

SRI VENKATESWARA UNIVERSITY: TIRUPATI
DEPARTMENT OF COMPUTER SCIENCE
2015-16 ADMITTED BATCH

BCA Under CBCS With Effect From Academic Year 2016-17
Course of Study & Scheme of Examination

IV SEMESTER

| Sno | Course | Total Marks | Mid Sem Exam* | Sem End Exam | Teaching Hours** | Credits |
|-----|---|-------------|---------------|--------------|------------------|-----------|
| 1. | <i>Foundation Course – 7</i> CSS – 3 | 50 | 0 | 50 | 2 | 2 |
| 2. | <i>Foundation Course – 8</i> Analytical Skills | 50 | 0 | 50 | 2 | 2 |
| 3. | <i>Foundation Course - 9</i> ICT – 2 | 50 | 0 | 50 | 2 | 2 |
| 4. | <i>Foundation course – 10</i> Leadership Education | 50 | 0 | 50 | 2 | 2 |
| 5. | Operations Research | 100 | 25 | 75 | 4 | 4 |
| 6. | Systems Programming | 100 | 25 | 75 | 4 | 4 |
| 7. | Database Management Systems | 100 | 25 | 75 | 4 | 4 |
| 8. | Data Communications And Computer Networks | 100 | 25 | 75 | 4 | 4 |
| 9. | SP Lab | 50 | 0 | 50 | 4 | 2 |
| 10. | DBMS Lab | 50 | 0 | 50 | 4 | 2 |
| 11. | DCCN Lab | 50 | 0 | 50 | 4 | 2 |
| | TOTAL | 750 | 100 | 650 | 36 | 30 |

**SRI VENKATESWARA UNIVERSITY: TIRUPATI
DEPARTMENT OF COMPUTER SCIENCE**

2015-16 ADMITTED BATCH

BCA Under CBCS With Effect From Academic Year 2016-17
Course of Study

II YEAR IV SEMESTER**OPERATIONS RESEARCH****UNIT-I:**

Introduction to Operations Research: Origin and Development of OR, Definition of OR, Applications of OR, Models and their classifications, Advantages and Limitations of OR

UNIT-II:

Linear programming problem (LPP): Formulation of LPP, Solution of LPP using graphical method and simplex method (\leq inequality only).

UNIT-III:

Transportation problem: Mathematical formulation, IBFS of transportation problem using north-west corner rule, least-cost rule and Vogels approximation method, Simple problems.

UNIT-IV:

Assignment problem: definition, mathematical formulation of assignment problem, solution of transportation problem using Hungarian Algorithm, simple problems

UNIT-V:

Job Sequencing Problem: Introduction – Definition – Terminology and Notations
Principal Assumptions, Problems with n Jobs through Two Machines Problems with n Jobs through Three Machines

Text Book:

1. Operations Research (2nd Edition) by S.Kalavathi, Vikas Publications Towers Pvt. Ltd.

Reference books:

1. Operations Research by Kanthiswaroop, P.K.Gupta, Manmohan by Sultan Chand & Sons
2. Operations Research by Paneerselvam by Prentice Hall of India
3. Operations Research by S.D.Sarma
4. Operations Research by Taha, H.A., Ninth Edition

SYSTEMS PROGRAMMING**UNIT I:**

Background introduction, system software and machine architecture, SIC, RISC, and CISC architecture. Assembler: basic assembler functions, machine dependent and independent assembler features, assembler design options, and implementation examples.

UNIT II:

Loading and linkers basic loader junction, machine dependent and independent loader features, loader design options and implementation examples. Macro processors, basic macro processor functions machines – independent macro processor features, macro processor design options, implementation examples.

UNIT III:

Compilers: basic compiler functions, machine dependent and independent compiler features, compiler design options and implementation examples. Other system software: text editors and interactive debugging systems

UNIT-IV

Introduction to Device Drivers, Design issues-Types of Drivers, Character driver-1 and Design issues, Character Driver-2- A/D converter and its design issues, Block driver-1 and its design issues- RAM DISK driver-Anatomy-Prologue of drivers and programming Considerations.

UNIT-V

Introduction to Linux- Linux Architecture- X-windows- Linux administration tools - Commands to use Linux OS- Executing Linux Shell scripts – Shell Programming concepts-Shell scripts.

Text Books:

1. Leland .Beck, System Software: An Introduction to systems Programming: 3/e, Pearson Educations Asia, 2003.
2. George pajari, Writing Unix Drivers, Addison – Wesley,1991.
3. Richard Petersen, *Linux complete Reference*, McGraw Hill Education (India) Private Limited; 6 edition (21 November 2007
4. Systems Programming By Srimanta Pal from Oxford University Press

Reference Books:

1. Dhamdhere, System programming and operation Systems Book 2/E, Tata McGraw, Hill, 1999
2. A.V. Aho, Ravi Sethi and J D Ullman , “compilers, Techniques and Tools”, Addison Wesley, 1986.
3. Jhon J. Donovan, System Programming Tata McGraw Hill 2005.

DATABASE MANAGEMENT SYSTEMS**UNIT I****Chapter 1.** Overview of Database Management System

Introduction - Data and Information – Database - Database Management System - Objectives of DBMS - Evolution of Database Management Systems - Classification of Database Management System - File-Based System - Drawbacks of File-Based System - DBMS Approach - Advantages of DBMS - Ansi/Spark Data Model - Data Models - Components and Interfaces of Database Management - Database Architecture - Situations where DBMS is not Necessary - DBMS Vendors and their Products

UNIT II**Chapter 2** Entity–Relationship Model

Introduction - The Building Blocks of an Entity–Relationship Diagram - Classification of Entity Sets - Attribute Classification - Relationship Degree - Relationship Classification - Reducing ER Diagram to Tables - Enhanced Entity–Relationship Model (EER Model) - Generalization and Specialization - ISA Relationship and Attribute Inheritance - Multiple Inheritance - Constraints on Specialization and Generalization - Aggregation and Composition - Entity Clusters - Connection Traps - Advantages of ER Modeling

UNIT III**Chapter 3** Relational Model

Introduction - CODD’S Rules - Relational Data Model - Concept of Key - Relational Integrity - Relational Algebra - Relational Algebra Operations - Advantages of Relational Algebra - Limitations of Relational Algebra - Relational Calculus - Domain Relational Calculus (DRC) - QBE

UNIT IV**Chapter 4** Structured Query Language

Introduction - History of SQL Standard - Commands in SQL - Datatypes in SQL - Data Definition Language (DDL) - Selection Operation - Projection Operation - Aggregate Functions - Data Manipulation Language - Data Manipulation Language - Table Truncation - Imposition of Constraints - Join Operation - Set Operations - View. – Subquery - Embedded SQL

UNIT V**Chapter 5.** PL/SQL

Introduction - Shortcomings in SQL - Structure of PL/SQL - PL/SQL Language Elements - Data Types - Operators Precedence - Control Structure - Steps to Create a PL/SQL Program - Iterative Control – Cursors - Steps to Create a Cursor – Procedure – Function- Packages - Exceptions Handling - Database Triggers - Types of Triggers

Text Book:**1. Fundamentals of Relational Database Management Systems**

By S. Sumathi, S. Esakkirajan

DATA COMMUNICATIONS AND COMPUTER NETWORKS**UNIT I****DATA COMMUNICATIONS**

Components – Direction of Data flow – networks – Components and Categories – types of Connections – Topologies – Protocols and Standards – ISO / OSI model – Transmission Media– Coaxial Cable – Fiber Optics – Line Coding – Modems – RS232 Interfacing sequences.

UNIT II**DATA LINK LAYER**

Error – detection and correction – Parity – LRC – CRC – Hamming code – low Control and Error control - stop and wait – go back-N ARQ – selective repeat ARQ- sliding window – HDLC. - LAN - Ethernet IEEE 802.3 - IEEE 802.4 - IEEE 802.5 - IEEE 802.11 – FDDI - SONET – Bridges.

UNIT III**NETWORK LAYER**

Internetworks – Packet Switching and Datagram approach – IP addressing methods – Subnetting – Routing – Distance Vector Routing – Link State Routing – Routers.

UNIT IV**TRANSPORT LAYER**

Duties of transport layer – Multiplexing – Demultiplexing – Sockets – User Datagram Protocol (UDP) – Transmission Control Protocol (TCP) – Congestion Control – Quality of services (QOS) – Integrated Services.

UNIT V**APPLICATION LAYER**

Domain Name Space (DNS) – SMTP – FTP – HTTP - WWW – Security –Cryptography.

TEXT BOOKS

1. Behrouz A. Forouzan, “Data communication and Networking”, Tata McGraw-Hill, 2004.

REFERENCE BOOKS

1. James F. Kurose and Keith W. Ross, “Computer Networking: A Top-Down Approach Featuring the Internet”, Pearson Education, 2003.
2. Andrew S. Tanenbaum, “Computer Networks”, PHI, Fourth Edition, 2003.
3. William Stallings, “Data and Computer Communication”, Sixth Edition, Pearson Education, 2000.

Code No:

SRI VENKATESWARA UNIVERSITY: TIRUPATI
BCA (CBCS)
Fourth Semester Examinations
OPERATIONAL RESEARCH

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. What are the advantages of Operational Research?
2. Explain the formulation of LPP
3. Explain graphical method of solving an LPP
4. Explain Vogel's approximations
5. Solve the transportation problem by using North west corner method

| | Destination | | | | | Supply |
|--------|-------------|----|----|---|----|--------|
| Origin | 2 | 11 | 10 | 3 | 7 | 4 |
| | 1 | 1 | 7 | 2 | 1 | 8 |
| | 3 | 9 | 4 | 8 | 12 | 9 |
| Demand | 3 | 3 | 4 | 5 | 6 | |

6. Define assignment problem and mathematical formulation of assignment problem
7. Explain difference between assignment problem and transportation problem
8. Explain two machines problems with 2 job

PART - B

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

5 x 10 = 50 Marks

UNIT - I

- 9.
- (a). What are the origin and development of OR.
 - (b). Discuss the application of OR

OR

- 10.
- (a) Explain the models of OR
 - (b) Explain the advantages and limitations of OR

UNIT-II

11. Solve the LPP by graphical method
- $$\text{Max } Z = 3x_1 + 2x_2$$
- Subject to conditions $2x_1 + x_2 \leq 40$
 $x_1 + 3x_2 \leq 60$
 $x_1, x_2 \geq 0$

OR

12. Solve the LPP by Simplex method
- $$\text{Max } Z = 2x_1 + 3x_2$$
- Subject to constraints $x_1 + x_2 \leq 6$
 $7x_1 + 3x_2 \leq 14$
 $x_1, x_2 \geq 0$

UNIT-III

13. Solve the transportation problem

| | | Destination | | | Supply |
|--------|---|-------------|-----|-----|--------|
| | | 1 | 2 | 3 | |
| Source | 1 | 20 | 10 | 5 | 200 |
| | 2 | 10 | 12 | 9 | 300 |
| | 3 | 25 | 30 | 18 | 500 |
| Demand | | 200 | 400 | 400 | |

OR

14. Solve the transportation problem by VAM

| | P | Q | R | AVAILABILITY |
|------------|----|----|----|--------------|
| A | 16 | 19 | 12 | 14 |
| B | 22 | 13 | 19 | 16 |
| C | 14 | 28 | 8 | 12 |
| REQUIRMENT | 10 | 15 | 17 | |

UNIT-IV

15. Explain unbalanced Assignment problem

OR

16. Solve this assignment problem

| | | EMPLOYEE | | | | |
|-----|---|----------|---|---|----|---|
| | | A | B | C | D | E |
| JOB | 1 | 7 | 9 | 3 | 3 | 2 |
| | 2 | 6 | 1 | 6 | 6 | 5 |
| | 3 | 3 | 4 | 9 | 10 | 7 |
| | 4 | 1 | 5 | 2 | 2 | 4 |
| | 5 | 6 | 6 | 9 | 4 | 2 |

UNIT-V

17. There Are five jobs which must go through these machines A,B and C in order A,B, C processing times of the jobs on different machines given below. Determine a sequence for 5 jobs which will minimize elapsed time(T)

| Jobs | A | B | C |
|------|---|---|---|
| 1 | 7 | 5 | 6 |
| 2 | 8 | 5 | 8 |
| 3 | 6 | 4 | 7 |
| 4 | 5 | 2 | 4 |
| 5 | 6 | 1 | 3 |

OR

18. Determine the optimal sequencing to complete the following task on 2 machines

| Task | A | B | C | D | E | F | G | H | I |
|-----------|---|---|---|---|---|---|---|---|----|
| Machine 1 | 2 | 5 | 4 | 9 | 6 | 8 | 7 | 5 | 4 |
| Machine 2 | 6 | 8 | 7 | 4 | 3 | 9 | 3 | 8 | 11 |

Code No:

SRI VENKATESWARA UNIVERSITY: TIRUPATI
BCA (CBCS)
Fourth Semester Examinations
SYSTEM PROGRAMMING

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 Assembler
2. Explain Loaders
3. What is Compiler?
4. Write short debugging.
5. Write short notes on Device Drivers.
6. What is a Shell script?
7. Write about text editors
8. What is RAM DISK?

PART - B

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

5 x 10 = 50 Marks

UNIT - I

9. Write about RISC architecture.

OR

10. Explain in detail about machine dependent and independent assembler features.

UNIT-II

11. Briefly explain about Macro processors.

OR

12. Write about machine dependent and independent loader features

UNIT-III

13. Explain compiler design options and its implementation

OR

14. Explain text editors and interactive debugging systems of system software

UNIT-IV

15. Write about Character driver-1 and its Design issues.

OR

16. Describe about Types of Drivers

UNIT-V

17. Discuss in detail about Shell Programming.

OR

18. Explain briefly about Linux Architecture.

Code No:

SRI VENKATESWARA UNIVERSITY: TIRUPATI
BCA (CBCS)
Fourth Semester Examinations
Database Management 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. Objectives of DBMS
2. ANSI/SPARK data model
3. EER And Relationship Degree
4. Connection types of RDBMS
5. Aggregate functions
6. Embedded sql
7. Group by command
8. data types of plsql

PART - B

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

5 x 10 = 50 Marks

UNIT - I

9. What Is DBMS? Derive database Architecture in DBMS

OR

10. Discuss about file- based database system with advantages and disadvantages

UNIT-II

11. What is relational database ? explain how it inherit the IS-A relationship

OR

12. Explain the differten types of notations to draw an ER diagram

UNIT-III

13. Explain the Dr E F Codd's rules.

OR

14. Discuss about relational integrity and relational algebra with limitations

UNIT-IV

15. What are the types of SQL Commands with syntax and examples

OR

16. a) Join operations
b) views with syntax

Unit-V

17. Explain the structure or blocks of plsql and plsql language elements

OR

18. Write a program for package creation and how to mange errors in it.

Code No:

SRI VENKATESWARA UNIVERSITY: TIRUPATI
BCA (CBCS)
Fourth Semester Examinations
Data Communications and Computer Networks

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 Components of Communication.
2. Write about OSI Model.
3. Write about Coding and Sampling.
4. Explain the Channelization.
5. Write about Addressing in detail
6. Define Integrated Services.
7. Write about Kerberos.
8. Explain the Socket Interface?

PART - B

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

5 x 10 = 50 Marks

UNIT - I

9. Write about Multiplexing in detail.

OR

10. Explain the Digital and Analog transmission in detail?

UNIT-II

11. Explain the Error Detection and Correction Methods?

OR

12. Explain different types of Ethernet in detail?

UNIT-III

13. Explain Network layer protocols with example?

OR

14. Write about Multicast Routing Protocols.

UNIT-IV

15. Write congestion and control and Explain the Quality of Service?

OR

16. Write about Digital Signature with user authentication..

UNIT-V

17. Explain the Design Issues in Application layer with example.

OR

18. Write about HTTP, FTP, SMTP and World Wide Web in detail.