

Full marks: 60

Pass marks: 24

Time: 3 hours.

Bachelor Level/ Fourth Year/Eight Semester/Science

Data Warehousing and Data Mining (CSC-451)

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Group-A

Long Answer Questions (Attempt any Two questions)

[2x10=20]

1. Suppose that a data warehouse for Big University consists of the following four dimensions: student, course, semester, and instructor, and two measures count and avg-grade. When at the lowest conceptual level (e.g., for a given student, course, semester, and instructor combination), the avg-grade measure stores the actual course grade of the student. At higher conceptual levels, avg-grade stores the average grade for the given combination.
 - a) Draw a snowflake schema diagram for the data warehouse.
 - b) Starting with the base cuboid [student, course, semester, instructor], what specific OLAP operations (e.g., roll-up from semester to year) should one perform in order to list the average grade of CS courses for each Big University Student.
 - c) If each dimension has five levels (including all), such as “student < major < status < university < all”, how many cuboids will this cube contain (including the base and apex cuboids)?
2. $A = \{A_1, A_2, A_3, A_4, A_5, A_6\}$, Assume $\sigma = 35\%$. Use A priori algorithm to get the desired solution.

A1	A2	A3	A4	A5	A6
0	0	0	1	1	1
0	1	1	1	0	0
1	0	0	1	1	1
1	1	0	1	0	0
1	0	1	0	1	1
0	1	1	1	0	1
0	0	0	1	1	0

0	1	0	1	0	1
1	0	0	1	0	0
1	1	1	1	1	1

3. What kind of data preprocessing do we need before applying data mining algorithm to any data set. Explain binning method to handle noisy data with example.

Group- B

Short Answer Questions (Attempt any Eight questions) [8x5=40]
Question number 13 is compulsory.

4. Explain the use of frequent item set generation process. [5]
5. Differentiate between data marts and data cubes. [5]
6. Explain OLAP operations with example? [5]
7. List the drawbacks of ID3 algorithm with over-fitting and its remedy techniques [5]
8. Write the algorithm for K-means clustering. Compare it with k-nearest neighbor algorithm. [5]
9. What is text mining? Explain the text indexing techniques. [5]
10. Describe genetic algorithm using as problem solving technique in data mining. [5]
11. What do you mean by WWW mining? Explain WWW mining techniques. [5]
12. What is DMQL? How do you define Star Schema using DMQL? [5]
13. Write short notes (Any Two) [2x2.5=5]
 - a) Text Database Mining
 - b) Back propagation Algorithm
 - c) Regression
 - d) HOLAP

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Bachelor Level / Forth Year / Eighth Semester / Science
Computer Science and Information Technology - (CSc. 451)
(Data warehousing and Data mining)

Full Marks: 60
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The figures in the margin indicate full marks.*

Group A

Attempt any two questions.

(2×10=20)

1. Differentiate between Data-Warehouse and Data mining. Explain the stages of knowledge discovery in database with example.
2. What do you mean by clustering? Explain the k-mean and k-mediod algorithm with example.
3. Explain the data warehouse architecture. Differentiate between distributed and virtual data warehouse.

Group B

Attempt any eight questions.

(8×5=40)

4. Explain the multidimensional data model with example.
5. Differentiate between OLTP and OLAP.
6. Explain the tuning and testing of Data Warehouse.
7. Differentiate between KDD and Data mining.
8. Explain the data mining query language with example.
9. What are the advantages and disadvantages of association rules.
10. What are the types of Regression? Explain.
11. Explain the Aprion Algorithm.
12. Explain the application of mining used in www.
13. Write short notes (any two):
 - a) HOLAP
 - b) Hierarchy specification
 - c) Spatial Database

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The figures in the margin indicate full marks.

Group A

Attempt any two questions.

(2×10=20)

1. What do you mean by representative object based clustering technique? Explain in detail with example.
2. Explain the various data mining task primitives in detail.
3. Explain the architecture of data mining system with schematic diagram.

Group B

Attempt any eight questions.

(8×5=40)

4. What are the basic stages of KDD?
5. Differentiate between DBMS and data warehouse.
6. Explain the distributed and virtual data warehouse.
7. Explain the data cube with example.
8. What are the data warehouse back end tools? Explain.
9. Explain the data mining tasks performed on a text database.
10. Define spatial database and its features.
11. Differentiate between OLTP and OLAP.
12. Explain the Aprion Algorithm.
13. Write short notes (any two):
 - a) Stars
 - b) HOLAP
 - c) Data specification
 - d) Mining the world wide web (www)



Bachelor Level / Fourth Year /Eight Semester/Science
Computer Science and Information Technology-(CSc.451)
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Full Marks: 60
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Group A

Attempt any two questions.

(10x2=20)

1. Explain the architecture of data mining system with block diagram. 15
2. Define clustering. Explain with example of the partitioning and hierarchical clustering methods.
3. Explain the architecture and implementation of data warehouse with example.

Group B

Attempt any Eight questions. (Question number 13 is compulsory). (5x8=40)

4. What do you mean by knowledge discovery in database (KDD)? 3
5. Explain the application of data warehouse and data mining. 4
6. Differentiate between OLAP and OLTP. 1
7. Explain the data mining techniques. 1
8. Explain the apriori Algorithm. 1
9. Explain the K-Mediod algorithm. 1
10. Explain the spatial database and its features. 3
11. What is data cube? Explain with example. 3
12. Explain the data mining languages. 1
13. Write short notes (any two):
(a) OLAP queries
(b) Snow flakes ✓
(c) K-mean ✓
(d) Mining text data bases. 4

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Bachelor Level / Fourth Year /Eight Semester/Science
Computer Science and Information Technology-(CSc.458)
(Cloud Computing)

Full Marks: 60
Pass Marks: 24
Time: 3 hours.

*Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.*

Attempt all questions.

1. What do you mean by cloud? Describe about the basic characteristics of cloud. [1+5]
2. What type of deployment models can be adopted in cloud computing. Describe each of them with suitable example. [6]
3. Discuss the capabilities that the cloud users can get through Platform-as-a-Service (PaaS). Also mention the key characteristics of PaaS. [3+3]
4. How the Jericho Cloud Cube model dimensions like *perimeterised, de-perimeterised* and *proprietary*, open differentiate the cloud formations from each other? [6]
5. What do you mean by Service Oriented Architecture? How can you characterize Service Oriented Architecture? [2+4]
6. What are the Managed Service Providers (MSP)? Discuss the evolution of MSP Model to Cloud Computing. [2+4]
7. Define virtualization. What is the role of virtualization in cloud computing? [2+4]
8. What do you mean by an intrusion in a cloud network? How intrusions in cloud networks are detected? [2+4]
9. How data segmentation and credential management ensures host security in a cloud? Explain with suitable example. [6]
10. Write short notes on (any two):
a) Risk Assessment in Cloud
b) Role of open source software in cloud computing
c) Grid Computing

Answers

[3x2=6]

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Bachelor Level / Fourth Year /Eight Semester/Science
Computer Science and Information Technology-(CSc.458)
(Cloud Computing)

Full Marks: 60
Pass Marks: 24
Time: 3 hours.

*Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.*

Attempt all questions.

(6x10=60)

1. Explain the components of cloud computing.
2. Explain the platform as -- a service (PaaS) and its characteristics.
3. Explain the cloud data center and its applications.
4. Explain the software as service and its characteristics.
5. Explain the service provided by the amazon EC2 service from user perspective.
6. Explain the service oriented architecture (SOA) and its characteristics.
7. Explain the Jericho cloud cube model.
8. Explain the cloud security challenges.
9. What do you mean by network Intrusion detection?
10. Explain the disaster recovery planning in cloud system.

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Bachelor Level / Fourth Year / Eight Semester / Science
Computer Science and Information Technology - (CSc.458)
(Cloud Computing)

Full Marks: 60
 Pass Marks: 24
 Time: 3 hours.

*Candidates are required to give their answers in their own words as far as practicable.
 The figures in the margin indicate full marks.*

Attempt all questions.

[10x6=60]

1. How can you define cloud service? Describe the characteristics of a cloud service. [2+4]

2. Differentiate between each of private, public and hybrid cloud models with suitable examples. [6]

3. What is the role of Early Detection and Intelligent Log Centralization and Analysis services in Monitoring-as-Service (MaaS) Model? [6]

4. What are the benefits of using Software-as-a-Service (SaaS) Model? Briefly discuss about the maturity levels of SaaS Architecture. [2+4]

5. What do you mean by Service Oriented Architecture (SOA)? How cloud services get benefited by SOA? [2+4]

6. What are the Managed Service Providers (MSP)? Discuss the evolution of MSP Model to Cloud Computing. [2+4]

7. What is the need for data center virtualization? What are the benefits of data center virtualization? [6]

8. Explain the different approaches for enforcing host security in a cloud environment. [6]

9. What do you mean by disaster recovery? How recovery point objective differs from recovery time objective? [2+4]

10. Write short notes on (any two): [3x2=6]
 a) Data Segmentation and Credential Management
 b) Role of open source software in cloud computing
 c) Grid Computing



Bachelor Level / Forth Year /Eighth Semester/Science
Computer Science and Information Technology-(CSc. 451)
(Data warehousing and Data mining)

Full Marks: 60
Pass Marks: 24
Time: 3 hours.

Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Group A

Attempt any two questions.

(2×10=20)

1. What are the key steps in knowledge discovery in databases? Explain.
2. Explain the functionalities and classification of data mining system with example.
3. Explain about the architecture and implementation of data warehouse with example.

Group B

Attempt any eight questions.

(8×5=40)

4. What are the stages of knowledge discovery in database (KDD)?

5. List down the functionality of meta data.

6. Differentiate between OLAP and OLTP.

7. Explain the multidimensional data model.

8. List down the data mining tools.

9. Write down the two measures of association rule.

10. What is the objective of K-means algorithm?

11. Explain the application of spatial databases.

12. Explain the methods of mining multimedia database.

13. Write short notes (any two):

- a) MOLAP
- b) Data cubes
- c) Snowflakes
- d) Regression

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2069



Bachelor Level/Fourth Year/Eighth Semester/Science
Computer Science and Information Technology
(CSc. 458 – Cloud Computing)

Full Marks: 60

Pass Marks: 24

Time: 3 hours

*Candidates are required to give their answer in their words as far as practicable
The figures in the margin indicate full marks.*

Attempt all questions.

(10×6=60)

1. Explain the cloud computing model and its benefits.
2. Explain the cloud deployment models.
3. What are the difference between public clouds and private clouds?
4. What are the implementation issues on SaaS? Explain.
5. Explain the platform as a service and its challenges.
6. Explain the data center virtualization.
7. What do you mean by service oriented architecture (SOA)? Explain with example.
8. How can you design the security architecture in cloud? Explain.
9. Explain the process of implementation of Network Intrusion detection.
10. Explain the disaster recovery planning of cloud computing.

Course Title: Cloud Computing
Course No: CSC 458
Hours: 3 hrs

Full Marks: 60
Pass Marks: 24

Model Question

Attempt all questions. Each question carries equal marks.

1. Describe about cloud-based services. What are the challenges in cloud computing?
2. How grid computing differs from cloud computing? Justify what the elasticity and multitenancy properties of cloud computing means?
3. What do you mean by virtualization? What is the role of virtualization in cloud computing?
4. What are the cloud security challenges? How risks can be handled in cloud computing?
5. Discuss about disasters in cloud. How intrusions are detected in cloud?
6. What do you mean by service oriented architectures (SOA)? How can you characterize SOA?
7. Discuss about Jericho Cloud Cube Model. What are the advantages of Communication-as-a-Service (CaaS) Model?
8. Discuss about the implementation issues that need to be considered while maintaining Software-as-a-Service (SaaS) Model.
9. Discuss about the planning needed for building the Service Oriented Architecture.
10. Describe the services provided by the Monitoring-as-a-Service (MaaS) Vendors in cloud service system.

CSc.453-2073 ☶

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Bachelor Level / Fourth Year /Eight Semester/Science
Computer Science and Information Technology-(CSc.453)
(Advance Networking with IPv6)

Full Marks: 60
Pass Marks: 24
Time: 3 hours.

*Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.*

Attempt any SIX questions.

(6x10=60)

1. Explain the OSI model and its applications.
2. Explain the history of IPv6 and addressing of IPv6.
3. Explain the ICMP error and also explain the information message types.
4. Explain the security techniques and QoS paradigms
5. Explain the OSPF for IPv6.
6. Differentiate between automatic tunneling and configured tunneling.
7. What are the migration strategies from IPv4 to IPv6.
8. Explain the process of IPv6 Network configuration in Linux.

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• 2071



Bachelor Level / Fourth Year / Eight Semester / Science
Computer Science and Information Technology - (CSc.453)
(Advance Networking with IPv6)

Full Marks: 60
Pass Marks: 24
Time: 3 hours.

*Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.*

Attempt any six questions.

(6x10=60)

1. Define OSI model. Explain the Unidirectional Link Routing.
2. Explain the features of IPv6 and its addressing.
3. Explain the ICMPv6 message format with example.
4. Explain the IPSEC framework and QoS paradigms.
5. What do you mean by PIM – SM and DVMRP for IPv6? Explain.
6. Explain the migration strategies from IPv4 to IPv6.
7. Explain the process of IPv6 Network configuration in linux and windows machines.
8. Short notes on (any two):
 - (a) Tunneling
 - (b) NAT - PT
 - (c) IPv6 deployment
 - (d) OSPF for IPv6
 - (e) MLD

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2069



Bachelor Level / Fourth Year / Eight Semester / Science
Computer Science and Information Technology - (CSc.453)
(Advance Networking with IPv6)

Full Marks: 60
Pass Marks: 24
Time: 3 hours.

*Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.*

Attempt any six questions.

(10x6=20)

1. What do you mean by networking protocols? Mention the OSI model. ✓
2. Explain the IPv6 and its features. ✓ 8
3. What do you mean by neighbor discovery processes? Explain the MTU discovery. ✓ 5
4. Explain the security features and quality of service in IPv6. ✓ 5
5. What do you mean by IPv6 routing? Explain the OSPF for IPv6. ✓ 7
6. Explain the migration strategies from IPv4 to IPv6. ✓ 8
7. How can you configure IPv6 network in Linux and windows machines? Explain.

8. Short notes on (any two):

- (a) Aycast
- (b) MLD
- (c) Threats
- (d) DVMRP
- (e) Dual Stack

115 + 410 =
= 85
100