU103/18

M. Code: 96502/ 75085

Date of Examination: 07-05-2026

Time: 3 Hrs. **Max. Marks: 60**

INSTRUCTIONS TO CANDIDATES:

1. **All questions are compulsory.**
2. **Question no. 1, 2 & 3 carries TEN marks each.**
3. **Question no. 4 & 5 carries FIFTEEN marks each.**

Q. No.	Question	Course Outcome	Bloom's Level
1.	Identify the process of communication with a relevant diagram.	CO1	L3
2.	Explain the different modes of communication along with a suitable example.	CO2	L5
3.	Construct the precis writing of the given paragraph: Climate change is an urgent global threat driven by greenhouse gas emissions from fossil fuels, deforestation, and industrial activity. Its impacts—melting ice caps, rising seas, severe heat waves, unpredictable rainfall, and stronger storms—are unevenly distributed, with coastal, island, and low lying areas suffering worst, while arid zones face increasing water scarcity. Agriculture, infrastructure, and public health are disrupted even in temperate regions. Developing countries are particularly vulnerable due to limited adaptive capacity. Although solutions such as renewable energy, reforestation, climate smart agriculture, water management, and pollution regulation exist, progress has been hampered by weak political will, inadequate funding, and lack of international cooperation. To avoid ecosystem collapse, species extinction, and human displacement, all stakeholders—governments, businesses, local communities, and individuals—must act decisively in mitigation and adaptation.	CO3	L6
4.	Illustrate the common barriers to business communication with suitable examples.	CO4	L2
5.	Write a letter to the editor of a newspaper about the problems faced by commuters due to the reckless driving of the vehicles.	CO5	L3

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. | | | | | | | | | | | | | Total No. of Pages: 1

Total No. of Questions: 07

B.Sc. (AIMLCS), Semester-1st

FUNDAMENTALS OF COMPUTER AND IT

Subject Code: UGCA1902/25C2CCU-102

M.Code: 79004/96523/92570/96534

Date of Examination: 11-05-2026

Time: 3 Hrs. **Max. Marks: 60**

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B consists of SIX questions, carrying TEN marks each and student have to attempt any FOUR questions.**

Q. No.	Question	CO	BL
	SECTION-A		
1.	Answer briefly:		
a.	What is a bar code reader?	CO1	L1
b.	Explain printers in detail, including their types, features, and uses.	CO1	L2
c.	Classify bit and byte based on their roles in data representation.	CO2	L2
d.	Define the base values of binary, octal, decimal, and hexadecimal number systems.	CO2	L1
e.	List the characteristics of a high-level language.	CO3	L1
f.	Define the basic functions and importance of an operating system.	CO3	L1
g.	Differentiate QR code and OMR using basic diagrams.	CO4	L2
h.	How can you use macros in word processing?	CO4	L1
i.	Classify smart cards and their uses.	CO5	L2
j.	Interpret the concept of Electronic Fund Transfer (EFT).	CO5	L2
	SECTION-B		
2.	Identify the difference between input and output devices in detail with suitable examples and functional comparison.	CO1	L3
3.	Categorize the functional units of a computer system with a neat block diagram.	CO1	L4
4.	Write about machine language, assembly language, and high-level languages with their features and examples.	CO2	L3
5.	Analyze presentation and spreadsheet applications in detail with their features and uses along with suitable examples.	CO3	L4
6.	Explain the uses of debit and credit card with a diagram of each card?	CO4	L5
7.	Evaluate the impact of Big Data and Data Mining on business decision-making.	CO5	L5

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. | | | | | | | | | | | | |

Total No. of Pages: 01

Total No. of Questions: 07

B.Sc. (AI&ML), Semester-1st

PROGRAMMING IN PYTHON

Subject Code: UGCA1914 /25C2PYC-C02

M. Code: 79005

Date of Examination: 19-05-2026

Time: 3 Hrs. **Max. Marks: 60**

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B consists of SIX questions, each carrying TEN marks each and student has to attempt any FOUR questions.**

Q. No.	Question	CO	BL
	SECTION-A		
1.	Answer briefly:		
a.	What is a keyword in Python and name atleast any two keywords?	CO-1	L1
b.	Describe the term indentation in Python and its importance.	CO-1	L2
c.	List atleast two applications of Python.	CO-2	L1
d.	Compare Python and C language. (Give atleast two comparisons)	CO-2	L2
e.	State the term tuple with an example.	CO-3	L1
f.	Outline the use of break and continue statements in loops.	CO-3	L2
g.	Write any two built-in functions in Python.	CO-4	L1
h.	Explain the steps to create and import a module.	CO-4	L2
i.	Define constructor in Python.	CO-5	L1
j	Interpret how encapsulation and inheritance are implemented in Python classes.	CO-5	L2
	SECTION-B		
2.	Compute sum, subtraction, multiplication, division and exponent of given variables input by the user.	CO-1	L3
3.	Compare the major features and limitations of Python with traditional programming languages like C and Java.	CO-2	L4
4.	Interpret various control structures used for iteration and decision-making in Python.	CO-3	L5
5.	Identify the difference between Pass by Value and pass by reference in Python using examples.	CO-4	L3
6.	Simplify the process of garbage collection and object destruction in Python with an example.	CO-5	L4
7.	Explain the concept of Package and Module in Python with an example.	CO-4	L5

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. | | | | | | | | | | | | |

Total No. of Pages: 01

Total No. of Questions: 07

B.Sc. (AIML), Semester- 2nd
DATA STRUCTURES
Subject Code: 25C2DSC-C03/ UGCA1915
M.Code: /79858
Date of Examination: 13-05-2026

Time: 3 Hrs. **Max. Marks:60**

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B consists of SIX questions, carrying TEN marks each and student have to attempt any FOUR questions.**

Q. No.	Question	CO	BL
	SECTION-A		
1.	Answer briefly:		
a.	List the advantages of dynamic memory allocation over static.	CO1	L1
b.	Describe time complexity of loop: for(i=1; i<=n; i++)	CO1	L2
c.	How many elements can be stored in an array of size 10?	CO2	L1
d.	If stack size = 5 and, 5 elements are inserted, what is next condition?	CO2	L1
e.	In a BST, which side stores smaller elements?	CO3	L1
f.	Construct BST for: 40,20,60,10.	CO3	L2
g.	If n=8, how many comparisons in binary search (approx)?	CO4	L1
h.	If array = [2,4,6,8,10], explain middle index in binary search.	CO4	L2
i.	Define hash function.	CO5	L1
j.	Explain adjacency matrix representation.	CO5	L2
	SECTION-B		
2.	Compare Binary search and Linear search.	CO1	L4
3.	Insert elements 5, 10, 15 in a queue and illustrate front & rear.	CO2	L4
4.	Explain the advantages of linked lists over arrays in real-world scenarios with proper justification.	CO3	L5
5.	Sort the array [9, 3, 7, 1] using Bubble Sort and count number of swaps.	CO4	L5
6.	Apply Linear Search for 25 in [10, 20, 25, 40]. Write the step-by-step procedure.	CO4	L3
7.	Analyze different collision resolution techniques used in hashing.	CO5	L4

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. | | | | | | | | | | | | |

Total No. of Questions: 07 **Total No. of Pages: 02**

B.Sc. (AIML), Semester- 2nd

FUNDAMENTALS OF STATISTICS

Subject Code: 25C2AIU-201 / UGCA1907

M.Code: /79856

Date of Examination: 06-05-2026

Time: 3 Hrs. **Max. Marks:60**

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B consists of SIX questions, carrying TEN marks each and student have to attempt any FOUR questions.**

Q. No.	Question	CO	BL
	SECTION-A		
1.	Answer briefly:		
a.	What are limitations of secondary data?	CO1	L1
b.	Outline the precautions that can be taken to remove distrust of Statistics.	CO1	L2
c.	Differentiate direct personal investigation and indirect oral investigation method.	CO1	L2
d.	What are open end class intervals? Illustrate giving an example.	CO2	L1
e.	Give a continuous frequency (tally) distribution from the following data: 20, 11, 11, 37, 15, 40, 31, 29, 38, 27, 13, 7, 29, 25, 37, 42, 30, 10, 9, 27, 25, 18, 2, 9, 47, 17, 11, 32, 41, 6, 29, 15, 13, 39, 21, 40, 10, 15, 3, 4.	CO2	L2
f.	Summarize the differences between classification and tabulation.	CO2	L2
g.	Write the key note for calculating arithmetic mean for any two types of continuous data series.	CO3	L1
h.	Define weighted mean. Under what circumstances it is preferred in comparison to simple arithmetic mean.	CO3	L2
i.	What are the features of dispersion which makes its evaluation worthy?	CO4	L1
j.	The mean of 100 items is 50 and their standard deviation is 5. Obtain the sum and sum of square of all the 100 items.	CO4	L2
	SECTION-B		
2.	Organize a systematic study describing the various methods or rules for rounding off the data.	CO1	L3
3.	Compare the market share of 4 brands of T.V. sets solds in Amritsar and Jalandhar by means of Pie diagram **Brands of sets** / **Units sold in Amritsar** / **Units sold in Jalandhar** Samsung / 480 / 625 L.G. / 360 / 500 Onida / 240 / 438 Sony / 120 / 312	CO2	L5
4.	Determine the missing frequency of the following data missing frequencies for given mean=35 and N (total no. of students) = 68. Marks: 0-10 / 10-20 / 20-30 / 30-40 / 40-50 / 50-60 No. of Students: 4 / 10 / 12 / ? / 20 / ?	CO3	L5
5.	The arithmetic mean and standard deviation of 20 observations were calculated by a student as 20 and 5 respectively. But while calculating them an item 13 was misread as 30. Calculate correct arithmetic mean and standard deviation.	CO4	L3
6.	Analyze the following data to find 3rd quartile, 6th decile and 70th percentile. Marks: More than 0 / 10 / 20 / 30 / 40 / 50 No. of students: 50 / 46 / 40 / 20 / 10 / 4	CO3	L4
7.	The particulars regarding the income of two villages are given below Village X / Village Y No. of People: 600 / 500 Average Income: 175 / 186 Variance of Income: 100 / 81 a) Compare in which village is variation in income is greater. b) Determine combined standard deviation of the village X and village Y put together?	CO4	L5

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. | | | | | | | | | | | | |

Total No. of Pages: 01

Total No. of Questions: 07

B.Sc. (AIML), Semester- 3rd

ARTIFICIAL INTELLIGENCE

Subject Code: UGCA1973

M.Code: 90349

Date of Examination: 05-05-2026

Time: 3 Hrs. Max. Marks:60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B consists of SIX questions, carrying TEN marks each and student have to attempt any FOUR questions.

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	Discuss the major challenges faced by AI systems in achieving human-like intelligence.	CO1	L1
b.	Explain the importance of learning in AI agents.	CO2	L2
c.	Define Minimax search.	CO3	L1
d.	Outline the advantages of bidirectional search.	CO3	L2
e.	Define local vs global search.	CO4	L1
f.	Illustrate problem reduction in search algorithms.	CO4	L2
g.	Define sequential decision problems.	CO5	L1
h.	Mention basic syntax of PROLOG.	CO6	L2
i.	What is Forward chaining in an expert system?	CO6	L1
j.	Outline the applications of knowledge representation.	CO5	L2
	SECTION-B		
2.	Identify the main areas where AI is used today. Give simple examples from our day to day life.	CO1	L3
3.	Write a short note on: a) Utility-driven agent b)Learning agent.	CO2	L4
4.	Explain the role of evaluation and heuristic functions in search.	CO3	L5
5.	Explain the A* search algorithm with a step-by-step example.	CO4	L5
6.	Identify knowledge representation in the field of AI with various types of knowledge.	CO5	L3
7.	Classify the architecture of expert systems with its components and existing expert systems.	CO6	L4

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. | | | | | | | | | | | | |

Total No. of Pages:01

Total No. of Questions: 07

B.Sc. (AIML), Semester-3
DATABASE MANAGEMENT SYSTEM
Subject Code: UGCA1922
M.Code: 90351
Date of Examination: 12-5-2026

Time: 3 Hrs. **Max. Marks:60**

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B consists of SIX questions, carrying TEN marks each and student have to attempt any FOUR questions.**

Q. No.	Question	CO	BL
	SECTION-A		
1.	Answer briefly:		
a.	List the major components of a Database Management System (DBMS).	CO-1	L1
b.	Explain the table and how to create its fields.	CO-1	L2
c.	Define the term Entity with an example.	CO-1	L1
d.	Write about the SQL Commands: - a. Alter b. Drop	CO-2	L1
e.	Define Data Definition Language (DDL) and Data Manipulation Language (DML) in SQL.	CO-2	L1
f.	Describe the Database Trigger.	CO-2	L2
g.	Illustrate the concept of transitive dependency in Third Normal Form (3NF).	CO-3	L2
h.	Compare create and rename commands with syntax and examples.	CO-3	L2
i.	Define the concept of concurrency problems in database systems.	CO-4	L1
j.	Explain the advantages of distributed databases in modern systems.	CO-4	L2
	SECTION-B		
2.	Construct the Three-Level Architecture of DBMS with the help of neat diagram.	CO1	L3
3.	Explain the term Normalization and justify 1NF, 2NF, and 3NF with suitable examples.	CO3	L5
4.	Make use of SQL queries to perform Data Definition Language (DDL) operations for creating a "Student" table.	CO2	L3
5.	Differentiate the concept of stored procedures and triggers in database automation.	CO2	L4
6.	Distinguish the concepts of primary key and foreign key, and with the help of STUDENT–DEPARTMENT tables.	CO3	L4
7.	Evaluate distributed databases based on their limitations and performance issues.	CO4	L5

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. | | | | | | | | | | | | |

Total No. of Pages:01

Total No. of Questions: 07

B.Sc. (AIML), Semester-3rd

DESIGN AND ANALYSIS OF ALGORITHMS

Subject Code: UGCA1979

M.Code:90350

Date of Examination: 08-05-2026

Time: 3 Hrs. Max. Marks:60

INSTRUCTIONS TO CANDIDATES:

3. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
4. SECTION-B consists of SIX questions, carrying TEN marks each and students have to attempt any FOUR questions.

Q. No.	Question	CO	BL
	SECTION-A		
1.	Answer briefly:		
a.	Write one example each for linear and logarithmic time algorithms.	CO-1	L1
b.	State the various characteristics of an algorithm.	CO-1	L2
c.	Differentiate between Time and Space complexity of an algorithm.	CO-1	L2
d.	What is backtracking?	CO-2	L1
e.	Illustrate the concept of N-Queens problem.	CO-2	L2
f.	Interpret how dynamic programming guarantees optimal solutions.	CO-2	L2
g.	Define Depth First Search (DFS).	CO-3	L1
h.	Explain the concept of residual graphs in network flow.	CO-3	L2
i.	Write two examples of a tractable problem.	CO-4	L1
j.	State the role of polynomial-time reduction.	CO-4	L2
	SECTION-B		
2.	Compute the average-case complexity of sequential search in an array of n elements.	CO1	L3
3.	Evaluate the number of bins required using First-Fit Decreasing and Best-Fit Decreasing algorithms for the items [8, 5, 6, 2, 4, 7] with bin capacity 12. Arrange the items in decreasing order, show step-by-step bin allocation for both methods, compare the results, and justify which algorithm performs better.	CO2	L5
4.	Construct the shortest path algorithms with their types, working steps, and suitable examples.	CO3	L3
5.	Examine the relationship between NP, NP-complete, and NP-hard problems with suitable reasoning.	CO4	L4
6.	Differentiate the performance of Prim's and Kruskal's algorithms for dense and sparse graphs.	CO3	L4
7.	Apply randomized techniques to solve a problem and compare it with a deterministic solution.	CO4	L5

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. | | | | | | | | | | | | | | Total No. of Pages: 01

Total No. of Questions: 07

B.Sc (AIML), Semester-3rd

Internet Tools and Applications

Subject Code: UGCA1959

M.Code: 90355

Date of Examination: 14-05-2026

Time: 3 Hrs. **Max. Marks:60**

INSTRUCTIONS TO CANDIDATES:

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B consists of SIX questions, carrying TEN marks each and student have to attempt any FOUR questions.**

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	Name one advantage and one disadvantage of the Internet.	CO-1	L1
b.	Explain how DNS helps translate names to addresses.	CO-1	L2
c.	Define Internet Protocol (IP).	CO-2	L1
d.	Outline any 2 benefits FTP offer to users.	CO-2	L2
e.	What is the difference between "To" and "BCC" fields in email?	CO-3	L1
f.	Illustrate why is the user agent important in the email architecture?	CO-3	L2
g.	Name different servers help in working of DNS.	CO-4	L1
h.	Outline a basic function of DNS in Internet communication.	CO-4	L2
i.	What is meant by "client-server model" in WWW?	CO-5	L1
j.	Explain the structure of a basic hyperlink in HTML.	CO-5	L2
	SECTION-B		
2.	Apply the concept of remote login to describe how to manage distant servers effectively.	CO-1	L3
3.	Analyze the advantages and disadvantages of using FTP for data transfer compared to modern cloud-based methods.	CO-2	L4
4.	Explain the role of Internet applications in digital communication—such as messaging, blogs, and social media.	CO-3	L5
5.	Assess the importance of using proper URL schemes for security and functionality on websites.	CO-4	L5
6.	Apply your understanding of lists in HTML to organize data efficiently. Give example.	CO-5	L3
7.	Examine CSS within a <style> tag to modify the appearance of a web page created using HTML, with example.	CO-5	L4

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐

Total No. of Questions: 7

Date : 14-05-2026
Total No. of Pages: 2

BSc (AIML), Semester-4th
Subject Name: ADVANCE PYTHON PROGRAMMING
Subject Code: UGCA1983 E2
M. Code : 91712

Time: 03:00 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.

SECTION-B consists of SIX questions, carrying TEN marks each and student have to attempt any FOUR questions.

Q No.	Description	CO	BL	Marks
	SECTION A			20
1.a.	List the SQL commands for creating table with the help of an example.	CO-1	L1	**2**
1.b.	Classify Database Management System types based on data model.	CO-1	L2	**2**
1.c.	Explain the term missing data handling.	CO-2	L2	**2**
1.d.	Name any two data structures used in Pandas.	CO-2	L1	**2**
1.e.	Describe the term iteration over rows in DataFrame.	CO-2	L2	**2**
1.f.	Summarize the defination and overview of descriptive statistics.	CO-2	L2	**2**
1.g.	Write any four matrix operations.	CO-3	L1	**2**
1.h.	Illustrate histogram plotting in NumPy with its diagram.	CO-3	L2	**2**
1.i.	How does "supervised learning" represent in machine learning?	CO-4	L1	**2**
1.j.	Interpret the purpose of the Scikit-learn library in machine learning tasks.	CO-4	L2	**2**
	SECTION B			40
2.	Develop a SQL query to select all records from a Customer table and draw a proper table of customer using the fileds (CusID, CusName, Items, Quantity,Amount) with the help of queries.	CO-1	L3	**10**
3.	Choose the linear algebra operations that are implemented using NumPy. List the advantages of NumPy arrays in computations.	CO-3	L5	**10**
4.	Execute array slicing techniques using NumPy to perform data analysis tasks and solve relevant numerical problems effectively.	CO-3	L3	**10**
5.	Examine security issues challenges related to database connections in Database Management System.	CO-2	L4	**10**
6.	Explain NumPy techniques for efficient array processing, considering time complexity and memory constraints.	CO-3	L5	**10**
7.	Compare the statistical functions Mean(), Median(), Mode(), Standard Deviation, and Variance in SciPy based on their characteristics and applications.	CO-4	L5	**10**

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. ☐☐☐☐☐☐☐☐☐☐

Date : 07-05-2026

Total No. of Questions: 7

Total No. of Pages: 2

BSc (AIML), Semester-4th
Subject Name: DATA SCIENCE
Subject Code: UGCA1978 E2
M-Code: 91707

Time: 03:00 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.

SECTION-B consists of SIX questions, carrying TEN marks each and student have to attempt any FOUR questions.

Q No.	Description	CO	BL	Marks
	SECTION A			**20**
1.a.	What is meant by semi-structured data?	CO-1	L1	**2**
1.b.	Summarize why data integration is required.	CO-1	L2	**2**
1.c.	Define parsing in data science systems.	CO-2	L1	**2**
1.d.	Give any two causes of missing data .	CO-2	L2	**2**
1.e.	What is meant by discrete and continuous data?	CO-3	L1	**2**
1.f.	Give importance of mapping in visualization.	CO-3	L2	**2**
1.g.	Define overfitting in model performance.	CO-4	L1	**2**
1.h.	Summarize the importance of cross validation in model development.	CO-4	L2	**2**
1.i.	Define k-fold cross validation.	CO-5	L1	**2**
1.j.	Explain batch processing in Data Sceince.	CO-5	L2	**2**
	SECTION B			**40**
2.	Make use of data transformation techniques and identify their impact on data accuracy and system performance.	CO-1	L3	**10**
3.	Explain data governance,data security,data management in detail and discuss their roles and importance in ensuring effective data handling and organizational decision-making.	CO-2	L4	**10**
4.	Evaluate the choice of chart type that affects the interpretation of data.	CO-3	L5	**10**
5.	Evaluate different visualization techniques for presenting comparison between multiple variables.	CO-4	L5	**10**
6.	Organize the role of out-of-sample evaluation metrics in assessing the predictive performance of a model.	CO-4	L3	**10**
7.	Evaluate polynomial regression and pipelines and their significance in prediction.	CO-5	L5	**10**

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐

Date : 04-05-2026

Total No. of Questions: 7

Total No. of Pages: 2

BSc (AIML), Semester-4th

Subject Name: MACHINE LEARNING

Subject Code: UGCA1977 E2

M Code: 91706

Time: 03:00 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.

SECTION-B consists of SIX questions, carrying TEN marks each and student have to attempt any FOUR questions.

Q No.	Description	CO	BL	Marks
	SECTION A			20
1.a.	What is the Divisive clustering technique? Mention its applications.	CO-1	L1	2
1.b.	Classify the Convolutional Neural Network (CNN) algorithm and explain how it works.	CO-1	L2	2
1.c.	State the role of a leaf node in a decision tree with suitable example.	CO-2	L1	2
1.d.	Label the meaning of Conditional probability and its role in Bayesian learning.	CO-2	L1	2
1.e.	Explain the role of distance metrics (Euclidean/Manhattan) in KNN.	CO-3	L2	2
1.f.	Write the one iteration of Q-learning update rule.	CO-3	L1	2
1.g.	Lits the major application areas of genetic programming.	CO-6	L1	2
1.h.	Outline the working of a genetic algorithm step by step in solving optimization problems.	CO-6	L2	2
1.i.	Compare the Logistic Discrimination and Logistic Regression with example.	CO-5	L2	2
1.j.	Describe the perceptron model by analyzing its decision boundary and classification capability.	CO-4	L2	2
	SECTION B			40
2.	Investigate reinforcement learning over supervised learning in dynamic environments with reasoning.	CO-1	L4	10
3.	Investigate the issue of overfitting in decision trees and suggest prevention techniques.	CO-2	L4	10
4.	Evaluate the suitability of SVM for large-scale datasets and recommend alternative models with proper justification.	CO-3	L5	10
5.	Compute the Conditional probability with a real world example also simplify the meaning of sample spaces.	CO-4	L3	10
6.	Explain the limitations of the perceptron in classifying spam vs non-spam emails with complex patterns where the data is not linearly separable.	CO-5	L5	10
7.	Classify different mutation operations to maintain diversity in the population and avoid premature convergence.	CO-6	L4	10

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐

Total No. of Questions: 7

Date : 11-05-2026
Total No. of Pages: 2

BSc (AIML), Semester-4th
Subject Name: IMAGE PROCESSING
Subject Code: UGCA1974 E2
M. Code: 91708

Time: 03:00 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.

SECTION-B consists of SIX questions, carrying TEN marks each and student have to attempt any FOUR questions.

Q No.	Description	CO	BL	Marks
	SECTION A			**20**
1.a.	State the function of rotation transformation.	CO-1	L1	**2**
1.b.	Describe color models of computer graphics.	CO-1	L2	**2**
1.c.	State the meaning of image acquisition.	CO-2	L1	**2**
1.d.	Explain the concept of pixel connectivity in images.	CO-2	L2	**2**
1.e.	Explain how gray-level transformations improve image contrast.	CO-3	L2	**2**
1.f.	State the function of median filter.	CO-3	L1	**2**
1.g.	Define Butterworth low-pass filter in the context of image smoothing.	CO-4	L1	**2**
1.h.	Describe how cutoff frequency controls the filtering effect.	CO-4	L2	**2**
1.i.	Define image restoration in digital image processing.	CO-5	L1	**2**
1.j.	Describe the effect of Gaussian noise on pixel intensity distribution.	CO-5	L2	**2**
	SECTION B			**40**
2.	Compute final coordinates of a rectangle with vertices (0,0), (2,0), (2,3), (0,3) after applying scaling (2,2) followed by translation (1,1).	CO-1	L3	**10**
3.	Analyze role of image processing in different application areas such as medical imaging and remote sensing with respect to functionality and impact.	CO-2	L4	**10**
4.	Evaluate histogram equalization and contrast stretching in terms of their effectiveness in improving visual quality.	CO-3	L5	**10**
5.	Explain the role of edge detection techniques in segmentation processes for accurately identifying object boundaries and improving the precision of region separation in digital images.	CO-4	L5	**10**
6.	Distinguish linear and nonlinear filtering techniques in terms of processing and results.	CO-5	L4	**10**
7.	Justify the use of frequency domain filtering techniques for image enhancement in comparison to spatial domain approaches.	CO-3	L5	**10**

Total No. of Questions: 07

B.Sc. (CS)/B.Sc. (AIML), Semester-5th

CLOUD COMPUTING

Subject Code: UGCA1936

M.Code:94071

Date of Examination: 13-05-2026

Time: 3 Hrs. Max. Marks:60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B consists of SIX questions, carrying TEN marks each and students have to attempt any FOUR questions.

Q. No.	Question	CO	BL
	SECTION-A		
1.	Answer briefly:		
a.	Give any two challenges ahead in cloud computing.	CO-1	L1
b.	Explain any two benefits of cloud migration for organizations.	CO-1	L2
c.	Describe the concept of distributed computing in cloud computing.	CO-1	L2
d.	Define the term "migration strategy" in cloud computing	CO-2	L1
e.	Classify Broad Approaches to Migrating into the cloud.	CO-2	L2
f.	Compare the working of cluster computing and cloud computing.	CO-2	L2
g.	List any two approaches to cloud migration.	CO-3	L1
h.	Outline any two pros and cons of virtualization.	CO-3	L2
i.	What is the purpose of Microsoft Hyper-V?	CO-4	L1
j.	Interpret the purpose of the system metrics.	CO-4	L2
	SECTION-B		
2.	Identify the components and characteristics of distributed computing in detail.	CO1	L3
3.	Explain the various types of virtualizations, providing a detailed explanation and a real-world example for at least four types.	CO1	L5
4.	Simplify cloud migration and generalize the steps model of migration into a cloud.	CO2	L3
5.	Classify Hypervisor Technology Examples- Xen, VMware, Microsoft Hyper-V.	CO3	L4
6.	List the advantages and disadvantages of virtualization in business organizations, with suitable examples.	CO3	L4
7.	Determine the purpose of Google App Engine (GAE) with its five main features.	CO4	L5

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. | | | | | | | | | | | | |

Total No. of Pages: 01

Total No. of Questions: 07

B.Sc. (AIML), Semester-5th
Neural Network
Subject Code: UGCA1989
M.Code: 92424
Date of Examination: 06-05-2026

Time: 3 Hrs. Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B consists of SIX questions, carrying TEN marks each and student have to attempt any FOUR questions.

Q. No.	Question	Course Outcome	Bloom's Level
	SECTION-A		
1.	Answer briefly:		
a.	List any two characteristics of neural networks	CO1	L1
b.	Explain gradient descent algorithm.	CO1	L2
c.	Define the concept of multilayer perceptron (MLP).	CO2	L1
d.	State the concept of Mexican Hat network.	CO3	L1
e.	Explain the importance of backpropagation in training a multilayer perceptron.	CO2	L2
f.	Describe the use of Principal Component Analysis (PCA) for dimensionality reduction.	CO4	L2
g.	What is a radial basis function (RBF) network?	CO4	L1
h.	Explain the concept of interpolation in radial basis function (RBF) networks.	CO5	L2
i.	Classify how self-organizing maps (SOM) perform clustering.	CO3	L2
j.	Explain cooperative process in SOM.	CO3	L2
	SECTION-B		
2.	Analyze the role of Principal Component Analysis in dimensionality reduction and data preprocessing.	CO4	L4
3.	Evaluate the importance of gradient descent Algorithm in training neural networks with suitable examples.	CO1	L5
4.	Explain self-organizing maps (SOM) in comparison with other clustering techniques.	CO3	L5
5.	Apply the artificial neuron model to show how linear regression can be implemented using neural networks.	CO1	L3
6.	Classify the concept of linear separability and its limitations using perceptron models.	CO2	L4
7.	Construct the performance differences between multilayer perceptron and radial basis function networks.	CO5	L3

Note: Disclosure of Identify by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the students.

Roll No. | | | | | | | | | | | | |

Total No. of Pages: 01

Total No. of Questions: 07

B.Sc.CS/B.Sc. (AIML), Semester-5th

FIREWALL AND INTRUSION DETECTION SYSTEM

Subject Code: UGCA 2028

M.Code: 94073

Date of Examination: 18-05-2026

Time: 3 Hrs.

Max. Marks:60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B consists of SIX questions, carrying TEN marks each and students have to attempt any FOUR questions.

Q. No.	Question	CO	BL
	SECTION-A		
1.	Answer briefly:		
a.	Define the term Confidentiality and Integrity in the context of information security.	CO-1	L1
b.	Classify a Trojan Horse based on its behavior in cybersecurity threats.	CO-1	L2
c.	Name the two main types of security attacks in computer networks.	CO-1	L1
d.	State the meaning of a Denial of Service (DoS) attack.	CO-2	L1
e.	Compare the retina and iris scanning.	CO-2	L2
f.	Explain role-based and rule-based access control (DAC) with suitable examples.	CO-2	L2
g.	What is a firewall in cybersecurity?	CO-3	L1
h.	Interpret the importance of an Intrusion Detection System (IDS) in computer networks.	CO-3	L2
i.	Define encryption and decryption in the context of information security.	CO-4	L1
j.	Outline the basic meaning of cyber-crime and its impact on computer users.	CO-4	L2
	SECTION-B		
2.	Use the principles of Confidentiality, Integrity, and Availability to secure data in an information security environment with appropriate examples.	CO1	L3
3.	Apply the need for classifying information and the criteria used for information classification with suitable examples.	CO1	L3
4.	Compare different authentication methods along with their advantages and limitations in securing systems with examples.	CO2	L4
5.	Analyze the different types of firewalls with suitable diagrams and examples.	CO3	L4
6.	Compare and contrast Network-Based IDS and Host-Based IDS in terms of functionality, deployment, and performance with examples.	CO3	L5
7.	Evaluate the characteristics of plaintext and ciphertext with examples and explain how their transformation contributes to secure communication.	CO4	L5

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. | | | | | | | | | | | | |

Total No. of Pages:01

Total No. of Questions: 07

B.Sc. (AIML), Semester- 5th

R Programming

Subject Code: UGCA1946

M.Code: 92411

Date of Examination: 30-04-2026

Time: 3 Hrs. Max. Marks:60

INSTRUCTIONS TO CANDIDATES:

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B consists of SIX questions, carrying TEN marks each and student have to attempt any FOUR questions.

Q. No.	Question	CO	BL
	SECTION-A		
1.	Answer briefly:		
a.	Why is R called a dynamically typed language?	CO-1	L1
b.	Describe the generic functions in R.	CO-1	L2
c.	Rewrite the syntax of plot() function.	CO-2	L2
d.	What is the purpose of graphics in R?	CO-2	L1
e.	Outline the purpose of boxplot() in R.	CO-2	L2
f.	State the purpose of the byrow = TRUE argument in the matrix() function.	CO-3	L1
g.	How can you delete and add rows in a matrix?	CO-3	L1
h.	Classify how to access the element in the 2nd row and 3rd column of a matrix.	CO-3	L2
i.	Write syntax to create a factor from a character vector.	CO-4	L1
j.	Explain the functions you can use to take the input from the users in R.	CO-4	L2
	SECTION-B		
2.	Write an R program to create an S3 class student with attributes like name, marks, and grade.	CO1	L3
3.	Differentiate the R code used to generate a histogram, bar plot, and boxplot.	CO2	L4
4.	Utilize the R program to simulate random numbers using rnorm().	CO1	L3
5.	Classify the structure and operations of vectors in R with suitable code.	CO3	L4
6.	Evaluate a R program that creates two matrices and performs addition, subtraction, and multiplication operations.	CO3	L5
7.	Explain the role of factors and tables in data analysis. Write programs demonstrating creation, modification of factors and tables.	CO4	L5

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐

Total No. of Questions: 7

Date : 12-05-2026
Total No. of Pages: 2

BSc (AIML), Semester-6th
Subject Name: BIG DATA ANALYTICS
Subject Code: UGCA2006 E2
M. Code: 93655

Time: 03:00 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.

SECTION-B consists of SIX questions, carrying TEN marks each and student have to attempt any FOUR questions.

Q No.	Description	CO	BL	Marks
	SECTION A			20
1.a.	List the characteristics of distributed file systems.	CO-1	L1	2
1.b.	Differentiate between structured and unstructured data.	CO-1	L2	2
1.c.	What is the working of DataNode in HDFS?	CO-2	L1	2
1.d.	Difference between copyFromLocal and copyToLocal commands.	CO-2	L2	2
1.e.	Explain Hadoop architecture in terms of distributed processing.	CO-2	L2	2
1.f.	Explain how metadata is stored in HDFS.	CO-2	L2	2
1.g.	List Pig architecture components.	CO-3	L1	2
1.h.	Interpret the output of the Explain operator.	CO-3	L2	2
1.i.	Write the importance of date-time functions usage.	CO-4	L1	2
1.j.	Explain the SELECT operation in Hive with an example query.	CO-4	L2	2
	SECTION B			40
2.	Breakdown the YARN framework in terms of its components and scheduling mechanism for distributed applications.	CO-1	L4	10
3.	Explain the HDFS file read mechanism in ensuring efficient data retrieval across distributed nodes.	CO-2	L5	10
4.	Write basic Pig operations in terms of Dump, Describe, Explain, Illustrate, and Store for data analysis.	CO-3	L3	10
5.	Discover the heartbeat mechanism for monitoring DataNode status in HDFS.	CO-2	L4	10
6.	Select appropriate Pig operators in terms of solving specific data processing problems such as filtering, grouping, and joining datasets.	CO-3	L5	10
7.	Validate complete Pig data processing workflow in terms of accuracy, efficiency, and scalability in real-world scenarios	CO-4	L5	10

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐

Date : 05-05-2026

Total No. of Questions: 7

Total No. of Pages: 1

BSc (AIML), Semester-6th

Subject Name: BUSINESS INTELLIGENCE

Subject Code: UGCA2016

M.Code: 93651

Time: 03:00 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.

SECTION-B consists of SIX questions, carrying TEN marks each and student have to attempt any FOUR questions.

Q No.	Description	CO	BL	Marks
	SECTION A			20
1.a.	Define ETL in Business Intelligence.	CO-1	L1	**2**
1.b.	List any two examples of structured decisions.	CO-1	L2	**2**
1.c.	List the steps in developing a mathematical model.	CO-2	L1	**2**
1.d.	What is meant by a classification problem?	CO-2	L1	**2**
1.e.	Explain any two data mining analysis methodologies	CO-3	L2	**2**
1.f.	Define Relational Marketing with example.	CO-3	L1	**2**
1.g.	What is customer relationship management (CRM) in relational marketing?	CO-4	L1	**2**
1.h.	Compare expert systems and human experts.	CO-4	L2	**2**
1.i.	Summarize the connection between organizational learning and knowledge management.	CO-5	L2	**2**
1.j.	Describe the backlogging process in logistic systems.	CO-4	L2	**2**
	SECTION B			40
2.	Identify various factors affecting decision making process & explain decision and problem solving with diagram	CO-1	L3	**10**
3.	Analyze the problems caused by inconsistent data and explain how consistency checking improves data quality.	CO-2	L4	**10**
4.	Evaluate the impact of data transformation techniques on data accuracy and performance.	CO-3	L5	**10**
5.	Organize the role of expert system in evaluation metrics in assessing the predictive performance of a model.	CO-4	L3	**10**
6.	Write note on cross-efficiency analysis, evaluation of virtual inputs and virtual outputs, and weight restrictions.	CO-5	L3	**10**
7.	Evaluate Efficiency Measures and Efficient Frontier in Data Envelopment Analysis.	CO-4	L5	**10**

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.

Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐

Date : 08-05-2026

Total No. of Questions: 7

Total No. of Pages: 2

BSc (AIML), Semester-6th

Subject Name: INTELLIGENT SYSTEMS

Subject Code: UGCA2010 E2

M. Code: 93652

Time: 03:00 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.

SECTION-B consists of SIX questions, carrying TEN marks each and student have to attempt any FOUR questions.

Q No.	Description	CO	BL	Marks
	SECTION A			**20**
1.a.	List any two components of an artificial neural network.	CO-1	L1	**2**
1.b.	Outline how genetic algorithms are used in intelligent systems.	CO-1	L2	**2**
1.c.	What is completeness in search algorithms?	CO-2	L1	**2**
1.d.	Classify mutation in genetic algorithms, and why is it important?	CO-2	L2	**2**
1.e.	What are frames in knowledge representation?	CO-3	L1	**2**
1.f.	Describe the working of simulated annealing.	CO-3	L2	**2**
1.g.	Define the concept of knowledge representation in AI.	CO-4	L1	**2**
1.h.	Summarize the importance of uncertainty handling in AI systems.	CO-4	L2	**2**
1.i.	What is statistical learning in Intelligent System?	CO-5	L1	**2**
1.j.	Explain four advantages of evolutionary algorithms.	CO-5	L2	**2**
	SECTION B			**40**
2.	Inspect how an RBF network model can be used to approximate a function and interpret the results.	CO-1	L4	**10**
3.	Examine the limitations of Greedy Best-First Search and explain how they affect performance.	CO-2	L4	**10**
4.	Interpret the working of backpropagation with mathematical steps and write its effectiveness in training neural networks.	CO-3	L5	**10**
5.	Explain machine learning algorithms perform in uncertain environments and state different challenges involved in it.	CO-5	L5	**10**
6.	Compare deterministic and probabilistic search techniques with respect to their performance and applicability.	CO-4	L5	**10**
7.	Justify different uncertainty reasoning techniques used in AI and discuss their suitability for various problem domains.	CO-5	L5	**10**

NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the student.