F–7466	Sub. Code
	7MCE1E3

M.Sc. DEGREE EXAMINATION, APRIL 2022

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. List out any two characteristics that differentiate software from hardware.

2. Define Waterfall Model.

3. Why is it difficult to gain a clear understanding of what the customer wants?

4. What are the functions of requirements engineering process?

5. What is the objective of software project planning?

6. Name any two measures used for measuring the size of a software?

7. Define Verification and Validation.

8. Draw the spiral model representing the testing strategy?

9. List down the purposes of Project metrics?

10. What is meant by CBSE process?

Part B (5 × 5 = 25)

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

11. (a) Explain any five categories of computer software.

Or

(b) Discuss Prototyping Process model. Why is it called as evolutionary process model?

12. (a) Define Use-case. Discuss the process of developing Use-Cases.

Or

(b) Explain any two methods of Eliciting Requirements.

13. (a) Discuss the major categories of software engineering resources.

Or

(b) Explain Problem based estimation with suitable examples.

14. (a) What is meant by System Testing? Discuss different types of system tests.

Or

(b) Explain any two control structure testing methods.

15. (a) What is the cost / benefit of CBSE?

Or

(b) Discuss the metrics for Software Quality.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Name and discuss any two examples of software projects that would be amenable to the incremental model. Be specific.

17. Discuss the steps required to initiate requirements engineering.

18. Explain Empirical estimation model.

19. What is Black Box testing? Discuss any two black box testing strategies.

20. What components are yielded by CBSE? How are they classified and retrieved?

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F–7467	Sub. Code
	7MCE2C1

M.Sc. DEGREE EXAMINATION, APRIL 2022.

Second Semester

Computer Science

COMPUTER SYSTEM ARCHITECTURE

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Which type of computer organization does not have address field in the computational instructions? Give an example.

2. How is a software interrupt different from a subroutine call?

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

4. Draw the block diagram and the corresponding Timing diagram to represent the Transfer from R1 to R2 when the control function P = 1?

5. What is the difference between a microprocessor and a microprogram?

6. What is the advantage of the microprogrammed control unit?

7. Specify any two reasons for installing Interface unit?

8. What is meant by Page fault?

9. What is the purpose of Parallel Processing?

10. How does RISC architecture differ from CISC architecture?

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

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

11. (a) What is the purpose of Program Interrupt? Discuss the interrupt procedure.

Or

(b) Explain Register Stack organization.

12. (a) Draw and explain the Bus system for four registers.

Or

(b) Explain 4 bit adder – subtractor unit with a block diagram.

13. (a) Explain the Microprogrammed control organization with a block diagram.

Or

(b) Show how a 9-bit microoperation field in a microinstruction can be divided into subfields to specify 46 microoperations. How many microoperations can be specified in one microinstruction?

14. (a) Discuss Virtual memory and address mapping in virtual memory.

Or

(b) What is a Cache Memory? Explain any one mapping procedures?

15. (a) Discuss three issues that disturb the regular functioning of Instruction pipeline.

Or

(b) What is multiprocessing? How are multiprocessors classified based on their memory?

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

Answer any **three** questions.

16. What is the need for different addressing modes? Explain any six addressing modes with examples.

17. Explain the control unit of basic computer and control timing signals.

18. Explain the address sequencing of a microprogramed control memory.

19. What is meant by Priority Interrupt? Discuss different ways of handling them?

20. Explain any four issues that arise in multiprocessing and how are they handled?

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F–7468	Sub. Code
	7MCE2C2

M.Sc. DEGREE EXAMINATION, APRIL 2022.

Second Semester

Computer Science

.NET TECHNOLOGY

(CBCS – 2017 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Write any four System Namespaces.

2. Differentiate overloading and overriding.

3. Write the type checking functions in VB.NET.

4. Give suitable example for InputBox function.

5. List the three states in checkboxes.

6. List our Built in dialog boxes.

7. Write the purpose of MapPath () and Transfer () in ServerUtility Class.

8. Write the types of data controls used for ASP.NET data binding.

9. Define authentication.

10. Write the syntax for SQL update statements.

Part B (5 × 5 = 25)

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

11. (a) Describe the function of CLR.

Or

(b) Give a note on Abstraction and Encapsulation with example.

12. (a) Explain conditional and looping statements in VB.NET with example.

Or

(b) Explain how to create a LinkLable using VB.NET code. Give example for it.

13. (a) Discuss how to create and manipulate Combo Box in VB.NET.

Or

(b) Describe status bar and progress bar with example.

14. (a) Explain HTTP Request class with example.

Or

(b) Explain how to create a simple user control in ASP.NET. Give example.

15. (a) Write the steps to implement windows based security.

Or

(b) Write an simple example for data binding.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain .NET components in detail.

17. Describe TextBoxes and RichTexBoxes with example.

18. Discuss about RadioButton with example.

19. Give example for the following:

    (a) DropDownList

    (b) CheckBoxList

    (c) RadioButtonList

20. Write a detailed note on Data Objects.

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F–7469	Sub. Code
	7MCE2C3

M.Sc. DEGREE EXAMINATION, APRIL 2022

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 is resource sharing?

2. Define medium access control protocols.

3. Define a message-passing system.

4. What is a datagram?

5. Differentiate between weak consistency and release consistency.

6. What is the purpose of using election algorithm?

7. State the purpose of using files in distributed system.

8. What are the advantages of nested transactions?

9. Differentiate between passive and active attacks.

10. Define an access matrix.

Part B (5 × 5 = 25)

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

11. (a) What are the main differences between a network operating system and distributed operating system?

Or

(b) What are the main differences between a LAN and a WAN?

12. (a) Briefly describe the different types buffering strategies.

Or

(b) Write short notes on encoding and decoding of message data.

13. (a) Explain the three commonly used approaches for structuring the shared memory space of a DSM system

Or

(b) How will you implement the logical clocks? Illustrate with example.

14. (a) Write short notes on the most commonly used criteria for file modeling.

Or

(b) Explain the locking approach in concurrency control.

15. (a) Write short note on protocols based on symmetric cryptosystems.

Or

(b) List some of the design principles that are used for designing secure systems.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. What are the major issues in designing a distributed operating system?

17. Explain the issues related to one-to-many communication schemes in detail.

18. Explain the three basic approaches used for implementing mutual exclusion in distributed systems.

19. Write short notes on cache location, modification propagation and cache validation.

20. Explain the two-way authentication protocol based on asymmetric cryptosystem using centralized authentication server.

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F–7470	Sub. Code
	7MCE2E3

M.Sc. DEGREE EXAMINATION, APRIL 2022

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 Aspect Ratio.

2. State the principle applications of image processing.

3. Define Shear.

4. What is pixel phasing?

5. Define clipping.

6. Define Segment and state the attributes of Segment.

7. What is meant by surface rendering?

8. Write the transformation matrix for z-axis shear.

9. What is principal vanishing point?

10. Define axonometric orthographic projection.

Part B (5 × 5 = 25)

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

11. (a) Write short notes on Character generation.

Or

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

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

Or

(b) Explain Area-Fill attributes in detail.

13. (a) Explain Cohen-Sutherland's line clipping algorithm in detail.

Or

(b) Enlighten about the physical input devices.

14. (a) Write short notes on three dimensional reflection and shear transformation.

Or

(b) Describe in detail about three dimensional rotation about an arbitrary axis.

15. (a) Explain depth-buffer method in detail.

Or

(b) Explain the general perspective-projection transformations in detail.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Describe the mid-point circle algorithm in detail.

17. Explain 2D general pivot-point rotation and general fixed-point scaling.

18. Discuss in detail about the various interactive picture-construction techniques.

19. Explain three-dimensional display techniques in detail.

20. Describe scan line method in detail.

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F–7471	Sub. Code
	7MCE2E4

M.Sc. DEGREE EXAMINATION, APRIL 2022

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 Parallel Processing?

2. What is throughput? Write some of the ways to improve the throughput?

3. What is Shuffle – exchange network?

4. Define cube connected network.

5. Write the use of data parallelism.

6. What do you mean by shared address space.

7. Give any two design issues.

8. Write the benefits of using depth first search algorithms.

9. What is crossbar memory?

10. Name the two types of multiprocessors.

Part B (5 × 5 = 25)

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

11. (a) Discuss some of the computational demands of parallel processing.

Or

(b) Write about parallel processing terminologies.

12. (a) Explain tightly coupled system.

Or

(b) Write a note on Linear and Ring architectures.

13. (a) Write short notes on precedence graph of a process.

Or

(b) How message passing differs from shared address space.

14. (a) Explain Gustafson's laws.

Or

(b) Give note on breadth first search algorithm.

15. (a) How will you handle shared variables?

Or

(b) Explain any one memory contention techniques.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Describe the mechanism of implementing parallel processing.

17. Write short notes on

    (a) 2D Mesh.

    (b) Hype cube architectures.

18. Discuss the types of mapping.

19. Explain Branch-and-Bound search algorithm.

20. Explain shared bus and multiport memory in detail.

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F–7472	Sub. Code
	7MCE2E5

M.Sc. DEGREE EXAMINATION, APRIL 2022

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 differences between data and information?

2. What is data independence?

3. Define table.

4. What is an entity set? What are the different types of entity type?

5. What is the importance of functional dependencies in database design?

6. What do you understand by the term normalization?

7. What is client/server computing?

8. Define homogeneous distributed database system.

9. What is Internet? What are the available Internet services?

10. What are the operating systems supported by MySQL?

Part B (5 × 5 = 25)

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

11. (a) What is data dictionary? Explain its function with a neat diagram.

Or

(b) Discuss about the data independence.

12. (a) What are different types of constraints in relational databases? Discuss with examples.

Or

(b) Define a relationship. Discuss different types of relationship with example.

13. (a) Describe the decomposition.

Or

(b) Discuss about the join dependencies and fifth normal form.

14. (a) Discuss the benefits and limitations of client/server architecture of the DDBS.

Or

(b) Write short notes on concurrency control in Distributed Database.

15. (a) Discuss about the Mobile Databases.

Or

(b) What are the characteristics of MYSQL Database software?

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Explain in detail about the data models.

17. Explain the relational algebra operations with an example.

18. Define Boyce-Codd normal form (BCNF). How does it differ from 3NF? Why is it considered a stronger from 3NF? Provide an example to illustrate.

19. What are the various types of distributed databases? Discuss in detail.

20. Explain in detail about MYSQL Database.

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F–7473	Sub. Code
	7MCE3C1

M.Sc. DEGREE EXAMINATION, APRIL 2022

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. Define security service.
2. What are the essential ingredients of a symmetric cipher?
3. Differentiate stream cipher and block cipher.
4. Write ABS parameters.
5. What is cipher text?
6. List out the requirements for public key certificate.
7. What is hash function?
8. What are properties of digital signature?
9. What is S/MIME?
10. Write the use of pseudo random function in transport layer security.

Part B (5 × 5 = 25)

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

11. (a) Discuss the categories of security attacks.

Or

(b) Briefly describe Caesar cipher.

12. (a) Summarize the process of DES encryption algorithm.

Or

(b) Discuss the final set of criteria used by NIST to evaluate candidate AES ciphers.

13. (a) Write a detailed note on public key cryptography.

Or

(b) Discuss the distribution of secret keys using public key cryptography.

14. (a) Summarize the different ways in which a hash code call be used to provide message authentication.

Or

(b) Describe the security of MAC.

15. (a) Write a note on SSL Architecture.

Or

(b) What are the five principal services provided by PGP? Explain.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. Discuss about steganography. Write its pros and cons.

17. Explain the overall structure of AES with block diagram.

18. Describe RSA algorithm with example.

19. Discuss about ElGamal digital signature scheme.

20. Give a brief note on ESP format.

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F–7474	Sub. Code
	7MCE3C2

M.Sc. DEGREE EXAMINATION, APRIL 2022

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. Write the function to provide information about all the types contained within the variable.

2. Give suitable example for? operator.

3. Write the syntax of 'while' and 'do-while' statement.

4. List out any four string functions with example.

5. Write the code to cheek the existence of file and if it exist then open the file in read mode otherwise display a warning message.

6. What is server side validation?

7. What is object serialization?

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

9. What is session?

10. Write the use of AJAX.

Part B (5 × 5 = 25)

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

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

Or

(b) Write the syntax and example for 'if' and switch statement.

12. (a) Explain how to create and manipulate single dimensional array and associative array.

Or

(b) Write a program in PHP to illustrate user defined function.

13. (a) Write a suitable PHP program to open a file and output one character at the time until end-of-file.

Or

(b) Write a PHP code to validate user name and email address in forms.

14. (a) Explain constructors and destructors with suitable example in PHP.

Or

(b) Write a suitable example for different forms of select query.

15. (a) Explain encoding and decoding session variables.

Or

(b) Write a note on method and properties of XMLHttpRequest.

Part C

(3 × 10 = 30)

Answer any **three** questions.

16. (a) Summarize PHP data types with example.

    (b) List out operators in PHP with example.

17. Discuss about 'for', 'for-each', 'break' and 'continue' statements with suitable example.

18. Write a simple form in PHP using HTML for file upload operation.

19. Discuss with example about setting and deleting a cookie with PHP.

20. Give a suitable example for creating and sending an e-mail in PHP.

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