# CBCS SCHEME

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**BIS613D**

## Sixth Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026

## Cloud Computing and Security

Time: 3 hrs. Max. Marks: 100

***Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.***
***2. M : Marks , L: Bloom's level , C: Course outcomes.***

| | | **Module – 1** | **M** | **L** | **C** |
|---|---|---|---|---|---|
| **Q.1** | **a.** | Explain the different system models used in distributed and cloud computing. | **10** | **L2** | **CO1** |
| | **b.** | What are the challenges in ensuring security in a distributed cloud set up? | **10** | **L3** | **CO1** |
| | | **OR** | | | |
| **Q.2** | **a.** | Compare performance and energy efficiency in Traditional Vs Cloud-based systems. | **10** | **L3** | **CO1** |
| | **b.** | Illustrate the architectural difference between cluster and grid computing. | **10** | **L2** | **CO1** |
| | | **Module – 2** | | | |
| **Q.3** | **a.** | Explain the different levels of virtualization implementation. | **10** | **L2** | **CO2** |
| | **b.** | List and explain types of hypervisors with examples. | **10** | **L2** | **CO2** |
| | | **OR** | | | |
| **Q.4** | **a.** | Explain memory and I/O device virtualization with practical scenarios. | **10** | **L2** | **CO2** |
| | **b.** | What are the advantages of virtual clusters over physical clusters. | **10** | **L1** | **CO2** |
| | | **Module – 3** | | | |
| **Q.5** | **a.** | Compare the three primary cloud service models : IaaS, PaaS and SaaS. | **10** | **L3** | **CO3** |
| | **b.** | Describe the cloud platforms : Google App Engine(GAE), AWS, and Azure. | **10** | **L2** | **CO3** |
| | | **OR** | | | |
| **Q.6** | **a.** | What is Inter-Cloud Resource Management? Why is it important? | **10** | **L1** | **CO3** |
| | **b.** | Explain the concept of federated cloud and its challenges. | **10** | **L2** | **CO3** |
| | | **Module – 4** | | | |
| **Q.7** | **a.** | What is Privacy Impact Assessment (PIA) in cloud computing? | **10** | **L1** | **CO4** |
| | **b.** | Compare OS-level security Vs VM level security in cloud. | **10** | **L3** | **CO4** |
| | | **OR** | | | |
| **Q.8** | **a.** | Why is security a top concern in cloud computing? | **10** | **L2** | **CO4** |
| | **b.** | How does XOAR provide a trusted hypervisor environment? | **10** | **L2** | **CO4** |
| | | **Module – 5** | | | |
| **Q.9** | **a.** | How does MapReduce support distributed computing? | **10** | **L2** | **CO5** |
| | **b.** | What are emerging cloud software environments? Give examples. | **10** | **L2** | **CO5** |
| | | **OR** | | | |
| **Q.10** | **a.** | Discuss application development or AWS using Lambda or EC2. | **10** | **L2** | **CO5** |
| | **b.** | Describe parallel computing paradigms in cloud platforms. | **10** | **L2** | **CO5** |

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21CS644/21IS644/21IC644

# Sixth Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026

# Data Science and Visualization

Time: 3 hrs. Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

## Module-1

1 a. Define Data Science. Explain the current landscape with a neat diagram. **(08 Marks)**

b. Explain the Data Science work profile. **(08 Marks)**

c. What is Datafication? Explain with examples. **(04 Marks)**

OR

2 a. Explain the following concepts with examples:

- (i) Statistical inference
- (ii) Population
- (iii) Samples
- (iv) Random variables **(08 Marks)**

b. Explain probability distribution with example. **(08 Marks)**

c. Discuss fitting of a model. Explain overfitting with example. **(04 Marks)**

## Module-2

3 a. Explain Exploratory Data Analysis with example. **(08 Marks)**

b. With a neat diagram, demonstrate the Data Science process. **(08 Marks)**

c. Compare clustering and classification. **(04 Marks)**

OR

4 a. Explain K-NN with an example. **(08 Marks)**

b. Briefly explain Linear Regression Algorithm. **(08 Marks)**

c. List the advantages and issues in K-means algorithm. **(04 Marks)**

## Module-3

5 a. List the feature selection methods. Explain each in detail. **(08 Marks)**

b. What is Crowdsourcing? Discuss the Kaggle Model. **(08 Marks)**

c. Define Bagging. Write a short note on Random Forest. **(04 Marks)**

OR

6 a. Explain Decision Tree and construct an example Decision Tree. **(08 Marks)**

b. What is Dimensionality problem? Illustrate Principal Component Analysis. **(08 Marks)**

c. List and explain the problems with Nearest Neighbors. **(04 Marks)**

## Module-4

7 a. With a suitable diagram, explain the steps involved in Data Wrangling process. **(08 Marks)**

b. Explain what Line, Bar and Radar charts are. Also explain their uses and Design practices. **(08 Marks)**

c. Explain Heatmaps and its variant in detail. **(04 Marks)**

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

**OR**

8 a. Discuss various distribution plots. **(08 Marks)**
b. Explain Histogram plots with example. Compare Histogram and Density plots. **(08 Marks)**
c. Discuss Venn Diagram with an example. **(04 Marks)**

## Module-5

9 a. What is Pyplot? List and explain the common operations that are performed using Pyplot. **(08 Marks)**
b. With a suitable figure, explain basic text functions. **(08 Marks)**
c. Briefly explain Legends with an example. **(04 Marks)**

**OR**

10 a. Describe Histogram and its parameters. Mention the functions for plotting basic and 2D Histograms and explain with example plots. **(08 Marks)**
b. Demonstrate the basic operations for designing an image. **(08 Marks)**
c. Using a simple code, demonstrate writing of mathematical expressions. Also give 2 Tex examples. **(04 Marks)**

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## Sixth Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026

# Introduction to Artificial Intelligence

Time: 3 hrs. Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.*
*2. M : Marks , L: Bloom's level , C: Course outcomes.*

| | | Module – 1 | M | L | C |
|---|---|---|---|---|---|
| Q.1 | a. | Explain with examples, some of the task domains of Artificial Intelligence. Explain Question Answering. | 10 | L2 | CO1 |
| | b. | Explain the application of control strategies and heuristic search for production systems. | 10 | L2 | CO1 |
| | | OR | | | |
| Q.2 | a. | Bring out the features that used to represent AI as exploiting knowledge. Give the data structures and algorithm for a program that converts input text into structured internal form. | 10 | L3 | CO1 |
| | b. | Explain with examples, the issues in the design of search programs. | 10 | L3 | CO1 |
| | | Module – 2 | | | |
| Q.3 | a. | Define the desirable properties of good system for representation of knowledge, with an algorithm explain property inheritance. | 10 | L2 | CO2 |
| | b. | With examples, show representation of Instance , ISA relationship , Computable functions and predicates. | 10 | L3 | CO2 |
| | | OR | | | |
| Q.4 | a. | With examples, explain the selection of granularity of representation and finding the right structures. | 10 | L1 | CO2 |
| | b. | Explain forward V/s backward reasoning with examples. What are the three basic approaches to the problem of conflict resolution in production system? | 10 | L2 | CO2 |
| | | Module – 3 | | | |
| Q.5 | a. | Explain the key issues to be addressed in non montonic reasoning systems? Explain with examples working of default logic and abduction. | 10 | L1 | CO3 |
| | b. | Define and explain the notions of Bayes Theorem with example. Describe some of the properties to be satisfied by combining functions. | 10 | L2 | CO3 |
| | | OR | | | |
| Q.6 | a. | With examples, describe the working of non dependency directed back tracking and context lattices. | 10 | L1 | CO3 |
| | b. | Bring out the concepts of Bayesian networks like Causality , DAG , Conditional probabilities with examples. | 10 | L2 | CO3 |

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| | | **Module – 4** | | | |
| **Q.7** | **a.** | Explain the working of MINIMAX search procedure with example. | **10** | **L2** | **CO5** |
| | **b.** | Write algorithms for Depth First Iterative deepening and Iterative Deepening A* and illustrate on an example. | **10** | **L3** | **CO5** |
| | | **OR** | | | |
| **Q.8** | **a.** | Explain the various components of natural language understanding process. | **10** | **L2** | **CO5** |
| | **b.** | Give simple grammar for fragment of English and differentiate Top down V/s Bottom up parsing. | **10** | **L3** | **CO5** |
| | | **Module – 5** | | | |
| **Q.9** | **a.** | Explain the working of Rote learning and learning by taking advice. | **10** | **L2** | **CO4** |
| | **b.** | Explain Knowledge Acquisition process in MOLE and SALT. | **10** | **L1** | **CO4** |
| | | **OR** | | | |
| **Q.10** | **a.** | Explain the working and characteristics of Theory driven discovery. | **10** | **L2** | **CO4** |
| | **b.** | Explain the rules included in R1 ,PROSPECTOR and DESIGN ADVISOR shells. | **10** | **L2** | **CO4** |

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