S–3030	Sub. Code
	23MIT1C1

M.Sc. DEGREE EXAMINATION, APRIL 2024.

First Semester

Information Technology

PYTHON PROGRAMMING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. What are the three attributes that are associated with all python objects?

2. Compare lists and tuples.

3. What are decorators?

4. What are anonymous functions?

5. What is the use of globals ( ) and locals ( ) built-in functions?

6. What are modules?

7. What are Tkinter and Tk?

8. What is the use of entry and frame widgets?

9. What is MongoDB?

10. Compare SQL and NoSQL databases.

Part B (5 × 5 = 25)

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

11. (a) Discuss the different types of Integers supported by python.

Or

(b) Discuss any four standard type built-in functions.

12. (a) Discuss about formal arguments.

Or

(b) Explain any four set type operators.

13. (a) Write a note on namespaces.

Or

(b) What is polymorphism? Explain with a sample python code.

14. (a) Explain the text widget.

Or

(b) Discuss the steps required to create and run GUI applications.

15. (a) Explain how to update and delete rows in a table.

Or

(b) Explain how to create and insert rows into tables.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain the for and while statements with suitable example.

17. Discuss about variable scope with suitable example.

18. Explain any five exceptions supported by python.

19. Write a python program to display a label upon clicking a push button.

20. How to connect to a database using MongoDB in python? Explain.

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S–3031	Sub. Code
	23MIT1E1

M.Sc. DEGREE EXAMINATION, APRIL 2024

First Semester

Information Technology

Elective — DATA STRUCTURES

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. How the classic data structures are classified?

2. Define stack.

3. Define Linked List.

4. What is Deque?

5. What is Root node and Lead node?

6. What is expression tree?

7. What is Radix sort?

8. Write the merit and demerit of binary search.

9. Write any two applications of DFS traversal.

10. Compare Kruskal's and Prim's algorithm.

Part B (5 × 5 = 25)

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

11. (a) Discuss about the representation of stacks.

Or

(b) Write a brief note on sparse matrices.

12. (a) Describe the addition of an element at the end of the doubly Linked List with the algorithm.

Or

(b) Explain the CPU scheduling in multiprogramming environment using Queues.

13. (a) Write the In-order tree traversal algorithm and explain.

Or

(b) Discuss about splay tree.

14. (a) Explain the Linear Search algorithm.

Or

(b) Explain the shell sort.

15. (a) Discuss any one way of representation of graphs.

Or

(b) Explain the knapsack problem.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain the Tower of Hanoi problem with the algorithm.

17. Describe the insertion and deletion algorithms for a circular Queue.

18. Discuss the Linear and Linked representation of binary trees.

19. Explain the Quick Sort with the algorithm.

20. Explain the Graph Traversal algorithms.

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S–3032	Sub. Code
	23MIT1E2

M.Sc. DEGREE EXAMINATION, APRIL 2024

First Semester

Information Technology

Elective — COMPILER DESIGN

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. List the advantages of a compiler over an Interpreter.

2. What is L – value and r – value?

3. Write the need for Lexical Analysis.

4. Compare deterministic and Non-deterministic Finite Automata.

5. What are symbol Tables?

6. What is YACC?

7. List any two techniques used in Loop optimization.

8. What is Dynamic Loading and Dynamic Linking?

9. What is the need for global register allocation?

10. What is Register Descriptor?

Part B (5 × 5 = 25)

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

11. (a) Write a note on Syntax Analysis.

Or

(b) Write a note on code generation.

12. (a) Explain about context Free Grammars.

Or

(b) Explain about transition Diagram with an example.

13. (a) Write about symbol Table records and reusing of symbolic table spaces.

Or

(b) Write about semantic and Lexical phase errors.

14. (a) Explain the principal sources of optimization.

Or

(b) Write about the fetch and placement strategies of memory.

15. (a) Discuss about Register allocation by Graph coloring.

Or

(b) Explain Peep-Hole optimization.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Write briefly about the structure of a compiler.

17. Explain operator-Precedence Parsing with an example.

18. Explain any three Data Structures for symbol Tables.

19. Discuss about DAG representation of Basic blocks.

20. Discuss the problems in code Generation.

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S–3033

Sub. Code
23MIT1E3

M.Sc. DEGREE EXAMINATION, APRIL 2024

First Semester

Information Technology

Elective – NATURAL LANGUAGE PROCESSING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Write any two challenges in NLP?
2. What is Morphology?
3. Mention the uses of evaluating N-grams.
4. List any two issues in POS tagging.
5. What is a Tree bank?
6. What is meant by shallow parsing?
7. Define first order logic.
8. What is dictionary?
9. What is meant by coherence?
10. What is BNC?

Part B (5 × 5 = 25)

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

11. (a) Discuss about language modeling.

Or

(b) Explore structure of Finite-State Automata.

12. (a) Discuss smoothing, interpolation and Backoff.

Or

(b) Describe part-of-speech tagging.

13. (a) Write different types of context free grammar.

Or

(b) Explain the probabilistic CYK algorithm.

14. (a) Write the process of WSD using supervised method.

Or

(b) Discus about requirements for representation.

15. (a) Describe the reference phenomena.

Or

(b) Elaborate FrameNet and Brown Corpus.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Enumerate different types of transducers for lexicon rules.

17. Explain the concept of maximum entropy models.

18. Write about features structures and its unification.

19. Explain about significance of first order logic and description logics.

20. What is porter stemmer? explain in detail.

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S–3034

Sub. Code
23MIT1E4

M.Sc. DEGREE EXAMINATION, APRIL 2024

First Semester

Information Technology

Elective – OPERATING SYSTEMS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A $(10 \times 2 = 20)$

Answer **all** questions.

1. What is a process? List the various process states.

2. Compare Preemptive and Non-Preemptive scheduling.

3. What is virtual memory?

4. What is page and page frame?

5. List the ways of recovering from Deadlock.

6. List the conditions for Resource Deadlocks.

7. List any four file attributes.

8. What is seek time?

9. What is shell? List any two Linux shells.

10. List any four important directions found in most Linux File Systems.

Part B (5 × 5 = 25)

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

11. (a) Write a brief note on evolution of operating systems.

Or

(b) Explain the Fair-share scheduling and shortest job first scheduling.

12. (a) Write a note on swapping.

Or

(b) Compare paging and segmentation.

13. (a) Write a note on Deadlock Prevention.

Or

(b) Write short notes on Semaphore.

14. (a) Explain the FCFS and SSF disk scheduling algorithms.

Or

(b) Write about Disk Formatting.

15. (a) Explain any four Linux file oriented commands.

Or

(b) Write a note on Linux Virtual File System.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain about Inter Process Communication.

17. Explain any three page replacement algorithms.

18. Explain about Deadlock Avoidance.

19. Write in detail about Directories.

20. Discuss the Linux File System Calls.

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S–3035	Sub. Code 23MIT1E5

M.Sc. DEGREE EXAMINATION, APRIL 2024

First Semester

Information Technology

Elective – DIGITAL COMPUTER ARCHITECTURE

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Give an example for weighted code and Unweighted code.
2. Convert the decimal number 20 into BCD number.
3. Give the algebraic function of NOR and XOR Gates.
4. List any two popular logic families of integrated circuits.
5. What is Micro operation? Give two examples.
6. What is an Instruction code?
7. What is program counter?
8. What are the three major types of Interrupts?
9. What is Multiprogramming?
10. What is hit ratio?

Part B (5 × 5 =25)

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

11. (a) Explain complements with suitable example.

Or

(b) Explain error detection with odd parity bit.

12. (a) Explain Half-Adder.

Or

(b) Explain the Binary counters.

13. (a) Write a note on Register Transfer.

Or

(b) Explain the Arithmetic Logic shift unit.

14. (a) Discuss about Data manipulation Instructions.

Or

(b) Discuss about Daisy-chaining priority method.

15. (a) Write a note on main memory.

Or

(b) Write a note on Associative memory.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Convert the following binary numbers to their equivalent Hexadecimal and Decimal representation

(a) 110.01

(b) 1010.0111

(c) 101101.0101

17. Explain in detail about Decoders.

18. Explain in detail about Instruction cycle.

19. Explain any five addressing modes.

20. Explain briefly about memory management Hardware.

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S–3036	Sub. Code 23MIT1E6

M.Sc. DEGREE EXAMINATION, APRIL 2024

First Semester

Information Technology

Elective – HUMAN COMPUTER INTERACTION

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Expand WIMP.

2. What is meant by interactivity?

3. What is user focus design?

4. What is the function of HCI pattern?

5. What are the four approaches to Evaluation thought expert Analysis?

6. What is an evaluation?

7. What is universal design principle? Give an example.

8. Mention any two types of adaptive help systems.

9. Define linguistic models.

10. Define tasks.

Part B (5 × 5 = 25)

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

11. (a) Write briefly about display devices.

Or

(b) Explain the context of the interactions.

12. (a) Discuss about design basics.

Or

(b) Give the golden rules of Interface Design.

13. (a) What is programming the application? Explain in detail.

Or

(b) Elaborate the goals of evaluation.

14. (a) Discuss the task of designing for diversity.

Or

(b) Explain the designing of user support system.

15. (a) Write short note on goals and tasks in cognitive model.

Or

(b) Discuss about physical and device models.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain about Interaction styles.

17. Describe the screen design and layout.

18. Briefly explain about elements of windowing system.

19. Elaborate the requirements of user support.

20. Discuss about cognitive architecture.

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S–3037

Sub. Code
23MIT2C1

M.Sc. (IT) DEGREE EXAMINATION, APRIL 2024.

Second Semester

Information Technology

DATABASE SYSTEMS

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. Define view of data.
2. Spell out Triple relational calculus.
3. How to remove redundant attributes in entity set?
4. List the Alternative Notation for modeling data.
5. Specify Lock based protocol.
6. Define failure classification.
7. Justify Distributed data storage.
8. What is Homogenous database?
9. Write the syntax for subqueries.
10. List the uses of triggers.

Part B (5 × 5 = 25)

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

11. (a) Write the database uses and administrators.

Or

(b) Explain about keys.

12. (a) Discuss Reduction to relational schemas.

Or

(b) Describe Functional dependency.

13. (a) Spell out Transaction management.

Or

(b) Illustrate Concurrency control.

14. (a) Analyze Heterogeneous database.

Or

(b) Summarize concurrency control in distributed databases.

15. (a) Generalize functions in SQL.

Or

(b) Discuss Cursors.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Explain Formal relational query languages.

17. Write detail note on Relational database design.

18. Analyze Recovery and atomicity.

19. Summarize Distributed query processing.

20. Quote Exception handling.

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S–3038	Sub. Code
	23MIT2E1

M.Sc.(IT) DEGREE EXAMINATION, APRIL 2024

Second Semester

Information Technology

Elective – NETWORKS AND SECURITY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What is line configuration?
2. List the uses of TCP/IP reference model.
3. What is data link layer?
4. Classify the uses of routing algorithm.
5. Spell out the elements of transport protocol.
6. What is DNS?
7. Define cryptography.
8. Specify SSL services
9. State Wireless network
10. What is web application security?

Part B (5 × 5 = 25)

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

11. (a) Describe Transmission mode.

Or

(b) Enumerate Switching.

12. (a) Illustrate Error detection and correction.

Or

(b) Discuss Congestion control.

13. (a) Describe Element of transport protocol.

Or

(b) Write short note on Email.

14. (a) Analyze Message authentication.

Or

(b) Justify SSL protocols.

15. (a) Summarize Security threads.

Or

(b) Spell out Protecting the wireless network.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain Guided transmission media.

17. Discuss Shortest path routing.

18. Express Application layer domain name system.

19. Construct IP Security in the internet.

20. Outline Authentication and access control.

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S–3039

Sub. Code
23MIT2E2

M.Sc. DEGREE EXAMINATION, APRIL 2024

Second Semester

Information Technology

Elective – BIOMETRIC TECHNIQUES

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. When are verification and Identification Appropriate?
2. Define Failure-to-Enroll (FTE) Rate.
3. List out the components of Finger-scan System.
4. Write down the importance of Facial-scan deployments.
5. Define Image Acquisition.
6. Illustrate on Perception of Low Accuracy.
7. Notify the significance of Retina-Scan.
8. How do you change Usernames and Passwords?
9. Define Criminal Identification.
10. List the primary issues when designing retail/ATM/POS systems.

Part B (5 × 5 = 25)

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

11. (a) List out the benefits of Biometrics in Identification Systems.

Or

(b) What benefits do biometrics provide compared to authentication methods? Explain.

12. (a) Classify the five stages involved in finger-scan verification and identification.

Or

(b) Explain in detail about Components of Facial-Scan.

13. (a) Illustrate on How Iris-Scan works.

Or

(b) Discuss briefly about Hand-Scan Strengths.

14. (a) Write a short notes on components of Signature-Scan.

Or

(b) Explain shortly How Keystroke-Scan works.

15. (a) Write a shirt notes on future E-Commerce/Telephony Trends.

Or

(b) Elaborate a short note on Retail/ATM/Point of Sale.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Analyze the accuracy metrics used in biometrics and show how these metrics can be applied to real-world applications.

17. Explain in detail about Finger-Scan Strengths.

18. Elucidate the details of Voice-Scan Weaknesses.

19. Discuss the relationship between Keystroke-Scan Strengths and weaknesses.

20. Describe the significance of Today's Surveillance Applications.

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S–3040	Sub. Code
	23MIT2E3

M.Sc. (IT) DEGREE EXAMINATION, APRIL 2024

Second Semester

Information Technology

Elective — BLOCK CHAIN TECHNOLOGY

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What is blockchain technology?

2. List out the features of blockchain technology.

3. What is scalability?

4. What is EVM?

5. What are smart contracts in Ethereum?

6. What is Interoperability?

7. What is open source?

8. List out the uses of Hyperledger.

9. Define IoT.

10. What is DNS?

Part B (5 × 5 = 25)

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

11. (a) Describe the advantages of Digital signature.

Or

(b) Explain the Blockchain technology networks.

12. (a) Explain the components of Bitcoin technology.

Or

(b) Explain about the Bitcoin wallets and its types.

13. (a) Describe about the metamask functions.

Or

(b) Explain the mechanism of consensus.

14. (a) List out the characteristics of Distributed ledger

Or

(b) Describe about Ethers.

15. (a) What are the key components of IoT?

Or

(b) How Domain Name Service works?

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Explain the private and public blockchain.

17. Give in detail about cryptocurrency and its characteristics.

18. Explain the key features of Ethereum.

19. Distinguish Hyperledger and Distributed ledger.

20. Explain the future of Blockchain technology.

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S–3041	Sub. Code
	23MIT2E4

M.Sc. (IT) DEGREE EXAMINATION, APRIL 2024

Second Semester

Information Technology

Elective – SOFTWARE ENGINEERING

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Section A (10 × 2 = 20)

Answer **all** the questions.

1. Define Serum.
2. Examine RAD Model?
3. Describe Requirement Engineering.
4. Enumerate the types of Feasibility study.
5. Recall the characteristics of a good Design?
6. Recite Coupling.
7. State Validation Testing.
8. Express the types of Manual Testing.
9. Restate the term “Risk”?
10. Define Quality Assurance.

Section B (5 × 5 = 25)

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

11. (a) Explain Waterfall Model.

Or

(b) What is agile process? Illustrate Agile process model.

12. (a) Demonstrate System Engineering Hierarchy.

Or

(b) Establish Class based Modeling.

13. (a) Examine Design Engineering? Explain its Design Concepts.

Or

(b) Summarize User Interface Design.

14. (a) Report Testing. Write notes on Software Testing Life cycle.

Or

(b) Construct Object oriented Testing and Conventional Testing.

15. (a) Define Risk. Write a short note on Risk Control and Monitoring.

Or

(b) Illustrate the Evolution of Quality Management System.

Section C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss in detail about Process Models with Diagram.

17. Illustrate about Requirement Engineering with examples.

18. What is Design? Elaborate Component Level Design.

19. Write a detailed survey on Black box and White Box Testing.

20. Evaluate Risk Management with examples.

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S–3042	Sub. Code
	23MIT2E5

M.Sc. DEGREE EXAMINATION, APRIL 2024.

Second Semester

Information Technology

Elective – OBJECT ORIENTED ANALYSIS AND DESIGN

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions.

1. What is Object State?

2. Define Aggregation.

3. Recall Framework.

4. Express a Pattern.

5. Enumerate the steps involved in CRC Process.

6. Review about Qualifier.

7. Sate Error.

8. Compare Fault and Failure.

9. Visualize the Use Case Diagram.

10. Express UML.

Part B (5 × 5 = 25)

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

11. (a) Define Object. Explain Object state, Behaviours and Methods.

Or

(b) Write a short note on Meta Classes.

12. (a) Demonstrate Rumbaugh Object Model.

Or

(b) Enumerate the benefits of Patterns and Framework.

13. (a) Explain Business Object Analysis.

Or

(b) Prepare a note on Noun Phrase Approach.

14. (a) Point out the Design Process and Design Axioms.

Or

(b) State Test. Summarize the Testing Strategies.

15. (a) Illustrate the UML Diagram with Example.

Or

(b) Write an analytical study on Class Diagram.

Part C (3 × 10 = 30)

Answer any **three** questions.

16. Discuss in detail about Object Oriented Philosophy.

17. Analyze the Booch and Jacobson Methodologies.

18. Distinguish Object Oriented Analysis and Use Case Driven Approach.

19. Evaluate Object Oriented Design.

20. Review the UML Diagrams with example.

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S–3043	Sub. Code
	23MIT2E6

M.Sc. (IT) DEGREE EXAMINATION, APRIL 2024

Second Semester

Information Technology

Elective – SOFTWARE PROJECT MANAGEMENT

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Section A (10 × 2 = 20)

Answer ALL the questions

1. What is a Product?
2. Review SEI CMM.
3. State Project.
4. What is a Work Package?
5. Define Cost Estimation.
6. Express COCOMO.
7. What is Organizational Form?
8. Expand PERT and CPM.
9. What is the concept of Quality?
10. Enumerate the importance of SCM.

Section B (5 × 5 = 25)

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

11. (a) Illustrate Product Development Life Cycle with a diagram.

Or

(b) Write a short note on International Organization for Standardization.

12. (a) Evaluate on Project Portfolio Management.

Or

(b) Explain Project Milestones with example.

13. (a) Discuss Cost Estimation with example.

Or

(b) Define COCOMO. Write a note on COCOMO II.

14. (a) Explain Software Development Dependencies.

Or

(b) What is Brainstorming? Illustrate Map the schedule to a Real Calendar.

15. (a) Explain the Challenges of SEI CMM.

Or

(b) Illustrate a note on Legal Issues in Software.

Section C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss in detail about Product Development Techniques.

17. Illustrate Creating the Work Breakdown Structure and the approaches to build a WBS.

18. Describe SLIM with example.

19. Summarize Project Management Resource Activities.

20. Illustrate Building Software Quality Assurance and Plan.

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S–3044

Sub. Code
23MIT2S1

M.Sc. (IT) DEGREE EXAMINATION, APRIL 2024

Second Semester

Information Technology

WEB DESIGN

(CBCS – 2023 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** the questions

1. Recall the Structure of Navigation bar.
2. Discuss the basic Principles of web design.
3. Examine DNS.
4. Define TCP and IP.
5. Enumerate the generations of HTML.
6. Restate the HTML, XHTML and DHTML.
7. Summarize the list.
8. Review CSS ID.
9. Generalize the Hosting in webpage design.
10. Define Website.

Part B (5 × 5 = 25)

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

11. (a) Explain about the five golden Principles of Web designing.

Or

(b) Describe about Homepage Layout.

12. (a) Illustrate the events happened in recent five years in Internet.

Or

(b) Establish the internet infrastructure.

13. (a) Construct a web page using the basic structure of HTML.

Or

(b) Distinguish tables and frames with its attributes.

14. (a) Give an outline about Internal style sheet in CSS.

Or

(b) Report briefly about CSS Colors.

15. (a) Describe the structure of Creating Website.

Or

(b) Advertise the themes of publishing Websites.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Correlate the planning Process of Web design.

17. Distinguish about the history of Internet.

18. Conclude the HTML Tags: *<h6>, <tt>, <b>, <U>, <I>, <Li>, <UI>, <ol>, <p> , <a herf>, <img>.*

19. Summarize the concept of CSS.

20. Analyze the ways to create a dynamic Website.

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