C–2004	Sub. Code
	96425

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Second semester

Computer Science

NUMERICAL ANALYSIS AND STATISTICS

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

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

Answer **All** questions

1. Locate the negative root of $x^3 - 2x + 5 = 0$, approximately.

2. State Newton's forward interpolation formula.

3. Give the name of any two iteration method in Numerical methods.

4. Why is trapezoidal rule is so called?

5. Give the formula for second order Runge-Kutta method.

6. Milne's method is not self starting? Why?

7. What are five measures of central tendency?

8. Define pearson's correlation coefficient r.

9. It was found for a Binomial Distribution, the mean is 5 and standard deviation 3. Can it be true?

10. What is meant by normal Distribution?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Find the least positive root of $xe^{-2x} = 0.5\sin x$ correct to three decimal places using Newton-Raphson method.

Or

(b) Find a real root of $2x - \log_{10} x = 7$ by iteration method.

12. (a) Evaluate $\displaystyle\int_0^1 \frac{dx}{1+x^2}$, using trapezoidal rule with $h = 0.2$.

Or

(b) Given $e^0 = 1$; $e^1 = 2.72$; $e^2 = 7.39$; $e^3 = 20.09$; $e^4 = 54.60$. Use Simpson's rule to find the approximate value of $\displaystyle\int_0^4 e^x \, dx$.

13. (a) Using Taylor's series method compute $y(0.1)$ correct to 4 decimal places if $y(x)$ satisfies $y' = x + y$, $y(0) = 1$.

Or

(b) Using Euler's method find $y(0.2)$ from $\dfrac{dy}{dx} = x + y$, $y(0) = 1$ with $h = 0.2$.

2 C–2004

14. (a) Find the coefficient of correlation and obtain the lines of regression from the data given below :

x	62	64	65	69	70	71	72	74
y	126	125	139	145	165	152	180	208

Or

(b) Compute the "mean deviation" from the mean for the distribution given below.

Class (x) :	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency (f) :	8	12	17	14	9	7	4

15. (a) Write down the properties of normal distribution.

Or

(b) A car-hire firm has two cars, which it hires, out day by day. The number of demands for a car on each day is distributed as Poisson distribution with mean 1.5. Calculate the proportion of days on which neither car is used and the proportion of days on which some demand is refused.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Find the polynomial $f(x)$ by using Lagrange's formula and hence find $f(3)$ for

x :	0	1	2	3
$f(x)$:	2	3	12	147

Or

3

C–2004

(b) Solve the system of equations by Gauss elimination method.

$10x - 2y + 3z = 23$

$2x + 10y - 5z = -33$

$3x - 4y + 10z = 41$

17. (a) Solve the system of equations :

$4x + 2y + z = 14$; $\quad x + 5y - z = 10$; $\quad x + y + 8z = 20$ using Gauss-seidal iteration method.

Or

(b) The differential equation $\dfrac{dy}{dx} = y - x^2$ is satisfied by $y(0) = 1$, $\quad y(0.2) = 1.12186$; $\quad y(0.4) = 1.46820$; $y(0.6) = 1.7379$. Compute the value of $y(0.8)$ by Milne's predictor-corrector formula.

18. (a) Find the correlation coefficient between x and y from the data given below.

x	92	89	87	86	83	77	71	63	53	50
y	86	88	91	77	68	85	52	82	37	57

Or

(b) A manufacturer of cotter pins knows that 5% of his product is defective. If he sells cotter pins in boxes of 100 and guarantees that not more than 10 pins will be defective. What is the approximate probability that a box will fail to meet the guaranteed quality?

————————

4

C–2004

C–4934	Sub. Code
	96432

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021.

Third Semester

Computer Science

DIGITAL COMPUTER FUNDAMENTALS

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1. What is a binary number system?

2. What is Excess3 code?

3. Write the basic properties of Boolean algebra.

4. Define minterm and maxterm.

5. What is decoder?

6. List the different types of shift registers.

7. What is the function of ALU?

8. Define the term half adder.

9. What are the two parts of floating point representation?

10. How to represent a positive and negative sign in computers?

Answer **all** questions.

11. (a) $(10110001101011.11110010)_2 = (?)_{16}$

Or

(b) With an example, explain about Gray code and Excess3 code.

12. (a) Show that $(X + Y' + XY)(X + Y')(X'Y) = 0$.

Or

(b) Briefly explain DeMorgan's theorem.

13. (a) Distinguish between DeMultiplexer and Decoder.

Or

(b) Give a brief note on binary counter.

14. (a) Write short notes on full adder with circuit.

Or

(b) Give a brief account on half subtractor.

15. (a) Elaborate on fixed point representation.

Or

(b) Write short notes on data types.

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Convert

(i) $5BC_{16}$ to decimal and binary (4)

(ii) binary number 101110 to decimal and octal. (4)

(iii) decimal number 512 to binary. (2)

Or

(b) Simplify the following function using K-map technique $f(A, B, C, D) = M(0, 2, 3, 8, 9, 12, 13, 15)$.

C–4934

17. (a)   Explain Quine Mckluskey method with an example.

Or

     (b)   Define flip flop. Explain types of flip flops.

18. (a)   Describe arithmetic operations using parallel binary adders.

Or

     (b)   Explain about error detection codes.

————————

C–4934

C–4935	Sub. Code 96433

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Third Semester

Computer Science

JAVA PROGRAMMING

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1. Write down the objectives of object-oriented programming.

2. What are the types of Java program?

3. Write few examples of Java expressions.

4. Draw the flowchart of simple if statement.

5. Write the rules for applying appropriate access modifiers.

6. Define the term Constructor.

7. What is multithreading?

8. What are the methods available in the life cycle of a thread?

9. Write the syntax for Applet Tag.

10. List the various sections of Web page.

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

11. (a) Explain the applications and benefits of OOP.

Or

(b) Discuss about data types in Java.

12. (a) Write a Java program to compute sum of digits.

Or

(b) Explain do-while loop with an example.

13. (a) Describe two-dimensional array with an example.

Or

(b) What is string manipulation? Explain its cases.

14. (a) How to access and use a package in Java? Explain.

Or

(b) How to use finally statement? Illustrate with an example.

15. (a) Discuss about passing parameters to applets.

Or

(b) Briefly explain the tags in HTML tags and their purpose.

C–4935

Part C (3 × 10 = 30)

Answer **all** the questions

16. (a) Elaborate on the structure of Java program.

    Or

    (b) Discuss about the features of Java programming.

17. (a) Write a Java program for matrix addition.

    Or

    (b) Describe the various forms of implementing interfaces giving examples.

18. (a) Write in detail about exception handling in Java.

    Or

    (b) What are the steps involved in developing and testing an applet? Explain in detail.

————————————

3
C–4935

C–4936		Sub. Code
		96434

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Third Semester

Computer Science

DATA STRUCTURES AND ALGORITHMS

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   Differentiate between linked list and Arrays.

2.   What are the advantages of using data structures?

3.   Write any two applications of stack.

4.   Write different ways of implementing a list.

5.   What is meant by an ordered tree?

6.   What are the basic primary operations of a hash table?

7.   State the algorithmic technique used in merge sort.

8.   Illustrate the algorithm for insertion sort.

9.   What is Performance Analysis of an algorithm?

10. Define Big Oh notation.

Part B (5 × 5 = 25)

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

11. (a) Write short notes on merging lists.

    Or

    (b) How to search an element in a list? Explain through an example.

12. (a) Write the algorithms to perform insert and delete operations in a circular queue.

    Or

    (b) Write the algorithm to convert infix to postfix expression. Explain with an example.

13. (a) Construct the binary search tree from the following elements: 17, 2, 21, 10, 6, 25, 13, 19. Also show preorder, inorder and postorder traversal for the same.

    Or

    (b) Explain different types of binary tree with examples.

14. (a) Derive the best, average, worst case time complexity of a linear search.

    Or

    (b) Discuss on divide and conquer approach.

15. (a) Explain in detail about space and time complexity.

    Or

    (b) Briefly explain about asymptotic notation.

2 **C–4936**

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Discuss the array implementation of list with suitable example.

Or

(b) Discuss in detail about Doubly linked list and algorithm for the operations that can be performed on them in detail.

17. (a) Discuss in detail about stack and its operations with illustrations.

Or

(b) Formulate an algorithm to find the shortest path using Dijkstra's algorithm. Give illustrations.

18. (a) State and explain the algorithm to perform Quick sort. Also analyze the time complexity of the algorithm.

Or

(b) Analyze space and time complexity of an algorithm.

————————

3 **C–4936**

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Third Semester

Computer Science

Allied – APPLIED PHYSICS – I

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

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

Answer **all** questions.

1.   State Coulomb law.

2.   Give short note about equipotential surface.

3.   Define magnetization.

4.   Explain the magnetic flux.

5.   State Laplace law.

6.   State Kirchhoff's first law with neat diagram.

7.   State Faradays law electromagnetic induction.

8.   Draw the circuit for self-inductance.

9.   Write short note about double components.

10.   Define Wattless current.

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

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

11. (a) Explain the principle of capacitor and energy loss due to sharing of charges.

Or

    (b) Differentiate electric potential and potential difference.

12. (a) (i) Define Magnetic flux density,

        (ii) Define susceptibility

Or

    (b) Write short note about the properties of Dia, Para and ferro magnetic materials.

13. (a) Explain Wheatstone bridge working with neat diagram.

Or

    (b) Explain the theory moving coil galvanometer and conversion of galvanometer into ammeter and voltmeter

14. (a) Describe the concept of coefficient of coupling.

Or

    (b) Explain the transformer theory.

15. (a) Differentiate resistance and impedance.

Or

    (b) Measure the current and voltage of double component with A/C circuits.

2   **C–4937**

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

Answer all questions.

16. (a) Express the derivation of intensity at a point due to uniformly charged cylinder.

Or

(b) Define Hysteresis and explain how to finding the coercivity, retentivity from hysteresis loop.

17. (a) Explain Ballistic galvanometer working principle with neat diagram.

Or

(b) Explain the Anderson's methods of coefficient of mutual inductance.

18. (a) Define Impedance and explain Choke- series and parallel resonance circuits.

Or

(b) Define capacitance of capacitor and explain the spherical and cylindrical capacitor.

———————————

C–4937

C–4938	Sub. Code
	96451

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Fifth Semester

Computer Science

WEB TECHNOLOGIES

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1. Define heading tags and its types.

2. Write any one tag which doesn't end with </> and state the reason for it.

3. Write the syntax of a java script.

4. Why java is called as machine independent language?

5. What is the purpose of if else statement?

6. What is the difference between while and do while?

7. Define the term scope rules.

8. Define the term Boolean variable.

9. State the purpose of using VB script.

10. Write the general structure of VB script program.

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

11. (a) Explain the basic syntax an structure of a HTML program and list the basic tags used.

Or

(b) How we can insert horizontal rules and line break in a HTML program? Illustrate.

12. (a) Elaborate the differences between java script and other scripting languages.

Or

(b) Explain the concept of decision making and memory allocation.

13. (a) Enunciate on java script logical operators.

Or

(b) Describe the types of programmer defined functions.

14. (a) Briefly explain about java script local and global functions with an example.

Or

(b) Explain about java script number objects.

15. (a) Elucidate the control structures in VB script.

Or

(b) Brief on controlling the flow of code in VB script.

C–4938

Part C (3 × 10 = 30)

Answer **all** the questions

16. (a) Explain in detail about HTML alignment tags and form tags with an example program.

Or

(b) Describe in detail about HTML frames with suitable example.

17. (a) Elaborate on java multi scripted arrays with an example.

Or

(b) Enunciate on java script math and string objects with suitable examples.

18. (a) Describe about arrays concept in VB script.

Or

(b) Explain in detail about VB script classes and objects with an example program.

————————

3 **C–4938**

C–4939	Sub. Code
	96452

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Fifth Semester

Computer Science

OPERATING SYSTEM

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   What is the three main purpose of an operating system?

2.   What is the job of virtual memory?

3.   What is job scheduling?

4.   Write down the types of process scheduler.

5.   What does synchronization mean?

6.   What is process relationship in operating system?

7.   List out the types of file organization.

8.   What are physical storage devices?

9.   What was the name of first UNIX operating system?

10. What is meant by process management in Linux?

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

Answer **all** questions.

11. (a) Write short notes on single user contiguous scheme in operating system.

Or

(b) What is relocation in OS? Discuss about relocatable dynamic partition with a neat structure.

12. (a) Discuss in brief about round robin scheduling with a neat structure.

Or

(b) List out the conditions for deadlock.

13. (a) Write short notes on race condition in operating system.

Or

(b) How do you manage I/O request and communication among devices? Explain.

14. (a) What are the major tasks of the file manager in operating system? Explain.

Or

(b) Briefly discuss about the access methods in operating system with a neat structure.

15. (a) Bring out the history and evolution of UNIX operating system.

Or

(b) Discuss about device management in Unix operating system.

C–4939

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) Elaborate on fixed partitioning in operating system with a neat structure.

Or

(b) Discuss in detail about segmented memory allocation with a neat structure.

17. (a) Explain in detail the following:

(i) Shortest job next

(ii) First come First serve scheduling.

Or

(b) Describe in detail about various components of the I/O system.

18. (a) Compare and contrast network and distributed operating system.

Or

(b) What are the different types of files in Unix? Explain in detail giving examples.

————————

3 **C–4939**

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Fifth Semester

Computer Science

SOFTWARE ENGINEERING

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1.   Define the term: Software Engineering.

2.   Write any four factors that influences the quality and productivity.

3.   What is project estimation?

4.   List out the software cost factors.

5.   What is Architectural design?

6.   What do you mean by walkthrough?

7.   What are the elements of a test plan?

8.   What is validation testing?

9.   What is Software Quality Assurance?

10.   List down any four automated tools for software maintenance.

Part B   (5 × 5 = 25)

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

11. (a) Explain various project size categories.

Or

(b) Explain the important activities of Project Planning.

12. (a) Explain briefly the staffing level estimation techniques.

Or

(b) Explain the format of a software requirement specification.

13. (a) Explain the various design techniques.

Or

(b) Write about the metrics for Source Code.

14. (a) Explain modules and modularization criteria.

Or

(b) Explain the methods of real time system design.

15. (a) Discuss about formal and technical reviews.

Or

(b) Write about ISO 9000 quality standards.

Part C   (3 × 10 = 30)

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

16. (a) Explain the Phased model of the software life cycle.

Or

(b) Explain the cost estimation procedure using COCOMO model.

2   **C–4940**

17. (a) Describe the various design notations.

Or

(b) Explain Software Design Techniques.

18. (a) Explain the methods for Unit testing and Integration testing.

Or

(b) Discuss about statistical quality assurance.

———————

3   **C–4940**

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Fifth Semester

Computer Science

MULTIMEDIA AND ITS APPLICATIONS

(2016 onwards)

Duration : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Is the Internet a data stream? Justify.

2. What is the importance of communication in multimedia?

3. What are the basic sound editing operations in multimedia?

4. What is multimedia speech?

5. What is computer animation?

6. Who is called the father of animation?

7. What is the importance of data compression in multimedia?

8. What is image preparation in multimedia?

9. What are the types of text in multimedia?

10. What tools do animators use?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Bring out the features of macromedia director in multimedia.

Or

(b) List out the features of multimedia authoring tools.

12. (a) Discuss briefly about lossless compression format in multimedia.

Or

(b) Write short notes on the synthesis of images in multimedia.

13. (a) List out the methods of controlling animation in multimedia.

Or

(b) Discuss about the transmission of animation in multimedia.

14. (a) Write short notes on hierarchical mode in multimedia.

Or

(b) Discuss briefly about digital Video Interface in multimedia.

15. (a) List out the applications of multimedia.

Or

(b) Brief on sound editors in multimedia.

C–4941

Part C (3 × 10 = 30)

Answer **all** questions.

16. (a) What is Adobe flash player? Discuss about its functions and properties.

Or

(b) What is VRML in multimedia? Discuss in brief about its emergence, popularity and file format.

17. (a) Explain in detail about the working and uses of speech analysis in multimedia.

Or

(b) Elaborate in detail about various methods and techniques in multimedia.

18. (a) Discuss in detail about lossy data compression standards.

Or

(b) What is virtual reality? Discuss about it in detail.

————

3 **C–4941**

B.Sc. DEGREE EXAMINATION, NOVEMBER 2021

Fifth Semester

Computer Science

TRENDS IN COMPUTING

(2016 onwards)

Duration : 3 Hours   Maximum : 75 Marks

Part A   (10 × 2 = 20)

Answer **all** questions.

1. Define the term Distributed Computing.

2. How Resource Sharing takes place in Grid Computing?

3. List out the types of Cloud Computing.

4. What do you mean by Identify as a Service?

5. List down the advantages of Cloud based Data Storage.

6. Define the term Web Service.

7. What are the applications of Neural Network?

8. What do you mean by Membership Function?

9. Define the term Genetic Algorithm.

10. What do you mean by Roulette Wheel Selection in Evolutionary Algorithm?

Part B (5 × 5 = 25)

Answer **all** questions.

11. (a) Describe the Grid Layered Architecture with Neat Sketch.

Or

(b) Elucidate the Pathway to Grid computing with proper Illustration.

12. (a) List out various components of Cloud Computing with neat illustration.

Or

(b) Write short notes on Platform as a Service.

13. (a) Describe in detail about Cloud based data storage with suitable illustration.

Or

(b) Elucidate the Service Oriented Architecture in Cloud Computing paradigm.

14. (a) Write short notes on Unsupervised Learning with suitable example.

Or

(b) Explain briefly about basics of Fuzzy logic theory.

15. (a) Describe briefly about the reproduction function in genetic algorithm operators.

Or

(b) Elaborate the genetic algorithm life cycle with suitable example.

2 **C–4942**

Part C (3 × 10 = 30)

Answer any **three** questions.

16. (a) Explain in detail about Data Grids with neat Sketch.

Or

(b) How the Cloud Computing, will be used as 'Software as a Service'? Explain in detail.

17. (a) Describe in detail threats and attacks, and recovery tools available in Cloud Computing.

Or

(b) Explain in detail about Fuzzy sets membership functions through illustrations.

18. (a) Elaborate on Genetic Algorithm Operators through illustrations.

Or

(b) Describe the cycle of genetic algorithm. Bring out the applications of genetic algorithm.

_____

3 **C–4942**