

MODEL PAPER – 1
Bachelor of Computer Application (BCA)– Semester 6
Paper: Big Data Analytics
Time: 3 Hours | Max Marks: 70

♦ SECTION – A

Answer any SIX questions ($6 \times 5 = 30$ Marks)

1.
 - a) Define Big Data and its characteristics.
 - b) Explain types of data in Big Data.
 - c) Define Big Data Analytics.
 - d) Explain cloud computing features.
 - e) Define Hadoop.
 - f) Explain HDFS architecture.
 - g) Define MapReduce.
 - h) Explain NoSQL databases.
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♦ SECTION – B

Answer ALL questions ($4 \times 10 = 40$ Marks)

- 2.(a) Explain Big Data concepts, elements, and advantages.
OR
(b) Explain cloud computing models and services for Big Data.
- 3.(a) Explain Hadoop ecosystem and its components.
OR
(b) Explain HDFS architecture including NameNode and DataNode.
- 4.(a) Explain MapReduce framework and its working.
OR
(b) Explain Big Data stack layers and their functions.
- 5.(a) Explain NoSQL databases and types of data models.
OR
(b) Explain CAP theorem and polyglot persistence.

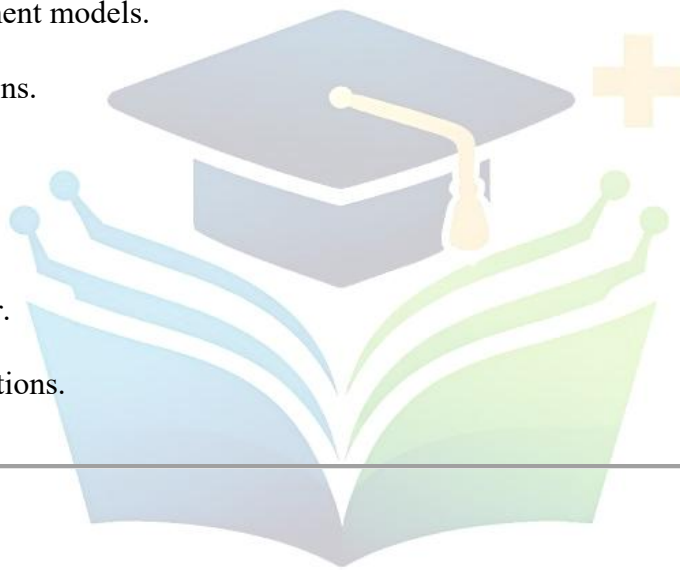
MODEL PAPER – 2
Bachelor of Computer Application (BCA)– Semester 6
Paper: Big Data Analytics
Time: 3 Hours | Max Marks: 70

♦ SECTION – A

Answer any SIX questions ($6 \times 5 = 30$ Marks)

1.

- a) Explain structuring Big Data.
- b) Define distributed computing.
- c) Explain cloud deployment models.
- d) Define Hadoop functions.
- e) Explain HBase.
- f) Define Hive and Pig.
- g) Explain ingestion layer.
- h) Define RDBMS limitations.



♦ SECTION – B

2.(a) Explain Big Data technologies and distributed computing.

OR

(b) Explain cloud providers and services in Big Data.

3.(a) Explain HDFS features and block concept.

OR

(b) Explain Hadoop ecosystem tools (Hive, Pig, Sqoop, Flume).

4.(a) Explain MapReduce working and optimization techniques.

OR

(b) Explain Big Data architecture layers.

5.(a) Explain NoSQL characteristics and types.

OR

(b) Explain integration of Big Data with data warehouse.

MODEL PAPER – 3
Bachelor of Computer Application (BCA)– Semester 5
Paper: Big Data Analytics
Time: 3 Hours | Max Marks: 70

♦ **SECTION – A**

Answer any SIX questions ($6 \times 5 = 30$ Marks)

1.

- a) Define elements of Big Data.
- b) Explain parallel computing.
- c) Define cloud services.
- d) Explain HDFS blocks.
- e) Define MapReduce phases.
- f) Explain HBase features.
- g) Define data ingestion.
- h) Explain CAP theorem.



♦ **SECTION – B**

2.(a) Explain Big Data overview and analytics process.

OR

(b) Explain cloud computing and deployment models.

3.(a) Explain Hadoop ecosystem and HBase architecture.

OR

(b) Explain Hive and Pig with applications.

4.(a) Explain MapReduce framework with example.

OR

(b) Explain Big Data technology stack.

5.(a) Explain NoSQL data models (key-value, document, graph).

OR

(b) Explain data warehouse integration with Big Data.

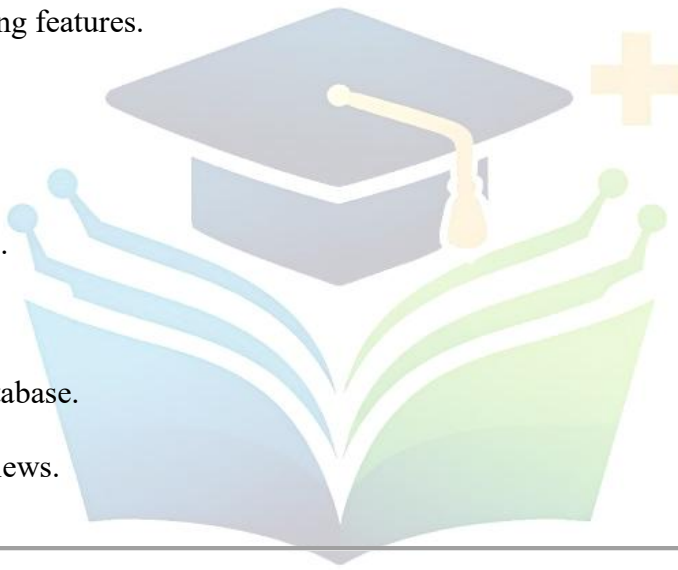
MODEL PAPER – 4
Bachelor of Computer Application (BCA)– Semester 5
Paper: Big Data Analytics
Time: 3 Hours | Max Marks: 70

♦ **SECTION – A**

Answer any SIX questions ($6 \times 5 = 30$ Marks)

1.

- a) Define Big Data advantages.
- b) Explain cloud computing features.
- c) Define Namenode.
- d) Explain Datanode.
- e) Define MapReduce job.
- f) Explain ZooKeeper.
- g) Define schema-less database.
- h) Explain materialized views.



♦ **SECTION – B**

2.(a) Explain Big Data types and structuring methods.

OR

(b) Explain cloud computing architecture.

3.(a) Explain HDFS architecture and working.

OR

(b) Explain Hadoop ecosystem tools in detail.

4.(a) Explain MapReduce optimization techniques.

OR

(b) Explain Big Data stack layers in detail.

5.(a) Explain NoSQL databases and schema-less design.

OR

(b) Explain CAP theorem with real-world examples.

MODEL PAPER – 5
Bachelor of Computer Application (BCA)– Semester 5
Paper: Big Data Analytics
Time: 3 Hours | Max Marks: 70

♦ **SECTION – A**

Answer any SIX questions ($6 \times 5 = 30$ Marks)

1.

- a) Define Big Data.
- b) Explain cloud computing.
- c) Define Hadoop.
- d) Explain HDFS.
- e) Define MapReduce.
- f) Explain HBase.
- g) Define NoSQL.
- h) Explain CAP theorem.



♦ **SECTION – B**

2.(a) Explain Big Data concepts and advantages.

OR

(b) Explain cloud computing models.

3.(a) Explain Hadoop ecosystem and HDFS.

OR

(b) Explain HBase and its features.

4.(a) Explain MapReduce framework.

OR

(b) Explain Big Data architecture layers.

5.(a) Explain NoSQL databases and data models.

OR

(b) Explain Big Data and data warehouse integration.

UNIT WISE IMPORTANT QUESTIONS

UNIT – I (Big Data & Cloud Computing)

- Define Big Data and its characteristics (5V's) ★★★★★
- Explain types of data (structured, semi-structured, unstructured) ★★★★★
- Explain elements of Big Data ★★★★★
- Explain Big Data Analytics and its advantages ★★★★★
- Explain distributed and parallel computing ★★★★★
- Explain cloud computing and its features ★★★★★
- Explain cloud deployment models ★★★★★
- Explain cloud services (IaaS, PaaS, SaaS) ★★★★★

UNIT – II (Hadoop Ecosystem)

- Explain Hadoop and its ecosystem ★★★★★
- Explain HDFS architecture ★★★★★
- Explain NameNode and DataNode ★★★★★
- Explain block concept in HDFS ★★★★★
- Explain MapReduce ★★★★★
- Explain HBase architecture ★★★★★
- Explain Hive and Pig ★★★★★
- Explain Sqoop, Flume, ZooKeeper ★★★★★

UNIT – III (MapReduce & Big Data Stack)

- Explain MapReduce framework ★★★★★
- Explain working of MapReduce ★★★★★
- Explain Map and Reduce phases ★★★★★
- Explain optimization techniques in MapReduce ★★★★★
- Explain Big Data stack layers ★★★★★
- Explain ingestion layer ★★★★★
- Explain storage and processing layers ★★★★★
- Explain visualization layer ★★★★★

UNIT – IV (NoSQL & Data Warehousing)

- Explain RDBMS limitations in Big Data ★★★★★
- Explain NoSQL databases ★★★★★
- Explain characteristics of NoSQL ★★★★★
- Explain types of NoSQL (key-value, document, graph) ★★★★★
- Explain schema-less databases ★★★★★

- Explain CAP theorem ★★★★★
- Explain polyglot persistence ★★★★★
- Explain Big Data and data warehouse integration ★★★★★



Smart Study
— PLUS —

MODEL PAPER – 1
Bachelor of Computer Application (BCA)– Semester 6
Paper: Machine Learning
Time: 3 Hours | Max Marks: 70

♦ SECTION – A

Answer any SIX questions ($6 \times 5 = 30$ Marks)

1.
 - a) Define Machine Learning and its applications.
 - b) Explain types of Machine Learning.
 - c) Define regression.
 - d) Explain linear regression.
 - e) Define decision tree.
 - f) Explain Bayes theorem.
 - g) Define neural networks.
 - h) Explain KNN algorithm.
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♦ SECTION – B

Answer ALL questions ($4 \times 10 = 40$ Marks)

- 2.(a) Explain machine learning concepts, working, and challenges.
OR
(b) Explain regression techniques including linear and logistic regression.
- 3.(a) Explain decision tree learning algorithm with example.
OR
(b) Explain issues in decision tree learning.
- 4.(a) Explain Bayesian learning and Naïve Bayes classifier.
OR
(b) Explain maximum likelihood hypothesis and EM algorithm.
- 5.(a) Explain artificial neural networks and backpropagation algorithm.
OR
(b) Explain KNN algorithm and instance-based learning.

MODEL PAPER – 2
Bachelor of Computer Application (BCA)– Semester 6
Paper: Machine Learning
Time: 3 Hours | Max Marks: 70

♦ SECTION – A

Answer any SIX questions ($6 \times 5 = 30$ Marks)

1.
 - a) Explain how machine learning works.
 - b) Define supervised learning.
 - c) Explain logistic regression.
 - d) Define hypothesis space.
 - e) Explain inductive bias.
 - f) Define Naïve Bayes classifier.
 - g) Explain perceptron.
 - h) Define lazy learning.
-



♦ SECTION – B

2.(a) Explain types of Machine Learning and their applications.

OR

(b) Explain regression models including multiple regression.

3.(a) Explain decision tree representation and hypothesis space search.

OR

(b) Explain inductive bias and overfitting in decision trees.

4.(a) Explain Bayes theorem and concept learning.

OR

(b) Explain Bayesian belief networks and Gibbs algorithm.

5.(a) Explain neural network models and multilayer networks.

OR

(b) Explain instance-based learning and KNN algorithm.

MODEL PAPER – 3
Bachelor of Computer Application (BCA)– Semester 6
Paper: Machine Learning
Time: 3 Hours | Max Marks: 70

♦ SECTION – A

Answer any SIX questions ($6 \times 5 = 30$ Marks)

1.
 - a) Define machine learning challenges.
 - b) Explain non-linear regression.
 - c) Define decision tree algorithm.
 - d) Explain overfitting.
 - e) Define maximum likelihood.
 - f) Explain EM algorithm.
 - g) Define backpropagation.
 - h) Explain radial basis function.
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♦ SECTION – B

2.(a) Explain machine learning workflow and applications.

OR

(b) Explain regression models with examples.

3.(a) Explain decision tree learning algorithm and its issues.

OR

(b) Explain hypothesis space and inductive bias.

4.(a) Explain Bayesian learning and Naïve Bayes classifier.

OR

(b) Explain Bayes optimal classifier and EM algorithm.

5.(a) Explain neural networks and backpropagation algorithm.

OR

(b) Explain KNN algorithm and locally weighted regression.

MODEL PAPER – 4
Bachelor of Computer Application (BCA)– Semester 6
Paper: Machine Learning
Time: 3 Hours | Max Marks: 70

♦ SECTION – A

Answer any SIX questions ($6 \times 5 = 30$ Marks)

1.
 - a) Define concept learning.
 - b) Explain multiple regression.
 - c) Define decision tree representation.
 - d) Explain pruning.
 - e) Define least squares error.
 - f) Explain Gibbs algorithm.
 - g) Define multilayer network.
 - h) Explain eager learning.
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♦ SECTION – B

2.(a) Explain machine learning types and challenges.

OR

(b) Explain regression techniques in detail.

3.(a) Explain decision tree algorithm and pruning techniques.

OR

(b) Explain issues in decision tree learning.

4.(a) Explain Bayesian learning and maximum likelihood hypothesis.

OR

(b) Explain Naïve Bayes and Bayesian networks.

5.(a) Explain neural networks and perceptron model.

OR

(b) Explain instance-based learning and lazy vs eager learning.

MODEL PAPER – 5
Bachelor of Computer Application (BCA)– Semester 6
Paper: Machine Learning
Time: 3 Hours | Max Marks: 70

♦ SECTION – A

Answer any SIX questions ($6 \times 5 = 30$ Marks)

1.

- a) Define Machine Learning.
- b) Explain regression.
- c) Define decision tree.
- d) Explain Bayes theorem.
- e) Define neural network.
- f) Explain KNN.
- g) Define EM algorithm.
- h) Explain logistic regression.



♦ SECTION – B

2.(a) Explain machine learning concepts and applications.

OR

(b) Explain regression techniques.

3.(a) Explain decision tree learning algorithm.

OR

(b) Explain issues in decision tree learning.

4.(a) Explain Bayesian learning and Naïve Bayes.

OR

(b) Explain maximum likelihood and EM algorithm.

5.(a) Explain neural networks and backpropagation.

OR

(b) Explain KNN and instance-based learning.

UNIT WISE IMPORTANT QUESTIONS

UNIT – I (Introduction & Regression)

- Define Machine Learning and explain its applications ★★★★★
- Explain types of Machine Learning (supervised, unsupervised, reinforcement) ★★★★★
- Explain how machine learning works ★★★★★
- Explain challenges in machine learning ★★★★★
- Explain regression and its types ★★★★★
- Explain linear regression with example ★★★★★
- Explain multiple linear regression ★★★★★
- Explain logistic regression ★★★★★

UNIT – II (Decision Trees)

- Explain decision tree learning ★★★★★
- Explain decision tree representation ★★★★★
- Explain basic decision tree algorithm ★★★★★
- Explain hypothesis space search ★★★★★
- Explain inductive bias ★★★★★
- Explain issues in decision tree learning ★★★★★

UNIT – III (Bayesian Learning)

- Explain Bayes theorem ★★★★★
- Explain Bayesian learning ★★★★★
- Explain maximum likelihood hypothesis ★★★★★
- Explain least squares error ★★★★★
- Explain Naïve Bayes classifier ★★★★★
- Explain Bayes optimal classifier ★★★★★
- Explain Gibbs algorithm ★★★★★
- Explain EM algorithm ★★★★★

UNIT – IV (Neural Networks & Instance Learning)

- Explain artificial neural networks ★★★★★
- Explain perceptron model ★★★★★
- Explain multilayer networks ★★★★★
- Explain backpropagation algorithm ★★★★★
- Explain k-nearest neighbour (KNN) ★★★★★
- Explain locally weighted regression ★★★★★
- Explain radial basis functions ★★★★★
- Explain lazy vs eager learning ★★★★★

MODEL PAPER – 1
Bachelor of Computer Application (BCA)– Semester 6
Paper: Machine Learning
Time: 3 Hours | Max Marks: 70

♦ SECTION – A

Answer any SIX questions ($6 \times 5 = 30$ Marks)

1.

- a) Define Machine Learning and its applications.
- b) Explain types of Machine Learning.
- c) Define regression.
- d) Explain linear regression.
- e) Define decision tree.
- f) Explain Bayes theorem.
- g) Define neural networks.
- h) Explain KNN algorithm.



♦ SECTION – B

Answer ALL questions ($4 \times 10 = 40$ Marks)

2.(a) Explain machine learning concepts, working, and challenges.

OR

(b) Explain regression techniques including linear and logistic regression.

3.(a) Explain decision tree learning algorithm with example.

OR

(b) Explain issues in decision tree learning.

4.(a) Explain Bayesian learning and Naïve Bayes classifier.

OR

(b) Explain maximum likelihood hypothesis and EM algorithm.

5.(a) Explain artificial neural networks and backpropagation algorithm.

OR

(b) Explain KNN algorithm and instance-based learning.

MODEL PAPER – 2
Bachelor of Computer Application (BCA)– Semester 6
Paper: Machine Learning
Time: 3 Hours | Max Marks: 70

♦ SECTION – A

Answer any SIX questions ($6 \times 5 = 30$ Marks)

1.
 - a) Explain how machine learning works.
 - b) Define supervised learning.
 - c) Explain logistic regression.
 - d) Define hypothesis space.
 - e) Explain inductive bias.
 - f) Define Naïve Bayes classifier.
 - g) Explain perceptron.
 - h) Define lazy learning.
-



♦ SECTION – B

2.(a) Explain types of Machine Learning and their applications.

OR

(b) Explain regression models including multiple regression.

3.(a) Explain decision tree representation and hypothesis space search.

OR

(b) Explain inductive bias and overfitting in decision trees.

4.(a) Explain Bayes theorem and concept learning.

OR

(b) Explain Bayesian belief networks and Gibbs algorithm.

5.(a) Explain neural network models and multilayer networks.

OR

(b) Explain instance-based learning and KNN algorithm.

MODEL PAPER – 3
Bachelor of Computer Application (BCA)– Semester 6
Paper: Machine Learning
Time: 3 Hours | Max Marks: 70

♦ SECTION – A

Answer any SIX questions ($6 \times 5 = 30$ Marks)

1.
 - a) Define machine learning challenges.
 - b) Explain non-linear regression.
 - c) Define decision tree algorithm.
 - d) Explain overfitting.
 - e) Define maximum likelihood.
 - f) Explain EM algorithm.
 - g) Define backpropagation.
 - h) Explain radial basis function.
-

♦ SECTION – B

2.(a) Explain machine learning workflow and applications.

OR

(b) Explain regression models with examples.

3.(a) Explain decision tree learning algorithm and its issues.

OR

(b) Explain hypothesis space and inductive bias.

4.(a) Explain Bayesian learning and Naïve Bayes classifier.

OR

(b) Explain Bayes optimal classifier and EM algorithm.

5.(a) Explain neural networks and backpropagation algorithm.

OR

(b) Explain KNN algorithm and locally weighted regression.

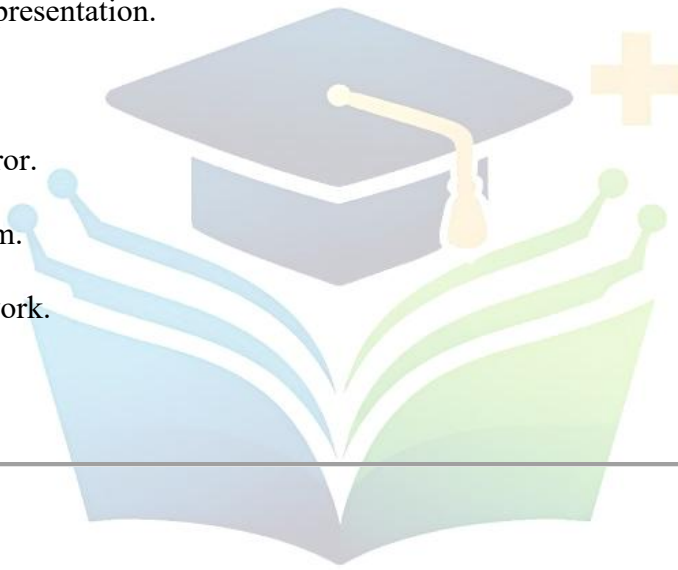
MODEL PAPER – 4
Bachelor of Computer Application (BCA)– Semester 6
Paper: Machine Learning
Time: 3 Hours | Max Marks: 70

♦ SECTION – A

Answer any SIX questions ($6 \times 5 = 30$ Marks)

1.

- a) Define concept learning.
- b) Explain multiple regression.
- c) Define decision tree representation.
- d) Explain pruning.
- e) Define least squares error.
- f) Explain Gibbs algorithm.
- g) Define multilayer network.
- h) Explain eager learning.



♦ SECTION – B

2.(a) Explain machine learning types and challenges.

OR

(b) Explain regression techniques in detail.

3.(a) Explain decision tree algorithm and pruning techniques.

OR

(b) Explain issues in decision tree learning.

4.(a) Explain Bayesian learning and maximum likelihood hypothesis.

OR

(b) Explain Naïve Bayes and Bayesian networks.

5.(a) Explain neural networks and perceptron model.

OR

(b) Explain instance-based learning and lazy vs eager learning.

MODEL PAPER – 5
Bachelor of Computer Application (BCA)– Semester 6
Paper: Machine Learning
Time: 3 Hours | Max Marks: 70

♦ SECTION – A

Answer any SIX questions ($6 \times 5 = 30$ Marks)

1.

- a) Define Machine Learning.
- b) Explain regression.
- c) Define decision tree.
- d) Explain Bayes theorem.
- e) Define neural network.
- f) Explain KNN.
- g) Define EM algorithm.
- h) Explain logistic regression.



♦ SECTION – B

2.(a) Explain machine learning concepts and applications.

OR

(b) Explain regression techniques.

3.(a) Explain decision tree learning algorithm.

OR

(b) Explain issues in decision tree learning.

4.(a) Explain Bayesian learning and Naïve Bayes.

OR

(b) Explain maximum likelihood and EM algorithm.

5.(a) Explain neural networks and backpropagation.

OR

(b) Explain KNN and instance-based learning.

UNIT WISE IMPORTANT QUESTIONS

UNIT – I (Introduction & Regression)

- Define Machine Learning and explain its applications ★★★★★
- Explain types of Machine Learning (supervised, unsupervised, reinforcement) ★★★★★
- Explain how machine learning works ★★★★★
- Explain challenges in machine learning ★★★★★
- Explain regression and its types ★★★★★
- Explain linear regression with example ★★★★★
- Explain multiple linear regression ★★★★★
- Explain logistic regression ★★★★★

UNIT – II (Decision Trees)

- Explain decision tree learning ★★★★★
- Explain decision tree representation ★★★★★
- Explain basic decision tree algorithm ★★★★★
- Explain hypothesis space search ★★★★★
- Explain inductive bias ★★★★★
- Explain issues in decision tree learning ★★★★★

UNIT – III (Bayesian Learning)

- Explain Bayes theorem ★★★★★
- Explain Bayesian learning ★★★★★
- Explain maximum likelihood hypothesis ★★★★★
- Explain least squares error ★★★★★
- Explain Naïve Bayes classifier ★★★★★
- Explain Bayes optimal classifier ★★★★★
- Explain Gibbs algorithm ★★★★★
- Explain EM algorithm ★★★★★

UNIT – IV (Neural Networks & Instance Learning)

- Explain artificial neural networks ★★★★★
- Explain perceptron model ★★★★★
- Explain multilayer networks ★★★★★
- Explain backpropagation algorithm ★★★★★
- Explain k-nearest neighbour (KNN) ★★★★★
- Explain locally weighted regression ★★★★★
- Explain radial basis functions ★★★★★
- Explain lazy vs eager learning ★★★★★