

C.S.S

1. Passing Mark (32)

1.

Write a short note on:

1) X.509 - Module no. 3 | (5M)

2) Kerberos - Module no. 4 | (5M)

1.

Differentiate:

i) MD-5 and SHA - Module no.5 | (10M)

ii) Firewall and IDS. - Module no.5 | (10M)

1.

**What is the need of SSL? Explain all phases of SSL Handshake protocol in detail.
OR What are the different protocols in SSL? How do the client and server establish an SSL connection. - Module no. 5 | (10M)**

2.

Explain the different types of Denial of Service attacks. - Module no. 5 | (10M)

3.

List and explain various types of attacks on encrypted message. - Module no.3 | (5M)

4.

Explain Digital Signature and Digital Certificate used for Authentication? - Module no.4 | (10M)

5.

Elaborate international Data encryption Algorithm(IDEA) and its key generation? - Module no.2 | (10M)

6.

Encrypt given using Playfair cipher with Keyword given. - Module no.1 | (10M)

7.

Explain briefly with examples, how the following attacks occur: i) Phishing attack ii) Denial of Service attack iii) SQL injection attack iv) Cross-site scripting attack - Module no. 6 | (10M)

2. Average Between (32-45 Marks)

1.

Write a short note on:

1) X.509 - Module no. 3 | (5M)

2) Kerberos - Module no. 4 | (5M)

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Differentiate:

i) MD-5 and SHA - Module no.5 | (10M)

ii) Firewall and IDS. - Module no.5 | (10M)

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6. **Encrypt given using Playfair cipher with Keyword given. - Module no.1 | (10M)**
7. **Explain briefly with examples, how the following attacks occur: i) Phishing attack ii) Denial of Service attack iii) SQL injection attack iv) Cross-site scripting attack - Module no. 6 | (10M)**
8. **What is a digital certificate? How does it help to validate the authenticity of a user? Explain the X.509 certificate format. - Module no. 4 | (10M)**
9. **With reference to DES comment on the following. i) Block size and key size ii) Need for expansion permutation. iii) Avalanche and completeness effects iv) Weak keys and semi-weak key v) Role of S-box - Module no. 2 | (10M)**

3. Above (45 Marks)

1. **Write a short note on:**
 - 1) X.509 - Module no. 3 | (5M)
 - 2) Kerberos - Module no. 4 | (5M)
 - 3) Buffer Overflow - Module no. 6 | (5M)
 - 4) 3 DES - Module no. 2 | (5M)
1. **Differentiate:**
 - i) MD-5 and SHA - Module no.5 | (10M)
 - ii) Firewall and IDS. - Module no.5 | (10M)
1. **What is the need of SSL? Explain all phases of SSL Handshake protocol in detail.**

OR What are the different protocols in SSL? How do the client and server establish an SSL connection. - Module no. 5 | (10M)

2. **Explain the different types of Denial of Service attacks. - Module no. 5 | (10M)**
3. **List and explain various types of attacks on encrypted message. - Module no.3 | (5M)**
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9. **With reference to DES comment on the following. i) Block size and key size ii) Need for expansion permutation. iii) Avalanche and completeness effects iv) Weak keys and semi-weak key v) Role of S-box - Module no. 2 | (10M)**
10. **Encrypt the plaintext message given using affine cipher with the key pair given. Decrypt to get back original plaintext.- Module no. 5 | (10M)**
11. **Numerical on Diffie-Hellman key exchange technique. - Module no. 2 | (10M)**
12. **What are traditional ciphers? Discuss any one substitution and transposition cipher with example. List their merits and demerits.- Module no. 1 | (10M)**

13.
Numerical on RSA digital signature. - Module no. 2 | (10M)
14.
Discuss in detail block cipher modes of operation. - Module no. 1 | (10M)
15.
What are the requirements of the cryptographic hash functions? Compare MD5 and SHA Hash functions. State real world applications of hash functions. - Module no. 3 | (10M)
16.
Enlist security goals. Discuss their significance. - Module no. 1 | (5M)
17.
Compare AES and DES. Which one is bit oriented? Which one is byte oriented? - Module no. 2 | (5M)
18.
What is authentication header(AH)? How does it protect against replay attacks? - Module no. 4 | (5M)
19.
List various Software Vulnerabilities. How vulnerabilities are exploited to launch an attack. - Module no. 6 | (5M)

DWM

1. Passing Mark (32)

1. Write a short note on:
 - 1) FP Tree - Module no.4 | (5M)
 - 2) Applications of data mining (Minimum two in detail) - Module no.3 | (5M)
 - 3) Role of metadata - Module no.1 | (5M)
 - 4) Updates to dimension tables - Module no.1 | (5M)
 - 5) Hierarchical clustering - Module no.4 | (5M)

6) DBSCAN - Module no.3 | (5M)

7) Data Warehouse Architecture in detail. - Module no.1 | (10M)

- 1. Meta data with example OR What is Metadata? Why do we need metadata when search engines like Google seem so effective? - Module no.1 | (5M)**
- 2. Numerical on Frequent pattern mining algorithms. - Module no. 4 | (10M)**
- 3. Numerical on i) Find all frequent patterns using Apriori Algorithm. ii) List strong association rules - Module no.5 | (10M)**
- 4. Numerical on Create a Cube and perform following OLAP operations: i) Rollup ii) Drill down iii) Slice iv) Dice - Module no.2 | (10M) OR Discuss various OLAP models and their architecture.**
- 5. Discuss different steps involved in Data Pre-processing. OR Data pre-processing - Module no.3 | (5M)**
- 6. Numerical on Find clusters using k-means clustering algorithm - Module no.4 | (10M)**
- 7. Discuss Data Warehouse design strategies in detail? - Module no.1 | (10M)**

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7. Discuss Data Warehouse design strategies in detail? - Module no.1 | (10M)
8. Discuss the types of attributes and data visualization for data exploration. - Module no.3 | (10M)
9. Explain ETL of data warehousing in detail. - Module no.2 | (10M)
10. Numerical on Naive Bayes classifier algorithm - Module no.4 | (10M)
11. Why naive Bayesian classification is called "naive" ? Briefly outline the major ideas of Naive Bayesian classification. - Module no.4 | (10M)

3. Above (45 Marks)

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- 1) FP Tree - Module no.4 | (5M)
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11. Why naive Bayesian classification is called "naive" ? Briefly outline the major ideas of Naive Bayesian classification. - Module no.4 | (10M)
12. What is spatial data structure? Outline their importance in GIS.- Module no. 6| (5M)
13. In the real world, tuples with missing values for some attributes are a common occurrence. Describe Various methods for handling this problem. - Module no. 3| (5M)
14. With respect to web mining, is it possible to detect visual objects using meta-objects?- Module no. 6| (5M)
15. What is the relationship between data warehousing and data replication? Which form of replication (synchronous or asynchronous) is better suited for data warehouse mining? Why? Explain with example. - Module no. 1| (10M)
16. Why is tree pruning useful in decision tree induction? What is a drawback of using a separate set of tuples to evaluate pruning? Given a decision tree, you have the option of converting the decision tree to rules and then pruning the resulting rules, or (ii) pruning the decision tree and then converting the pruned tree to rules. What advantage does (i) have over (ii)?- Module no. 4| (10M)
17. Briefly outline with examples, how to compute the dissimilarity between objects described (10) by the following: i) Nominal attributes ii) Asymmetric binary attributes .- Module no. 3| (10M)
18. Differentiate between simple linkage, average linkage and complete linkage algorithms. Use complete linkage algorithm to find the clusters from the following dataset. - Module no. 4| (10M)
19. Data quality can be assessed in terms of several issues, including accuracy, completeness, and consistency. For each of the above three issues, discuss how data quality assessment can depend on the intended use of the data, giving examples. Propose two other dimensions of data quality.- Module no.1 | (10M)

S.E

1. Passing Mark (32)

1.

Write a short note on:

1) Explain FTR. - Module no. 5| (5M)

2) Test Driven Development. - Module no.6 | (5M)

3) Service Oriented Software Engineering. - Module no.4 | (5M)

4) Change Control & Version Control. - Module no. 3| (10M)

5) Agile Process Models. - Module no.1 | (10M)

6) Process of CMM. - Module no. 1| (10M)

7) Testing strategies? - Module no. 6| (10M)

1.

Differentiate:

1) Differentiate between waterfall and spiral model. - Module no. 1| (5M)

2) White Box and Black Box Testing. - Module no. 6| (10M)

3) FP based & LOC based cost estimation techniques. - Module no. 3| (10M)

1.

Explain cohesion and Coupling, Explain different types with detailed examples. - Module no.4 | (10M)

2.

What is maintenance? Explain with different types of maintenance. OR What do you understand by software maintenance? Explain the different types of maintenance. - Module no.6 | (10M) - Module no. 6| (10M)

3.

What is testing? What is the role of testing in software engineering? - Module no. 6| (5M)

4.

Develop the SRS for University Management System. - Module no. 2| (10M)

5.

Explain in detail the Software Configuration Management process with suitable diagram. - Module no.5 | (10M)

6.

Explain in detail Service-Oriented Software Engineering. - Module no.4 | (10M)

7.

What is white box testing? Explain the basis path testing method in detail. - Module no.6 | (10M)

2. Average Between (32-45 Marks)

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7. What is white box testing? Explain the basis path testing method in detail. - Module no.6 | (10M)
8. What is user interface design? Explain it with example. - Module no. 4| (10M)
9. List out Requirement Elicitation Techniques? Explain any two methods. - Module no. 2| (5M)
10. What are the different categories of Risks? Explain the steps in developing RMMM plan. OR Explain Risk and its types? Explain the steps involved in setting up or generating RMMM plan. - Module no.5 | (10M)
11. What is FTR in SQA ? What are its objectives? Explain the steps in FTR. OR
12. What is FTR? Explain the Review guidelines considered during FTR. - Module no.5 | (10M)

3. Above (45 Marks)

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12.
What is FTR? Explain the Review guidelines considered during FTR. - Module no.5 | (10M)
13.
List different metrics used for software measurement.Explain function point based estimation technique in detail. - Module no.5 | (10M)
14.
Explain with suitable diagram Scrum Agile model. - Module no.1 | (10M)
15.
Explain software reverse engineering in detail. - Module no.6 | (10M)
16.
What is the use case diagram? Draw a use case diagram for Hospital management system. - Module no. 5 | (10M)

S.P.C.C

1. Passing Mark (32)

1.
Write a short note on:
 - 1) YACC - Module no.3 | (5M)
 - 2) Java compiler environment. - Module no.5 | (5M)

1.

Differentiate:

1) System software and application software. - Module no. 1 | (5M)

2) Top-Down and Bottom-Up parsing techniques. - Module no.5 | (10M)

3) Compiler and interpreter. - Module no.1 | (5M)

4) Linking loader and linkage editor. - Module no.4 | (10M)

1.

Explain different code optimization techniques with example. - Module no. 6 | (5M)

2.

Consider grammar Is the LL(1)? Justify your answer. - Module no.5 | (10M)

3.

Explain recursive descent parser with an example. - Module no.5 | (10M)

4.

With reference to assembler explain the following table with suitable example i) MOT ii) POT iii) ST iv) BT . - Module no. 2 | (10M)

5.

Explain the different issues in code generation. - Module no. 6 | (10M)

6.

Explain the different phases of compiler. Illustrate all the output after each phase for the following statement: - Module no.5 | (10M)

2. Average Between (32-45 Marks)

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Explain different types of garbage collection and compaction in compilers. - Module no.5 | (10M)

8.

Explain macro and macro expansion. OR Explain different features of macro with an example. - Module no. 3 | (10M)

9.

Explain different types of Intermediate code representations. - Module no.6 | (10M)

10.

Draw flowchart and explain with databases the working pass 2 of assembler. -

Module no.2 | (10M)

11.
What is system software & application software? - Module no.1 | (5M)
12.
Construct a predictive parsing table for the grammar. - Module no.5 | (10M)
13.
Explain working of direct linking loader with example, show entries in different databases built by DLL. - Module no.4 | (10M)

3. Above (45 Marks)

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 - 3) Compiler and interpreter. - Module no.1 | (5M)
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Explain working of direct linking loader with example, show entries in different databases built by DLL. - Module no.4 | (10M)
14.
Draw the flowchart of a Pass-I of two pass assembler design and explain in detail. - Module no. 2| (10M)
15.
Explain the different types of loaders in detail. - Module no. 5| (10M)

16.
Explain synthesized and Inherited attribute with example. - Module no. 6 | (10M)
17.
Find FIRST & FOLLOW for the following grammar. - Module no. 5 | (5M)
18.
Explain different functions of loaders. - Module no. 4 | (5M)
19.
Explain forward reference problem and how it is handled in assembler design. - Module no. 2 | (5M)

Machine Learning - DLOC

1. Passing Mark (32)

1.
Write a short note on:
- 1) Logistic Regression - Module no. 4 | (5M)
 - 2) Independent Component Analysis - Module no. 6 | (5M)
 - 3) Back propagation algorithm - Module no.5 | (10M)
 - 4) Temporal Difference Learning. - Module no. 1 | (5M)
 - 5) Hidden Markov Model. - Module no. 5 | (10M)
 - 6) Bayesian Belief networks. - Module no. 5 | (5M)
 - 7) ISA and compare it with PCA - Module no.6 | (5M)
 - 8) DownHill simplex method - Module no. 3 | (5M)
1.
For the following data calculate Gini indexes and determine which attribute is root attribute and generate two level deep decision tree. - Module no. 1 | (10M)
2.
What is machine learning? How is it different than Data Mining? What are the

key tasks of Machine learning? - Module no. 1| (5M)

3. **What are the elements of reinforcement learning? - Module no. 1| (10M)**
4. **For a given set of points identify clusters using complete link and average link using agglomerative clustering. - Module no. 5| (10M)**
5. **What is the goal of the support vector machine(SVM)? How to compute the margin? - Module no. 5| (10M)**
6. **Why Dimensionality Reduction is very Important step in Machine Learning? - Module no. 6| (5M)**
7. **Illustrate support vector machine with neat labeled sketch and also show how to derive optimal hyperplane? - Module no. 5| (5M)**
8. **Draw and discuss the structure of radial basis function network. How RBFN can be used to solve non linearly separable pattern? - Module no. 2| (10M)**
9. **Why Dimensionality reduction is an important issue? Describe the steps to reduce dimensionality using principal component analysis method by clearly stating mathematical formula used. - Module no. 6| (10M)**

2. Average Between (32-45 Marks)

1. **Write a short note on:**
 - 1) **Logistic Regression - Module no. 4| (5M)**
 - 2) **Independent Component Analysis - Module no. 6| (5M)**
 - 3) **Back propagation algorithm - Module no.5 |(10M)**

4) Temporal Difference Learning. - Module no. 1| (5M)

5) Hidden Markov Model. - Module no. 5| (10M)

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9.

Why Dimensionality reduction is an important issue? Describe the steps to reduce dimensionality using principal component analysis method by clearly stating mathematical formula used. - Module no. 6| (10M)

10.

Explain the steps of developing Machine Learning applications. OR Explain

procedure to design a machine learning system. - Module no. 1 | (10M)

- 11. Use Principal Component analysis(PCA) to arrive at the transformed matrix for the given matrix A. - Module no. 6 | (10M)**
- 12. For a sunburn dataset given, construct a decision tree. - Module no. 4 | (10M)**
- 13. Apply agglomerative clustering algorithm on given data and draw dendrogram. Show three clusters with its allocated points. Use single link method. - Module no. 5 | (10M)**

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 - 5) Hidden Markov Model. - Module no. 5 | (10M)**
 - 6) Bayesian Belief networks. - Module no. 5 | (5M)**
 - 7) ISA and compare it with PCA - Module no.6 | (5M)**
 - 8) DownHill simplex method - Module no. 3 | (5M)**
- 1. For the following data calculate Gini indexes and determine which attribute is root attribute and generate two level deep decision tree. - Module no. 1 | (10M)**
- 2. What is machine learning? How is it different than Data Mining? What are the**

key tasks of Machine learning? - Module no. 1| (5M)

3. **What are the elements of reinforcement learning? - Module no. 1| (10M)**
4. **For a given set of points identify clusters using complete link and average link using agglomerative clustering. - Module no. 5| (10M)**
5. **What is the goal of the support vector machine(SVM)? How to compute the margin? - Module no. 5| (10M)**
6. **Why Dimensionality Reduction is very Important step in Machine Learning? - Module no. 6| (5M)**
7. **Illustrate support vector machine with neat labeled sketch and also show how to derive optimal hyperplane? - Module no. 5| (5M)**
8. **Draw and discuss the structure of radial basis function network. How RBFN can be used to solve non linearly separable pattern? - Module no. 2| (10M)**
9. **Why Dimensionality reduction is an important issue? Describe the steps to reduce dimensionality using principal component analysis method by clearly stating mathematical formula used. - Module no. 6| (10M)**
10. **Explain the steps of developing Machine Learning applications. OR Explain procedure to design a machine learning system. - Module no. 1| (10M)**
11. **Use Principal Component analysis(PCA) to arrive at the transformed matrix for the given matrix A. - Module no. 6| (10M)**
12. **For a sunburn dataset given, construct a decision tree. - Module no. 4| (10M)**
13. **Apply agglomerative clustering algorithm on given data and draw dendrogram. Show three clusters with its allocated points. Use single link method. - Module no. 5| (10M)**

14. **Describe Downhill simplex method . Why is it called Derivative Free method? - Module no. 3| (5M)**
15. **Numerical on Markov chain model. - Module no. 3| (10M)**
16. **Differentiate Derivative based and Derivative free optimization techniques. - Module no. 3| (5M)**
17. **Explain how regression problem can be solved using Steepest descent method. Write down the steps. - Module no. 4| (5M)**
18. **Explain the following terms w.r.t Bayes theorem with proper examples: 1) Independent probabilities 2) Dependent probabilities 3) Conditional probabilities 4) Prior & Posterior probabilities Define Bayes theorem based on these probabilities. - Module no.5 | (10M)**
19. **Numerical on Steepest descent method. - Module no.4 | (10M)**
20. **Explain following terms Initial hypothesis, Expectations step and Maximization step wrt E-M algorithm. Explain How Initial hypothesis converges to optimal solutions? - Module no. 5| (10M)**