

# COMPUTER SCIENCE

## GRADE: XI

*Full Marks: 100 (75T+25P)*

*Teaching Hours: 150*

### I. Introduction:

Information Technology has become a part of contemporary society and as a potential tool in the socio-economic development of country. As Information technology manpower is the backbone for the rapid development of ICT sector in the country, government of Nepal has accordingly identified IT as a priority sector. Keeping in view the importance of computer technology in general and indispensability of its knowledge and skill to the society in general and to the students of higher secondary level in particular, the course seeks to introduce computer science to acquaint the learner with the basic skills of computer literacy.

### II. General Objective:

*The general objectives of this course are to:*

1. help establish a strong foundation for the development of internationally competent human resources in the field of Information Communication and Technology;
2. help decrease the digital divide; and
3. fulfill the middle level ICT Human Resources to the ICT industries.

### III. Specific Objective:

*After completing this course, the student will be able to:*

1. explain the fundamental principle of computer system mechanism and Information and Communication Technology;
2. identify computer recourse for any specific purpose PC based application in the real life situations;
3. solve the office automation related system problems, general skill about network, internet, email and web site design;
4. provide computing knowledge and skill to individuals or organization;
5. engage in higher study of computer science and information technological course in the country or aboard;
6. provide the services as instructor of computer sciences course in schools or institutions;
7. state programming concept and tools;
8. explain the state-of-art information technology and works to change agents for spreading ICT culture in their society; and
9. encourage the student for visit the hardware and software industries, e-communities centers.

### IV. Course Contents:

#### **UNIT-1 Introduction and Evolution of Computer**

- 1.1 Concept and Characteristics of Computer
- 1.2 Application of Computers
- 1.3 History of Computer: Mechanical Calculating era, Electro-Mechanical era, Electronic computers era
- 1.4 Generation of Computers: First, Second, Third, Fourth and Fifth Generation(AI) and its features
- 1.5 Computer speed and Measurement Unit

## **UNIT-2 Classification of Computer**

- 2.1 On the basis of working principle – Analog, Digital and Hybrid Computers
- 2.2 On the basis of size – Super, Mainframe, Mini and Microcomputers
- 2.3 On the basis of brand – IBM PC, IBM Compatible and Apple/Macintosh
- 2.4 Mobile Computing

## **UNIT-3 Number System and Their Conversion**

- 3.1 Decimal, Binary, Octal, Hexadecimal Number System & conversion
- 3.2 9's and 10's complements decimal subtraction
- 3.3 Calculation in Binary – addition, subtraction, One's and Two's Complement Methods of binary subtraction

## **UNIT-4 Logic Function and Boolean Algebra**

- 4.1 Logic Function and Boolean Algebra
- 4.2 Introduction of Truth Table, Boolean Expression
- 4.3 Logic Gates –AND, OR, NOT, NAND, NOR, XOR and XNOR – its definition, use, truth table, logic symbol
- 4.4 Duality Principle
- 4.5 Laws of Boolean Algebra – Associative, Commutative, Distributive, Identity, Complement Laws
- 4.6 De Morgan's Theorem : Statement and Logic Expression
- 4.7 Venn diagram and its represent of logic gates(AND, OR, NOT)

## **UNIT-5 Computer Systems**

- 5.1 Concept of Computer Architecture
- 5.2 Concept of Computer Organization
- 5.3 Components of Computer System – Input, Output, Processor and Storage
- 5.4 Microprocessor – Concepts, Components of Processor, Functions
- 5.5 Concept of System Buses: Data Bus, Address Bus, Control Bus
- 5.6 Memory – Primary and Secondary, Cache(L1, L2), Buffer, RAM, ROM
- 5.7 Storage Device – Definition, Use, Types: Hard Disk , Floppy Disk, Magnetic Tape, Flash Memory, Optical Disk(CD,VCD,DVD), External Storage Device
- 5.8 Input Devices – Keyboard, Mouse, Scanner, Light Pen, OMR, OCR, BCR, Scanner, Touch Pad Kiosk, Microphone and Digital Camera
- 5.9 Output Devices – Monitor, Printer, Plotter, Speaker
- 5.10 Computer Peripherals
- 5.11 Interfaces – Parallel Port, Serial Port, USB Ports, IEEE 1394 and Slots
- 5.12 Identification of PC Accessories and Peripherals
- 5.13 Specification of PC
- 5.14 Software and Classification
  - 5.14.1 System software: OS, Language processor
  - 5.14.2 Application software including Utilities Software
  - 5.14.3 Computer Virus and Antivirus

## **UNIT-6 Operating System**

### **6.1 Fundamental Concept**

- 6.1.1 Introduction to Operating System
- 6.1.2 Role of Operating System
- 6.1.3 Functions of an Operating System
- 6.1.4 Types of Operating System: Based on Processing Method (Batch, Multitasking, Multiprocessing, Timesharing, Real Time), Based on User Interface (GUI, CUI), Based on Mode of User ( Single-user & Multi-user)

### **6.2 Disk Operating System (DOS)**

- 6.2.1 Introduction to CUI and its feature
- 6.2.2 Common DOS Commands (External and Internal Commands)
- 6.2.3 Concept of File and Directory
- 6.2.4 Wildcards and Pathname
- 6.2.5 System Files: Config.sys, IO.sys, MSDOS. sys, autoexec.bat

### **6.3 Windows Operating System**

- 6.3.1 Introduction to GUI and its features
- 6.3.2 Working with a Window Environment
- 6.3.3 Working with a Windows Application Program
- 6.3.4 Working with Files and Folders
- 6.3.5 Customizing the Taskbar and Desktop
- 6.3.6 Customizing Windows
- 6.3.7 Use of Accessories

### **6.4 Concept of Open Sources Operating System**

- 6.4.1 Introduction to Open Sources Operating System
- 6.4.2 Introduction to Linux, UNIX

### **UNIT-7 Programming Concepts & Logics**

- 7.1 Programming Languages(Low level, High level, 4 GL)
- 7.2 Compiler, Interpreter and Assembler
- 7.3 List of high level Programming Language
- 7.4 Difference between Program and Software
- 7.5 Concept of Programming Statement
- 7.6 Syntax and Semantics errors
- 7.7 Program Control Structures: Sequence, Selection and Iteration.
- 7.8 Program Design tools – Algorithm, Flowchart and Pseudo code
- 7.9 Introduction to Data Type
- 7.10 Codes: Absolute Binary, BCD, ASCII ,EBCDIC, Unicode

### **UNIT-8 Application Package**

#### **8.1 Word Processor**

- 8.1.1 Concept of Word Processor
- 8.1.2 Types of Word Processing
- 8.1.3 Basic terms of word processing
- 8.1.4 Working and Editing Text
- 8.1.5 Formatting Characters and Paragraphs
- 8.1.6 Formatting Pages
- 8.1.7 Working with Tables
- 8.1.8 Working with Templates and Styles
- 8.1.9 Drawing and Working with Graphics
- 8.1.10 Performing a Mail Merge
- 8.1.11 Document Collaboration
- 8.1.12 Working with Outlines and Long Documents
- 8.1.13 Working with WordArt and Charts
- 8.1.14 Project Work on Word Processor

#### **8.2 Spread Sheet**

- 8.2.1 Concept and Use of Spread Sheet
- 8.2.2 Types of Spread Sheet
- 8.2.3 Basic fundamentals of Spread Sheet
- 8.2.4 Formatting a Worksheet
- 8.2.5 Creating and Working with Charts

- 8.2.6 Managing Workbooks
- 8.2.7 General Functions and Formulas
- 8.2.8 Data Filter and sorting
- 8.2.9 Working with Other objects
- 8.2.10 Data Analysis and PivotTables
- 8.2.11 What-If Analysis
- 8.2.12 Project Work on Spread Sheet

### **8.3 Presentation**

- 8.3.1 Concept of Presentation
- 8.3.2 Types and use of Presentation Program
- 8.3.3 Basic fundamental of Presentation
- 8.3.4 Editing a Presentation
- 8.3.5 Design and Formatting Presentation
- 8.3.6 Transition of Presentation
- 8.3.7 Animation and Custom Animation
- 8.3.8 Working with Tables, Graphics and WordArt
- 8.3.9 Working with Graphs and Organization Charts
- 8.3.10 Working with Multimedia
- 8.3.11 Project Work on Presentation

## **UNIT- 9 Internet and E-mail**

### **9.1 Internet**

- 9.1.1 Introduction of Internet
- 9.1.2 Uses of Internet:
- 9.1.3 Concept of Protocols
- 9.1.4 Web Browser, Web Page, Website, Web Server, URL, DNS
- 9.1.5 Search Engine, Messenger Services
- 9.1.6 Setting Browser Properties
- 9.1.7 Setup Network Connection

### **9.2 E-mail**

- 9.2.1 Concept of E-mail
- 9.2.2 Uses of E-mail
- 9.2.3 Different types of E-mail Account
- 9.2.4 Web Based E-mail and POP E-mail

## **Unit- 10 Web Page Designing**

- 10.1 Introduction to HTML
- 10.2 Types of Tags
- 10.3 Basic Structure of HTML
- 10.4 Character Formatting (Paragraphs, Heading, Text format)
- 10.5 Create an Ordered and Unordered List
- 10.6 Insert Images and Objects
- 10.7 Create Hyper Link
- 10.8 Create Table
- 10.9 Design Frames and Form
- 10.10 Concept of CSS and Script Language
- 10.11 Webpage Design and Editing Tools
- 10.12 **Project Work on Web Page**

## **UNIT-11 Final Project Work**

- 11.1 Project Work on Webpage or Spread Sheet
- 11.2 Documentation of the Project

#### V. Instructional Materials:

- To be guided by Teaching Manual

#### VI. Instructional Techniques:

- To be guided by Teaching Manual

#### VII. Evaluation Schemes:

##### a) Theory Evaluation:

- Short Questions
- Long Questions
- Short Notes

Theory Questions are guided by marks distribution and model questions.

##### b) Practical Evaluation:

S. No.	Unit	Topics	No of Exercise	Mini Projects Evaluation	Remarks
1	5	PC Component Identification	2	-	Practical Marks Evaluated By: External Examiner: 10 Internal Examiner: 15 Based on Mini Project, Lab Exercise and Final Project
2	6.3	Operating System(Windows)	4	-	
3	8.1	Word Processor	6	5	
4	8.2	Spreadsheet	5	5	
5	8.3	Presentation	4	5	
6	9	Internet, Email	4	2	
7	10	Web Page Designing (HTML)	6	5	
8	11	Final Project			

Lab exercises are guided by marks distribution and Teaching Manual.

#### VIII. Marks and Teaching Hours distribution

Units	Mark Distribution		Number of Hours	
	Theory	Practical	Theory	Practical
1	2		3	
2	3		5	
3	5		5	
4	5		10	
5	10		15	2
6	10	3	10	20
7	10		10	
8	15	15	10	22
9	10	5	10	16
10	5	2	5	7
11				
<b>Total</b>	<b>75</b>	<b>25</b>	<b>83</b>	<b>67</b>

## IX. Reference books:

- Gurung, J. B.; Baskota, A; Baral, D.S.; Baral, D.; Niroula, R.; Dhakal, T.P. (2008), *A Text Book on Computer Science Part-A Second Edition*, Kathmandu: Bhundipuram Prakashan.
- Subba, B.R., *Computer Science Grade-XII*, Kathmandu: Taleju Prakashan.
- Khanal, R. C. (2007), *Computer Practical Volume-I*, Kathmandu: Ekata Publication.
- Pudasaini, D.Shakar; Adhikari, N., *A Text Book on Computer Science Grade XI*, Kathmandu: Buddha Academic Enterprises Pvt. Ltd.
- Basandra, S. K. (2008), *Computers Today Updated Edition*, Galgotia Publication.
- Leon, Alexis and Leon, Mathews, *Fundamental of Information Technology*, New Delhi: Vikash Publishing Houses.
- Sinha, P. K. (2003), *Computer Fundamentals (Cd) 4th Edition*, BPP Publication.
- Rajaraman, V. (2007), *Fundamental of Computer*, Prentics Hall, Fourth Edition.
- URL: <http://www.w3.org/html/>
- URL: <http://en.wikipedia.org/>

**HSEB**  
**Computer Science-Grade XI**  
**Model Questions**

Full Marks: 75  
Pass Marks: 27  
Time: 3 Hrs.

Candidates are required to give their answers in their own words as far as possible. Figures in the margin indicate full marks.

**Group – A**  
**(Long Answer Questions)**

**Attempt all questions [3x10=30]**

1. Draw a well-labeled diagram of typical architecture of a computer system and explain the main function of Control Unit and ALU. [4+3+3]
  
2. (a) What is an operating system? Explain any three functions of an operating system. [1+6]  
(b) The 'WIMP' environment is much more user-friendly why? [3]  

OR

(a) What is cell addressing and explain different types of cell addressing used in Spreadsheet. [5]  
(b) Explain about the following HTML tag with example: <A>, <input> [5]
  
3. (a) Define flow-chart and pseudo-code. Explain their significance in programming. [5]  
(b) Write a pseudo-code to accept any three numbers and output the largest among them. [5]

**Group – B**  
**(Short Answer Questions)**

**Attempt any Nine Questions [9x5=45]**

4. Classify the computers according to their generation based on the technology used. [5]
5. Differentiate between analogue and digital computer, explain with examples. [5]
6. What do you mean by number system? Why do digital computers use binary numbers for their operation? [2+3]
7. Convert these number [5]
  - a)  $(126)_{10} = (?)_2$
  - b)  $(11011)_2 = (?)_{10}$
  - c)  $(57)_8 = (?)_2$Perform following operations  
d)  $1011 - 1001$   
e)  $1110 + 1110$
8. State the Demorgan's theorem and verify it. [5]
9. What are logic gates? Construct the truth table of NOR operation. [5]
10. Write short notes on (any two): [5]
  - (i) IDE
  - (ii) SCSI
  - (iii) Wave Camera
11. What are uses of internet? Write any five search engine name. [5]
12. Differentiate between System Software and Application Software with examples. [5]
13. What are DTP features in MS-Word? Write three features of Presentation Packages. [2+3]
14. Write an algorithm and flow chart to print the word "Hello" ten times using "while loop" [5]

# COMPUTER SCIENCE

## GRADE: XII

*Full Marks: 100 (75T+25P)*

*Teaching Hours: 150*

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Information Technology has become a part of contemporary society and as a potential tool in the socio-economic development of country. As Information technology manpower is the backbone for the rapid development of ICT sector in the country, government of Nepal has accordingly identified IT as a priority sector. Keeping in view the importance of computer technology in general and indispensability of its knowledge and skill to the society in general and to the students of higher secondary level in particular, the course seeks to introduce computer science to acquaint the learner with the basic skills of computer literacy.

### II. General Objective:

*The general objectives of its course are to:*

1. help establish a strong foundation for the development of internationally competent Human Resources in the field of Information Communication and Technology;
2. help decrease the Digital Divide; and
3. fulfill the middle level ICT Human Resources.

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*After completing this course, the student will be able to:*

1. state the fundamental principle of computer system mechanism and information technology;
2. identify computer recourse for any specific purpose PC based application in the real life situations;
3. solve the office automation related system problems, general networking problems, and web site design;
4. provide computing knowledge and skill to individuals or organization;
5. engage in higher study of computer science and information technological course in the country or aboard;
6. provide the services as instructor of computer sciences course in schools or institutions;
7. discuss programming tool technique and concept about database and C programming;
8. discuss the state-of-art information technology and works to change agents for spreading ICT culture in their society; and
9. encourage the students to visit the hardware and software industries, e-communities centers.

### IV. Course Contents:

#### **Unit 1: System Development Concept**

- 1.1 Introduction: System, Information System
- 1.2 Types of Information System
- 1.3 System Analyst – roles, responsibilities and characteristics
- 1.4 System development Life Cycle (SDLC)
- 1.5 Importance and the necessity of SDLC
- 1.6 System Development Models: Waterfall, Prototype, Spiral



- 1.7 System Development Phase
  - 1.7.1 System Study
  - 1.7.2 System Analysis Feasibility Analysis
  - 1.7.3 Feasibility Study: Technical, Economical, Operational
  - 1.7.4 System Design
  - 1.7.5 System Development
  - 1.7.6 System Testing
  - 1.7.7 Implementation
  - 1.7.8 Maintenance and Reviews
- 1.8 Concept of System Design Tools (Context Diagram, DFD, E-R Diagram, System Flow Chart, Decision Table, Decision Tree, Use Case, UML)
- 1.9 Case Study

## **Unit 2: Database**

### **2.2.1 Concept of Database**

- 2.1.1 Introduction: Data, Information, Database and DBMS
- 2.1.2 Objectives of DBMS
- 2.1.3 Database Model: Relational Model ,Network Model, Hierarchical Model, Entity Relational Data Model
- 2.1.4 Concept of Normalization
- 2.1.5 Types of Normalization 1NF, 2NF, 3NF
- 2.1.6 Structured Query Language
- 2.1.7 Centralized Vs. Distributed Database
- 2.1.8 Data Security

### **2.2 Design Database using DBMS Software**

- 2.2.1 Create a Database
- 2.2.2 Create Tables and Fields and its properties
- 2.2.3 Create a Relational Databases
- 2.2.4 Create and Run Queries
- 2.2.5 Working with Forms
- 2.2.6 Generate Reports
- 2.2.7 Formatting Forms and Reports

### **2.3 Project Work on DBMS Software**

## **Unit 3: Communication and Networking**

- 3.1 Introduction: Definition, Purpose of networking
- 3.2 Analog and Digital Signal, Modulation(AM, FM, PM)
- 3.3 Direction of communication flow(Simplex, Halfduplex,)
- 3.4 Types of Network: Peer-to-peer and Client/Server, LAN, MAN and WAN
- 3.5 LAN Topologies :Bus, Star, Ring, Tree, Mesh Topologies (Its definition, structure,advantages & disadvantages)
- 3.6 Transmission Media: Bound Media (Coaxial Cable, Twisted Pair cable and Optical Fiber Cable – its description, structure, advantages and disadvantages), Unbound Media (Satellite, Wireless Media, Microwave Transmission)
- 3.7 Network Connecting Device: Modem, NIC, Switch / Hub, Router, Gateway, Repeater, Bluetooth, IR, WiFi
- 3.8 OSI Reference Model – Layer wise use and function
- 3.9 Communication Protocol: TCP/IP, SMTP, POP3, FTP, HTTPs, Telnet protocol
- 3.10 Demonstration of Communication Media and Connecting Devices

## **Unit 4: Programming in C**

- 4.1 Introduction:
  - 4.1.1 Overview, History, Features, Advantages and Disadvantages of C Language

- 4.1.2 Structure of C program
- 4.1.3 Compiling Process
- 4.1.4 C Preprocessor and Header Files
- 4.2 Fundamentals of C
  - 4.2.1 Character Set used in C
  - 4.2.2 Use of Comments
  - 4.2.3 Identifiers and Keywords and Tokens
  - 4.2.4 Data Types in C
  - 4.2.5 Constants and Variables
  - 4.2.6 Type of Specifier
  - 4.2.7 Statements – Simple and Compound Statements
- 4.3 Operators and Expressions
  - 4.3.1 Operators : Precedence & Associativity
  - 4.3.2 Expressions
  - 4.3.3 Type Casting and Conversions
  - 4.3.4 Introduction to Library Functions
- 4.4 Input/Output (I/O) Functions
- 4.5 Control Structures
  - 4.5.1 Decisions (if, if - else, else if, switch, ?; operator)
  - 4.5.2 Looping (while, do while, for)
- 4.6 Array and String
  - 4.6.1 Definition of array and string
  - 4.6.2 Types of Array – One-Dimensional and Two-Dimensional(definition, declaration, and initialization.)
  - 4.6.3 String Function : strlen(), strcat(), strcmp(), strcmp(), strcpy(), strlen() , strdup()
- 4.7 Functions
  - 4.7.1 Concept of Function, function definition, function prototype
  - 4.7.2 Return and Void statements of a function
  - 4.7.3 Accessing a Function – Function Call(by value, by reference)
  - 4.7.4 Concept of Recursion
- 4.8 Structures and Unions
  - 4.8.1 Definition and Difference between Structure and Union
  - 4.8.2 Structure: Declaration, Initialization and Size of Structure
- 4.9 Pointers
  - 4.9.1 Definition of Pointer
  - 4.9.2 Address (&) and indirection (\*) operator
  - 4.9.3 Pointer Expression and Assignment
- 4.10 Working with Files
  - 4.11 Concept of Data File
  - 4.12 Sequential and Random File
  - 4.13 Opening, Reading, Writing and Appending on/from Data File

#### **Unit 5: Object-Oriented Programming (OOP)**

- 5.1 Concept of OOP
- 5.2 Features of OOP: Class, Object, Polymorphism and Inheritance
- 5.3 Application of OOP
- 5.4 Difference between OOP and Structured Programming Language

#### **Unit 6: Information Communication Technology and Cyber Law**

- 6.1 Social Impact of the ICT
- 6.2 Digital Divide
- 6.3 Computer Ethics

- 6.4 Intellectual Properties Right
- 6.5 Privacy, Anonymity
- 6.6 Computer Crime
- 6.7 Concept of Cyber Law
- 6.8 Area of Cyber Law
- 6.9 Cyber Law in Nepal
- 6.10 IT Policy in Nepal

**Unit 7: Multimedia**

- 7.1 Introduction to Multimedia
- 7.2 Component of Multimedia : Text, Graphics, Audio, Video and Animation
- 7.3 Application of Multimedia

**Unit 8: Artificial Intelligence**

- 8.1 Concept of AI
- 8.2 Component of AI
- 8.3 Uses of AI
- 8.4 Ethical Aspect of AI

**Unit 9: Contemporary Technology**

- 9.1 e- Business
- 9.2 e-Learning
- 9.3 e-Governances
- 9.4 e-Medicine
- 9.5 Virtual Reality
- 9.6 Robotics

**Unit 10: Final Project Work**

- 10.1 Project Synopsis of the Project
- 10.2 Project Development using C Programming
- 10.3 Project Report

(Project should be assigned to individual students.)

**V. Instructional Materials:**

- To be guided by Teaching Manual

**VI. Instructional Techniques:**

- To be guided by Teaching Manual

**VII. Evaluation Schemes**

**c) Theory Evaluation:**

- Short Questions
- Long Questions
- Short Notes

Theory Questions are guided by marks distribution and model questions.

**d) Practical Evaluation:**

S. No.	Unit	Topics	No of Exercise	Mini Projects Evaluation	Remarks
1	2.2	Database Management System	10	10	Practical Marks Evaluated By: External Examiner: 10
2	3.10	Networking	2	-	Internal Examiner: 15 Based on Mini Project,

					Lab Exercise and Final Project
3	4	C programming Language	30	15	
4	10	Final Project			

Lab exercises are guided by marks distribution and Teaching Manual.

### VIII. Marks and hours distribution

Units	Mark Distribution		Number of Hours	
	Theory	Practical	Theory	Practical
1	10		15	
2	15	10	15	15
3	10		15	3
4	25	15	30	30
5	3		6	
6	3		6	
7	3		4	
8	2		3	
9	4		8	
10				
<b>Total</b>	<b>75</b>	<b>25</b>	<b>102</b>	<b>48</b>

### IX. Reference books:

- Gurung, J.B.; Baskota, A; Baral, D.S.; Baral, D.; Niroula, R.; Dhakal, T.P., *A Text Book on Computer Science Part-B*, Kathmandu: Bhundipuran Prakashan.
- Subba, B.R., *Computer Science Grade-XII*, Kathmandu: Taleju Prakashan.
- Baral, D.S.; Baral, D.; Ghimire; S.K. (2008), *The Secretes of C Programming Language*, Kathmandu: Bhundipuran Prakashan.
- Subba, B.R., *Computer Programming*, Kathmandu: Taleju Prakashan.
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- Pudasaini, D. Shakar; Adhikari, N., *A Text Book on Computer Science Grade XII*, Kathmandu: Buddha Academic Enterprises Pvt. Ltd.
- Balaguruswamy, E. (2000), *Programming in ANSI C, Second Edition*, Tata McGraw Hill Publishing Company.
- Gottfried, B.S. (2001), *Schaum's Outline Series for Programming with C, Second Edition*, Tata McGraw Hill Publishing Company.
- Yashavant, P. Kanetkar (2008), *Let Us C E/D*, BPB Publications.
- URL: <http://en.wikipedia.org/>

**HSEB**  
**Computer Science-Grade XII**  
**Model Questions**

Full Marks: 75  
Pass Marks: 27  
Time: 3 Hrs.

Candidates are required to give their answers in their own words as far as possible. Figures in the margin indicate full marks.

**Group – A**  
**(Long Answer Questions)**

**Attempt any Four Questions [4x10=40]**

1. What is Entity-Relationship Data Model? Give an ER-diagram for a database showing fatherhood, motherhood and spouse relationship among men and women. [4+6]
2. The rate of interest offered by a bank on fixed deposit:  
i) Period < 6 month 5%  
ii) Period 6 to 12 month 6%  
iii) Above 1 year 10%  
Write a flowchart and program using C language to calculate monthly interest of customer. [3+7]
3. Write a program that reads several different names and addresses into the computer, rearrange the names into alphabetical order. Make use of structure variables. [10]
4. Write a program that will read successive records from the new data file and display each record on the screen in an appropriately formatted form. [10]
5. Write a program with function and input menu from keyboard & activate these functions:  
i) print a circle()  
ii) reverse string() [10]

**Group – B**  
**(Short Answer Questions)**

**Attempt any Seven Questions [7x5=35]**

6. What is feasibility study? Why feasibility study is important in system analysis phase? Explain. [2+3]
7. What are the different types of LAN topology? Write merits and demerits of Star Topology. [2+3]
8. Write short notes on (any two):  
(a) Coaxial Cable (b) Fiber-Optic Cable (c) Switch [2.5+2.5]
9. Differentiate between array and structure with suitable examples. [2.5+2.5]
10. What do you mean by parameter "Passing by value" and "Passing by reference" in C? Explain with suitable example. [2.5+2.5]
11. Explain the terms Polymorphism and Inheritance. [2.5+2.5]
12. Describe the limitations of using *getchar()* and *putchar()* functions for reading strings. [2.5+2.5]
13. What do you understand by AI? How it may effect the society? [3+2]
14. Write short notes on (any two):  
(a) Cyber Law (b) Normalization (c) Context Diagram [2.5+2.5]