F–3045

Sub. Code
7MCE1C1

M.Sc. DEGREE EXAMINATION, NOVEMBER 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 tautology. Give example.
2. What is the condition for a statement A to tautologically imply a statement B?
3. What is existential Quantifier? Give example.
4. Define disjunctive normal form.
5. Define Rooted tree. Give example.
6. Define level and height of a rooted tree. Give example.
7. Define the canonical form of linear programming problem.
8. What is meant by optimum solution of an LPP?
9. State the mathematical formulation of an assignment problem.
10. What is meant by prohibited assignments?

Part B $(5 \times 5 = 25)$

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

11. (a) Prove that following implications

(i) $(P \wedge Q) \Rightarrow (P \rightarrow Q)$

(ii) $P \Rightarrow (Q \rightarrow P)$.

Or

(b) Show the following equivalence

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

12. (a) Obtain the disjunctive normal form of $P \vee (Q \wedge R)$.

Or

(b) Obtain the disjunctive normal form of $\neg (P \vee Q) \rightleftarrows (P \wedge Q)$.

13. (a) Explain spanning tree with example.

Or

(b) Explain binary tree with example.

14. (a) Use graphical method to solve the following problem

Maximize $z = 2x + 3y$

Subject to $x + y \leq 30$

$x - y \geq 0$

$y \geq 3$, $0 \leq x \leq 20$, $0 \leq y \leq 12$

Or

(b) An animal feed company must produce 200lbs of a mixture containing the ingredients X_1 and X_2. X_1 costs Rs. 3 per lb and X_2 cost Rs. 8 per lb. Note that 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 if the company wants to minimize the cost. Formulate the above problem.

15. (a) Obtain an initial basic feasible solution to the following transportain problem using Vogel's approximation method.

	To			Available
	7	3	4	2
From	2	1	3	3
	3	4	6	5
Demand	4	1	5	

Or

(b) The Head of the department has five jobs A, B, C, D, E and five sub-ordinates V, W, X, Y, Z. The number of hours each man would take to perform each job is as follows.

	V	W	X	Y	Z
A	3	5	10	15	8
B	4	7	15	18	8
C	8	12	20	20	12
D	5	5	8	10	6
E	10	10	15	25	10

How should the jobs be allocated to minimize the total time?

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Obtain an equivalent formula for the following which contains neither the biconditional or conditional

(a) $P \wedge (Q \rightleftarrows R) \vee (R \rightleftarrows P)$

(b) $((P \vee Q) \wedge R) \rightarrow (P \vee R)$.

17. Obtain the principal disjunctive normal forms of the following and also identify whether they are tautologies or not

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

(b) $(Q \rightarrow P) \wedge (\neg P \wedge Q)$.

18. Discuss in detail about matrix representation of Graphs.

19. Use two-phage simplex method to solve the following LPP.

Maximize $Z = 5x_1 + 8x_2$

Subject to $3x_1 + 2x_2 \geq 3$

$x_1 + 4x_2 \geq 4$

$x_1 + x_2 \leq 5$, $x_1, x_2 \geq 0$.

20. Find the optimum solution to the following transportation problem using MODI method.

	T_1	T_2	T_3	T_4	Availability
B_1	5	3	6	2	19
B_2	4	7	9	1	37
B_3	3	4	7	5	34
Requirement	16	18	31	25	

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F–3046

Sub. Code
7MCE1C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 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. Define space and time complexity.

2. Differentiate stack and queue.

3. Write the recurrence relation of divide and conquer algorithm.

4. Write the recurrence relation for computing time of quick sort.

5. What is feasible solution?

6. Write the purpose of Huffman codes.

7. Define multistage graph.

8. Give example for biconnected graph.

9. What is backtracking?

10. Give example for hamiltonian cycles.

Part B (5 × 5 = 25)

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

11. (a) Give a brief note on recursive function with example.

Or

(b) Write an algorithm for stack operations.

12. (a) Explain how to use recursion for finding maximum and minimum of set of elements.

Or

(b) Prove that the average computing time $T_A(n)$ of selection sort is O(n).

13. (a) Find the feasible solution to the job sequencing instance $n = 4$, $\{p_1, p_2, p_3, p_4\} = \{100,10,15,27\}$ and $\{d_1, d_2, d_3, d_4\} = \{2,1,2,1\}$.

Or

(b) Write greedy algorithm to generate shortest path.

14. (a) Explain Bellman Ford algorithm to compute shortest path.

Or

(b) Write an algorithm for tree traversals.

15. (a) Explain how to estimate the efficiency of backtracking.

Or

(b) Describe the function for Knapsack problem.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain different representation of Graph.

17. Discuss about binary search with example.

18. Describe the stages of Kruskal's algorithm.

19. Explain breadth first search tree.

20. Give a brief note on Graph Coloring.

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F–3047

Sub. Code
7MCE1C3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

First Semester

Computer Science

ADVANCED JAVA PROGRAMMING

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Section A (10 × 2 = 20)

Answer **all** questions.

1. What is JDBC – ODBC Bridge?

2. What is the purpose of SQL Exception class?

3. What are the two kinds of TCP sockets in Java?

4. How is datagram implemented in Java?

5. What is the purpose of Bound property?

6. What is meant by persistance? How is it achieved in Java Bean?

7. What is servlet? What are the advantages of servlets over CGI?

8. What is a cookie?

9. Tabbed panes are encapsulated by ———————— class, which extends ————————.

10. What methods are used for drawing Ellipses and circles?

Section B $(5 \times 5 = 25)$

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

11. (a) What is JDBC? How does it work?

Or

(b) Explain JDBC metadata classes.

12. (a) Explain URL and URL connection classes with example code.

Or

(b) With a sample code, explain how the contents of a document is cached on a server.

13. (a) Explain JAR files.

Or

(b) What is Java Bean? Explain its advantages and disadvantages?

14. (a) What is meant by session Tracking? How is it achieved in HTTP servlet.

Or

(b) Draw a state diagram and explain the life cycle of servlet.

15. (a) Discuss the constructors and methods of color class.

Or

(b) How is a table created using swing class?

Section C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain the Anatomy of a JDBC application and the classes and statements involved.

17. Write a simple client/server application using RMI and explain the concepts.

18. Discuss the Design patterns for properties and Events.

19. Discuss any four important classes and interfaces in Javax.servlet package.

20. How is a Tree created in an Applet? Explain the various classes and methods used?

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F–3048	Sub. Code
	7MCE1C4

M.Sc. DEGREE EXAMINATION, NOVEMBER 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 compiler.

2. Define a string with an example.

3. Construct a parse tree for id + id*id.

4. List down the four actions performed by a shift-reduce parser.

5. Draw the syntax tree for a*(b + c)/d.

6. Write about unconditional jumps.

7. Write down the format of symbol table.

8. Specify any two block structured languages.

9. Define a basic block.

10. What do you mean by an optimal ordering?

Part B $(5 \times 5 = 25)$

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

11. (a) Why do we need translators? Explain.

Or

(b) Explain the method of constructing a deterministic finite automation from a non-deterministic one.

12. (a) Write about ambiguous grammar with an example.

Or

(b) Write an algorithm for the construction of an SLR parsing table.

13. (a) Explain the method of evaluating the postfix expressions by an example.

Or

(b) Discuss about the statements that alter the flow of control.

14. (a) Discuss about Hash tables.

Or

(b) Explain about the storage allocation in Block-structured languages.

15. (a) How can you construct a DAG? Explain.

Or

(b) Discuss in brief the problems in code generation.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Describe the structure of a compiler with a neat diagram.

17. Explain the stack implementation of Shift-Reduce Parsing with an example.

18. Discuss about any two kinds of intermediate codes used in compilers with examples.

19. Discuss the storage allocation in brief.

20. Explain a simple code generator in detail.

———————

F–3049

Sub. Code
7MCE1E1

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

First Semester

Computer Science

Elective — OBJECT ORIENTED ANALYSIS AND DESIGN

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What are the characteristics of an object oriented systems?

2. What is meant by overriding?

3. Define scenarios and event trace.

4. What is a constraint? What are the different types of constraints?

5. What are the steps required in constructing an object model?

6. What is an operation in OOAD parlance? What are the different sources of operations?

7. What are the two forms of layered architecture? When is one preferred over the other?

8. Write down any four kinds of a system.

9. Draw the implementations of stack using Inheritance and delegation? Which one is better than the other?

10. What are the trade-offs between information hiding and optimization?

Part B $(5 \times 5 = 25)$

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

11. (a) How do you establish relationships among objects and classes?

Or

(b) Draw an object model of windowing system discuss the underlying O.O. concepts.

12. (a) Discuss state Generalization with example.

Or

(b) Explain the relation of object and dynamic models.

13. (a) Discuss scenario, event and event trace with an example.

Or

(b) How are object attributes identified and right attributes selected?

14. (a) How are sub systems allocated to processors and tasks?

Or

(b) Discuss the two kinds of control flows in a software system.

15. (a) Discuss any three issues in designing algorithms.

Or

(b) What are the three different models in O.O. Design? How are they combined?

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Discuss aggregation and multiple inheritance.

17. Discuss the components of DFD and explain how a functional model is designed using DFD.

18. Discuss the steps performed in constructing a dynamic model.

19. Discuss any four common architectural frameworks.

20. Explain design optimization. Why is it required?

———————

F–3050

Sub. Code
7MCE1E2

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

First Semester

Computer Science

Elective : SYSTEM SOFTWARE

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. List down the language processing activities.
2. Define a production with its format.
3. Give an example for a DFA.
4. Write down the format of an assembly language statement.
5. Write any two expansion time statements with their syntax.
6. Write the post fix form of a + b * c + d * e ↑ f .
7. What are the components of a interpreter?
8. Define linking.
9. Specify the two object program forms supported by MSDOS.
10. What is a programming environment?

Part B (5 × 5 = 25)

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

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

Or

(b) Write short notes on Entry formats.

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

Or

(b) Discuss about any two advanced assembler directives.

13. (a) Write about positional and keyword parameters with examples.

Or

(b) Discuss about the various parameter passing mechanisms.

14. (a) Describe pure and impure interpreters.

Or

(b) Write down the format of an object modula.

15. (a) Discuss about program testing and debugging.

Or

(b) Write about program environment with its components.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Describe any two types of table organization in brief.

17. Describe top down parsing with its implementation with an example.

18. Explain the design of a macro preprocessor.

19. Discuss about some of the optimizing transformations used in compilers.

20. Describe the structure of user Interface and UIMS.

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F–3051

Sub. Code
7MCE1E3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

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 is meant by system software and application software?

2. State the distinguishing feature of the spiral model.

3. What is QFD?

4. Define use-case and actor.

5. State the software equation for the cost estimation model.

6. Mention the ways in which LOC and FP are used during software project estimation.

7. What is the purpose of black– box and while–box testing?

8. State the benefit of smoke testing.

9. What are the three factors that have profound influence on software quality and organizational performance?

10. Define CBSE.

Part B (5 × 5 = 25)

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

11. (a) State the characteristics of software? Discuss.

Or

(b) Write short notes on Legacy software.

12. (a) Describe the steps required to initiate requirements engineering.

Or

(b) Explain how to write effective use-cases in detail.

13. (a) Explain process-based estimation with examples.

Or

(b) Enlighten about empirical estimation models.

14. (a) Explain basis path testing in detail.

Or

(b) Describe validation testing in detail.

15. (a) Write short notes on economics of CBSE.

Or

(b) Describe in detail about Reusable components and Reuse environment.

Part C (3 × 10 = 30)

Answer any **THREE** questions.

16. Elaborate on prescriptive models and incremental models in detail.

17. Describe in detail about the function accomplished during the requirement engineering tasks.

18. Discuss briefly about problem- based estimation and Use-Case based estimation with examples.

19. Explain various black-box testing methods.

20. Describe in detail about software measurement and also the metrics used for software quality.

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F–3052

Sub. Code
7MCE2C1

M.Sc DEGREE EXAMINATION, NOVEMBER 2019

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. What is CPU? What are its major components?

2. Define Stack.

3. How do you define the internal hardware organization of a digital computer?

4. Define Selective complement operation.

5. What is the advantage of Microprogrammed Control unit?

6. What is the purpose of Control Address Register?

7. What is meant by Asynchronous data transfer?

8. Define Hit ratio.

9. What is meant by delayed branch?

10. Write any two characteristics of RISC architecture.

Part B (5 × 5 = 25)

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

11. (a) Explain Instruction formats.

Or

(b) Discuss the purpose of Status Register in Program Control.

12. (a) A digital computer has a common bus system for 16 registers of 32 bits each. The bus is constructed with multiplexers.

(i) How many selection input are there in each multiplexer?

(ii) What size of multiplexers are needed?

(iii) How many multiplexers are there in the bus?

Or

(b) Discuss Input-Output configuration.

13. (a) Define the following

(i) Micro operation

(ii) Microinstruction

(iii) Micro program

(iv) Microcode

Or

(b) Explain Address Sequencing in Microprogram control unit.

14. (a) Explain Associative memory.

Or

(b) Explain I/O Interface and connection of I/O bus to Input and Output devices.

15. (a) Discuss the characteristics of Multiprocessors.

Or

(b) Explain Array Processing.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain any six Addressing modes with examples.

17. Explain Instruction Cycle with necessary flowchart.

18. Explain Microprogram sequencer.

19. Explain Parallel Priority interrupt hardware.

20. Explain Instruction Pipeline and the difficulties associated with it.

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F–3053	Sub. Code
	7MCE2C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 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. What is .NET Framework?

2. What is object oriented programming?

3. Define scope.

4. What is mean by docking a control?

5. What is the difference between Tree and list views?

6. What is Typography?

7. Define name space.

8. Why do we need validator control?

9. What is the difference between ADO and ADO .Net?

10. What is a Repeater?

Part B (5 × 5 = 25)

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

11. (a) Write a short note on .Net Assemblies.

Or

(b) How will you create a structure? Explain with an example.

12. (a) Describe the facilities for handling sub procedures in VB Net.

Or

(b) How will you create dialog boxes? Explain with an example?

13. (a) Describe the funcbonality of splitters and notify Icons

Or

(b) Briefly describe file handling in VB .Net.

14. (a) Explain the usage of Global. asax file.

Or

(b) Discuss on the creation of user custom controls.

15. (a) Explain the characteristics of ADO.Net

Or

(b) How data blinding is used in ASP.Net Applications? Explain with example.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. How is method overloading different from method overriding? Explain with example.

17. Elaborate on conditional statement in VB.Net with an Example.

18. Discuss about the significance of built in Dialog boxes.

19. Give a detailed note on Http Request and Http response.

20. Explain the step to implement forms- based security with Diagram.

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F–3054

Sub. Code
7MCE2C3

M.Sc. DEGREE EXAMINATION, NOVEMBER 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. What are the two primary tasks of operating system?

2. What are PSEs?

3. What are the two basic methods for information sharing?

4. Define buffering.

5. Mention the four factors that are influencing the block size selection?

6. Why does a computer need timer mechanism?

7. Define: File system

8. What do you mean by mutable file model?

9. What do you mean by external security?

10. What are the main types of authentication in distributed system?

Part B (5× 5= 25)

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

11. (a) What is DCE? Explain its components in detail.

Or

(b) Differentiate LAN and WAN using their key characteristics.

12. (a) Explain the role of syncronization in distributed system message passcing.

Or

(b) Explain the many-to many communication scheme in group communication of message passing.

13. (a) Write down the advantages of DSM.

Or

(b) Explain the WFG- based distributed algorithm for deadlock detection.

14. (a) Write the difference between replication and caching.

Or

(b) State the general principles for designing distributed file system.

15. (a) Explain about key distribution in asymmetric cryptosystems.

Or

(b) Explain the mechanism of password based authentication system.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Discuss about the issues in designing distributed system.

17. What are the desirable features of a good message-passing system? Explain.

18. Explain the different approaches used to implement mutual exclusion.

19. What are the desirable features of good distributed file system? Explain.

20. Explain the concept of digital signature for distributed system security in detail.

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F–3055

Sub. Code
7MCE2E1

M.SC DEGREE EXAMINATION, NOVEMBER 2019

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 meant by laptop computing?

2. Distinguish between mobility and portability.

3. Define Multiplexing.

4. What is mobility management?

5. What is agent discovery?

6. What do you mean by registration reply?

7. What is a Datagram?

8. What is foreign agent key?

9. What is smooth handoff?

10. Define Ingress filtering.

Part B (5 × 5 = 25)

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

11. (a) What is mobile networking? Explain.

Or

(b) Describe the architectural model of IETF Mobile IP protocol.

12. (a) Write a note on signal propagation.

Or

(b) Briefly explain about handover in cellular systems.

13. (a) Explain the operation of mobile agent.

Or

(b) Explain the procedure to register mobile node.

14. (a) Write a note on generic routing encapsulation.

Or

(b) How do you bind caches? Explain.

15. (a) Write about DHCP protocol and its functions.

Or

(b) What is reverse tunneling? Explain.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain the overview of IP and routing with neat diagram.

17. Describe the GSM system architecture with appropriate diagram.

18. Explain in detail about agent advertisement.

19. Explain the different route optimization message formats.

20. Explain in detail about Wireless Telephony Application.

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F–3057

Sub. Code
7MCE2E3

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

Second Semester

Computer Science

Elective — COMPUTER GRAPHICS

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Define Morphing.

2. Distinguish between image processing and computer graphics.

3. State the attributes of character.

4. Define Shear.

5. What is the purpose of input modes of input functions?

6. Define point clipping.

7. State any two applications of depth cueing.

8. What is meant by parallel and perspective projections?

9. Define cabinet projection.

10. What is vanishing point?

Part B (5 × 5 = 25)

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

11. (a) Describe midpoint circle algorithm in detail.

Or

(b) Explain the techniques used for color displays.

12. (a) Write short notes on character attributes.

Or

(b) Explain composite transformations with proper illustration.

13. (a) Describe in detail about text clipping.

Or

(b) Write briefly about segment attributes.

14. (a) Explain the three dimensional graphics packages in detail.

Or

(b) Discuss briefly about the three-dimensional display techniques.

15. (a) Explain general parallel-projection transformations in detail.

Or

(b) Explain back-face detection method in detail.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Discuss briefly about interactive input devices.

17. Explain in detail about the following transformations in detail.

    (a) Reflection

    (b) Shear

    (c) Translation, Scaling and Rotation

18. Enlighten about the interactive-picture construction methods.

19. Explain the three dimensional transformations in detail.

20. Explain depth buffer method in detail.

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F3058	Sub. Code
	7MCE2E4

M.Sc. DEGREE EXAMINATION, NOVEMBER 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. Define parallelism.
2. What is hypercubes?
3. What is ring network?
4. What is control parallelism?
5. Write the types of mapping?
6. Define message passing.
7. Write any two performance laws.
8. Write any two parallel search algorithms.
9. What is multiport memory?
10. Expand NUMA.

Part B (5 × 5 = 25)

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

11. (a) How to implement parallel processing.

Or

(b) Describe the computational demands of parallel processing.

12. (a) Give a brief note on loosely coupled systems.

Or

(b) Describe mesh & hypercube architecture.

13. (a) Differentiate message passing & shared adders space.

Or

(b) Discuss three types of Granularity.

14. (a) Explain Amdahl's & Gustafson's laws.

Or

(b) Write a note on types of complexities.

15. (a) Explain cross bar & multiport memory.

Or

(b) Discus about eache coherence.

Part C (3 × 10 = 30)

Answer any **Three** questions.

16. Describe the major issues in parallel processing.

17. Explain tightly coupled systems.

18. Discuses the types of mapping.

19. Explain depth first & breadth first search algorithms.

20. Describe memory Contention techniques.

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F–3059

Sub. Code
7MCE2E5

M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

Second Semester

Comuputer 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 is data dictionary?

2. Differentiate between schema and instances.

3. What are the main reasons for the delay in development and implementation of relational model.

4. Compare the derived attribute and stored attribute.

5. Describe the concept of full functional dependency.

6. Write the purpose of normalising data.

7. What is client/server computing? What are its main components?

8. What is semi-JOIN?

9. What are multimedia databases?

10. What are the newer modules available for MySQL stability.

Part B $(5 \times 5 = 25)$

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

11. (a) Write short notion the functions and responsibilities of DBAs.

Or

(b) Write a note on data model.

12. (a) Describe with example the different types of keys used in relational model.

Or

(b) An enterprise database needs to store information as follows :

EMPLOYEE(EMP-ID, SALARY, PHONE)

DEPARTMENTS(DEPT-ID, DEPT-NAME, BUDGET)

EMPLOYEE-CHILDREN(NAME, AGE)

Employees 'work' in departments. Each department is 'managed by' an employee. A child must be identified uniquely by 'name' when the parent (who is an employee) is known. Once the parent leaves the enterprise, the information about the child is not required. Draw an E-R diagram that captures the above information.

13. (a) Illustrate the three Armstrong's axioms using diagrammatical representation.

Or

(b) Consider the universal relation R (A, B, C, D, E, F, G, H, I, J) and the set of FDs are given as

$F = (\{A,B\} \rightarrow \{A\} \rightarrow \{D,E\}, \{B\} \rightarrow \{F\}, \{F\} \rightarrow \{G,H\},$

$\{D\} \rightarrow \{I,J\}.$

(i) What is the key of R?

(ii) Decompose R into 2NF, then 3NF relations.

14. (a) What is middleware system architecture? Explain with a neat sketch and an example.

Or

(b) What is distributed locking? What are its advantages and disadvantages?

15. (a) What is a mobile database? Explain the architecture of mobile database with meat sketch.

Or

(b) Write the features of MySQL 4.1.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain the important operations performed on the data file with example.

17. What are the problems that arise when constructing an E-R model? How will you resolve them? Illustrate with examples.

18. Define the concept of multi valued dependency and describe how this concept relates to 4NF. Provide an example to illustrate your answer.

19. Explain the functioning of two-phase and three-phase commit protocols used in recovery control of distributed database system.

20. Define MySQL database. How will you create the MySQL tables? Explain with examples the insertion of data into and retrieval of information from the MySQI table.

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F–3060

Sub. Code
7MCE2E6

M.Sc. DEGREE EXAMINATION,
NOVEMBER 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 are the modalities of imaging based on CAT principle?

2. Define sampling and quantization.

3. What is meant by Bit-plane slicing?

4. Define histogram of a digital image.

5. What is spatial and temporal aliasing? Give examples.

6. Define 2-D ideal highpass filter.

7. List out order-statistic filters.

8. State Fourier-slice theorem.

9. What is meant by intensity slicing?

10. What is meant by Radiance and Luminance?

Part B (5 × 5 = 25)

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

11. (a) Explain image representation, sampling and quantization in detail.

Or

(b) Explain the role of image transforms and probabilistic methods in image processing.

12. (a) Explain intensity-level slicing and bit-plane slicing in detail.

Or

(b) Write short notes histogram matching.

13. (a) Explain the following properties of 2-D Discrete Fourier Transform:

(i) Symmetry

(ii) Fourier Spectrum and Phase angle.

Or

(b) Describe Image Smoothing using frequency domain filters in detail.

14. (a) Describe Constrained Least Squares filtering.

Or

(b) Explain the model of the image Degradation/Restoration Process in detail.

15. (a) Enlighten about color models.

Or

(b) Discuss in brief about the image compression fundamentals.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Discuss in detail about the relationships between pixels in a digital image.

17. How fuzzy sets used in intensity transformations? Explain.

18. Describe image sharpening using frequency domain filters in detail.

19. Explain the three principal ways to estimate the degradation function for use in image restoration.

20. Discuss in detail about the following image compression methods.

    (a) Huffman coding

    (b) LZW coding

    (c) Run-Length coding

    (d) Wavelet coding.

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F–3061

Sub. Code
7MCE3C1

M.Sc. DEGREE EXAMINATION, NOVEMBER 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** questions.

1. What are the services of security?

2. What is one-time pad?

3. What is block cipher?

4. State the difference between Rijndael and AES.

5. What are the keys used for asymmetric encryption?

6. Write the purpose of Diffie-hellman key exchange.

7. What is hash function?

8. What are the properties of digital signature?

9. What is S/MIME?

10. Write the use of Handshake protocol.

Part B (5 × 5 = 25)

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

11. (a) Briefly describe categories of passive and active security attacks.

Or

(b) Explain Caesar cipher and play fair cipher with example

12. (a) Summarize the strength of DES.

Or

(b) Briefly describe the key expansion algorithm.

13. (a) Explain the applications and requirements of public key cryptography.

Or

(b) Discuss about Elliptic curve cryptography.

14. (a) Write a note on cryptanalysis.

Or

(b) Explain public key encryption approach to deal with replay attacks.

15. (a) Explain different types of keys exchange methods.

Or

(b) Discuss the principle services provided by PGP.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Briefly define categories of security services.

17. Explain in detail about AES structure.

18. Describe RSA algorithm with example.

19. Discuss about Digital signature algorithm**.**

20. Explain in detail about secure socket layer architecture.

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F–3062

Sub. Code
7MCE3C2

M.Sc. DEGREE EXAMINATION, NOVEMBER 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. State the added features of PHP 4 when compared to PHP 3.

2. Distinguish between Value assignment and Reference assignment.

3. What is the purpose of break and continue statement.

4. List out any four inbuilt string functions.

5. Write a code for checking existence of a file?

6. What is the use of forms?

7. Define a class.

8. Write a code to find the number of rows in a table?

9. What is session?

10. Expand AJAX and DOM.

Part B (5 × 5 = 25)

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

11. (a) Explain how PHP scripts work.

Or

(b) What are Type-related functions and type identifier functions? Explain.

12. (a) Elucidate the For and For each looping statements with suitable example.

Or

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

13. (a) Write a short notes on file creation and deletion.

Or

(b) How do you get input from user in PHP?

14. (a) Discuss about the base exception class and its methods.

Or

(b) Write notes on creating session cookie?

15. (a) Explain in detail about Email creation in PHP?

Or

(b) Write about methods and properties of Http Request?

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Discuss in detail about the PHP's supported Data types.

17. How do you sort the arrays in PHP? Explain with example.

18. How do you read the characters from a file? Explain it.

19. Discuss in detail about table creation and update the table structure.

20. Describe the concepts of starting a session and working with session variables.

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F-3063

Sub. Code
7MCE3C3

M.Sc DEGREE EXAMINATION, NOVEMBER 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. How is a data warehouse different from a database?

2. List out the strategies for data reduction.

3. What is a data cube?

4. Give the contents of metadata repository.

5. Define the accuracy of a classifier.

6. What is back propagation?

7. List out the categories of clustering methods.

8. What are the two types of hierarchical clustering methods?

9. Name the three types of dimensions in spatial data cube.

10. What is a signature file?

Part B (5 × 5 = 25)

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

11. (a) Explain about classification and prediction with suitable example.

Or

(b) Discuss about Principal Component Analysis.

12. (a) Write notes on snowflake schema for multidimensional databases.

Or

(b) Discuss about the OLAP operations in the multidimensional data model.

13. (a) Describe the issues regarding classification and prediction.

Or

(b) Write notes on Bayes' theorem.

14. (a) Write notes on binary variables.

Or

(b) Discuss about grid based methods.

15. (a) Give explanation for text retrieval methods.

Or

(b) How data mining can be applied for financial data analysis?

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Give detailed explanation for data cleaning process.

17. Give the architecture for On-Line Analytical Mining and explain.

18. Discuss in detail about classification by back propagation.

19. Explain the k-means and k-medoid methods for partitioning.

20. Explain the various dimensionality reduction techniques for text.

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F-3064

Sub. Code
7MCE3E3

M.Sc DEGREE EXAMINATION, NOVEMBER 2019

Third Semester

Computer Science

Elective- MULTIMEDIA SYSTEM

(CBCS – 2017onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **All** questions.

1. What are the hardware/software components needed for a multimedia development system?

2. Mention some of the image formats used in multimedia.

3. What is the use of graphics in multimedia?

4. Mention the various CD formats.

5. What is meant by adaptive data pulse code modulation?

6. What are the key parameters need to be considered to evaluate compression performance?

7. What is voice mail?

8. Define HTML.

9. What is meant by Hoptic signals?

10. Define scientific visualization.

Part B (5 × 5 = 25)

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

11. (a) Write briefly about Multimedia hardware.

Or

(b) Discuss about Multimedia standards.

12. (a) Write short notes on Text.

Or

(b) Discuss about Digital Audio.

13. (a) Write short notes on Transform representation of sounds.

Or

(b) Describe the various file storage in video.

14. (a) Write short notes on MIME.

Or

(b) Discuss briefly about the features of Authoring tools in multimedia.

15. (a) Discuss about the mode of interaction.

Or

(b) Describe about the modelling virtual world.

Part C (3 × 10 = 30)

Answer any **Three** questions.

16. Explain in detail about the Multimedia Applications.

17. Write briefly about the video.

18. Discuss in brief about the digital representation of sound.

19. Explain about the Internet content in Multimedia.

20. Explain in detail about the sensor Hardware.

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F–3065

Sub. Code
7MCE3E6

M.Sc DEGREE EXAMINATION, NOVEMBER 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** questions.

1. List the components of WAP.
2. Write the features of WAP.
3. Expand UML.
4. Define WAP gateway.
5. What is Event?
6. Write any 4 standard Libraries in WML.
7. What is the purpose of XML?
8. Write the use of CSS.
9. Write the difference between attribute & elements.
10. What is Unicode character set?

Part B (5 × 5 = 25)

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

11. (a) Explain in detail about WAP protocal stack.

Or

(b) Give a note on WAP resources.

12. (a) Compare web model with WAP model.

Or

(b) Describe WML structures.

13. (a) Explain selection statement with example.

Or

(b) Write about input &output statements with example.

14. (a) Write a XML document for product catalog.

Or

(b) Write a XML document for displaying the covariant function of Maxwell's equation in math ML.

15. (a) How to create tables using XSL?

Or

(b) Explain &give example for Attributes Elements.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about WAP architecture.

17. Explain how to position a WAP gateway in the network.

18. Give suitable example for

    (a) Looping statement (4)

    (b) Automatic type conversion (4)

    (c) Operators. (2)

19. Describe how to prepare a style sheet for document display.

20. Write a brief note on legacy character sets.

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