

F-1294

Sub. Code

7MCE2E4

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &
SUPPLEMENTARY / IMPROVEMENT / ARREAR EXAMINATIONS**

Second Semester

Computer Science

***Elective* — PARALLEL PROCESSING**

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Define Parallel Processing.
2. What is Super computer?
3. List the types of architectural models of a multiprocessor system.
4. What is Multiprocessor?
5. What is data control?
6. What do you mean by message passing?
7. Define sequential algorithm.
8. List any three parallel search algorithm.
9. What is Multiport memory?
10. Define Cache coherence.

Part B**(5 × 5 = 25)**

Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss some interesting features of Parallel Processors.

Or

- (b) Discuss about the major issues in Parallel processing.

12. (a) Explain about the Cyber-170 architecture.

Or

- (b) Write a note on Hybercube.

13. (a) What is Precedence graph? Explain.

Or

- (b) Write a note on data control.

14. (a) Explain any two parallel algorithm designing approaches.

Or

- (b) Discuss about the parallel algorithm design complexities.

15. (a) Write a note on cache coherence.

Or

- (b) What do you mean by memory contention and Arbitration techniques? Explain.

Part C $(3 \times 10 = 30)$ Answer any **three** questions.

16. List the two key differences between multiprocessor and multicomputer systems and explain.
 17. Discuss about Time shared or common bus memory.
 18. Explain the message passing versus shared address space.
 19. List and explain any two parallel search algorithms.
 20. Discuss briefly about cross bar and Multiport memory with neat diagram.
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F-3056

Sub. Code

7MCE2E2

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &
SUPPLEMENTARY / IMPROVEMENT / ARREAR EXAMINATIONS
Second Semester**

Computer science

Elective- GRID COMPUTING

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Write two advantages of grid computing.
2. What are the components of a bottom horizontal layer of community grid model?
3. Write any two enterprise distributed computing technologies.
4. Why do we consider APIs and SDKs?
5. Mention the service provided by virtualization service for distributed digital entities.
6. What is the role of content provider?
7. What is the purpose of SDD?
8. Write the technical details of OGSF specification.
9. List any four grid resources.
10. What do you mean by application deployment on a grid?

Part B**(5 × 5 = 25)**

Answer **all** questions, choosing either (a) or (b).

11. (a) Describe the beginning of the grid.

Or

- (b) Explain the programming models of grid.

12. (a) Explain the emergence of virtual organization.

Or

- (b) Explain the relationship of grid architecture and other technologies.

13. (a) Write a note on grid management systems.

Or

- (b) Explain the query models used in PZP use service discovery.

14. (a) Explain the technical details of OGSI specification.

Or

- (b) Explain the grid services and client services programming models.

15. (a) Exemplify the manual steps needed to submit a job on grid.

Or

- (b) How to execute an application deployed on grid? Explain.

Part C**(3 × 10 = 30)**Answer any **THREE** questions.

16. Describe the building blocks of the grid.
 17. With illustration explain the computational and data grids.
 18. With neat diagrams explain the key technology concept for PZP grids.
 19. Explain the common management model in detail.
 20. Describe about the molecular modeling for drug design grid application in detail.
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F-5027

Sub. Code

7MCE1C2

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &
Supplementary / Improvement/ Arrear Examinations
First Semester
Computer Science**

DESIGN AND ANALYSIS OF ALGORITHMS

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. What is meant by recursion?
2. Define queue.
3. How to perform Binary Search?
4. Write down the order of Quicksort in worst case.
5. What is greedy technique?
6. Define minimum spanning tree problem.
7. What is meant by multistage graph?
8. What is meant by traveling salesman problem?
9. What do you mean by backtracking?
10. What is Knapsack problem?

Part B

(5 × 5 = 25)

Answer **all** the questions, choosing either (a) or (b).

11. (a) Write an algorithm to solve the towers of Hanoi problem.

Or

- (b) Write short notes on Graphs.

12. (a) Write an algorithm that finds the maximum and minimum of the set.

Or

- (b) Explain Merge Sort algorithm with an example.

13. (a) Write short notes on Greedy Method.

Or

- (b) Write an algorithm to generate a two-way merge tree.

14. (a) Write an algorithm for finding a minimum-cost binary search trees.

Or

- (b) Write short notes on Breadth First Search Traversal with algorithm.

15. (a) Discuss about the Graph Coloring Problem.

Or

- (b) Write short notes on Branch and Bound Techniques.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss in detail about trees.
 17. Explain Quick sort algorithm with an example.
 18. Explain about Knapsack problem with example.
 19. Explain in detail about Biconnected components and DFS.
 20. Explain 8-queens problem with an example.
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F-5028

Sub. Code

7MCE1C3

M.Sc. DEGREE EXAMINATION, APRIL 2021 &

Supplementary/Improvement/Arrear Examinations

First Semester

Computer Science

ADVANCED JAVA PROGRAMMING

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all the** questions.

1. Write any two other JDBC classes.
2. Write the three types of statements that are supported by JDBC.
3. State the purpose of URL.
4. What is datagram?
5. Write the use of JAR files.
6. Write the patterns used to identify an event generated by Bean.
7. Write the purpose of service() and destroy() method in servlet.
8. List any four methods that handle various types of HTTP requests.

9. Write an example for creating a push button using JButton class.
10. Draw a class hierarchy for Panel and Frame.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain statement related methods of connection class with example.

Or

- (b) Discuss about DriverManager class and its methods with example.

12. (a) Describe TCP/IP client sockets.

Or

- (b) Write a simple client/server application using RMI.

13. (a) Explain design pattern for properties in Java Bean.

Or

- (b) Discuss about persistence in Java Bean.

14. (a) Describe the benefits of Generic Servlet class.

Or

- (b) Write a servlet program in Java to illustrate how to use session state.

15. (a) Write an Applet program to create a tree and recognize mouse click on it.

Or

- (b) Write an Applet program to construct several colors and draws various objects using these colors.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain how to perform processing and retrieving results from a dataset using ResultSet class.
 17. Give a suitable example to implement a simple networked communications client and server.
 18. Discuss about Bean Development Kit.
 19. Write a servlet program in Java that illustrates cookies.
 20. Discuss about drawing methods in Graphics class with example.
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F-5029

Sub. Code

7MCE1C4

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &
Supplementary / Improvement/ Arrear Examinations
First Semester
Computer Science**

PRINCIPLES OF COMPILER DESIGN

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Section A

(10 × 2 = 20)

Answer **all** the questions.

1. What is a translator?
2. Draw NFA for the language $(a/b)^*abb$.
3. Define a handle.
4. How many parts are there in LR parsers? What are they?
5. What is the postfix notation of $(a + b) * (c + d)$?
6. Differentiate forward jump with backward jump.
7. Mention any two block structured languages.
8. List any two synthetic errors.
9. Define a flow graph.
10. What do you mean by optimal ordering for Trees?

Section B

(5 × 5 = 25)

Answer **all** the questions, choosing either (a) or (b).

11. (a) Write about Error handling.

Or

- (b) Write an algorithm to construct an NFA from a regular expression.

12. (a) What is meant by ambiguity? Explain it with an example.

Or

- (b) Discuss about elimination of left-recursion with an example.

13. (a) Write about Three-Address code with an example.

Or

- (b) Discuss about unconditional jumps.

14. (a) Discuss about self-organizing lists.

Or

- (b) Draw the schematic diagram of the error detection and recovery portion of the compiler.

15. (a) What do you mean by reduction in strength? Explain.

Or

- (b) Discuss about the various addressing modes.

Section C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain the implementation of a Lexical Analyser.
 17. Describe the stack implementation of Shift-Reduce Parsing.
 18. Discuss the methods of translating Boolean Expressions.
 19. Discuss about the storage allocation in FORTRAN.
 20. How can you construct a DAG? Explain with an example.
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F-5030

Sub. Code

7MCE1E2

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &
Supplementary/Improvement/Arrear Examinations**

First Semester

Computer Science

Elective – SYSTEM SOFTWARE

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Specify the two popular models for program execution.
2. Give any two linear data structures.
3. Draw an AST for $a * b + c$.
4. Define a handle.
5. Write down the syntax for macro call.
6. What is meant by dead code?
7. Give the schematic of pure interpreter.
8. Define linking.

9. What is a debug monitor? What is its use?
10. Write down the two components of UI.

Part B

(5 × 5 = 25)

Answer **all** questions choosing either (a) or (b).

11. (a) Write in brief about IR with its properties.

Or

- (b) Describe Binary search organization.

12. (a) Specify a DFA to recognise integer strings.

Or

- (b) Write about any two advanced Assembler Directives.

13. (a) Discuss about Nested macro calls.

Or

- (b) Describe memory allocation in recursion.

14. (a) Write about Interpreters with its use.

Or

- (b) Write about object module with its components.

15. (a) Explain the steps in program testing and debugging.

Or

- (b) Describe the structure of UI.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss about the classification of Grammers.
17. Describe operator precedence parsing with an example.
18. Explain the various intermediate code forms for expressions.
19. Describe the design of a linker in brief.
20. Discuss about the programming environments with its components.

F-5031

Sub. Code

7MCE2C3

M.Sc. DEGREE EXAMINATION, APRIL 2021 &

Supplementary/Improvement/Arrear Examinations

Second Semester

Computer Science

DISTRIBUTED OPERATING SYSTEM

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. What is meant by fault tolerance?
2. Expand CSMA/CD protocol.
3. What is polling?
4. Define closed and open group.
5. What are the issues involved in the design and implementation of DSM system?
6. What are the four necessary conditions for a deadlock to occur?
7. What are the models used for accessing remote files in distributed file system.
8. List out the transaction properties.

9. What are the types of active attacks associated with message communications in a distributed system?
10. Specify the names of access control models.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What is DCE? Explain the components of DCE.

Or

- (b) Explain the important features of ATM Technology.

12. (a) What are the main issues related to the IPC protocols of a message passing system?

Or

- (b) Write short notes on the following:

- (i) absolute ordering of messages
- (ii) consistent ordering of messages

13. (a) What is DSM? Explain the architecture of the DSM System.

Or

- (b) Explain the details of deadlock prevention.

14. (a) Elucidate the different types of file sharing semantics.

Or

- (b) Explain the approaches for concurrency control mechanisms.

15. (a) What are the approaches used for user login authentication in computer system? Explain it.

Or

- (b) Explain the working principle with its properties of a security based system on ACL?

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. What is meant by transparency? Explain in detail about the different forms of transparency.
 17. Discuss in detail about the features of message passing system.
 18. Discuss the advantages and disadvantages of using the NRNMB, NRMB, RMB and RNMB strategies in the DSM system.
 19. Describe the design issues of file caching schemes in a distributed file system.
 20. Explain the methods for solving the key distribution problem in a symmetric cryptosystems.
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F-5032

Sub. Code

7MCE3C1

**M. Sc. DEGREE EXAMINATION, APRIL 2021 &
Supplementary/Improvement/Arrear Examinations
Third Semester
Computer Science**

CRYPTOGRAPHY AND NETWORK SECURITY

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. Define Computer security.
2. Write the five ingredients of Symmetric encryption model.
3. What is meant by Stream cipher?
4. List the characteristics of Rijindael algorithm?
5. What is differential cryptanalysis?
6. What are the disadvantages of double DES?
7. State the term Diffusion and confusion.
8. List the approaches to deal with replay attacks.
9. What is padding fields in ESP?
10. What are functions provided by S/MIME?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) List the services provided by the Information security.

Or

- (b) Explain about Polyalphabetic cipher.

12. (a) Mention the purpose of S-Box in DES.

Or

- (b) Write in detail on AES key expansion.

13. (a) Write down the applications of Public key Cryptosystem.

Or

- (b) Describe the distribution of public keys and its techniques.

14. (a) Explain in detail on Brute force attacks.

Or

- (b) Write the two levels of functionalities that compromise the message authentication.

15. (a) List the services provided by Pretty Good privacy.

Or

- (b) Discuss authentication, header and ESP in detail with their packet format.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain Substitution Monoalphabetic ciphers in detail.
17. Give a brief note on Mix Column Transformation.

18. Explain the RSA algorithm with $p=7, q=11, e=17, M=8$.
 19. What is digital signal standard? Explain with its types.
 20. Write the applications and benefits of IP security.
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F-5033

Sub. Code

7MCE3C2

M.Sc. DEGREE EXAMINATION, APRIL 2021 &

Supplementary / Improvement / Arrear Examinations

Third Semester

Computer Science

PROGRAMMING IN PHP

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. State the strength of PHP.
2. List out the type identifier functions.
3. How do you get the size of an array?
4. List out any four inbuilt date and time functions.
5. What are the different file opening modes?
6. How do you embed the PHP code in webpage?
7. Define constructors.
8. Specify the database table column types.
9. Write a script for sending email.
10. What is DOM?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain the basic rules of a PHP program.

Or

- (b) Explain the switch statement in PHP with example.

12. (a) How do you sort the values in associative arrays? Explain with suitable example.

Or

- (b) Explain the concept of passing arguments to a function by reference.

13. (a) How do you create and delete a text file? Explain.

Or

- (b) Write a script to create a simple form for getting input from a user.

14. (a) Discuss the methods of the exception class.

Or

- (b) Write a code for retrieving data from the database and explain it.

15. (a) How do you manage the session variables? Explain.

Or

- (b) Write short notes on uploading a file.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss in detail about the operators in PHP.
17. Explain the following statements
 - (a) while
 - (b) do-while
 - (c) for
 - (d) for each
18. How do you read the characters from a file? Explain.
19. Explain the details about classes and objects with its properties and methods.
20. Describe the methods and properties of XMLHttpRequest with example.

F-5034

Sub. Code

7MCE3C3

**M. Sc. DEGREE EXAMINATION, APRIL 2021 &
Supplementary/Improvement/Arrear Examinations**

Third Semester

Computer Science

DATA MINING AND DATA WAREHOUSING

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all the** questions.

1. What is OLAP? How is it different from Data mining?
2. Write any four Data reduction strategies.
3. What is Data Warehouse? How is it related to Data mart?
4. Write any four components of Metadata Repository.
5. List down any four metrics used for comparing Classification methods.
6. How is prediction different from classification?
7. Define Cluster.
8. How can the data for a variable be standardized?
9. Why is dimensionality reduction for text required?
10. Write any four areas in any industry where Data mining can be applied.

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) What techniques are used to identify the properties of the data?

Or

- (b) What is a Noisy data? How do you smooth the data?

12. (a) How are OLAM and OLAP architectures are integrated?

Or

- (b) What are the three Data Warehouse models? Discuss the recommended approach for Data warehouse development

13. (a) Explain K-Nearest Neighbour algorithm? Why is it called as lazy learner?

Or

- (b) Explain Fuzzy set approach of classification. How is it different from Rough Set approach?

14. (a) Discuss any four categories of Major Clustering methods.

Or

- (b) Explain BIRCH technique of clustering.

15. (a) Discuss the vector space model and basic measures for text retrieval?

Or

- (b) Discuss spatial data cube construction and spatial OLAP.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. What kinds of patterns can be mined? Discuss with suitable examples.
17. Discuss various schemas for Multidimensional databases and OLAP operations in the Multidimensional Data Model
18. How does backpropagation work?
19. What is an Outlier? Discuss any two methods of outlier detection
20. Explain any three web mining techniques.

F-5035

Sub. Code

7MCE3E3

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &
Supplementary / Improvement/ Arrear Examinations**

Third Semester

Computer Science

Elective – MULTIMEDIA SYSTEM

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Specify any two Analog media devices.
2. What is MPEG?
3. Write down any two string operations.
4. Define Morphing.
5. What is quantization noise?
6. Mention any two video compression techniques.
7. Write any two HTML tags with its purpose.
8. Give any two applications of multimedia.
9. Write down the purpose of Gloves.
10. What is a Jack?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write briefly about Digital Media Devices with some examples.

Or

- (b) What do you mean by multimedia PC?

12. (a) Describe the various colour models used in graphics.

Or

- (b) Discuss about CD-ROM formats.

13. (a) Write about transformation of digital sound.

Or

- (b) Describe the bitstream syntax hierarchy of MPEG videos.

14. (a) Write briefly about XML.

Or

- (b) What is UI? Explain.

15. (a) Discuss about VR applications.

Or

- (b) Discuss the VR application in the entertainment field.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss about the features of multimedia networking.
 17. Discuss about the operating system support for multimedia.
 18. Describe the four different modes of operation for JPEG with its architecture diagram.
 19. Explain any two file standard for Internet.
 20. Discuss in brief about modes of interaction in VR.
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F-5036

Sub. Code

7MCE3E6

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &
Supplementary/Improvement/Arrear Examinations**

Third Semester

Computer Science

Elective – WAP AND XML

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is meant by Web?
2. What are the software products available for WAP?
3. Define WAP gateway.
4. What is the basic structure of WML?
5. What is meant by WML script?
6. What is the role of standard libraries?
7. Expand XML and XSL.
8. Give an example for Xlinks.
9. What is meant by attribute?
10. What is Unicode character set?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write a short note on WAP.

Or

- (b) Compare WAP and Web.

12. (a) Discuss about the functionality of WAP gateway.

Or

- (b) Write a short note on WML card.

13. (a) Explain about events of WML.

Or

- (b) Explain about the automatic data type conversion with example.

14. (a) Explain about the structure and semantics of XML with example.

Or

- (b) How the XML data is organized? Explain.

15. (a) Write a note on structured metadata.

Or

- (b) Explain about scripts, fonts, character sets and Glyphs.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain about the internal structure of WAP.
 17. Discuss in detail about the advanced display features of WML.
 18. Explain about the function of WML script control statements.
 19. Briefly explain about XML with example.
 20. How to write XML in Unicode? Explain with example.
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F-5124

Sub. Code

7MCE1C1

M.Sc. DEGREE EXAMINATION, APRIL 2021 &

Supplementary/Improvement/Arrear Examinations

First Semester

Computer Science

APPLIED MATHEMATICS FOR COMPUTER SCIENCE

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Define atomic and molecular statements.

2. Let R : Mark is rich

H : Mark is happy.

Write the following statement in symbolic form.

"Mark is neither rich nor happy".

3. What is existential quantifier? Give example.

4. Define principal conjunctive normal form.

5. Define spanning tree.

6. Define Path and matrix of graph G.

7. Define artificial variable.

8. What is unbounded solution in graphical method?
9. What do you mean by non degenerate basic feasible solution of a transportation problem?
10. State any two methods to find the initial basic feasible solution of a transportation problem.

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain conditional and biconditional statements with examples.

Or

- (b) Show the following equivalences.

$$(i) \quad \neg(P \Leftrightarrow Q) \Leftrightarrow (P \vee Q) \wedge \neg(P \wedge Q)$$

$$(ii) \quad P \rightarrow (Q \rightarrow P) \Leftrightarrow \neg P \rightarrow (P \rightarrow Q)$$

12. (a) Obtain the principal disjunctive and conjunctive normal form of $Q \wedge (P \vee \neg Q)$.

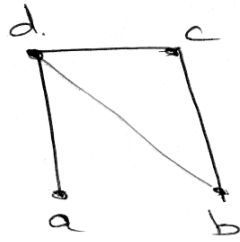
Or

- (b) Demonstrate that R is a valid inference from the premises $P \rightarrow Q, Q \rightarrow R$ and P .

13. (a) Explain Matrix Representation of Graphs with example.

Or

- (b) Find the number of spanning trees in the following graph.



14. (a) Solve the following LPP using Simplex method.

$$\text{Maximize } z=2x+3y$$

Subject to

$$-2x-y \geq -10$$

$$x+3y \geq 6$$

$$x, y \geq 0.$$

Or

- (b) Solve using Graphical method

$$\text{Maximize } z=12,00,000x+20,00,000y$$

Subject to

$$x+y \geq 15$$

$$1,100x+1,600y \leq 50,000$$

$$x \geq 3$$

$$y \geq 3$$

$$x, y \geq 0.$$

15. (a) Solve the following transportation problem.

	Distribution centres		Capacity
	D	E	
Plant A	80	215	1000
Plant B	100	108	1500
Plant C	102	68	1200
Demand	2300	1400	

Which plant should supply how many cars to which outlet so that the total cost is minimum. Find the initial basic feasible solution using North West Corner Rule.

Or

- (b) Solve the following Assignment problem.

		Sites			
		A	B	C	D
	1	90	75	75	80
Bulldozers	2	35	85	55	65
	3	125	95	90	105
	4	45	110	95	115

How should the bulldozers be moved to the construction sites in order minimize the total distance traveled.

Part C (3 × 10 = 30)

Answer any **three** questions.

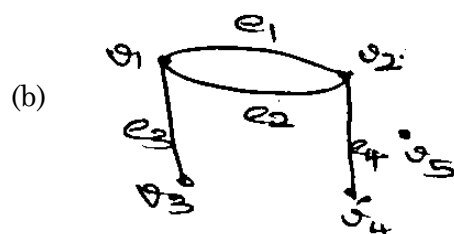
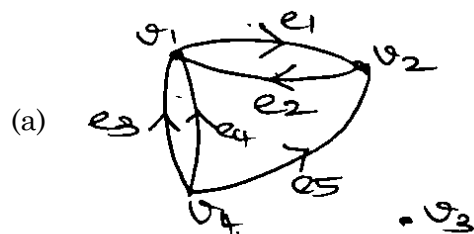
16. (a) Show the following implication
 $(P \rightarrow (Q \rightarrow R)) \Rightarrow (P \rightarrow Q) \rightarrow (P \rightarrow R)$.
- (b) Explain the basic connectives with truth tables.

17. Show that the following are equivalent formulas.

(a) $P \vee (P \wedge Q) \Leftrightarrow P$

(b) $P \vee (\neg P \wedge Q) \Leftrightarrow P \vee Q.$

18. Find the incidence matrix of the following graphs.



$$A = (a_{ij}) = \begin{cases} 1 & \text{if } v_i \text{ is the initial vertex of } e_j \\ -1 & \text{if } v_i \text{ is the terminal vertex of } e_j \\ 0 & \text{otherwise} \end{cases}$$

19. Solve using two phase simplex method.

Minimize $z = -3x_1 + x_2 - 2x_3$

Subject to

$x_1 + 3x_2 + x_3 \leq 5$

$2x_1 - x_2 + x_3 \geq 2$

$4x_1 + 3x_2 - 2x_3 = 5$

$x_1, x_2, x_3 \geq 0.$

20. Determine the optimal solution of the problem using Northwest corner rule for initial basic feasible solution and MODI for optimal solution.

Method	D_1	D_2	D_3	D_4	Supply
P_1	19	30	50	12	7
P_2	70	30	40	60	10
P_3	40	10	60	20	18
Requirement	5	8	7	15	

F-5125

Sub. Code

7MCE1E3

M.Sc. DEGREE EXAMINATION, APRIL 2021 &

Supplementary/Improvement/Arrear Examinations

First Semester

Computer Science

Elective: SOFTWARE ENGINEERING

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all the** questions.

1. What are the characteristics of software?
2. State the reasons why Prototyping model is problematic in certain situations.
3. Define use-case. Give examples.
4. What is meant by requirement engineering?
5. Define COCOMO and mention the areas addressed by COCOMO II model?
6. Define the Software Equation.
7. What is Graph matrix? How is it used in testing?
8. What types of errors are identified by Black Box Testing?

9. What is alpha test and beta test.
10. State the measures of software quality?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Explain briefly about the Prototyping model in detail.

Or

- (b) Enlighten about the computer software characteristics and its applications.

12. (a) Enlighten about Quality Function Deployment.

Or

- (b) Explain how to develop effective Use-Cases with examples.

13. (a) Discuss in detail about the estimation of resources required to accomplish the software development effort.

Or

- (b) Describe in brief about decomposition techniques.

14. (a) Enlighten about the testing objectives and testing principles.

Or

- (b) Describe data-flow testing and loop testing with examples.

15. (a) Elaborate on Economics of CBSE.

Or

- (b) Discuss in brief about domain engineering.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Describe in detail about the RAD model.
 17. Describe the steps accomplished during requirements engineering process.
 18. Explain Empirical Estimation Models in detail.
 19. Explain Validation testing in detail.
 20. Enlighten about direct and indirect measures of software engineering process.
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F-5482

Sub. Code

7MCE2C1

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &
Supplementary/Improvement/Arrear Examinations
Second Semester
Computer Science**

COMPUTER SYSTEM ARCHITECTURE

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Which data structure is generally used to store the return address for a recursive subroutine? Why?
2. What register is implied in One-Address instructions? Give an example.
3. Draw the block diagram of a Full adder?
4. How is logical shift different from circular shift?
5. Define (a) microoperation (b) microcode
6. What is the difference between hardware control and microprogrammed control?
7. When is Asynchronous data transfer required in a digital system?
8. When is write-through method preferred over write-back method in Virtual memory organization?

9. Define Multiprocessing.
10. Name any two measures used for evaluating the performance of a super computer.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write Load instruction using any five addressing modes.

Or

- (b) How are different types of Interrupts differ from each other?
12. (a) Represent the following conditional control statement by two register transfer statements with control functions.

if (P = 1) then (R1 → R2) else if (Q = 1) then (R1 → R3)

Or

- (b) Register A holds the 8 bit binary 11011001. Determine the B operand and the logic microoperation to be performed in order to change the value in A to
 - (i) 01101101
 - (ii) 11111101
13. (a) Explain the address sequencing for control memory with a block diagrams.

Or

- (b) Explain Microinstruction code format.

14. (a) A computer uses RAM chips of 1024 X 1 capacity.
- (i) How many bytes are needed, and how should their address lines be connected to provide a memory capacity of 1025 bytes?
 - (ii) How many chips are needed to provide a memory capacity of 16K bytes? Explain in words how the chips are to be connected to the address bus?

Or

- (b) Explain Parallel Priority Interrupt.
15. (a) Explain Pipeline Processing with required block diagrams.

Or

- (b) Discuss any two Interconnection Structure of a multiprocessor.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. What are Program Control instructions and status bit conditions?
17. Explain the phases of an instruction cycle.
18. Design a Microprogrammed Control Unit
19. What is a Associative memory? Explain the match logic for one word in Associative memory.
20. Explain Instruction pipeline with suitable example.

F-5483

Sub. Code

7MCE2C2

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &
Supplementary/Improvement/Arrear Examinations**

Second Semester

Computer Science

.NET TECHNOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What are Assemblies?
2. What is Overloading?
3. Give the syntax of switch statement.
4. What is Docking?
5. What are the two types of pickers?
6. What is Typography?
7. How to import namespace in ASP.NET?
8. List any two Validation controls.
9. What is Authentication?
10. What is the use of DataList?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Give a brief description about .NET components.

Or

- (b) Explain the concept of Encapsulation and Polymorphism with example.

12. (a) Explain sub procedures and functions with example.

Or

- (b) Explain label control with example.

13. (a) Explain how to create a Splitter along with its properties and functions.

Or

- (b) Explain the properties and functions of Status Bar.

14. (a) Explain any two data controls with example.

Or

- (b) Give a brief note on AJAX controls.

15. (a) Explain how to create Window based security.

Or

- (b) Explain DataGrid control with example.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about Assemblies and CLR.

17. Explain String handling functions with example.

18. Describe Tree and List view controls with example.
 19. Explain Logging and Error handling with example.
 20. State the properties and methods of Data table and Data row clauses. Explain.
-

F-5484

Sub. Code

7MCE2E1

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &
Supplementary/Improvement/Arrear Examinations
Second Semester
Computer Science**

ELECTIVE: MOBILE COMPUTING

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is location aware services?
2. What do you mean by user mobility?
3. Define: Coherence Bandwidth.
4. What is a guard space?
5. Write the role of Router discovery protocol.
6. What do you mean by authentication overview?
7. What do you mean by decapsulation?
8. Define Multicast.
9. What is Ingress filtering?
10. Write the purpose of WAP protocol.

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss about the mobile and wireless devices.

Or

- (b) Explain the role of IETF in Mobile net working.

12. (a) Write a note on GSM.

Or

- (b) What do you mean by handover? Explain.

13. (a) What is an agent operation? Explain.

Or

- (b) Write the procedure for mobile node registrations.

14. (a) What is route optimization? Explain.

Or

- (b) Discuss about message formats.

15. (a) Discuss about DHCP.

Or

- (b) Write a note on localizing registration.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss the applications of mobile network.
17. Explain the three basic methods of modulation.

18. Explain the actions of foreign agent registration.
 19. Discuss about mobile key requests.
 20. Write a note on Reverse Tunneling.
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F-5485

Sub. Code

7MCE2E3

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &
Supplementary/Improvement/Arrear Examinations
Second Semester
Computer Science
ELECTIVE-COMPUTER GRAPHICS**

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Distinguish between bitmap and pixmap.
2. What is run-length encoding?
3. State the attributes that control the appearance of a character.
4. What are the three basic transformations?
5. Mention the various input modes initiated by the input devices.
6. State the purpose of valuator type of input devices.
7. What is meant by surface rendering?
8. Write the transformation matrix for the reflection of points relative to the xy plane.
9. Define view reference point.
10. What is meant by cabinet projection and cavalier projection?

Part B

(5 × 5 = 25)

Answer **all** the questions, choosing either (a) or (b).

11. (a) Describe Bresenham's Line Drawing algorithm in detail.

Or

- (b) Write short notes on interactive input devices.

12. (a) Explain the Raster methods for transformations.

Or

- (b) Explain Area-Fill attributes in detail.

13. (a) Explain segment attributes in detail.

Or

- (b) Write briefly about the physical input devices.

14. (a) Write short notes on three dimensional graphics packages.

Or

- (b) Discuss briefly about the three-dimensional basic transformations.

15. (a) Explain scan line method in detail.

Or

- (b) Describe the implementation of viewing operations.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explicate Circle Generation algorithm in detail.
17. Explain the two dimensional basic, reflection and shear transformations in detail.

18. Enlighten about the interactive picture-construction techniques.
 19. Explain three-dimensional display techniques in detail.
 20. Explain Depth buffer and back-face detection methods in detail.
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F-5486

Sub. Code

7MCE2E5

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &
Supplementary/Improvement/Arrear Examinations**

Second Semester

Computer Science

ELECTIVE-ADVANCED DATABASE SYSTEMS

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is a Database?
2. Define a Schema
3. What is a Primary key?
4. Mention the three types of attributes
5. Define Armstrong's axioms for functional dependency
6. Define Third Normal Form (3NF)
7. Write any two disadvantages of distributed database.
8. What is Data Replication?
9. Write any two applications of multimedia database.
10. Write the function to make a connection with MySQL

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Distinguish between File- oriented system and Database system.

Or

- (b) Explain in detail about the three level ANSI-SPARC database architecture.

12. (a) Explain the following:

(i) Selection operation (ii) Projection operation

Or

- (b) Explain entity set with an example.

13. (a) Write short note on closure as a set of functional dependencies.

Or

- (b) Give a detail description about Boyce-Codd Normal Form (BCNF).

14. (a) Explain the types of Distributed database.

Or

- (b) Explain Two-phase commit with a neat diagram.

15. (a) Write short note on the sources of multimedia.

Or

- (b) Write any five features of MySQL.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain Data models in detail.
17. Explain the E-R diagram symbols with example.
18. Explain the following:
 - (a) Lossy Decomposition
 - (b) Lossless – Join decomposition.
19. Explain Distributed database system (DDBS) design in detail.
20. Explain in detail about Web databases

F-5487

Sub. Code

7MCE2E6

**M.Sc. DEGREE EXAMINATION, APRIL 2021 &
Supplementary/Improvement/Arrear Examinations
Second Semester
Computer Science
Elective-DIGITAL IMAGE PROCESSING**

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. State the representation of a digital image.
2. What is pixel pitch?
3. Define histogram of an image
4. What is gamma correction?
5. Define Fourier spectrum and Phase angle?
6. State sampling theorem.
7. Define geometric mean filter.
8. Define Wiener Filtering.
9. Define radiance, luminance and brightness.
10. Mention the purpose of digital image watermarking?

Part B

(5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Write short notes on Image sampling and Quantization.

Or

- (b) Enlighten about the Principal modalities of image sensing and acquisition

12. (a) Explain the basic steps used to implement a fuzzy-rule based system.

Or

- (b) Write short notes on Histogram Equalization.

13. (a) Explain Image Sharpening using frequency domain fitters.

Or

- (b) Write short notes on Selective filtering.

14. (a) Write short notes on Minimum Mean Square Error Filtering.

Or

- (b) Explain periodic noise reduction by frequency domain filtering.

15. (a) Explain how to segment the image based on color.

Or

- (b) Discuss briefly about the color transformations.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about the basic relationships between pixels in a digital image.
 17. Explain how to use fuzzy sets for intensity transformation.
 18. Enlighten the properties of 2-D Discrete Fourier transform in detail.
 19. Explain the principal ways to estimate the degradation function in detail.
 20. Discuss in detail about Pseudo-color and Full-color Image Processing.
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