DEPARTMENT OF COMPUTER SCIENCE

B.C.A.,

(Students admitted during 2018 – 2019 Onwards)

(Under CBCS with Outcome Based Education (OBE) Pattern)

Programme Outcomes and Course Outcomes

H.H. THE RAJAH'S COLLEGE

(Government Autonomous Co-educational Institution

Affiliated to Bharathidasan University, Trichy)

PUDUKKOTTAI – 622 001.

B.C.A. (2018 - 2019 Onwards)

S.NO	SEM	PAPER	SUB.CODE	SUBJECT	Hrs./ WEEK	CREDIT	EXAM HOURS	MARKS		
								IE	EX	TOT
1	I	LC-I	18ULT1 / 18ULH1	Language Paper – I	6	3	3	25	75	100
2	I	ELC-I	18ULE1	English for Communication – I	6	3	3	25	75	100
3	I	CC-I	18UCA1	Web Design	6	5	3	25	75	100
4	I	CP-II	18UCA2P	Web Design Lab	3	3	3	40	60	100
5	I	AC-I	18UCAA1	Digital Computer Fundamentals	5	5	3	25	75	100
6	I	SBE-I	18USBE1	Soft Skills - Paper – I	2		-	-	-	-
7	I	EVS	18UES	Environmental Studies	2	2	3	25	75	100
					30	**21**	**-**	**-**	**-**	**600**
8	II	LC-II	18ULT2 / 18ULH2	Language Paper – II	6	3	3	25	75	100
9	II	ELC-II	18ULE2	English for Communication – II	6	3	3	25	75	100
10	II	CC-III	18UCA3	Programming in C & C++	6	5	3	25	75	100
11	II	CP-IV	18UCA4P	Programming in C & C++ Lab.	3	3	3	40	60	100
12	II	AC-II	18UCAA2	Operation Research	5	5	3	25	75	100
13	II	VE	18UVE	Value Education	2	2	3	25	75	100
	II	SBE-I	18USBE1	Soft Skills - Paper – I	2	4	3	25	75	100
					30	**25**	**-**	**-**	**-**	**700**
14	III	LC-III	18ULT3 / 18ULH3	Language Paper – III	6	3	3	25	75	100
15	III	ELC-III	18ULE3	Poetry, Fiction & English for Competitive Examination	6	3	3	25	75	100
16	III	CC-V	18UCA5	Programming in Java	5	5	3	25	75	100
17	III	CP-VI	18UCA6P	Programming in Java Lab.	3	3	3	40	60	100
18	III	AC-III	18UCAA3	Financial Accounting	3	-	-	-	-	-
19	III	AP-IV	18UCAA4P	Accounting Package lab.	3	-	-	-	-	-
20	III	NME-I	18UCAN1	Management Information Systems (or)	4	2	3	25	75	100
				Principles of Management	**OBJECTIVE TYPE**					
					30	**16**	**-**	**-**	**-**	**500**

21	IV	LC-IV	18ULT4 / 18ULH4	Language Paper – IV	6	3	3	25	75	100
22	IV	ELC-IV	18ULE4	Drama& English for Competitive Examination	6	3	3	25	75	100
23	IV	CC-VII	18UCA7	Relational Database Management Systems	5	5	3	25	75	100
24	IV	CP-VIII	18UCA8P	RDBMS Lab.	3	3	3	40	60	100
	IV	AC-III	18UCAA3	Financial Accounting	3	5	3	25	75	100
	IV	AP-IV	18UCAA4P	Accounting Package lab.	3	5	3	40	60	100
25	IV	SBE-II	18USBE2	Soft Skills - Paper - II	4	4	3	25	75	100
					30	**28**	**-**	**-**	**-**	**700**
26	V	CC-IX	18UCA9	Data Structures	6	5	3	25	75	100
27	V	CC-X	18UCA10	Programming in PHP	6	5	3	25	75	100
28	V	CP-XI	18UCA11P	Programming in PHP Lab.	4	4	3	40	60	100
29	V	EC-I	18UCAE1	Operating Systems (or) Business Process Outsourcing	6	5	3	25	75	100
30	V	NME-II	18UCAN2	Introduction to Office Management (or) General Health and Fitness	4	2	3	25	75	100
31	V	SBE-III	18USBE3	Soft Skills - Paper - III	4	4	3	25	75	100
					30	**25**	**-**	**-**	**-**	**600**
32	VI	CC-XII	18UCA12	Data Communication and Networks	6	5	3	25	75	100
33	VI	CC-XIII	18UCA13	Programming in VB.Net	6	5	3	25	75	100
34	VI	CP-XIV	18UCA14P	Programming in VB.Net Lab.	4	4	3	40	60	100
35	VI	EC-II	18UCAE2	Software Engineering (or) System Analysis and Design	6	5	3	25	75	100
36	VI	EC-III	18UCAE3	E-commerce and Its Applications(or) Computer Graphics	6	4	3	25	75	100
37	VI	GS	18UGS	Gender Studies	2	1	3	25	75	100
38	VI			Extension Activity		1				
					30	**25**	**-**	**-**	**-**	**600**
Total					**180**	**140**	**--**	**--**	**--**	**3700**

B.C.A. - Course Structure under CBCS

(For the Candidates Admitted from the academic year 2018 - 2019 onwards)

Core Courses (14)

Sl. No	Sub. Code	Code	Title of the Paper	Credit
1	18UCA1	CC-I	Web Design	5
2	18UCA2P	CP-II	Web Design Lab	3
3	18UCA3	CC-III	Programming in C & C++	5
4	18UCA4P	CP-IV	Programming in C & C++ Lab.	3
5	18UCA5	CC-V	Programming in Java	5
6	18UCA6P	CP-VI	Programming in Java Lab.	3
7	18UCA7	CC-VII	Relational Database Management Systems	5
8	18UCA8P	CP-VIII	RDBMS Lab.	3
9	18UCA9	CC-IX	Data Structures	5
10	18UCA10	CC-X	Programming in PHP	4
11	18UCA11P	CP-XI	Programming in PHP Lab.	5
12	18UCA12	CC-XII	Data Communication and Networks	5
13	18UCA13	CC-XIII	Programming in VB.Net	4
14	18UCA14P	CP-XIV	Programming in VB.Net Lab.	5
				60
Elective Courses (3)				
1	18UCAE1	EC-I	Operating Systems (or)	5
			Business Process Outsourcing	
2	18UCAE2	EC-II	Software Engineering (or)	5
			System Analysis and Design	
3	18UCAE3	EC-III	E-commerce and Its Applications(or)	4
			Computer Graphics	
				14
Skill Based Elective Courses (3)				
1	18USBE1	SBE-I	Soft Skills - Paper - I	4
2	18USBE2	SBE-II	Soft Skills - Paper - II	4
3	18USBE3	SBE-III	Soft Skills - Paper - III	4
				12
Allied Courses (4)				
1	18UCAA1	AC-I	Digital Computer Fundamentals	5
2	18UCAA2	AC-II	Operation Research	5
3	18UCAA3	AC-III	Financial Accounting	5
4	18UCAA4P	AP-IV	Accounting Package lab.	5
				20
Non-Major Elective Courses (2)				
1	18UCAN1	NMEC1	Management Information Systems (or)	2
			Principles of Management	
2	18UCAN2	NMEC2	Introduction to Office Management (or)	2
			General Health and Fitness	
				4
1	18UES	EVS	Environmental Studies	2
2	18UVE	VE	Value Education	2
3	18UGS	GS	Gender Studies	1

Total Credits	**115**
Part - V : Extra Curicular Activity	1
Part - I & Part - II	24
Over all Credits	**140**

B.C.A. (2018 - 2019 Onwards)

S.NO	SEM	PAPER	SUB.CODE	SUBJECT	PAPER		
					NEW	REVISED	RETAINED
1	I	CC-I	18UCA1	Web Design		✓	
2	I	CP-II	18UCA2P	Web Design Lab		✓	
3	I	AC-I	18UCAA1	Digital Computer Fundamentals			✓
4	II	CC-III	18UCA3	Programming in C & C++	✓		
5	II	CP-IV	18UCA4P	Programming in C & C++ Lab.	✓		
6	II	AC-II	18UCAA2	Operation Research			✓
7	III	CC-V	18UCA5	Programming in Java			✓
8	III	CP-VI	18UCA6P	Programming in Java Lab.			✓
9	IV	AC-III	18UCAA3	Financial Accounting		✓	
10	IV	AP-IV	18UCAA4P	Accounting Package lab.		✓	
11	III	NME-I	18UCAN1	Management Information Systems (or)		✓	
12				Principles of Management	✓		
13	IV	CC-VII	18UCA7	Relational Database Management Systems			✓
14	IV	CP-VIII	18UCA8P	RDBMS Lab.		✓	
15	V	CC-IX	18UCA9	Data Structures		✓	
16	V	CC-X	18UCA10	Programming in PHP	✓		
17	V	CP-XI	18UCA11P	Programming in PHP Lab.	✓		
18	V	EC-I	18UCAE1	Operating Systems (or)		✓	
19				Business Process Outsourcing	✓		
20	V	NME-II	18UCAN2	Introduction to Office Management (or)			✓
21				General Health and Fitness	✓		
22	VI	CC-XII	18UCA12	Data Communication and Networks		✓	
23	VI	CC-XIII	18UCA13	Programming in VB.Net			✓
24	VI	CP-XIV	18UCA14P	Programming in VB.Net Lab.		✓	
25	VI	EC-II	18UCAE2	Software Engineering (or)			✓
26				System Analysis and Design	✓		
27	VI	EC-III	18UCAE3	E-commerce and Its Applications(or)		✓	
28				Computer Graphics	✓		
% of Change					**32**	**39**	**29**

Program Outcomes (POs):

PO1: Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate programmer of study.

PO2: Capability to apply analytic thought to a body of knowledge; analyses and evaluate evidence, arguments, claims, beliefs on the basis of empirical evidence; identify relevant assumptions or implications; formulate coherent arguments; critically evaluate practices, policies and theories, philosophies

PO3: A sense of inquiry and capability for asking relevant/appropriate questions; ability to recognize cause-and-effect relationships, define problems, formulate and test hypotheses, analyses, interpret and draw conclusions from data; ability to plan, execute and report the results of an experiment or investigation.

PO4: Ability to work effectively and respectfully with diverse teams; facilitate cooperative or coordinated effort on the part of a group, and act together as a group or a team in the interests of a common cause and work efficiently as a member of a team.

PO5: Capability to use ICT in a variety of learning situations; ability to work independently, identify appropriate resources required for a project; ability to acquire knowledge and skills, through self-paced and self-directed learning aimed at personal development.

Subject Code: 18UCA1

CC - I - WEB DESIGN

OBJECTIVES

1. Able to explain the fundamental concepts of internet
2. Able to explain the various tags of HTML

UNIT I : Introduction to the Internet : Computers in Business – Networking – Internet – Email – Resource Sharing – Gopher – WWW – Usenet – Telnet – Bulletin Board Service – Wide Area Information Service

UNIT II :Introduction to HTML: Head and Body Section – Header Section – Prologue – Body Section : Colorful webpage – Heading - Printing – Aligning – Horizontal Ruler – Anchor tag – Hyperlink – Comment .

UNIT III :Paragraph – Tab Setting : Formatting Characters – Physical Style Format – Colorful Web Pages - Font tag – Base Font – Pre Formatting Text – Special Characters.

UNIT IV :Images and Pictures – List : Ordered List – Unordered List – Nested List – Table handling : Table Creation – Width of tables and Cells – Cell's Spanning - Coloring Cells – Column Specification

UNIT V :Frames : Frame set Definition – Frame Definition – Nested Frame Sets – Forms – Form Elements.

TEXT BOOK

"World Wide Web Design with HTML", C.Xavier, TMH, 2000.

UNIT I: Chapter 1
UNIT II: Chapter 4.5, 4.6, 5.1, 5.2, 5.3, 5.5, 5.6, 6.1, 6.2, 6.3
UNIT III: Chapter 6.4, 6.5
UNIT IV: Chapter 6.6, 6.7, 8.1-8.6
UNIT V: Chapter 10, 11, 12

REFERENCE BOOK

- Programming the World Wide Web – Robert W. Sebesta Fourth Edition Pearson
- https://www.w3schools.com/Html/html_responsive.asp

OUTCOMES:

CO1: Able to get the exposure in Internet
CO2: Explain the concepts of internetworking techniques with their characteristics.
CO3: Illustrate the require noment for WWW format and techniques
CO4: Recognize the functioning of servers and privacy, security related mechanism
CO5: Able to Design the WebPages using HTML

Part – A Answer all the Questions 10 X 2 = 20 Marks	Part – B Internal Choice Type 5 X 5 = 25 Marks	Part – C Answer any 3 Questions 3 X 10 = 30 Marks
Question 1,2 – 1 Unit 3,4 – II Unit 5,6 – III Unit 7,8 – IV Unit 9,10 – V Unit	11a (or) 11b – 1 Unit 12a (or) 12b – II Unit 13a (or) 13b – III Unit 14a (or) 14b – IV Unit 15a (or) 15b – V Unit	16 – I Unit 17 – II Unit 18 – III Unit 19 – IV Unit 20 – V Unit

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	L
CO2	S	M	S	S	M
CO3	M	L	S	M	S
CO4	L	L	L	S	S
CO5	M	M	M	L	S

S: Strong; M: Medium; L: Low

Subject Code: 18UCA2P

CP-II- WEB DESIGN LAB

1. Pre tag
2. Anchor Tag
3. Hyper Link
4. Header
5. Colourful Web page
6. Ordered and Unordered List
7. Tables Creation
8. Cell's Spanning
9. Frames
10. Forms

OUTCOMES:

CO1: Able to get the exposure in Internet
CO2: Explain the concepts of internetworking techniques with their characteristics.
CO3: Illustrate the require noment for WWW format and techniques
CO4: Recognize the functioning of servers and privacy, security related mechanism
CO5: Able to Design the WebPages using HTML

Subject Code: 18UCAA1

AC-I- DIGITAL COMPUTER FUNDAMENTALS

OBJECTIVES

- Able to Understand the Number Systems
- Able to Visualize the Logic Gates and Circuits

UNIT I : Number Systems: Decimal - Binary - Octal – Hexadecimal - Conversion From One Another - Binary Addition - Subtraction - Multiplication And Division – Codes - BCD Weighted-Excess – Gray - Error Detection Codes

UNIT II :Basic Logic Gates – Boolean Algebra: Laws and Theorems – The Universal Building Blocks - Sum of Products - Product of Sums – Karnaugh Map Simplification

UNIT III :Combinational Logic Circuits: Adder – Half and Full Adder - Subtractor - Multiplexers – Demultiplexers – Decoders – Encoders

UNIT IV : Flip – Flops : RS - Clocked RS – D Flip – Flop – JK Flip – Flop – T Flip – Flop – Edge Triggered - - Master/Slave Flip – Flop

UNIT V :Counters and Registers: Counters - Ripple Counter – Ring Counter - Registers – Shift Registers

TEXT BOOK

"Principles Digital Electronics" – K. Meena, PHI.

UNIT I: Chapter 1
UNIT II: Chapter 2(2.1 - 2.7, 2.9), 3(3.1, 3.3, 3.5 – 3.9, 3.13, 3.14)
UNIT III: Chapter 4(4.1 – 4.5, 4.7 – 4.10)
UNIT IV: Chapter 5(5.1 – 5.8)
UNIT V: Chapter 6(6.1 – 6.3, 6.8)

REFERENCE BOOK

- "Digital Computers Fundamentals", Bartee, Tata McGraw Hill, 1996.
- http://www.darshan.ac.in/upload/diet/documents/ec/de_21310004_all_28122015_080325am.pdf

OUTCOMES:

CO1: Able to get exposure to Number Systems
CO2: Able to Design Various Circuits with Logic Gates
CO3: Explain the concept of Boolean algebra and logic gates
CO4: Interpretation of various types of Flip-Flops.
CO5: Interpretation of various types of Counters and registers.

Part – A Answer all the Questions 10 X 2 = 20 Marks	Part – B Internal Choice Type 5 X 5 = 25 Marks	Part – C Answer any 3 Questions 3 X 10 = 30 Marks
Question 1,2 – 1 Unit 3,4 – II Unit 5,6 – III Unit 7,8 – IV Unit 9,10 – V Unit	11a (or) 11b – 1 Unit 12a (or) 12b – II Unit 13a (or) 13b – III Unit 14a (or) 14b – IV Unit 15a (or) 15b – V Unit	16 – I Unit 17 – II Unit 18 – III Unit 19 – IV Unit 20 – V Unit

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	M	L	M	S	L
CO2	L	L	S	M	S
CO3	L	S	S	M	L
CO4	M	M	M	S	M
CO5	M	M	M	M	M

S: Strong; M: Medium; L: Low

Subject Code: 18UCA3

CC-III - PROGRAMMING IN C AND C++

OBJECTIVES

- To impart basic knowledge of programming skills in C.
- To Understand the OOPs Concept
- To Visualize the OOPs Concepts using C++

UNIT I : Overview of C : History of C - Basic Structure of C program - Character set –Tokens - Keywords - Constants - Variables - Data types- Operators and expressions –Managing input and output operators.

UNIT II :Decisions making and branching-Decision making and looping - The ?: operator-The go to statement-Jumps in Loops. **Array:** One dimensional array-Two dimensional array.

Unit III : Functions: Definition of Function - Function calls-Nesting of functions – String -handling functions.

UNIT IV :Basic concepts of object oriented programming - Benefits of oops - Applications of oops – structures of C++program – Control Structure - Classes and object: Member function

UNIT V :Constructor : parameterized constructor –Copy Constructor - **Inheritance:** Types of Inheritance – Single Inheritance – Multiple Inheritance – Multilevel Inheritance – Hierarchical and Hybrid Inheritance.

TEXT BOOK

1. Programming in ANSI C – E.BALAGRUSAMY - Tata McGraw Hill.
   UNIT I: Chapter 1,2,3,4
   UNIT II: Chapter 5, 6, 7
   UNIT III: Chapter 8(8.8), 9
2. Object Oriented Programming With C++ By E. Balagurusamy – 2nd Edition Tata McGraw Hill
   UNIT IV: Chapter 1, 2, 3(3.22), 5(5.1-5.8)
   UNIT V: Chapter 6(6.1-6.7), 8(8.1-8.8)

REFERENCE BOOKS:

1. Programming with C – Byron S Gottfried" – Schaum's Outline Series, Tata McGraw Hill, 1996.
2. Herbert Schildt, "Teach Yourself C++", Third edition, Tata Mcgraw Hill, 2000.

Part – A Answer all the Questions 10 X 2 = 20 Marks	Part – B Internal Choice Type 5 X 5 = 25 Marks	Part – C Answer any 3 Questions 3 X 10 = 30 Marks
Question 1,2 – 1 Unit	11a (or) 11b – 1 Unit	16 – I Unit
3,4 – II Unit	12a (or) 12b – II Unit	17 – II Unit
5,6 – III Unit	13a (or) 13b – III Unit	18 – III Unit
7,8 – IV Unit	14a (or) 14b – IV Unit	19 – IV Unit
9,10 – V Unit	15a (or) 15b – V Unit	20 – V Unit

- https://www.programiz.com/c-programming

OUTCOMES:

CO1: Understood the programming techniques
CO2: Acquired the basics of the C Programming
CO3: Understood the sequence control and data control.
CO4: Would have learnt the various OOPs Concept using C++
CO5: Apply the concepts of storage management.

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	L	M	S	L	M
CO2	S	M	S	S	L
CO3	S	L	M	S	M
CO4	L	S	L	L	S
CO5	M	S	M	L	M

S: Strong; M: Medium; L: Low

Subject Code: 18UCA4P

CP-IV - PROGRAMMING IN C AND C++ LAB

1. Simple C Program - 1
2. Simple C Program - 2
3. Simple C Program - 3
4. Program Using Decision Making Statements
5. Program Using Looping Statements
6. Program Using Arrays
7. Program Using Function with No arguments and No Return Values
8. Program Using Function with Arguments with Return values
9. Program Using String Functions
10. Simple C++ Program
11. Program Using Class And Objects
12. Program Using Constructors And Destructors
13. Program Using Single Inheritance
14. Program Using Multiple Inheritance
15. Program Using Multi Level Inheritance
16. Program Using Exception Handling
17. Program for File Handling

OUTCOMES:

CO1: Understood the programming techniques
CO2: Acquired the basics of the C Programming
CO3: Understood the sequence control and data control.
CO4: Would have learnt the various OOPs Concept using C++
CO5: Apply the concepts of storage management.

Subject Code: 18UCAA2

AC-II - OPERATION RESEARCH

OBJECTIVES

- To Understand the Fundamentals of Operation Research
- To Understand the Various Problems in OR.
- To Visualize the Network Scheduling and PERT.

UNIT I : Introduction To O.R. – Elementary Treatment Of L.P.P- Methodology Of Or – Mathematical Formation Of The Problem – Graphical And Solution Method – Un Balanced Graphical And Solution - Slack And Surplus Variables-Matrix Formulation Of L.P.P-Simplex Algorithm –Simplex Method

UNIT II : Application Of Transportation Problem- North West Corner – Least Cost Method – Vogel's Approximation Method - Transportation Algorithm - Moving Towards Optimality

UNIT III: Assignment Problem- Impossible Assignment Problem – Unbalanced Assignment Problem - The Assignment Algorithm

UNIT IV :Network Scheduling: CPM – Introduction – Network and Basic Components – Rules for Network Construction – Time Calculation in Network - Critical Path Method

UNIT V :PERT: Introduction - PERT - PERT Calculation – Float and Negative Slack – Advantages of Network: PERT and CPM

TEXT BOOK

Operations Research by Kantiswarup, P.K. Gupta AndManmohan.

UNIT I: Chapter 1(1.1 - 1.9), 2(2.1 – 2.3, 2.5, 2.6), 3(3.1 – 3.5)

UNIT II: Chapter 6(6.1 – 6.9)

UNIT III: Chapter 7(7.1 – 7.4)

UNIT IV: Chapter 21(21.1 – 21.5)

UNIT V: Chapter 21(21.6 – 21.9)

REFERENCE BOOK

Operations Research by P. Mariapan

- https://swayam.gov.in/course/1342-introduction-to-operations-research

OUTCOMES:

CO1: Would have learnt the various concepts of OR.
CO2: Would have learnt the various types of OR.
CO3: Explain application Of Transportation Problem
CO4: Exposes the student to use of various scientific tools and models
CO5: To get knowledge about various decision making through OR models

Part – A Answer all the Questions 10 X 2 = 20 Marks	Part – B Internal Choice Type 5 X 5 = 25 Marks	Part – C Answer any 3 Questions 3 X 10 = 30 Marks
Question 1,2 – 1 Unit 3,4 – II Unit 5,6 – III Unit 7,8 – IV Unit 9,10 – V Unit	11a (or) 11b – 1 Unit 12a (or) 12b – II Unit 13a (or) 13b – III Unit 14a (or) 14b – IV Unit 15a (or) 15b – V Unit	16 – I Unit 17 – II Unit 18 – III Unit 19 – IV Unit 20 – V Unit

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	M	L	M	S	L
CO2	M	S	L	M	M
CO3	L	M	S	M	S
CO4	L	M	S	S	M
CO5	S	L	L	S	L

S: Strong; M: Medium; L: Low

CC - V - PROGRAMMING IN JAVA

OBJECTIVES

- To Understand the OOPs Concept
- To Visualize the OOPs Concepts with Java
- To Program Applets and Graphics in Java

UNIT I : Fundamentals Of Object Oriented Programming – Java Evolution – Overview Of Java Language – Data Types , Variables , Arrays – Operators – Control Statements

UNIT II :Introduction to Classes – Class Fundamentals – Declaring Objects – Constructors – Methods – Overloading Methods – Nested and Inner Classes - String Handling

UNIT III : Inheritance – Method Overriding – Abstract Class - Packages – Interfaces - Exception Handling – Types Of Exception – Try And Catch – Nested Try Statements

UNIT IV : Multithreaded Programming - Stream I/O And Files: Java I/O Classes And Interfaces – File – The Stream Classes – The Byte Streams – Character Streams – Using Stream I/O – Serialization – Stream Benefits

UNIT V :Applets and Graphics: Fundamentals of Applets – Graphics. AWT and Event Handling: AWT Components and Event Handlers – AWT Controls and Event Handling Types and Examples

TEXT BOOK

The Complete Reference Java 2 5/E Herbert Schildt

UNIT I: Chapter 1 to 5
UNIT II: Chapter 6, 7
UNIT III: Chapter 8 to 11
UNIT IV: Chapter 11, 12
UNIT V: Chapter 19, 20, 21

REFERENCE BOOKS

1. Programming With Java - C. Muthu
2. Programming With Java A Primer 3/E E. Balaguruswamy

- http://www.learnjavaonline.org/

OUTCOMES:

CO1: Would have learnt the fundamentals of Java
CO2: Would have learnt the usage of Exception handling
CO3: Implement polymorphism and overloading of operators
CO4: Apply the I/O operations to handle backup system using files.
CO5: Would have learnt Applets and Graphics.

Part – A Answer all the Questions 10 X 2 = 20 Marks	Part – B Internal Choice Type 5 X 5 = 25 Marks	Part – C Answer any 3 Questions 3 X 10 = 30 Marks
Question 1,2 – 1 Unit 3,4 – II Unit 5,6 – III Unit 7,8 – IV Unit 9,10 – V Unit	11a (or) 11b – 1 Unit 12a (or) 12b – II Unit 13a (or) 13b – III Unit 14a (or) 14b – IV Unit 15a (or) 15b – V Unit	16 – I Unit 17 – II Unit 18 – III Unit 19 – IV Unit 20 – V Unit

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	L	M	L	L	M
CO2	S	L	S	L	L
CO3	M	S	M	S	S
CO4	M	S	L	M	L
CO5	L	M	M	M	S

S: Strong; M: Medium; L: Low

Subject Code: 18UCA6P

CP - VI - PROGRAMMING IN JAVA LAB

1. Classes and Objects
2. Control Statement
3. Constructors
4. Method Overloading
5. String Handling
6. Inheritance
7. Method Overriding
8. Packages and Interfaces
9. Exception Handling
10. Threads
11. File Processing
12. Graphics Methods
13. AWT controls
14. AWT Event Handling

OUTCOMES:

CO1: Would have learnt the fundamentals of Java
CO2: Would have learnt the usage of Exception handling
CO3: Implement polymorphism and overloading of operators
CO4: Apply the I/O operations to handle backup system using files.
CO5: Would have learnt Applets and Graphics.

Subject Code: 18UCAA3

AC - III - FINANCIAL ACCOUNTING

OBJECTIVES

- To Understand the Types of Accounting.
- To Visualize the Ledgers, Balance Sheets and Errors

UNIT I: Fundamentals of Book-Keeping: Accounting, Objectives, Classifications, Concepts and Conventions. Double Entry Systems and Single Entry Systems: Advantages, Difference between Single and Double Entry System, Rules of Double Entry System, Types of Accounts: Personal Account, Real Account, Nominal Account. Journal: Narration, Advantages, Limitations, Exercises.

UNIT II: Ledgers: Meaning, Methods, Advantages, Differentiate between Journal and Ledger, Exercises. Subsidiary Books: Objectives, Types, Advantages, Exercises. Trial Balance: Definition, Objects/Advantages, Specimen Format, Preparation of Trial. Methods: Balance / Total methods. Solved Problems.

UNIT III: Rectification of Errors: Definition, Types, Suspense Account, Exercises. Bank Reconciliation Statement (BRS): Cash / Pass Book Maintenance, Differences from Cash / pass book, Procedure for the preparation of BRS, Favorable and Unfavorable, Exercises. Trading Accounting: Specimen form, Direct and Indirect Expenses, Important of Gross and Net Profits. Profit and Loss Account: Specimen, Difference between Trading and Profit & Loss Account. Exercises.

UNIT IV : Balance Sheet: Terms of Assets and Liabilities, Classification, Limitations, Procedure, Exercises. Final Account: With Adjustments and Without Adjustment, Exercises.

UNIT V : Depreciation: Definition, Objects, Factors. Methods of Depreciations: Straight line Method, Return down Value Method, Annuity Method, Sinking Fund Method.

TEXT BOOK

Financial Account – T.S. Reddy and A. Murthy – MarghamPubications.

Advanced Accounting- Volume I [Financial Accounting] – Dr. S. Peer Mohamed,

Dr. S.A.N. Shazuli Ibrahim – Pass Publications.

UNIT I	:	1.01	-	J-2.27
UNIT II	:	2.01	-	3.12
UNIT III	:	4.01	-	6.32
UNIT IV	:	7.01	-	7.58
UNIT V	:	10.01	-	10.47

REFERENCE BOOK

- Advance accounting – M.C.Shukla, T.S. Grewal&S.C.Gupta – S.Chand And Co.,

OUTCOMES

CO1: Would have learnt the Basics of Accounting.
CO2: Would have learnt various methods of Financial Accountings.
CO3: Student will be able to exhibit theoretical knowledge of accounting and apply same in real time business world.
CO4: Sudent will be able to understand the accounting principle and standard and its application.
CO5: Students are able to prepare Financial Statements and interpret the results there off.

Part – A Answer all the Questions 10 X 2 = 20 Marks	Part – B Internal Choice Type 5 X 5 = 25 Marks	Part – C Answer any 3 Questions 3 X 10 = 30 Marks
Question 1,2 – 1 Unit 3,4 – II Unit 5,6 – III Unit 7,8 – IV Unit 9,10 – V Unit	11a (or) 11b – 1 Unit 12a (or) 12b – II Unit 13a (or) 13b – III Unit 14a (or) 14b – IV Unit 15a (or) 15b – V Unit	16 – I Unit 17 – II Unit 18 – III Unit 19 – IV Unit 20 – V Unit

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	M	S	M	M	L
CO2	M	L	L	S	M
CO3	L	M	S	M	S
CO4	S	M	M	S	S
CO5	L	L	L	L	M

S: Strong; M: Medium; L: Low

Subject Code: 18UCAA4P

AP - IV - ACCOUNTING PACKAGE LAB

1. Company Creations

2. Vouchers Types Journal

3. Ledger Creation – Editing and Deleting.

4. Trial Balance

5. Trading Account -Gross Profit or Gross Loss

6. Profit And Loss Account – Net Profit or Net Loss

7. Balance Sheet for Final Account, Identify the Items of Liabilities and Assets

8. Final Account with Adjustment

9. Final with Adjustment Calculation – Depreciation

OUTCOMES

CO1: Would have learnt the Basics of Accounting.
CO2: Would have learnt various methods of Financial Accountings.
CO3: Student will be able to exhibit theoretical knowledge of accounting and apply same in real time business world.
CO4: Sudent will be able to understand the accounting principle and standard and its application.
CO5: Students are able to prepare Financial Statements and interpret the results there off.

Subject Code: 18UCAN1

NME - I - MANAGEMENT INFORMATION SYSTEMS

OBJECTIVES:

- To learn the fundamentals of MIS
- To visualize the various Management Techniques
- To Understand the Telecommunication Networks and DSS.

UNIT I :Foundations of Information Systems in Business: Foundation Concepts – Components of Information Systems

UNIT II :Competing with Information Technology: Fundamentals of Strategic Advantage – Using Information Technology for Strategic Advantage

UNIT III :Data Resource Management: Technical Foundations of Database Management – Managing Data Resources.

UNIT IV :Telecommunications and Networks: The Networked Enterprise – Telecommunications Network Alternatives

UNIT V :Decision Support Systems: Decision Support in Business – Artificial Intelligence Technology in Business – Developing Business / IT Solutions

TEXT BOOK

"Management Information Systems", James A. O'brien, Fourth Edition, Galgotia Publications, 1999.

UNIT I: Chapter 1
UNIT II: Chapter 2
UNIT III: Chapter 5
UNIT IV: Chapter 6
UNIT V: Chapter 9, 10

REFERENCE BOOK

- "Management Information Systems", Gordon B. Davis Margrethe H. Olson, 2nd Edition, McGraw Hill.
- https://www.tutorialspoint.com/management_information_system/index.htm

OUTCOMES:

CO1: Relate the basic concepts and technologies used in the field of management information systems
CO2: Compare the processes of developing and implementing information systems.
CO3: Outline the role of the ethical, social, and security issues of information systems.
CO4: Translate the role of information systems in organizations, the strategic management processes, with the implications for the management.
CO5: Apply the understanding of how various information systems like DBMS work together to accomplish the information objectives of an organization.

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	L	M	S	L	L
CO2	M	M	L	M	L
CO3	S	M	L	S	S
CO4	M	M	L	M	S
CO5	S	S	M	M	S

S: Strong; M: Medium; L: Low

Subject Code: 18UCAN1

NME - I - PRINCIPLES OF MANAGEMENT

OBJECTIVES:

- To learn the fundamental Principles of Management
- To visualize the various Management Techniques

Unit I : Introduction: Meaning and Definition of Management – Features and Functions of Management – Importance of Management – Functions and Role of Manager – Responsibilities of Professional Manager – Elements of Management – Principle of Management – Scientific Management – Principle of Scientific Management.

Unit II : Planning: Approaches of Management: System Approach – Situational Approach – Policy: Meaning –Features – Importance – Types of Policies – Merits and Demerits of Policy – Planning:Meaning – Definition – Characteristics – Objectives – Nature – Importance – Advantage – Steps in Planning Process – Methods of Planning – Limitation of Planning,

Unit III : Organization: Meaning – Definition – Function – Principles –Characteristics – Advantages – Classification: Formal Organization – Informal Organization – Types ofOrganization: Line Organization – Functional Organization – Line and Staff Organization – Committee Organization – Project Organization – Matrix Organization – Free Form Organization.

Unit IV : Staffing: Definition – Elements – Functions – Processing – Proper Staffing – Recruitment – Sources – Merits and Demerits – Selection – Importance – Stages of Selection Procedure – Kinds of Interviews – Principles of Interview – Process of Interview – Promotion – Training: Meaning – Definition – Elements – Importance and Need – Types of Training – Characteristics of Good Training.

Unit V : Leadership: Types of Leadership: Importance – Approaches – Functions – Types of Leaders – Characteristics of Leadership Styles. Co–Ordination:Definition – Characteristics of Importance – Essential and Effective – Techniques – Types – Steps for Effective Co–Ordination – Co–Ordination and Co –Operation.

TEXT BOOK

Principles of Management – T. Ramasamy Himalaya Publishing House, 8th Revised Edition
Unit I: Chapter 1, 2
Unit II: Chapter 3, 4, 5
Unit III: Chapter 9, 13
Unit IV: Chapter 15, 17
Unit V: Chapter 21, 25.

REFERENCE BOOKS

- Principles of Management – C.M Prasad
- Principles of Management – Dinkarpagare
- http://open.lib.umn.edu/principlesmanagement/

OUTCOMES:

CO1: Would have learnt the various Management Techniques
CO2: To recall and identify the relevance of management concepts
CO3: Would have learnt the Various Levels of Management
CO4: To apply management techniques for meeting current and future management challenges faced by the organization
CO5: To apply principles of management in order to execute the role as a manager

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	S	L	L	S	M
CO2	S	S	M	S	M
CO3	L	M	M	M	L
CO4	M	L	L	L	L
CO5	L	S	S	L	M

S: Strong; M: Medium; L: Low

Subject Code: 18UCA7

CC - VII - RELATIONAL DATABASE MANAGEMENT SYSTEMS

OBJECTIVES:

- To provide the basic concepts of the database systems including data models, storage structure, normalization
- To learn the fundamentals RDBMS
- To visualize the various RDBMS Techniques

UNIT I :Introduction – File and Database System – Data Abstraction – Instances and Schemas – Database Languages – Database System Structure – Database Administrator

UNIT II :Data Models – E-R- Diagram – Key Constraints – Extended ER Features – ER Diagram with Relationships – Aggregate Functions – Relational Algebra: Fundamental Operations

UNIT III :SQL – Data Definition – Queries in SQL – Nested Sub Queries – Modification of the Database - Views – Joined Relations – Data Definition Language - Embedded SQL

UNIT IV :**Normalization:** 1NF - 2NF - 3NF – BCNF - 4NF - 5NF – File Organization – Organization of Records in Files – Hashing Techniques: Static Hashing – Dynamic Hashing

UNIT V :**Concurrency Control** - Lock Based Protocols - Time Stamp Based Protocols - Validation-Based Protocols - Multiple Granularity - Deadlock handling.

TEXT Book

Henry F. Korth Abraham Silberschatz , Database System Concepts , Fourth Edition McGraw Hill International Editions 2002

UNIT I: Chapter 1

UNIT II: Chapter 2, 3

UNIT III: Chapter 4

UNIT IV: Chapter 7, 10, 11

UNIT V: Chapter 14, 8

REFERENCE BookS

1. James Martin , “Computer Data Base Organization” , Second Edition Prentice Hall
2. C.J. Date, “An Introduction to Database System”, Seventh Edition, Pearson Education, New Delhi, 2002.
- https://www.w3schools.com/sql/sql_intro.asp

OUTCOMES:

CO1: Would have learnt the various RDBMS Techniques
CO2: Illustrate the concept of Database Management System.
CO3: Explain Entity Relationship Diagrams.
CO4: Illustrate concept of functional dependencies and determine normalization.
CO5: Would have learnt the Various Queries using ORACLE

Part – A Answer all the Questions 10 X 2 = 20 Marks	Part – B Internal Choice Type 5 X 5 = 25 Marks	Part – C Answer any 3 Questions 3 X 10 = 30 Marks
Question 1,2 – 1 Unit 3,4 – II Unit 5,6 – III Unit 7,8 – IV Unit 9,10 – V Unit	11a (or) 11b – 1 Unit 12a (or) 12b – II Unit 13a (or) 13b – III Unit 14a (or) 14b – IV Unit 15a (or) 15b – V Unit	16 – I Unit 17 – II Unit 18 – III Unit 19 – IV Unit 20 – V Unit

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	M	M	S	M	S
CO2	L	S	L	M	S
CO3	S	L	L	L	M
CO4	M	S	L	L	M
CO5	S	M	M	S	L

S: Strong; M: Medium; L: Low

Subject Code: 18UCA8P

CP - VIII - RDBMS LAB

1. To Implement Data Definition Language
    1.1. Create, Alter, Drop, Truncate
    1.2. To Implement Constraints.
    (A) Primary Key, (B) Foreign Key, (C) Check, (D) Unique, (E) Null, (F) Not Null, (G) Default, (H).Enable Constraints, (I) Disable Constraints, (J) Drop Constraints

2. To Implementation On DML, TCL And DRL
    (A) Insert, (B) Select, (C) Update, (D) Delete, (E) Commit, (F) Rollback, (G) Save Point,
    (H) Like'%', (I) Relational Operator

3. To Implement Nested Queries & Join Queries
    (A) To Implementation of Nested Queries
    (B) Inner Join, (C) Left Join, (D) Right Join (E) Full Join

4. To Implement Views
    (A) View, (B) Joint View, (C) Force View, (D) View With Check Option

5. Control Structure
    5.1. To Write a PL/SQL Block for Addition of Two Numbers
    5.2. To Write a PL/SQL Block for If Condition
    5.3. To Write a PL/SQL Block for If and Else Condition
    5.4. To Write a PL/SQL Block for Greatest of Three Numbers Using If and Elseif
    5.5. To Write a PL/SQL Block for Summation of Odd Numbers Using For Loop

OUTCOMES:

CO1: Would have learnt the various RDBMS Techniques
CO2: Illustrate the concept of Database Management System.
CO3: Explain Entity Relationship Diagrams.
CO4: Illustrate concept of functional dependencies and determine normalization.
CO5: Would have learnt the Various Queries using ORACLE

Subject Code: 18UCA9

CC-IX- DATA STRUCTURES

OBJECTIVES:

- To Learn the Basics of Data Structures
- To Visualize the various Data Structures

UNIT I :Basic Terminology – Data Structure Operations – **Algorithms:** Complexity, Time Space Tradeoff – **Arrays:** Linear Array – Representation of Linear Array – Inserting and Deleting – Bubble Sort – Linear Search- Binary Search

UNIT II :Linked List: Representation – Traversing – searching – Insertion – Deletion- Two Way List

UNIT III :Stack: Array Representation – Linked Representation – Arithmetic Expression – Quick Sort – Queue - Linked Representation

UNIT IV :Trees: Binary Tree Representation – Traversing – Traversal Algorithms Using Stack – Threads - Binary Search Trees - Insertion – Deletion in Binary Search Trees – Heap Sort

UNIT V :Graph: Terminology – Sequential Representation of Graph – Linked Representation of Graph- Operations on Graphs – Sorting: Insertion Sort – Selection Sort – Merge Sort

TEXT BOOK

Data Structures – Lipschuta, Tata Mcgraw Hill, Schaum's Outline Series.

UNIT I: Chapter 1.2, 1.4, 1.5, 4.2 – 4.8

UNIT II: Chapter 5.2 – 5.5, 5.7, 5.8, 5.10

UNIT III: Chapter 6.2 – 6.6, 6.10, 6.11

UNIT IV: Chapter 7.2 – 7.5, 7.7 – 7.9, 7.17

UNIT V: Chapter 8.2 – 8.3, 8.5, 8.6, 9.3-9.5

REFERENCE BOOK

- Fundamentals of Data Structure – Ellis Horowitz And SartajSahini
- https://www.studytonight.com/data-structures/

OUTCOMES:

CO1: Would have learnt the various Data Structure
CO2: Would have learnt the Various Operations of Data Structures
CO3: Compare various searching and sorting techniques
CO4: Identify the asymptotic notations
CO5: Choose appropriate data structure while designing the algorithms.

Part – A Answer all the Questions 10 X 2 = 20 Marks	Part – B Internal Choice Type 5 X 5 = 25 Marks	Part – C Answer any 3 Questions 3 X 10 = 30 Marks
Question 1,2 – 1 Unit 3,4 – II Unit 5,6 – III Unit 7,8 – IV Unit 9,10 – V Unit	11a (or) 11b – 1 Unit 12a (or) 12b – II Unit 13a (or) 13b – III Unit 14a (or) 14b – IV Unit 15a (or) 15b – V Unit	16 – I Unit 17 – II Unit 18 – III Unit 19 – IV Unit 20 – V Unit

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	S	L	L	S	L
CO2	M	M	M	L	L
CO3	S	S	M	S	S
CO4	L	M	S	S	S
CO5	M	L	L	M	M

S: Strong; M: Medium; L: Low

Subject Code: 18UCA10

CC-X – PROGRAMMING IN PHP

OBJECTIVES:

- To Understand the Basics of PHP
- To Visualize the fundamentals of PHP Programming.

UNIT I : Essential PHP: Development Environment – Creating and Running PHP Page – Mixing HTML and PHP – Printing – Echo Power – Command Line PHP – Variables – Strings – Constants – Internal Data Types - **Operator and Flow Control:** Operator - If Statements – Switch Statement – Looping Statement

UNIT II : Strings and Arrays: String Functions – Arrays – Array with Functions and Loops - Multidimensional Arrays - **Creating Functions:** Function – Passing Variables – Returning Data - Returning Array – Returning List- Returning Reference – Variable Scope - Global Data - Conditional, Variable and Nesting, Functions

UNIT III : Reading data with PHP : Setting up web Page – Handling text fields – Tool Box Controls - Password Controls - Hidden Controls - File Uploads- Handling Buttons.

UNIT IV : File Handling: Opening File – Looping over a file – Reading text and Character – Reading a whole file – Reading a file into array - Getting file information – Setting file pointer – Copying, Deleting, Reading and Writing files - Appending and locking files

UNIT V : Working with Database: Database – Essential SQL- Creating MYSQL Database – Creating a new table – Putting data – Accessing data – Updating – Inserting – Deleting Records – Creating new Database – Sorting Data.

TEXT BOOK

"THE COMPLETE REFERENCE: PHP", Steven Holzner, McGraw Hill Education (India) Edition 2008

Unit I: Chapter 1, 2
Unit II: Chapter 3, 4
Unit III: Chapter 5
Unit IV: Chapter 9
Unit V: Chapter 10

REFERENCE BOOK

- "Setting Up LAMP: Getting Linux, Apache, MySQL, and PHP and Working Together", Eric Rosebrock, Eric Filson, Published by John Wiley and Sons, 2004.

- https://www.w3schools.com/pHP/default.asp

OUTCOMES:

CO1: Would have learnt the basics of PHP
CO2: Would have learnt the Programming using PHP.
CO3: Students will be able to differentiate client side and server side scripting techniques.
CO4: Knowledge of PHP will help them to build dynamic web based solution based on user requirements.
CO5: Apply Web programming skills using PHP.

Part – A Answer all the Questions 10 X 2 = 20 Marks	Part – B Internal Choice Type 5 X 5 = 25 Marks	Part – C Answer any 3 Questions 3 X 10 = 30 Marks
Question 1,2 – 1 Unit 3,4 – II Unit 5,6 – III Unit 7,8 – IV Unit 9,10 – V Unit	11a (or) 11b – 1 Unit 12a (or) 12b – II Unit 13a (or) 13b – III Unit 14a (or) 14b – IV Unit 15a (or) 15b – V Unit	16 – I Unit 17 – II Unit 18 – III Unit 19 – IV Unit 20 – V Unit

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	L	S	S	M	M
CO2	S	L	M	S	L
CO3	S	M	M	L	L
CO4	M	M	M	L	L
CO5	M	S	S	S	S

S: Strong; M: Medium; L: Low

Subject Code: 18UCA11P

CP-XI - PROGRAMMING IN PHP LAB

1. Sum of Digits
2. Biggest Number using Function
3. Display Book Details using For Each Loop
4. Controls and Functions
5. Passing Variables using HTML
6. String Functions and Arrays
7. Applications Form using MySql Table
8. File System Functions
9. Date and Time Functions
10. File Upload and Converting Image File Types

OUTCOMES:

CO1: Would have learnt the basics of PHP
CO2: Would have learnt the Programming using PHP.
CO3: Students will be able to differentiate client side and server side scripting techniques.
CO4: Knowledge of PHP will help them to build dynamic web based solution based on user requirements.
CO5: Apply Web programming skills using PHP.

Subject Code: 18UCAE1

EC-I - OPERATING SYSTEMS

OBJECTIVES:

- To Visualize the different views of Operating System
- To Learn the various functions of OS.

UNIT I : Evolution of Operating Systems – Types of Operating System – Different Views of OS – Design and Implementation of Operating Systems – I/O Programming Concepts.

UNIT II : Memory Management – Single Contiguous Allocation – Partitioned Allocation – Relocatable Partitions Allocations – Paged and Demand Paged Memory Management – Segmented Memory Management – Segmented and Demand Paged Memory Management – Overlay Techniques – Swapping.

UNIT III :Processor Management – Job Scheduling – Process Scheduling – Functions And Policies – Evolution of Round Robin Multiprogramming Performance – Process Synchronisation – Race Condition – Synchronization Mechanism – Deadly Embrace – Synchronisation Performance Considerations.

UNIT IV : Device Management: Techniques for Device Management – Device Characteristics – I/O Traffic Controller, I/O Scheduler, I/O Device Handlers – Virtual Devices – Spooling.

UNIT V :File Management: Simple File System – General Model of a File System – Physical and Logical File System.

TEXT BOOK

"Operating Systems" – E. Madnick& John J.Donavan, Tata McGraw Hill Publishing Co., Limited. 1997 Edition.

UNIT I: Chapter 1, 2; UNIT II: Chapter 3; UNIT III: Chapter 4;
UNIT IV: Chapter 5; UNIT V: Chapter 6

REFERENCE BOOK

- "System Programming and Operating Systems" – D.M. Dhamdhere, Tata Mcgraw Hill Publishing Co., Limited.
- **https://www.tutorialspoint.com/operating_system/index.htm**

OUTCOMES:

CO1: Explain the structure and functions of Operating system.
CO2: Illustrate the concept of concurrency.
CO3: Outline the concepts of deadlock.
CO4: Distinguish between various memory management scheme.
CO5: Explain I/O management and file system, concepts of protection and security.

Part – A Answer all the Questions 10 X 2 = 20 Marks	Part – B Internal Choice Type 5 X 5 = 25 Marks	Part – C Answer any 3 Questions 3 X 10 = 30 Marks
Question 1,2 – 1 Unit 3,4 – II Unit 5,6 – III Unit 7,8 – IV Unit 9,10 – V Unit	11a (or) 11b – 1 Unit 12a (or) 12b – II Unit 13a (or) 13b – III Unit 14a (or) 14b – IV Unit 15a (or) 15b – V Unit	16 – I Unit 17 – II Unit 18 – III Unit 19 – IV Unit 20 – V Unit

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	M	M	L	S	L
CO2	S	S	L	L	S
CO3	S	M	M	M	M
CO4	L	M	S	M	M
CO5	L	L	M	L	L

S: Strong; M: Medium; L: Low

Subject Code: 18UCAE1

EC - I - BUSINESS PROCESS OUTSOURCING

OBJECTIVES:

- To Understand the Fundamentals of BPO
- To Learn the various Techniques of BPO.

UNIT I

Search For Competitiveness - Need For Outsourcing - BPOs: Beyond Call Centres

UNIT II

Transition Management - BPO Business Models - BPO Governance

UNIT III

Legal Issues in BPO Contracts - BPO—Regulatory Issues - Service Supplier Selection

UNIT IV

Service Level Agreement - BPO Legal Contract - BPO to KPO: Up In The Value Chain

UNIT V

HR Challenges in BPO Industry - Performance Evaluation In BPO - BPO— Prerequisites And Precautions - Service Quality Issues in BPO

Text Book

1**.** Business Process Outsourcing: A Supply Chain of Expertises, Vinod V. Sople, Prentice Hall of India, 2011.

Reference Book:

1. Business Process Outsourcing, SarikaKulkarni, Jaico Publishing House, Delhi 2005

- https://www.quora.com/What-is-the-best-way-to-start-learning-about-business-process-outsourcing-BPO

OUTCOMES:

CO1: Would have learnt the Fundamentals of BPO.
CO2: Would have learnt the Various Techniques of BPO.
CO3: Explain the Need for Business Process Outsourcing
CO4: Describe the Drivers of the BPO Phenomenon Explain the Elements to Consider to Outsource a Business Process
CO5: Explain the Steps for Measuring Performance of BPO Business

Part – A Answer all the Questions 10 X 2 = 20 Marks	Part – B Internal Choice Type 5 X 5 = 25 Marks	Part – C Answer any 3 Questions 3 X 10 = 30 Marks
Question 1,2 – 1 Unit	11a (or) 11b – 1 Unit	16 – I Unit
3,4 – II Unit	12a (or) 12b – II Unit	17 – II Unit
5,6 – III Unit	13a (or) 13b – III Unit	18 – III Unit
7,8 – IV Unit	14a (or) 14b – IV Unit	19 – IV Unit
9,10 – V Unit	15a (or) 15b – V Unit	20 – V Unit

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	L	L	M	S	S
CO2	M	L	M	S	M
CO3	M	S	L	L	L
CO4	L	M	L	S	L
CO5	L	M	L	M	S

S: Strong; M: Medium; L: Low

Subject Code: 18UCAN2

NME - II – INTRODUCTION TO OFFICE MANAGEMENT

OBJECTIVES:

- To Learn the Basics of Office Management
- To Visualize the various Office Management Techniques.

UNIT I

Office Management – Meaning – Elements of Office Management – Functions of Office Management

UNIT II

Office Organization – Definition, Characteristics and Steps – Types of Organizations – Functions of an Office Administrator

UNIT III

Office Record Management - Importance –Filing Essentials - Classification and Arrangement of Files – Modern Methods of Filing – Modern Filing Devices

UNIT IV

Office Communication –Correspondence and Report Writing – Meaning of Office Communication and Mailing

UNIT V

Form Letters – Meaning, Principles and Factors to be considered in Designing Office Forms – Types of Report Writing

TEXT BOOKS

1. Fundamentals of Office Management – by J.P. Mahajan
2. Office Management by S.P. Arrora
3. Office Management - R.S.N. Pillai and Bagavathi –S. Chand

- **https://www.gcflearnfree.org/topics/office2010/**

OUTCOMES:

CO1: Would have learnt the Fundamentals of Office Management.
CO2: Would have learnt the Various Techniques of Office Management.
CO3: Understand the concepts, need and importance of Office management
CO4: Critically analyse and understand the process of management
CO5: Understand adopt and integrate Communication skills

Question Pattern

Answer any 5 out of 8 Questions

5 X 15 = 75 Marks

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	M	L
CO2	L	S	S	M	M
CO3	L	M	L	L	M
CO4	M	L	M	S	S
CO5	M	S	S	L	S

S: Strong; M: Medium; L: Low

Subject Code: 18UCAN2

NME - II – GENERAL HEALTH AND FITNESS

OBJECTIVES:

- To Learn the Health Problems.
- To Visualize the various Fitness and Wellness Techniques.

UNIT I :INTRODUCTION

A. Health – Meaning and Definition
B. Aspects of Health – Physical – Mental – Social – Spiritual Health
C. Importance of Health
D. Factors Influencing Health
E. Need and Importance of Health

UNIT II :HEALTH PROBLEMS

A. Disease – Communicable Disease – Types – Modes of Transmission – Causes – Symptoms – Prevention and Control – Malaria – Small Box – Tuberculosis – AIDS.
B. Non – Communicable Disease – Hypertension – Stroke – Obesity – Coronary Heart Disease – Diabetes – Leukaemia – Epilepsy.
C. Immunity – Meaning and Definition – Types – Immunization.
D. BMI – Calculation and BMI Table – Hip / Waist Ratio.

UNIT III :HEALTH ORGANISATIONS AND AGENCIES

A. Structure and Functions of National and International Agencies.
B. WHO, UNICEF, IRCS, UNDP, World Bank, JRC, IMA, Family Planning Association of India, RRC.

UNIT IV :FITNESS AND WELLNESS

A. Meaning and Definition of Fitness – Physical Fitness.
B. Types of Physical Fitness – Health Related Physical Fitness – Skill Related Physical Fitness.
C. Meaning and Definition of Fitness and Wellness.
D. Physical Fitness Activities – Aerobic Exercise – Walking – Jogging – Running – Cycling – Swimming – Anaerobic Exercise – Slow and Fast Continuous Running – Resistance Training.
E. Simple Physical Exercise Programme for Computer Users.

UNIT V :YOGIC SCIENCE

A. Meaning and Definition of Yoga.
B. Aim and Objectives of Yoga – Limbs of Yoga.
C. Guidelines for Practicing Asana.
D. Suryanamaskar and its Benefits.
E. Pranayama and its Benefits – NadiSuddhi – NadiSodhana – Surya Bhedana – Chandra Bhedana – Kapalabathi.
F. Difference between Physical Exercise and Yoga Asana.

TEXT BOOKS:

1. Williams H.Melvin (1995), Life time fitness and wellness, Brow Pub. Dubugue.
2. Greenberg / Pargman – Physical Fitness (A wellness management)
3. A.K.Uppal – Physical Fitness (How to develop)
4. Swami Kuvalayananda, Asanas, KaivalyadhamaLomavala, Pune.
5. B.K.S. Iyankar, Light on Yoga Harper Collins Pub. , Delhi.

OUTCOMES:

CO1: Would have learnt the various Health Problems.
CO2: Would have learnt the Various Fitness and Wellness Techniques.
CO3: Understand the role of health organisations and agencies.
CO4: Explain the components of physical fitness and steps to achieve each.
CO5: Demonstrate an understanding of the various health issues currently facing today's society.

Question Pattern

Answer any 5 out of 8 Questions
5 X 15 = 75 Marks

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	M	M	S	S	M
CO2	S	M	S	L	L
CO3	L	L	M	S	S
CO4	S	S	L	M	M
CO5	S	M	M	M	L

S: Strong; M: Medium; L: Low

Subject Code: 18UCA12

CC - XII - DATA COMMUNICATION AND NETWORKS

OBJECTIVES:

- To Learn the basics of Communication Networks.
- To Understand the various Techniques of Data Communication Networks.

UNIT I :Data Communication – Networks – Protocols And Standard – Line Configuration – Topology – Transmission Mode – Categories Of Networks – Internet Works

UNIT II :The OSI Model – Functions Of The Layers – TCP/IP Protocols Suite – Signals – Analog And Digital Signal – Data Transmission – Data Terminal Equipment – Data Circuit Terminals Equipment – Modems

UNIT III :Transmission Of Media – Guided Media – Unguided Media – Transmission Impairments – Media Comparison - Error Detection – Types of Errors – Detection – Vertical Redundancy Check (VRC) – Longitudinal Redundancy Check (LRC) – Cyclic Redundancy Check (CRC) - Check Sum

UNIT IV : Switching – Circuit Switching – Packet Switching – Message Switching - Networking And Internetworking Devices – Repeaters – Bridges – Routers – Gateways. Routing Algorithm – Distance Vector Routing – Link State Routing

UNIT V :Internet Working: TCP/IP Protocol Suite – Client Server Model – Domain Name System – File Transfer Protocol (FTP) – Simple Mail Transfer Protocol (SMTP) – World Wide Web (WWW) – Hyper Text Transfer Protocol (HTTP)

TEXT BOOK

"Data Communications and Networking" –2nd Edition- Behrouz A Forouzan.
UNIT I: Chapter 1, 2(2.1 To 2.4)
UNIT I: Chapter 3(3.1to3.3), 4(4.1 To 4.6)
UNIT III: Chapter 7(7.1 To 7.3), 9(9.1 To 9.6)
UNIT IV: Chapter 14(14.1 To 14.3), 21(21.1 To 21.8)
UNIT V: Chapter 25(25.1, 25.3, 25.5, 25.7, 25.9, 25.10)

REFERENCE BOOK

1. Computer Networks- Tanenbaum
2. Computer Networks –William Stallings

- https://www.tutorialspoint.com/data_communication_computer_network/index.htm

OUTCOMES:

CO1: Would have learnt the fundamentals of Communication Networks
CO2: Would have learnt the Various Techniques of Data Communication Networks.
CO3: Student will be able to understand network communication using the layered concept
CO4: Student will be able to understand the concept of flow control, error control and LAN protocols
CO5: Student shall understand the functions performed by a Network Management System

Part – A Answer all the Questions 10 X 2 = 20 Marks	Part – B Internal Choice Type 5 X 5 = 25 Marks	Part – C Answer any 3 Questions 3 X 10 = 30 Marks
Question 1,2 – 1 Unit 3,4 – II Unit 5,6 – III Unit 7,8 – IV Unit 9,10 – V Unit	11a (or) 11b – 1 Unit 12a (or) 12b – II Unit 13a (or) 13b – III Unit 14a (or) 14b – IV Unit 15a (or) 15b – V Unit	16 – I Unit 17 – II Unit 18 – III Unit 19 – IV Unit 20 – V Unit

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	L	M	L	S	S
CO2	M	S	S	M	L
CO3	M	S	L	M	M
CO4	L	M	M	L	M
CO5	M	L	S	L	S

S: Strong; M: Medium; L: Low

Subject Code: 18UCA13

CC – XIII – PROGRAMMING IN VB.NET

OBJECTIVES:

- To Understand Basics of DotNet Framework.
- To Understand the various Programming Concepts of VB.Net

UNIT I : Introduction to Microsoft.Net Framework: Introduction – Start Page – IDE Main Window – Class View Window – Object Browser – Code Window – Compiling the Code – Code Debugging - Developing a Simple VB.NET Console Application – Developing Simple VB.NET Project through Visual Studio IDE

UNIT II : Variables Constants and Expressions: Value Types and Reference Types – variable Declaration and Initialization – Value Data Types – Reference Data Types - Boxing and Unboxing – Arithmetic Operators and expressions - Text Box Control - Label Control - Button Control – Control Statements – IF Statement - Radio Buttons - Check Box – Group Box - List Box – Checked Listbox - Combo Box Control – Select ... Case – While – Do – For Statements

UNIT III : Methods and Arrays - Types of Methods - Arrays – One Dimensional – Multidimensional Arrays – Jagged Arrays - Classes Properties and Indexes: Definition and Usage of Class - Constructor Overloading - Copy Constructor – Instance and Shared Class Members – Shared Constructor - Properties - Indexes Inheritance and Polymorphism

UNIT IV : Definition and Usage of Interfaces – Namespaces - Delegates – Events – Default Exception Handling Mechanism – User Defined Exception Handling Mechanism – Back Tracking – Throw Statement - Custom Exception – Usage of Thread – Thread Class – Start() , Abort(), Join(), Sleep(), Suspend() and Resume Methods

UNIT V :Database Connectivity: Advantages of ADO.NET – Managed Data Providers – Developing Simple Application – Creation of a Data Table – Retrieving Data from Tables – Table Updating

TEXT Book

Visual Basic. Net, C. Muthu, Vijay Nicole Imprints Private Limited

UNIT I: Chapter 2
UNIT II: Chapter 3, 4
UNIT III: Chapter 5, 6, 7
UNIT IV: Chapter 8, 9, 10, 11
UNIT V: Chapter 12, 15

REFERENCE Book

- The Complete Reference – Visual Basic . NET – Jefrey R. Shapiro , Tata McGraw Hill, 2002.
- https://www.tutorialspoint.com/vb.net/

OUTCOMES:

CO1: Would have learnt the fundamentals of VB.Net
CO2: Outline the sequence control and data control.
CO3: Understand .NET Framework architecture, its components and basics of Visual Studio.
CO4: Analyze the problem and create window based program with Visual Basic.
CO5: Develop and implement window based application using Visual Basic.

Part – A Answer all the Questions 10 X 2 = 20 Marks	Part – B Internal Choice Type 5 X 5 = 25 Marks	Part – C Answer any 3 Questions 3 X 10 = 30 Marks
Question 1,2 – 1 Unit 3,4 – II Unit 5,6 – III Unit 7,8 – IV Unit 9,10 – V Unit	11a (or) 11b – 1 Unit 12a (or) 12b – II Unit 13a (or) 13b – III Unit 14a (or) 14b – IV Unit 15a (or) 15b – V Unit	16 – I Unit 17 – II Unit 18 – III Unit 19 – IV Unit 20 – V Unit

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	M	S
CO2	S	M	L	S	S
CO3	L	L	M	S	M
CO4	M	S	L	M	M
CO5	L	M	M	M	M

S: Strong; M: Medium; L: Low

Subject Code: 18UCA14P

CP - XIV - PROGRAMMING IN VB.NET LAB

1. Console Applications.
2. Boxing and Unboxing
3. Control Structure
4. Controls
5. Arrays
6. Constructor
7. Inheritance
8. Polymorphism.
9. Events
10. Exception Handling
11. Thread
12. Database Connectivity

OUTCOMES:

CO1: Would have learnt the fundamentals of VB.Net
CO2: Outline the sequence control and data control.
CO3: Understand .NET Framework architecture, its components and basics of Visual Studio.
CO4: Analyze the problem and create window based program with Visual Basic.
CO5: Develop and implement window based application using Visual Basic.

Subject Code: 18UCAE2

EC-II - SOFTWARE ENGINEERING

OBJECTIVES:

- Understand the various phases of software development and software Engineering tools
- Know various Validation and Verification Techniques

UNIT I : Introduction – Definitions – Size Factors – Quality and Productivity Factors – Managerial Issues - Planning A Software Project – Introduction – Defining The Problem – Developing A Solution Strategy – Planning The Development Process – Planning An Organizational Structure – Other Planning Activities.

UNIT II :Software Cost Estimation: Software Cost Factors – Software Cost Estimation Techniques – Specification Techniques Staffing – Level Estimation: Estimating Maintenance Costs.

UNIT III :Software Requirements: Definition – Software Requirement Specification – Formal Specification Techniques – Languages and Processors for Requirements

UNIT IV ; Software Design – Fundamental Design Concepts – Modules And Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real Time And Distributed System Design – Test Plans – Milestones, Walkthroughs And Inspections – Design Guidelines.

UNIT V :Verification and Validation Techniques – Quality Assurance – Walkthroughs and Inspections – Static Analysis – Symbolic Execution – Unit Testing and Debugging – System Testing – Formal Verification

Text Book

Software Engineering Concepts – Richard Fairley.

UNIT I: Chapter 1, 2 UNIT II: Chapter 3
UNIT III: Chapter 4 UNIT IV: Chapter 5
UNIT V: Chapter 7

REFERENCE BOOK

"Software Engineering: A Practitioners Approach" by Roger, S. Pressman McGraw Hill International Book Company.

- https://www.tutorialspoint.com/software_engineering/index.htm

OUTCOMES :

CO1: Would have learnt the various phases of Software Engineering.
CO2: Able to apply the concepts of software engineering
CO3: Understand the concept of system and able to analyse its feasibility study.
CO4: Understand software process framework , requirement modeling approaches, software design, software quality.
CO5: Would have learnt the various Testing Criteria.

Part – A Answer all the Questions 10 X 2 = 20 Marks	Part – B Internal Choice Type 5 X 5 = 25 Marks	Part – C Answer any 3 Questions 3 X 10 = 30 Marks
Question 1,2 – 1 Unit	11a (or) 11b – 1 Unit	16 – I Unit
3,4 – II Unit	12a (or) 12b – II Unit	17 – II Unit
5,6 – III Unit	13a (or) 13b – III Unit	18 – III Unit
7,8 – IV Unit	14a (or) 14b – IV Unit	19 – IV Unit
9,10 – V Unit	15a (or) 15b – V Unit	20 – V Unit

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	M	M	M	L	S
CO2	M	L	L	L	L
CO3	S	M	S	S	M
CO4	L	L	L	L	S
CO5	S	S	L	M	M

S: Strong; M: Medium; L: Low

Subject Code: 18UCAE2

EC - II - SYSTEM ANALYSIS AND DESIGN

OBJECTIVES:

- To Learn the Various Phases of System Development
- To Learn the Knowledge Management and Decision Making Systems.

Unit I

Overview: Introduction - The System Development Life Cycle (SDLC) - System Development - Methodologies - Project Team Roles and Skills - Planning Phase: Identifying business value - Feasibility Analysis - Creating the work plan, staffing the project, Controlling and directing the project.

Unit II : Analysis Phase: System Analysis - analysis process, business process automation, business process improvement, business process reengineering, developing the analysis plan. Gathering Information – interviews, joint application design, questionnaires, document analysis, observation, selecting the appropriate technique. Process Modelling – data flow diagrams, use cases. Data Modelling – ER diagram.

Unit III : Design Phase: System Design – design strategies, developing the design plan, moving from logical to physical model. Architecture Design – computing architectures, infrastructure design, global issues, security, User Interface (UI) – principles of UI design, UI design process, navigation design, input design, output design. Data Storage Design – data storage formats, optimizing data storage. Program Design – structure chart, program specification.

Unit IV : Implementation Phase: Construction - managing programming, system testing, developing documentation. Installation – conversion, change management, post implementation activities & maintenance, concept of PERT and GANTT Charts.

Unit V : Management Information System: Concept of Management, organization & System approach to management, MIS Planning, Designing and implementation, Role of DSS, Decision making & MIS, DSS and Knowledge Management System.

Text Book:

System Analysis and Design, Kenneth E Kendall Julie, PHI, 2012

Reference Book:

Modern Systems Analysis and Design, Jeffrey A. Hoffer, Pearson India, 2011

- http://www.w3computing.com/systemsanalysis/

OUTCOMES :

CO1: Would have learnt the various phases of System Development
CO2: Understand how projects are initiated and selected, define a business problem and determine the feasibility of a proposed project.
CO3: Apply information gathering methods effectively to elicit human information requirement.
CO4: Understand prototyping and develop logical DFD's that illustrate the proposed system.
CO5: Would have learnt the MIS Techniques.

art – A Answer all the Questions 10 X 2 = 20 Marks	Part – B Internal Choice Type 5 X 5 = 25 Marks	Part – C Answer any 3 Questions 3 X 10 = 30 Marks
Question 1,2 – 1 Unit 3,4 – II Unit 5,6 – III Unit 7,8 – IV Unit 9,10 – V Unit	11a (or) 11b – 1 Unit 12a (or) 12b – II Unit 13a (or) 13b – III Unit 14a (or) 14b – IV Unit 15a (or) 15b – V Unit	16 – I Unit 17 – II Unit 18 – III Unit 19 – IV Unit 20 – V Unit

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	S	L	L	L	M
CO2	S	S	L	M	M
CO3	S	M	S	M	L
CO4	M	M	M	L	S
CO5	M	L	L	S	S

S: Strong; M: Medium; L: Low

Subject Code: 18UCAE3

EC - III - E - COMMERCE AND ITS APPLICATIONS

OBJECTIVES:

- To know the concepts of Internet and E-Commerce and their applications
- To Learn the Advertising and Marketing Techniques on the Internet.

UNIT I: INTRODUCTION: Electronic Commerce Frame Work: The Anatomy of E-Commerce Applications- Electronic Commerce Consumer Applications – Electronic Commerce Organisation Applications – The Network Infrastructure for E-Commerce: Components of Highway – Network Access Equipment – Global Information Distribution Networks

UNIT II :The Internet as Network Infrastructure: The Internet Terminology/Chronological History Of The Internet- The Business Of Internet Commercialization: Telco/Cable/Online Companies –National Independents ISPs – Regional Level ISPs – Local Level ISPs

UNIT III : Network Security And Firewalls: Client Server Network Security – Firewalls And Network Security – Data And Message Security – Challenge Response System – Encrypted Documents And Electronic Mail – Electronic Commerce And World Wide Web: Architectural Framework For E-Commerce- Technology Behind The Web – Security And The Web

UNIT IV :Inter Organisational Commerce and Edi: Electronic Data Interchange – Edi Application in Business – EDI Implementation, Mime and Value Added Networks: EDI Software Implementation – EDI Envelope for Message Transport- Value-Added Networks (VANs) –Internet – Based EDI

UNIT V : Advertising And Marketing On The Internet: The New Age Of Information Based Marketing – Advertising On The Internet – Charting The Online Marketing Process – Software Agents – Characteristics And Properties Of Agents – The Technology Behind Software Agents – Applets, Browsers And Software Agents

TEXT BOOK

Ravikalakola& Andrew Whinston, "Frontiers of Electronic Commerce", Addison Wesley, 2000.

UNIT I: Chapter 1, 2; UNIT II: Chapter 3, 4; UNIT III: Chapter 5, 6
UNIT IV: Chapter 9, 10; UNIT V: Chapter 13, 16

REFERENCE BOOK

Electronic Commerce – Rary P. Schneider and James T. Parry.

- https://www.tutorialspoint.com/e_commerce/index.htm

OUTCOMES :

CO1: Would have learnt the Concepts of E-Commerce.
CO2: Understand different Knowledge base systems.
CO3: Understand the application of tools and services to the development of small scale E - Commerce applications
CO4: Would have learnt the Applications of E- Commerce.
CO5: Understand designing of knowledge base Systems to improve the efficiency of organizations based on their need.

Part – A Answer all the Questions 10 X 2 = 20 Marks	Part – B Internal Choice Type 5 X 5 = 25 Marks	Part – C Answer any 3 Questions 3 X 10 = 30 Marks
Question 1,2 – 1 Unit 3,4 – II Unit 5,6 – III Unit 7,8 – IV Unit 9,10 – V Unit	11a (or) 11b – 1 Unit 12a (or) 12b – II Unit 13a (or) 13b – III Unit 14a (or) 14b – IV Unit 15a (or) 15b – V Unit	16 – I Unit 17 – II Unit 18 – III Unit 19 – IV Unit 20 – V Unit

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	L	M	L	M	S
CO2	M	S	M	S	M
CO3	S	M	L	M	L
CO4	S	L	S	S	M
CO5	L	M	S	M	L

S: Strong; M: Medium; L: Low

Subject Code: 18UCAE3

EC- III - COMPUTER GRAPHICS

OBJECTIVES:

- Know the fundamental principles of computer graphics
- Understand the computer graphics techniques

Unit I

Overview of Computer Graphics System: Video Display Devices – Raster Scan Systems – Random – Scan Systems - Graphics Monitors and Workstations – Input Devices – Hardcopy Devices – Graphics Software.

Unit II

Output Primitives: Line Drawing Algorithms – Loading the Frame Buffer – LineFunction – Circle – Generating Algorithms.Attributes of Output Primitives: Line Attributes – Curve Attributes – Color and Grayscale levels– Area fill Attributes – Character Attributes – Bundled Attributes – Inquiry Functions.

Unit III

2D Geometric Transformations: Basic Transformation – Matrix Representations – Composite Transformations – Window to View port Co-Ordinate Transformations.Clipping: Point Clipping – Line Clipping – Cohen-Sutherland Line Clipping – Liang BarskyLineClipping – Polygon Clipping – Sutherland – Hodgman Polygon Clipping – Curve Clipping – TextClipping.

Unit IV

Graphical User Interfaces and Interactive Input Methods: The User Dialogue – Inputof Graphical Data – Input Functions – Interactive Picture Construction Techniques.Three Dimensional Concepts: 3D-Display Methods – #Three Dimensional Graphics Packages

Unit V

3D Geometric and Modeling Transformations: Translation – Scaling – Rotation – Other Transformations.Visible Surface Detection Methods: Classification of Visible Surface Detection Algorithm –Backface Detection – Depth-Buffer Method – A-Buffer Method – Scan-Line Method – Applications of Computer Graphics.

Text Book:

Donald Hearn M. Pauline Baker, Computer Graphics C Version, Second Edition, Pearson Education, 2014.

Reference Book:

Computer Graphics, Sunil Kumar Sharma, ManojSinghal, Pearson Education,2014

- https://www.tutorialspoint.com/computer_graphics/index.htm

OUTCOMES :

CO1: Would have learnt present concepts on basic graphical techniques
CO2: Explore the background and standard line and circle drawing algorithms.
CO3: Would have learnt raster graphics, two dimensional and three dimensional graphics.
CO4: Explore Graphical User Interfaces and Interactive Input Methods.
CO5: Illustrate Projection and clipping with explore different techniques

Part – A Answer all the Questions 10 X 2 = 20 Marks	Part – B Internal Choice Type 5 X 5 = 25 Marks	Part – C Answer any 3 Questions 3 X 10 = 30 Marks
Question 1,2 – 1 Unit 3,4 – II Unit 5,6 – III Unit 7,8 – IV Unit 9,10 – V Unit	11a (or) 11b – 1 Unit 12a (or) 12b – II Unit 13a (or) 13b – III Unit 14a (or) 14b – IV Unit 15a (or) 15b – V Unit	16 – I Unit 17 – II Unit 18 – III Unit 19 – IV Unit 20 – V Unit

Mapping Course Outcomes with Programme Outcomes:

POs / Cos	PO1	PO2	PO3	PO4	PO5
CO1	S	L	S	L	M
CO2	M	S	L	M	M
CO3	L	L	L	S	S
CO4	M	L	M	S	S
CO5	S	S	M	L	L

S: Strong; M: Medium; L: Low