

F-2048

Sub. Code

7MCE1C1

M.Sc. DEGREE EXAMINATION, APRIL 2019

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 tautological implication.
2. What is the condition for two formulae ϕ and ψ to be equivalent?
3. Define elementary sum and elementary product.
4. What is principal disjunctive normal form?
5. Define complete symmetric graph.
6. When will you say a graph is a tree?
7. State the canonical form of a linear programming problem.
8. Define Degenerate solution.
9. What are the methods used to find the initial basic feasible solution of a transportation problem?
10. State the mathematical formulation of an assignment problem.

Part B

(5 × 5 = 25)

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

11. (a) Explain the basic connectives with truth tables.

Or

- (b) Show that $Q \vee (P \wedge \neg Q) \vee (\neg P \wedge \neg Q)$ is a tautology.

12. (a) Write each of the following in symbolic form.
(Assume that the universe consists of literally everything)

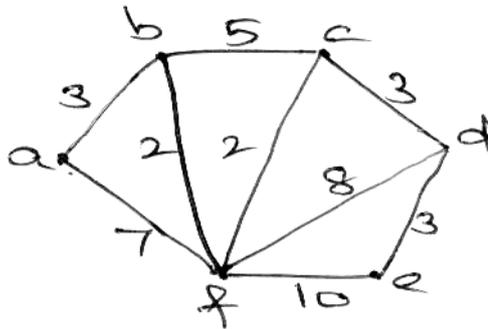
- (i) All men are giants
(ii) No men are giants
(iii) Some men are giants
(iv) Some men are not giants.

Or

- (b) Show that $P \rightarrow S$ can be derived from the premises

$$\neg P \vee Q, \neg Q \vee R, R \rightarrow S$$

13. (a) Find the shortest path from the vertex a to all other vertices of the following graph :



Or

- (b) Write short notes on spanning trees.

14. (a) An animal feed company must produce 200 lbs of a mixture containing the ingredients X_1 and X_2 . X_1 costs Rs.3 per lb and X_2 costs Rs.8 per lb. Not more than 80 lbs of X_1 can be used and minimum quantity to be used for X_2 is 60 lbs. Find how much of each ingredient should be used in the company wants to minimize the cost. Formulate the problem.

Or

- (b) Solve graphically the following LPP.

$$\text{Maximize } Z = 3x_1 + 2x_2$$

$$\text{Subject to } -2x_1 + x_2 = 1$$

$$x_1 \leq 2$$

$$x_1 + x_2 \leq 3$$

$$x_1, x_2 \geq 0.$$

15. (a) Use North-West corner method to obtain an initial basic feasible solution of the transportation problem

	D	E	F	G	Available
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Demand	200	225	275	250	950

Or

- (b) Solve the following assignment problem

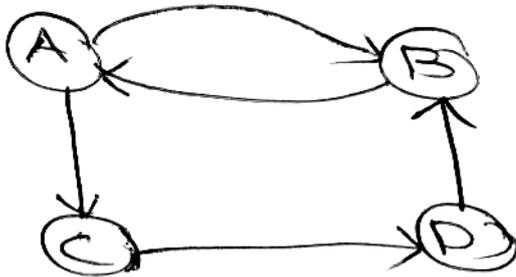
		Workers			
		W	X	Y	Z
Jobs	A	8	7	9	10
	B	7	9	9	8
	C	10	8	7	11
	D	10	6	8	7

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Show that :
- (a) $\neg(P \wedge Q) \rightarrow (\neg P \vee (\neg P \vee Q)) \Leftrightarrow (\neg P \vee Q)$
- (b) $(P \vee Q) \wedge (\neg P \wedge (\neg P \wedge Q)) \Leftrightarrow (\neg P \wedge Q)$
17. Show that $R \vee S$ is a valid conclusion from the premises $C \vee D, C \vee D \rightarrow \neg H, \neg H \rightarrow (A \wedge \neg B)$ and $(A \wedge \neg B) \rightarrow (R \vee S)$.
18. Consider the following digraph. Use its adjacency matrix to find how many paths of length 3 exists from A to B.



19. Use two-phase simplex method to solve the following LPP
- Maximize $Z = 5x_1 + 3x_2$
- $2x_1 + x_2 \leq 1$
- Subject to $x_1 + 4x_2 \geq 6$
- $x_1, x_2 \geq 0$
20. Obtain optimum distribution for the company in order to minimize the total transportation cost

		To					
		D	E	F	G	H	
From	A	5	8	6	6	3	800
	B	4	7	7	6	5	500
	C	8	4	6	6	4	900
		400	400	500	400	800	

F-2049

Sub. Code

7MCE1C2

M.Sc. DEGREE EXAMINATION, APRIL 2019

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** questions.

1. Write the properties of binary search trees.
2. Define : Graph.
3. What do you mean by partitioning algorithm?
4. Write the straight forward algorithm.
5. What is a subset paradigm?
6. Define : Weighted Trees.
7. What is principle of optimality?
8. Define : Mean Flow Time.
9. What is a bounding?
10. What is a live node?

Part B

(5 × 5 = 25)

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

11. (a) Discuss about the union algorithm with weighting rule.

Or

- (b) Write the algorithm for Add Q and Delete Q, assuming the Queue is represented as a linked list.

12. (a) What do you mean by strassen's matrix multiplication? Explain.

Or

- (b) What is a Worst – case optimal algorithm? Explain.

13. (a) Explain the tree vertex splitting algorithm for binary trees.

Or

- (b) Explain the working of Prim's method.

14. (a) What is 0/1 knapsack? Explain.

Or

- (b) With an algorithm, explain preorder and post order traversals of a binary search tree.

15. (a) What is Hamiltonian cycle? Explain.

Or

- (b) What do you mean by sum of subsets? Explain.

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

16. Explain about the three most commonly used Graph representation methods.
 17. Compare the sorting methods mergesort and quick sort 2.
 18. How to generate shortest paths using greedy algorithm? Explain.
 19. Write the pseudocode to determine bicomponents and explain.
 20. Explain the 8 – Queens problem.
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Sub. Code

7MCE1C3

M.Sc. DEGREE EXAMINATION, APRIL 2019

First Semester

Computer Science

ADVANCED JAVA PROGRAMMING

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is SQL Exception?
2. What is the purpose of Connection Class?
3. Why do you need InetAddress class?
4. What are the two main classes of Datagram?
5. What is meant by Persistence?
6. What is meant by constrained property?
7. What is the purpose of generic servlet?
8. What is the purpose of Session?
9. What is a Swing? How is it different from AWT?
10. Write down the steps to be followed in using a Tree in an Applet.

Part B**(5 × 5 = 25)**

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

11. (a) What is Meta Data? Discuss about the classes associated with it.

Or

- (b) Give an overview of JDBC.

12. (a) Discuss any three protocols associated with Sockets.

Or

- (b) What is URL? Explain URL class.

13. (a) What is a Java Bean? What are its advantages?

Or

- (b) Write any 4 interfaces, 6 classes and their functionalities associated with Java Beans API?

14. (a) What is a Cookie? Explain Cookie Class.

Or

- (b) Explain the life cycle of a Servlet.

15. (a) With an example code, discuss the steps involved in adding a JComboBox to an Applet.

Or

- (b) With an example code, discuss the steps involved in adding a JTable to an Applet.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss the steps involved in processing SQL statements with JDBC.
 17. Explain the steps for building a simple Client/Server application using RMI.
 18. What is meant by Introspection? How is it achieved?
 19. What is the need for reading Servlet and Initialization parameters? Explain with examples.
 20. Explain how Graphics are generated using AWT.
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Sub. Code

7MCE1C4

M.Sc. DEGREE EXAMINATION, APRIL 2019

First Semester

Computer Science

PRINCIPLES OF COMPILER DESIGN

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. Define a token with an example.
2. Write down the transition table for the NFA recognizing the language $(a/b)^*abb$.
3. What do you mean by ambiguous grammer?
4. Specify the two functions that the parsing table of LR parsers can have.
5. Draw the parse tree for $a + b * c$.
6. Translate the statement “if $A < B$ then 1 else 0” into the three address code sequence.
7. Write down the name of 2 tables used in the hash table.
8. Give any two example of syntax errors.
9. What is a flow graph?
10. Expand DAG.

Part B**(5 × 5 = 25)**Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss about error handling.

Or

- (b) Write down the procedure to construct an NFA from a regular expression.

12. (a) Write briefly about transition diagrams with examples.

Or

- (b) Write an algorithm to construct and SLR parsing table.

13. (a) How can you evaluate postfix expressions? Explain with an example.

Or

- (b) Discuss about postfix translations by taking an example.

14. (a) Write in short about symbol tables.

Or

- (b) Discuss about storage allocation in block structured languages.

15. (a) Write about DAG representation of basic blocks.

Or

- (b) Discuss about the various addressing modes.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss about the design of Lexical Analysers with its implementation.
 17. Explain the working principle of a predictive parser with its schematic representation.
 18. Discuss about the four kinds of intermediate codes used in compilers.
 19. Write in brief about the data structures used for symbol tables.
 20. What is code generation? What are the problems in code generation, Explain.
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Sub. Code

7MCE1E1

M.Sc. DEGREE EXAMINATION, APRIL 2019

First Semester

Computer Science

**Elective — OBJECT ORIENTED ANALYSIS AND
DESIGN**

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Section A

(10 × 2 = 20)

Answer **all** questions.

1. Define Class.
2. State the purpose of class diagram.
3. What do you mean by conditions?
4. List out various ways of specifying operations on objects.
5. What do you mean by redundant classes?
6. List out the steps involved in constructing dynamic model.
7. What is meant by thread of control?
8. Define Transaction Manager.
9. What is Information Hiding?
10. Write down the three basic approaches to implement the dynamic model.

Section B

(5 × 5 = 25)

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

11. (a) Describe object modeling technique in brief.
Or
(b) Describe operations and methods on objects.
12. (a) Discuss state diagram with example.
Or
(b) Write in brief about nested state diagram.
13. (a) Describe about identifying attributes and keeping the right attributes in object modeling.
Or
(b) Write and describe the key operations in the object model.
14. (a) Write down the advantages and disadvantages of using database.
Or
(b) Describe the architecture of ATM system.
15. (a) Write about one-way associations and two-way associations.
Or
(b) Discuss on documenting design decisions.

Section C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain about Advanced Link and Association concepts.
17. Discuss about data flow diagrams.

18. Write in brief about functional model.
 19. Briefly discuss about common architectural frameworks.
 20. Discuss about steps involved in design optimization.
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Sub. Code

7MCE1E2

M.Sc. DEGREE EXAMINATION, APRIL 2019

First Semester

Computer Science

***Elective* — SYSTEM SOFTWARE**

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Section A

(10 × 2 = 20)

Answer **all** the questions.

1. What is Language processing?
2. Write any two non-linear data structures.
3. Define DFA.
4. Draw the abstract syntax tree for $a + b * c$.
5. What is a macro?
6. What is an **expression** tree?
7. List down the components of an interpreter.
8. Define program relocation.
9. What is debug monitor?
10. Expand UIMS with its purpose.

Section B

(5 × 5 = 25)

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

11. (a) Write about intermediate representation with its properties.

Or

- (b) Describe binary search organisation with its procedure.

12. (a) How DFA's can be built? Explain with an example.

Or

- (b) Discuss in brief the intermediate code forms.

13. (a) How macro's can be defined and called?

Or

- (b) Discuss in brief the parameter passing mechanisms.

14. (a) Write in brief about overview of interpretation.

Or

- (b) Write an algorithm for program relocation.

15. (a) List down the steps in program development.

Or

- (b) Describe the design of an Editor.

Section C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss in brief the collision handling methods.
17. How recursive descent parser works? Explain.

18. Discuss the optimizing transformations used in compilers.
 19. Describe the design of a linker.
 20. Discuss about the various Text Editors in brief.
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Sub. Code

7MCE1E3

M.Sc. DEGREE EXAMINATION, APRIL 2019

First Semester

Computer Science

Elective — SOFTWARE ENGINEERING

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Define Embedded software.
2. What is RAD Model?
3. What is meant by Elaboration?
4. Define Stake holders.
5. Write the categories of Software engineering resources.
6. Define COCOMO.
7. Explain Stress testing.
8. What is Security testing?
9. Define the term 'Quality'.
10. Explain CBSE process.

Part B**(5 × 5 = 25)**

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

11. (a) Explain the quality of Legacy software.

Or

- (b) Describe the Evolutionary process models.

12. (a) Explain any two tasks of Requirements engineering.

Or

- (b) Explain how to develop use-cases. Explain.

13. (a) What are the different approaches to the sizing problem?

Or

- (b) Explain the Software scope and feasibility.

14. (a) Write Short notes on :

- (i) Loop testing
- (ii) Integration testing.

Or

- (b) Give detailed notes on Test strategies for Object Oriented Software.

15. (a) State the factors to be considered for Measuring Quality.

Or

- (b) Explain how to classify and retrieve Software components.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss about the Waterfall model in detail.
17. How to initiate the Requirements engineering process.
18. Describe the Empirical Estimation Models in detail.
19. What is Basis Path Testing and explain in detail.
20. Describe in detail about Component Based Development.

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Sub. Code

7MCE2C1

M.Sc. DEGREE EXAMINATION, APRIL 2019

Second Semester

Computer Science

COMPUTER SYSTEM ARCHITECTURE

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Section A

(10 × 2 = 20)

Answer **all** questions.

1. What is control word?
2. Name any two program control instructions.
3. Draw a 4-bit adder subtractor circuit.
4. What is interrupt?
5. What is called micro instructions?
6. What is subroutine?
7. What is the use of status command?
8. Define handshaking.
9. Expand SISD, MIMD.
10. Write the three major difficulties that cause the instruction pipeline to deviate the normal operation.

Section B

(5 × 5 = 25)

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

11. (a) Briefly explain the stack organization.

Or

- (b) Write short notes on data transfer instructions.

12. (a) Write short notes on shift micro operations.

Or

- (b) Write about stored program organization briefly.

13. (a) Write about the micro instruction format.

Or

- (b) Write short notes on microprogram sequences.

14. (a) Write the major differences between central computer and peripheral devices.

Or

- (b) Write short notes on priority interrupt.

15. (a) Explain the four - segment instruction pipeline with neat flowchart.

Or

- (b) Explain the memory interleaving technique briefly.

Section C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss various instruction formats with suitable example.
 17. Explain the various memory-reference instructions.
 18. Discuss the address sequencing in detail.
 19. Explain asynchronous data transfer.
 20. Explain array processor in detail.
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Sub. Code

7MCE2C2

M.Sc. DEGREE EXAMINATION, APRIL 2019

Second Semester

Computer Science

.NET TECHNOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Define Namespace.
2. What is data abstraction?
3. List the data types in VB.Net.
4. What is the difference between SDI and MDI?
5. What is the use of notify Icons?
6. What is a toolbar?
7. Define page class.
8. What is mean by tracing?
9. What is SSL?
10. Define data list.

Part B

(5 × 5 = 25)

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

11. (a) How will you create a class libraries? Explain with an example.

Or

- (b) Write the difference between classes and modules with an example.

12. (a) Write an application in VB .Net to sort an array.

Or

- (b) Write a short note on link labels.

13. (a) Explain the functional difference between checkboxes and radio buttons with example.

Or

- (b) Explain the salient features of menus in VB.Net.

14. (a) Explain the file types in ASP.Net.

Or

- (b) Explain in detail about any two validator controls with example.

15. (a) Write a short notes on windows authentication methods.

Or

- (b) How data binding works with a template control? Explain.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss the components of .Net framework.
 17. Explain the role of MsgBox and InputBox functions in VB.Net.
 18. Explain how the files are handled in VB.Net using classes.
 19. Discuss on AJAX controls in Asp.Net.
 20. Explain the components of ADO.Net object model.
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Sub. Code

7MCE2C3

M.Sc. DEGREE EXAMINATION, APRIL 2019

Second Semester

Computer Science

DISTRIBUTED OPERATING SYSTEM

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. Define fault tolerance.
2. What is meant by internet working?
3. Why are data gram message used in IPC?
4. What is “piggy backing” of a message?
5. What do you mean by false sharing?
6. Define reachable set.
7. What is periodic write?
8. What is cache location?
9. What is meant by passing rights?
10. What is a Trojan horse program?

Part B**(5 × 5 = 25)**

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

11. (a) Discuss about processor peal model.

Or

- (b) Explain the functionality of the ATM layer.

12. (a) What is meant by absolute ordering, consistent ordering and casual ordering? Explain.

Or

- (b) Write a note on buffering.

13. (a) Discuss about replacement strategy in DSM system.

Or

- (b) Explain about the bully algorithm.

14. (a) What is quorum based protocols? Explain.

Or

- (b) Discuss about cache validation schemes.

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

Or

- (b) Explain the password based approach for user logins authentication.

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

16. Write a note on CSMA/CD protocol.
 17. List the desirable features of a good message passing system.
 18. How to implement sequential consistency model? Explain.
 19. Explain the features of a good distributed file system.
 20. What are the important design principles that should normally be used as a guideline to design sources computer systems? Explain.
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F-2058

Sub. Code

7MCE2E1

M.Sc. DEGREE EXAMINATION, APRIL 2019

Second Semester

Computer Science

***Elective* — MOBILE COMPUTING**

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Section A

(10 × 2 = 20)

Answer **all** questions.

1. State the use of GPS.
2. What are the two parts of IP address?
3. What are the three fundamental propagation behaviors of radio waves?
4. List out the security services offered by GSM.
5. What is the use of lifetime field in ICMP?
6. Define registration request.
7. Write the format of packet header.
8. What is a home mobile key?
9. How to renumber the home subset?
10. Define reverse tunneling.

Section B

(5 × 5 = 25)

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

11. (a) What is Source routing? Explain.

Or

- (b) Explain the architectural model of IETF mobile IP protocol.

12. (a) Briefly explain about frequency hopping spread spectrum.

Or

- (b) Draw and describe the protocol architecture of GSM.

13. (a) Write a note on route discovery protocol.

Or

- (b) Explain about registration extension.

14. (a) Describe about tunnel management.

Or

- (b) Explain the registration key request extension in detail.

15. (a) Write short notes on Wireless transport layer security.

Or

- (b) Write a note on broadcast preference extension.

Section C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain the two types of mobile IP architectures.
 17. Discuss the various types of modulation techniques.
 18. Explain in detail about home agent processing for registration.
 19. Explain the Unicast, Broadcast and Multicast datagram routing.
 20. Explain about Wireless Session Protocol.
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Sub. Code

7MCE2E2

M.Sc. DEGREE EXAMINATION, APRIL 2019

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. What is FAFNER?
2. What is Legion?
3. What are data replication services?
4. What do you mean by cluster computing?
5. What is long term persistence?
6. What are data grid projects?
7. What is Policy service interfaces?
8. List the functionalities of service domain components.
9. Write the phases of policy abstraction.
10. Write the requirements for resource management.

Part B**(5 × 5 = 25)**Answer **all** questions, choosing either (a) or (b).

11. (a) What is Grid portals? Explain.

Or

- (b) Discuss about UNICORE.

12. (a) Write a note on collective layer.

Or

- (b) Discuss about Grid Architecture and relationship to other distributed technologies.

13. (a) What do you mean by service lifetime and data lifetime management? Explain.

Or

- (b) Discuss the functions of data grids.

14. (a) Write a note on Resource life cycle modeling.

Or

- (b) Write a note on security services.

15. (a) Explain about Grid resources.

Or

- (b) Discuss about Resource scheduling.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss about Grid applications.
 17. Explain about the semantic web architecture.
 18. Explain the issues in OGSA.
 19. Explain common security elements required for a Grid environment.
 20. Discuss the challenges in Grid resource management.
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Sub. Code

7MCE2E3

M.Sc. DEGREE EXAMINATION, APRIL 2019

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. What is meant by persistence?
2. Define Resolution.
3. What is meant by concatenation or composition?
4. What are the attributes of a line?
5. Mention the purpose of LOCATOR and STROKE devices.
6. What is meant by window and viewport?
7. What is the transformation matrix for x-axis rotation?
8. What is meant by surface rendering?
9. What is meant by cavalier projection?
10. Define principal vanishing point.

Part B**(5 × 5 = 25)**Answer **all** questions choosing either (a) or (b).

11. (a) Explain Raster-scan display processor in detail.

Or

- (b) Explain in detail about DDA Line Drawing algorithm.

12. (a) Explain briefly about Two-Dimensional Basic Transformations.

Or

- (b) Write short notes on Color and Grayscale Levels of a system.

13. (a) Explain in detail about input functions.

Or

- (b) Enlighten about Interactive-Picture Construction methods.

14. (a) Write short notes on three dimensional basic transformations.

Or

- (b) Describe in detail about three dimensional reflection and shear transformations.

15. (a) Describe back-face detection for identifying the back faces of a polygon.

Or

- (b) Enlighten about the implementation of viewing operations.

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

16. Explicate the Mid-Point Circle Generation algorithm in detail.
 17. Discuss briefly about Character and Bundled attributes.
 18. Enlighten about the logical classification of input devices.
 19. Explain three-dimensional rotation about an arbitrary axis in detail.
 20. Describe scan line method in detail.
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Sub. Code

7MCE2E4

M.Sc. DEGREE EXAMINATION, APRIL 2019

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. What is data parallelism?
2. Define Throughput.
3. Write the main characteristics of multiprocessor.
4. What is Loosely coupled system?
5. What do you mean by data control?
6. What is message passing?
7. What is PRAM?
8. Define Speedup.
9. What is cross-bar memory?
10. What do you mean by shared bus memory?

Part B**(5 × 5 = 25)**

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

11. (a) Explain any one mechanism of implementing parallel processing.

Or

- (b) Discuss about computational demands of parallel processing.

12. (a) What is Linear and Ring parallel architecture? Explain.

Or

- (b) Explain about the PDP – 10 multiprocess.

13. (a) Write a note on mapping Granularity.

Or

- (b) Discuss about message passing versus shared address space.

14. (a) Write a note on Parallel Search Algorithm.

Or

- (b) Explain the anomalies in Parallel algorithms.

15. (a) Explain about the cache coherence.

Or

- (b) How to handle shared variables? Explain.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. List and explain common problems in parallel processing.
 17. What is Mesh? Explain.
 18. Discuss in detail about temporal parallelism.
 19. Explain about the performance measures.
 20. Explain about memory contention and Arbitration techniques.
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Sub. Code

7MCE2E5

M.Sc. DEGREE EXAMINATION, APRIL 2019

Second Semester

Computer Science

Elective – ADVANCED DATABASE SYSTEMS

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. What are the operations performed on the database system?
2. Define mapping.
3. What is the difference between database and table?
4. What do you mean by attributes? What are the different types of attributes?
5. What is the dependency preservation property for decomposition? Why is it important?
6. Why is 4NF preferred to BCNF?
7. What are the various types of distributed databases?
8. Differentiate between deadlock and time stamping.

9. What is internet? What are the available Internet services?
10. What are the reserved MySQL keywords?

Part B (5 × 5 = 25)

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

11. (a) Explain data dictionary with neat diagram.
- Or
- (b) Summarise the characteristics of different data models.
12. (a) Describe the domain with illustration.
- Or
- (b) What is fan trap? How will you solve it? Give two examples.
13. (a) What do you mean by functional dependency? Draw a functional dependency diagram for the following:
- A PERSON occupies a POSITION in an organisation. The PERSON starts in a POSITION at a given START-TIME and relinquishes it at a given END-TIME. At the most, one POSITION can be occupied by one person at a given time.
- Or
- (b) Define the concept of join dependency and describe how this concept relates to 5NF.
14. (a) What do you mean by data replication? What are its advantages and disadvantages?
- Or
- (b) How do we achieve recovery control in a distributed database system?

15. (a) What are multimedia sources? Explain each of them.

Or

- (b) Discuss the mailing lists of MySQL.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain the ANSI-SPARC three-tier database architecture with neat diagram.
17. What do you mean by relational algebra? Define all the operators of relational algebra.
18. What are redundant functional dependencies? Explain with an example. Discuss the membership algorithm to find redundant FDs.
19. What is horizontal data fragmentation? How is it differ from vertical fragmentation? Explain with an example.
20. What is WWW? What are Web technologies? Discuss each of them.

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Sub. Code

7MCE2E6

M.Sc. DEGREE EXAMINATION, APRIL 2019

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. What is meant by spatial and intensity resolution?
2. Define city-block distance and chessboard distance.
3. Define contrast stretching.
4. What is meant by gamma correction?
5. State 2-D Convolution theorem.
6. Define Fourier spectrum and phase angle.
7. Define Gaussian noise.
8. Define blind deconvolution.
9. What is meant by full-color and pseudocolor processing?
10. State the characteristics used to distinguish one color from the other.

Part B**(5 × 5 = 25)**

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

11. (a) Explain the three principal sensor arrangements for image acquisition.

Or

- (b) Elaborate briefly on Gamma-Ray imaging and X-Ray imaging.

12. (a) Explain briefly on histogram equalization.

Or

- (b) Explain the membership functions commonly used in image processing.

13. (a) Explain image sharpening using frequency domain filters in detail.

Or

- (b) Describe selective filtering in brief.

14. (a) Describe any five noise probability density functions.

Or

- (b) Explain in detail about wiener filtering.

15. (a) Explain color transformations in detail.

Or

- (b) Explain image segmentation based on color in detail.

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

16. Describe mathematical tools applied to image processing tasks in detail.
 17. Explain the basic intensity transformation functions in detail.
 18. Enlighten any five properties of the 2-D Discrete Fourier Transform.
 19. Describe the process of reconstruction using Parallel-Beam filtered and Fan-Beam filtered back projections.
 20. Describe in detail about any five basic compression methods in detail.
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F-2064

Sub. Code

7MCE3C1

M.Sc. DEGREE EXAMINATION, APRIL 2019

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. What is the difference between threat and Attack?
2. What is a transposition Cipher?
3. Define the terms diffusion and confusion.
4. What is the purpose of the state array?
5. Define public key certificate.
6. What is the zero point of an elliptic curve?
7. What is meant by message authentication?
8. State the properties that a digital signature should possess.
9. What is the difference between an SSL connection and an SSL Session?
10. What is MIME?

Part B

(5 × 5 = 25)

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

11. (a) What are the three key objectives of computer security? Explain.

Or

- (b) Write short notes on steganography.

12. (a) Distinguish between stream and block ciphers.

Or

- (b) Explain the general AES Structure.

13. (a) What are the principal elements of a public – key cryptosystem? Explain.

Or

- (b) Explain Diffie – Hellman key exchange protocols.

14. (a) What types of attacks are addressed by message authentication? Explain.

Or

- (b) List out the requirements for a digital signature.

15. (a) Write short notes on transport layer security.

Or

- (b) Illustrate the key components of the Internet mail architecture.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss about the challenges of computer security.
 17. Describe the AES Key expansion algorithm.
 18. Perform encryption and decryption using the RSA algorithm for the following : $P=7$; $q=13$; $e = 5$; $M = 8$.
 19. Describe the operation of HMAC.
 20. Explain IPsec Architecture.
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F-2065

Sub. Code

7MCE3C2

M.Sc. DEGREE EXAMINATION, APRIL 2019

Third Semester

Computer Science

PROGRAMMING IN PHP

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** questions.

1. What is a dynamic variable in PHP?
2. List any four data types supported by PHP?
3. How do you create a multi dimensional array? Give an example?
4. Write the syntax of for..each loop?
5. What is the purpose of Super Global variable?
6. What is the use of hidden field?
7. What is Object serialization?
8. What is an Exception?
9. What is a Session?
10. What are environment variables?

Part B**(5 × 5 = 25)**

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

11. (a) Discuss the pros and cons of PHP.

Or

- (b) Explain how PHP works.

12. (a) Explain any five string functions with examples.

Or

- (b) How do you add and remove an array element?

13. (a) What is a regular expression? Explain five quantifiers with example?

Or

- (b) Explain File handling in PHP.

14. (a) How do you check for class and method existence?

Or

- (b) How do you create a query string with two variables?

15. (a) Write PHP code for uploading a file.

Or

- (b) Discuss the application of AJAX in Web application.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss various control structures available in PHP?
 17. Explain how functions are defined and different ways of passing arguments?
 18. Discuss Server and Client side validation?
 19. What is a Cookie? How are Cookies created and deleted?
 20. Discuss the required code to send email in PHP?
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F-2066

Sub. Code

7MCE3C3

M.Sc. DEGREE EXAMINATION, APRIL 2019

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** questions.

1. Define Data warehouse.
2. What do you mean by Heterogeneous Database?
3. What are the OLAP operations in the multidimensional data model?
4. What is On-line analytical mining?
5. Define the terms: k-itemset, absolute support.
6. Write the uses of Genetic algorithm.
7. What do you mean by Categorical variables?
8. What are two types of dimensions of Agglomerative and Divisive Hierarchical clustering?
9. List the three types of dimensions in a spatial data cube.
10. What is multimedia data cube?

Part B**(5 × 5 = 25)**

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

11. (a) Describe the architecture of data mining system.

Or

- (b) Briefly describe about Data Transformation.

12. (a) Explain the snowflakes and fact constellations schemas.

Or

- (b) Write a note on Meta data Repository.

13. (a) How to prepare the data for Classification and Prediction?

Or

- (b) Write about Tree pruning.

14. (a) Discuss on ROCK.

Or

- (b) Explain the Density - Based local Outlier detection.

15. (a) Discuss about mining associations in multimedia data.

Or

- (b) Write in brief about Data mining for Telecommunication Industry.

Part C $(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss in detail about Data Cleaning.
 17. Describe about three-tier data warehouse architecture.
 18. Explain Naïve Bayesian classification.
 19. Discuss on k-means method and k-medoids methods.
 20. Write in short about text mining approaches.
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F-2068

Sub. Code

7MCE3E3

M.Sc. DEGREE EXAMINATION, APRIL 2019

Third Semester

Computer Science

Elective : MULTIMEDIA SYSTEM

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. Differentiate digit media with natural media.
2. Give any two examples for multimedia Environment.
3. Write down the three bitmaps in the backdrop directory.
4. What is meant by hyper pictures?
5. Expand DSP.
6. Differentiate INTRA mode with INTER mode on a per-picture basis.
7. Specify the intended users of an authority systems/packages.
8. Compare HTML with XML.
9. How the objects within a VE can be grouped?
10. Give any two applications of VR in Engineering field.

Part B

(5 × 5 = 25)

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

11. (a) Write briefly about Analog media devices.

Or

- (b) Discuss about multimedia toolkits.

12. (a) How can you position the Button on the multimedia screen and link the same to any object/event.

Or

- (b) Discuss about various CD formats.

13. (a) Discuss about speech recognition.

Or

- (b) Describe statistical coding video compression technique.

14. (a) How can you send and receive voice mail?

Or

- (b) Discuss about presentation systems.

15. (a) Describe in brief the various elements of a VR system.

Or

- (b) Write in brief any five key features of a Jack.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. How multimedia networks differ from local networks and wide area networks? Distinguish the features.
 17. Discuss about the operating system support for multimedia.
 18. Discuss about the problems encountered while transmitting signals from one digital equipment to another with a solution.
 19. Discuss the problems faced in the various file standards for Internet.
 20. Modelling Virtual worlds – Discuss.
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F-2070

Sub. Code

7MCE3E6

M.Sc. DEGREE EXAMINATION, APRIL 2019

Third Semester

Computer Science

Elective : WAP AND XML

(CBCS – 2017 onwards)

Time : 3 Hours

Maximum : 75 Marks

Part A

(10 × 2 = 20)

Answer **all** the questions.

1. Define WAP.
2. Mention the products that are available for WAP development.
3. How do you encode the WML content?
4. Define DTD.
5. Write the events associated with WML.
6. What is a WMLScript?
7. List the reasons why web developers are excited about XML.
8. Define attribute in XML declaration.
9. Write the difference between an attribute and an element in XML.
10. What does an XML document contain?

Part B**(5 × 5 = 25)**

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

11. (a) Explain about Wireless Application Environment.

Or

- (b) What is a WAP browser? Explain its types.

12. (a) What is a WAP gateway? Explain.

Or

- (b) Explain the tags used for formatting text in WML.

13. (a) With suitable example, explain the options menu in WML.

Or

- (b) How to define and pass parameters to a function in WMLScript?

14. (a) Explain about XML for XML.

Or

- (b) Explain how to write and attach as style sheet to an XML document.

15. (a) Briefly explain about markup and character data.

Or

- (b) Write a note on scripts, character sets, fonts and Glyphs.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss about the WAP1.2 WTA and push technologies.
 17. Compare the Web with WAP models.
 18. Explain the input and parameter passing in WAP devices with example.
 19. Discuss how to prepare a style sheet to display XML document.
 20. Explain in detail about XSL with an example.
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