SRI VENKATESWARA UNIVERSITY, TIRUPATI

B.C.A. SEMESTER – II

S.no	Course	Total Marks	Mid Sem Exam*	Sem End Exam	Teaching Hours	Credits
1.	First Language English	100	25	75	4	3
2.	Information and Communication Technology (ICT) – 1	50	0	50	2	2
3.	Communication and Soft Skills (CSS)-1	50	0	50	2	2
4.	Statistical Methods and their Applications	100	25	75	4	4
5.	Operating Systems	100	25	75	4	4
6.	Object Oriented Programming Using "C++"	100	25	75	4	4
7.	Computer Organization	100	25	75	4	4
8.	Operating Systems Lab	50	0	50	4	2
9.	Object Oriented Programming Using "C++" Lab	50	0	50	4	2
10.	CO Lab using C / C++	50	0	50	4	2
	Total	**750**			**36**	**29**

4-2-101

STATISTICAL METHODS AND THEIR APPLICATIONS

UNIT I

Classification of data – Tabulation of data – Preparation of frequency distribution – Presentation of data through histogram, frequency polygon, frequency curve

UNIT II

Measures of Central Tendency: Computation of Arithmetic mean, median and mode for ungrouped data and grouped data., Verification of median through ogives

UNIT III

Measures of dispersion: Computation of Range, Quartile deviation, mean deviation and Standard deviation - co-efficient of variation. (Numerical Applications Only)

UNIT IV

Concept of Skewness, Karl Pearson's and Bowley's Coefficients of Skewness   (Numerical Applications Only)

UNIT V

Meaning of Correlation, types of correlation, correlation coefficient- Karl Pearson- spearman's rank correlation coefficient. (Numerical Applications Only)

TEXT BOOKS
1. Statistical Methods - Dr. S.P. Gupta- Sultan Chand & Sons.
2. Quantitative Techniques by C. Sathyadevi- S. Chand.

REFERENCE BOOKS
1. Fundamental of Mathematical Statistics- S.C. Gupta & V.K. Kapoor- Sultan   Chand
2. Statistical Methods - Snedecor G.W. & Cochran W.G. oxford & +DII
3. Elements of Statistics - Mode. E.B.- Prentice Hall

4-2-105

OPERATING SYSTEMS

UNIT - I

Operating System Introduction: Operating Systems Objectives and functions, Computer System Architecture, OS Structure, OS Operations, Evolution of Operating Systems - Simple Batch, Multi programmed, time shared, Parallel, Distributed Systems, Real-Time Systems, Operating System services.

UNIT – II

Process and CPU Scheduling - Process concepts - The Process, Process State, Process Control Block, Threads, Process Scheduling - Scheduling Queues, Schedulers, Context Switch, Preemptive Scheduling, Dispatcher, Scheduling Criteria, Scheduling algorithms.

Process Coordination - Process Synchronization, The Critical section Problem, Synchronization Hardware, Semaphores, and Classic Problems of Synchronization, Monitors.

UNIT - III

Memory Management and Virtual Memory - Logical & physical Address Space, Swapping, Contiguous Allocation, Paging, Structure of Page Table. Segmentation, Segmentation with Paging, Virtual Memory, Demand Paging, Performance of Demanding Paging, Page Replacement Page Replacement Algorithms, Allocation of Frames.

UNIT - IV

File System Interface - The Concept of a File, Access methods, Directory Structure, File System Mounting, File Sharing, Protection, File System Structure, Mass Storage Structure - Overview of Mass Storage Structure, Disk Structure, Disk Attachment, Disk Scheduling.

UNIT - V

Deadlocks - System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection and Recovery from Deadlock.

TEXT BOOKS:

1. Operating System Principles, Abraham Silberchatz, Peter B. Galvin, Greg Gagne 8th Edition, Wiley Student Edition.

REFERENCES BOOKS:

1. Principles of Operating Systems by NareshChauhan, OXFORD University Press
2. Operating systems - Internals and Design Principles, W. Stallings, 6th Edition, Pearson.
3. Modern Operating Systems, Andrew S Tanenbaum 3rd Edition PHI.
4. Operating Systems A concept - based Approach, 2nd Edition, D. M. Dhamdhere, TMH.
5. Principles of Operating Systems, B. L. Stuart, Cengage learning, India Edition.
6. Operating Systems, A. S. Godbole, 2nd Edition, TMH

Operating Systems Lab

1. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for FCFS and SJF. For each of the scheduling policies, compute and print the average waiting time and average turnaround time. (2 sessions)

2. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for Priority and Round robin. For each of the scheduling policies, compute and print the average waiting time and average turnaround time. (2 sessions)

3. Developing applications using Inter Process Communication (using shared memory, pipes or message queues)

4. Implement the Producer – Consumer problem using semaphores

5. Implement any two memory management schemes

6. Implement any two file allocation techniques (Linked, Indexed or Contiguous)

7. Implement any two Page Replacement Algorithms

8. Implement Deadlock prevention algorithm.

9. Implement any two disk scanning algorithms

4-2-104

OBJECT ORIENTED PROGRAMMING USING C++

UNIT I

Principles of OOP: Software Crisis, Software Evolution - Programming Paradigms. Object Oriented Technology - Basic Concepts and benefits of OOP - Application of OOP, OOP languages.

UNIT II

Introduction to C++: History of C++, Structure of C++, Application of C++, tokens, keywords, identifiers, basic data types, derived data types, symbolic constant, dynamic initialization, reference variables, scope resolution operator, type modifiers, type casting operators and control statements, input and output statements in C++

UNIT III

Function Prototyping, Function Components, Passing Parameters Call By Reference, Return By Reference, Inline Function, Default Arguments, Over Loaded Function Introduction Friend Function

UNIT IV

Classes and Objects: Class Specification, Member Function Definition-Nested Member Function, Access Qualifiers, Static Data Members and, Member Functions. Instance Creation-Array of Objects-Dynamic Objects-Static Objects-Objects as Arguments-Returning Objects

UNIT V

Constructers And Destructors: Constructors-Parameterized Constructors Overloaded Constructors, Constructors With Default Arguments, Copy Constructors, Dynamic Constructors, Dynamic Initialization Using Constructors, Destructors.

Text Book:
1. Robert Lafore, "Object Oriented Programming in C++", Galgotia Publication Pvt.Ltd,
    4th edition, New Delhi, 2002

Reference Books:

1.Object Oriented Programming with C++ BySouravSahay Form OxfordUniversityPress

2. Herbert Schildt , " C++ : The Complete Reference",TMH ,NewDelhi,2003.

3.Object Oriented Programming with C++ by ReemaThareja, OXFORD University Press

4. The Complete Reference C++, Herb Schildt, Tata McGraw-Hill, Fourth Edition.

5. Robert Lafore, "Object Oriented Programming in C++", Galgotia Publication Pvt. Ltd,4 th edition, New Delhi, 2002

6. Ashok N Kamathane, "Object Oriented Programming with ANSI & Turbo C++", Pearson Education, New Delhi, 2003.

7. BjarneStroustrup," C++ Programming language", Pearson Education, New Delhi, 2001.

8. Venugopal K R, RajkumarBuyya and Ravishankar T," Mastering C++", TMH, ND, 2006

OBJECT ORIENTED PROGRAMMING USING C++ LAB

1. Write a C++ program to find the sum of individual digits of a positive integer.

2. A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C++ program to generate the first n terms of the sequence.

3. Write a C++program to generate all the prime numbers between 1 and n , where n is a value supplied by the user.

4. Write a C++program to find the factorial of a given integer

5. Write a C++program to find the GCD of two given integers

6. Write a C++ program that uses a recursive function for solving Towers of Hanoiproblem.

7. Write a C++program to implement call by value and call by reference parameterspassing

8. Write a C++ program to implement function templates

9. Write a program to implement Overloading and Overriding

10. Write a C++ program to implement the matrix ADT using a class. The operations supported by this ADT are:

    a. Reading a matrix.

    b. Printing a matrix

    c. Addition of matrices

    d. Subtraction of matrices

    e. Multiplication of matrices

11. Write C++programs that illustrate how the Single inheritance, Multiple inheritance Multi level inheritance and Hierarchical inheritance forms of inheritance are supported

12. Write a C++program that illustrates the order of execution of constructors and destructors when new class is derived from more than one base class

13. Write a C++ program that illustrates how run time polymorphism is achieved usingvirtual functions

4-2-106

COMPUTER ORGANIZATION

UNIT I

Introduction Evolution of Digital Computers, Computer Generations, Functional units of a computer, The VonNeumann Model, Interconnection of components, Performance of a computer, Flynn's Taxonomy.

UNIT II

Data Representation Integer Representation: Signed Magnitude, Complement Systems, Floating-Point Representation, Floating Point Arithmetic,IEEE-754 Floating-Point Standard, Character Codes: Binary-C oded Decimal, EBCDIC, ASCII, Unicode

UNIT III

Basic Computer Organization CPU, Bus, Clocks, Input/Output Subsystem, Memory Hierarchy,Interrupts, Register Transfer Notation, Fe tch-Decode-Execute Cycle Instruction Sets Machine instructions, Operands, Addressing modes, Instruction formats, Instruction sets, Instruction set architectures - CISC and RISC architectures

UNIT IV

Central Processing Unit Organization of a processor - Registers, ALU and Control unit, Data path in a CPU, Instruction cycle, Control unit - Operations, Hardwired Vs. Micro programmed control unit.

UNIT V

Main Memory Types of Memory: RAM, ROM, Memory Hierarchy, Locality of Reference, Cache Memory, Replacement Policies, Hit Ratio, Virtual Memory, Paging Input/ Output and Storage System Programmed I/O, Interrupt controlled I/O, and DMA controlled I/O, I/O interfaces - Serial port, Parallel port, PCI bus, SCSI bus, USB bus, Firewall and Infiniband, Magnetic Disk Technology: Hard Disk Drive s, Floppy Disks, Optical Disks: CDROM,DVD, Blue Ray Disk, Magnetic Tape, RAID

Text Books

1."Computer Organization and Architecture," By D.A.Godse A.P.Godse: Technical Publications.

2. Computer Organization and Architecture," By William Stallings: Pearson Education.

Reference Books

1."Computer Fundamentals: Architecture and Organisation," By B. Ram: New Age International.

Code No:

SRI VENKATESWARA UNIVERSITY: TIRUPATI
BCA (CBCS)
Second Semester Examinations
STATISTICAL METHODS AND THEIR APPLICATIONS

Time: 3 Hours   **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer any five of the following Questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks

PART - A
Answer any Five of the following. All questions carry equal marks
5 x 5 = 25 Marks

1. Explain the scope of statistical methods and explain the limitations of it
2. Explain the difference between graphical data and diagrammatic data
3. Explain the relation between mean, mode and median
4. Define the standard deviation and explain its merits and demerits
5. Explain types of Skewness.
6. Explain types of Kurtosis based on moments?
7. Explain the types of correlation
8. Explain the difference correlation and regression

PART - B
Answer one question from each Unit. All questions carry equal marks
5 x 10 = 50 Marks

UNIT – I

9.
(a) Explain the diagrammatic methods
(b) Explain classification of data

OR

10.
(a) Graphical determination of percentiles
(b) Explain process of graphical data.

UNIT-II

11.
(a) Explain the properties of mean
(b) Find the average of the following data

Class Interval	10-20	20-30	30-40	40-50	50-60
Frequency	5	12	15	7	8

OR

12. Find the mean, mode and median

Class Interval	0-5	5-10	10-15	15-20	20-25	25-30
Frequency	7	9	8	15	13	8

UNIT-III

13.
   (a) Explain the measures of dispersions
   (b) Explain Standard deviation advantages and limitations
   OR

14.
   (a) Find the quartile deviation of the following data

x	3	7	12	16	20	22
f	4	5	13	10	2	3

   (b) Find the Standard deviation of the following data

Class Intervals	0-20	20-40	40-60	60-80	80-100
f	2	3	7	5	2

UNIT-IV

15.
   (a) Explain the measure of Skewness and its advantages
   (b) Find the Skewness of the following data

x	1	4	8	10	13	17
f	3	5	7	10	4	2

OR

16.
   (a)   Find the kurtosis value for the following data

X	0-10	10-20	20-30	30-40	40-50
f	3	5	12	7	6

   (b) Explain the types of Kurtosis

UNIT-V

17. Find the rank of correlation from the following data

X	18	16	14	13	12	15	17	19
y	20	21	25	27	26	23	24	22

OR

18. Find the regression lines for the following data

X	2	4	5	7	8
y	3	6	4	7	9

Code No:

SRI VENKATESWARA UNIVERSITY: TIRUPATI
BCA (CBCS)
Second Semester Examinations
OPERATING SYSTEMS

Time: 3 Hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer any five of the following Questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks

PART - A
Answer any Five of the following. All questions carry equal marks
5 x 5 = 25 Marks

1. Write about Operating System
2. Explain Process states
3. What is Synchronization?
4. Write short notes on paging.
5. Write short notes on frames.
6. What is file System?
7. Write about Memory Management
8. What is deadlock?

PART - B
Answer one question from each Unit. All questions carry equal marks
5 x 10 = 50 Marks

UNIT – I
9. Explain the Operating Systems Objectives and functions.
OR
10. Explain in detail about Evolution of Operating Systems.
UNIT-II
11. Briefly explain about Scheduling algorithms.
OR
12. Write short notes on
a.) Semaphores b.) Monitors c.) Critical Section d.) Message Passing
UNIT-III
13. Explain Page Replacement Algorithm.
OR
14. Explain Memory management in detail?
UNIT-IV
15. Write about File System Interface.
OR
16. Write about Disk Scheduling with an example

UNIT-V
17. What is deadlock? Explain characteristics of Deadlock.
OR
18. Explain Methods for Handling Deadlocks in detail.

Code No:

SRI VENKATESWARA UNIVERSITY: TIRUPATI
BCA (CBCS)
Second Semester Examinations
Object oriented Programming using C++

Time: 3 Hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
   Part A is compulsory which carries 25 marks. Answer any five of the following
   Questions in Part A.
   Part B consists of 5 Units. Answer any one full question from each unit.
   Each question carries 10 marks

PART - A
Answer any Five of the following. All questions carry equal marks

5 x 5 = 25 Marks

1. Write about Software Evolution
2. List out the benefits of OOP
3. Write about Tokens and Keywords in C++
4. Explain the Scope Resolution Operator
5. Write about Inline functions.
6. Define Member functions?
7. Write about Parameterized Constructors
8. Explain the Rues of Overloading Operators?

PART - B
Answer one question from each Unit. All questions carry equal marks

5 x 10 = 50 Marks

UNIT – I
9. Explain the Structure of C++ Program with example
OR
10. Define Data types in detail with example
UNIT-II
11. Write about Member Dereferencing Operators & Memory Management Operators
OR
12. Explain Operator overloading with example? Write about Operator Precedence.
UNIT-III
13. Explain Arrays within a Class? Write about Private Member Functions.
OR
14. Write about Array of Objects in detail.
UNIT-IV
15. Write about Constructors and Constructors with Default Arguments.
OR
16. Write about Dynamic Initialization of Objects and Dynamic Constructors.
UNIT-V
17. Define Operator Overloading with Unary & Binary Operators.
OR
18. Explain the Manipulation of String Using Operators in detail.

Code No:

SRIVENKATESWARAUNIVERSITY: TIRUPATI
BCA (CBCS)
Second Semester Examinations
COMPUTER ORGANIZATION

Time: 3 Hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer any five of the following
Questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks

PART - A
Answer any Five of the following. All questions carry equal marks
5 x 5 = 25 Marks

1. Evolution of computers
2. Flynn's taxonomy
3. BCD and Unicode
4. Memory hierarchy
5. Registers
6. ROM
7. RAID
8. STALL

PART - B
Answer one question from each Unit. All questions carry equal marks
5 x 10 = 50 Marks

UNIT – I
9. What are the functional units in a computer system?
OR
10. Discuss about computer generations

UNIT-II
11. How can you convert Byte to BCD with Sign Magnitude?
OR
12. Explain the format to convert normal text to floating point arithmetic

UNIT-III
13. Explain briefly about interrupts

OR
14. What is pipelining. Which steps will perform in pipeline?

UNIT-IV
15. Explain CPU organization in processor
OR
16. How can protect and control the h/w with MCU

Unit-V
17. Explain memory types in detail.

OR
18. Basic I/O interfaces