

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

GANPAT UNIVERSITY
FACULTY OF COMPUTER APPLICATIONS

DEGREE OF MASTER OF SCIENCE (INFORMATION TECHNOLOGY)

M. Sc. (IT)

(Five-Year Integrated Course)

TO BE EFFECTIVE FROM JUNE 2010

Regulation
For
Award of M. Sc. (IT)

To Be Implemented From
The Academic Year 2010 – 11

Regulations:

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GANPAT UNIVERSITY
Department of Computer Science
Choice Based Course Credit Semester System

Objective:

The objective of this course is to produce skilled professionals with proficiency in the areas of Computer Application and Information Technology. The candidates acquiring M. Sc. (IT) degree are expected to develop applications and incorporate the information technology to support for automation and management activities of the company.

Program Information:

- Master of Science (Information Technology) course is a full-time five-year integrated course. After successful completion of the first year course, the student will be awarded Certificate in Computer Application & Information Technology, After successful completion of second year course, the student will be awarded Diploma in Computer Application & Information Technology, After successful completion of third year the student will be awarded B.Sc. (IT), After successful completion of fourth year the student will be awarded Post Graduate Diploma in Computer Application & Information Technology and after successful completion of the fifth year, the student will be awarded M.Sc. (IT).
- The medium of the instruction/Examination will be English only.
- The duration of the B.Sc. (IT) programme shall be three years, divided in six semesters i.e Sem-I, Sem-II, Sem-III, Sem-IV, Sem-V and Sem-VI. All six semesters shall not be offered simultaneously. In general, semesters-I, III, and V shall be offered in the first half of academic year and semesters-II, IV, and VI shall be offered in the second half of the academic year.
- The duration of the M.Sc. (IT) programme shall be two years, divided in four semesters i.e. Sem-VII, Sem-VIII, Sem-IX and Sem-X. All four semesters shall not be offered simultaneously. In general, semesters-VII and IV shall be offered in the first half of academic year and semesters-VIII and X shall be offered in the second half of the academic year.

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Eligibility Criteria:

The eligibility criteria for admission to the M. Sc. (IT) programme is 12th Pass with English and any one of the following subjects. (i) Maths (ii) Business Maths (iii) Statistics (iv) Economics (v) Book Keeping (vi) Accountancy (vii) Computer (viii) Elements of Accountancy (ix) Biology .

Eligibility for Semester Examination:

- Eligibility for appearing in any semester examination for M. Sc. (IT) programme shall be granted, provided The student has registered at least 75 % attendance in theory and practical separately; the minimum requirement may be condoned up to 10%, with the approval of Director on the recommendation of Principal in individual cases for valid reasons.
- Student has to show good conduct and behavior within campus during the studies.

Ganpat University Regulation for CBCS

All other rule and regulations for the program will be applicable as per Ganpat University regulation for Under Graduate and Post Graduate Programmes.

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Program Structure for M. Sc. (IT)

Notation:

A = Core Courses and Complementary Courses

B= Common Courses / Open Courses

B.Sc. (IT) Semester-I Program Structure

Sr. No.	Course Code	Course Code	Instruction Hours per Week			Credit			Total Credit	Course Type
			Th.	Tu.	Pr.	Th.	Tu.	Pr.		
1	U21A1ADP	ALGORITHM DEVELOPMENT AND INTRODUCTION TO PROGRAMMING	2	1	4	2	1	2	5	A
2	U21A2OAT	OFFICE AUTOMATION TOOLS	1	2	4	1	2	2	5	A
3	U21A3DEL	INTRODUCTION TO DIGITAL ELECTRONICS	3	-	4	3	--	2	5	A
4	U21B4CS1	LANGUAGE & COMMUNICATION SKILLS-I	4	-	-	4	--		4	B
5	U21A5IIT	INTRODUCTION TO INFORMATION THEORY	3	-	-	3	--	--	3	A
TOTAL			13	3	12	13	3	6	22	

B.Sc. (IT) Semester-II Program Structure

Sr. No.	Course Code	Course code	Instruction Hours per Week			Credit			Total Credit	Course Type
			Th.	Tu.	Pr.	Th.	Tu.	Pr.		
1	U22A1ACP	ADVANCE CONCEPTS IN PROGRAMMING	2	1	4	2	1	2	5	A
2	U22A2WEB	WEB PROGRAMMING	2	1	4	2	1	2	5	A
3	U22A3BCN	BASIC OF COMPUTER NETWORKS	2	1	2	2	1	2	5	A
4	U22B4CS2	LANGUAGE & COMMUNICATION SKILLS-II	4	-	-	4	--		4	B
5	U22A5COA	COMPUTER ARCHITECTURE AND ORGANIZATION	3	-	-	3	--	--	3	A
Total			13	3	10	13	3	6	22	

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B.Sc. (IT) Semester-III Program Structure

Sr.	Course Code	Course code	Instruction Hours per Week			Credit			Total Credit	Course Type
			Th.	Tu.	Pr.	Th.	Tu.	Pr.		
1	U23A1DFS	Data and file structure	2	1	4	2	1	2	5	A
2	U23A2OCP	Object oriented concepts and programming	2	1	4	2	1	2	5	A
3	U23A3DBM	Database management system	3	1	4	3	1	2	6	A
4	U23B4EDM	Environment Disaster Management	3	--	--	3	--	--	3	B
5	U23A5OST	Open source technology	3	--	--	3	--	--	3	A
6	U23A6FMI	Fundamental mathematics for Information Technology	3	--	--	3	--	--	3	A
Total			16	3	12	16	3	6	25	

B.Sc. (IT) Semester-IV Program Structure

Sr.	Course Code	Course code	Instruction Hours per Week			Credit			Total Credit	Course Type
			Th.	Tu.	Pr.	Th.	Tu.	Pr.		
1	U24A1GUI	GUI Programming	2	1	4	2	1	2	5	A
2	U24A2ADM	Advance Database management system	3	1	4	3	1	2	6	A
3	U24A3COG	Computer Graphics	3		4	3	--	2	5	A
4	U24B4MIS	Management Information System	3			3	--		3	B
5	U24A5NTE	Network Technology-I	3			3	--	--	3	A
6	U24A6SEN	Software Engineering	3			3	--	--	3	A
Total			17	2	12	17	2	6	25	

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B.Sc. (IT) Semester-V Program Structure

Sr.	Course Code	Course code	Instruction Hours per Week			Credit			Total Credit	Course Type
			Th.	Tu.	Pr.	Th.	Tu.	Pr.		
1	U25A1ATE	Advance Technology-I	2	1	4	2	1	2	5	A
2	U25A2OPS	Operating System	2	1	4	2	1	2	5	A
3	U25A3WDE	Basic of Web Designing	3		4	3	--	2	5	A
4	U25B4CPD	CAREER PLANNING AND DEVELOPMENT	3			3	--		3	B
5	U25A5ANE	Network Technology-II	3			3	--	--	3	A
6	U25A6SVT	Software Testing	3			3	--	--	3	A
Total			16	2	12	16	2	6	24	

B.Sc. (IT) Semester-VI Program Structure

Sr.	Course Code	Course code	Instruction Hours per Week			Credit			Total Credit	Course Type
			Th.	Tu.	Pr.	Th.	Tu.	Pr.		
1	BIT-601	Industrial Project						22	22	A
Total								22	22	

Semester	Total Credit	Core Courses and Complementary Courses	Common Courses / Open Course
I	22	18	4
II	22	18	4
III	25	22	3
IV	25	22	3
V	24	21	3
VI	22	22	
TOTAL	140	123	17

Regulations:

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GANPAT UNIVERSITY

M. Sc.(IT) SEM-I

U21A1ADP: ALGORITHM DEVELOPMENT AND INTRODUCTION TO PROGRAMMING

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th.	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
2	1	2	30	20	70	30	100	50

Total Sessions: 74 (34 Theory +25 Practical+15 Tutorial)

Fundamental of Algorithms: (7)
Introduction, Algorithm Development Method, Algorithms for basic human general activities focused to understand basic steps(1), Basic number and arithmetic Operation(1), Looping & Control flow statements(2), Series computation(1), Introduction to flowchart(1), Symbols for input/output, Processes, Decision, Begin/End, Representation of algorithms by Flowchart.(1)
Concepts of C: (9)
<ul style="list-style-type: none">• Overview of C (5) Brief history of C, Importance of C, Features of 'C' language(1), Basic Structure of C Programs(1), Programming Style, Steps to execute 'C' Program(1), Understanding the terminologies: Source Program, Object Program, Executable Program, Linker, Loader(1), Debug, Compilation process, Interpreter(1),.
<ul style="list-style-type: none">• Constants, Variables and Data Types: (4) Character set, C tokens, keywords and identifiers (1), constants, variables (1), data types (1), declaration of variables, assigning value to variable, defining symbolic constants (1).
Operators and Managing I/O (9)
<ul style="list-style-type: none">• Operators and formatted I/O: (9) Operators – arithmetic, relational (1), logical, assignment, increment-decrement (1), conditional, bit-wise and special(1),Arithmetic expressions, evaluation of expressions, precedence of arithmetic operators(1), type conversions in expressions(1), operator precedence and associativity, mathematical functions.(1), Reading and writing a character Formatted input-output (3)

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Decision Making branching and Looping: (9)

- **Decision Making Branching:**

Decision making with IF statement, simple IF statement, the IF-ELSE statement (1), nesting of IF ... ELSE statements, the ELSE IF ladder (1), Switch statement (1), ternary (? :) operator, Go-To statement (1)

- **Looping :**

Looping statements – WHILE (1), DO (1) and FOR. (2)

Nesting and Jumps in loops, Break & Continue (1)

Reference Books:

1. “Programming in C” by Pradip dey and Manash Ghosh
2. Programming in ANSIC by Balaguruswami E. - TMH Publications
3. Let us ‘C’ by Yashwant Kanetkar –BPB Publications
4. Mastering Turbo C by Stan, Kelly,Bootle -BPB Publications
5. How to Solve it by Computer, R.G.Dromey-PHI Publication

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**
Questions must be covered all possible section.

Q-2 (Must be From topics: **Fundamental of Algorithms: (7 marks)**)

Q-3 (Must be From topics: **Concepts of C: (9 marks)**)

Q-4 (Must be From topics: **Operators and Managing I/O (9 marks)**)

Q-5 (Must be From topics: **Decision making branching and Looping: (10 marks)**)

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GANPAT UNIVERSITY

M. Sc.(IT) SEM-I

U21A2OAT: OFFICE AUTOMATION TOOLS

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th.	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
1	2	2	30	20	70	30	100	50

Total Sessions: 45 (15 Theory + 30 Tutorials)

Dos & Windows (8)
<p>Dos(5)</p> <ul style="list-style-type: none">• Introduction to DOS, Loading DOS ,System prompt, Drive and its operations(1)• Introduction to File & Directory , Creating ,changing and listing the directory ,Copying ,Changing and deleting the files(1)• Internal and external dos commands(2)• Batch file(1) <p>Windows(3)</p> <ul style="list-style-type: none">• History of windows, The desktop ,Working with window and mouse ,Working with My computer ,Windows explorer (1)• Recycle bin, notepad ,calculator, WordPad, paint(2)
MS-Word (7)
<ul style="list-style-type: none">• Introduction to word, Applications of word processing ,Formatting Text and Paragraph, Find and Replace Text, Spell Check, Autocorrect and auto text(2)• Tabs and indentation, Enhancing a document(1)• Different Views of document and its use, Bullets & Numbering, Page Setup, Columns(1)• Tables and Other Features, Use of Formula in Table(1)• Header, Footer, Footnote and End notes(1)• Mail Merge.(1)
MS-Excel (10)

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- Introduction to Worksheet and Work Book, Application of Excel, Cell, Addressing modes, Commands, Move/Copy text, Insert/Delete Rows and Columns(2)
- Formatting a Worksheet, Print the workbook, Charts, Naming Ranges, and Database in a worksheet, Conditional Formatting ,Filtering the data from database, (2)
- Additional Formatting Commands, Drawing toolbar, Freeze Panes, Splitting the worksheet. (2),
- Multiple Workbooks, Pivot table, Macros and Hyperlinks(1)
- Functions: Statistical, Math
And Financial Functions, Database functions (3)

MS-Power point & Introduction to MS-Access (5)

- Introduction to PowerPoint, Creating a Presentation, PowerPoint views, Slide show, Printing a Presentation, Formatting slides, Slide transition & adding special effects, Inserting pictures, chart. (3)
- Introduction to MS-Access and Basic concepts of database. (2)

Reference Book:

- (1) PC Software for windows made simple by Taxali R.K.-Tata McGraw-Hill Publishing Co. LTD.
- (2) Working with Personal Computer by R P Soni, Harshal Arolkar and Sonal Jain – Books India Publication.
- (3) The Complete Reference Office 2000 by Stephen L.Nelson. Tata McGraw-Hill Publishing Co. LTD.
- (4) ACCESS 2000 ,BPB Publications, Celeste Robinson
- (5) 10 Minute guide to MS-ACCESS 2000 ,PHI publication, Faithe wempen

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**
Questions must be covered all possible section.

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Q-2 (Must be From topics: **Dos & Windows (9 marks)**)

Q-3 (Must be From topics: **MS-Word (9 marks)**)

Q-4 (Must be From topics: **MS-Excel (11 marks)**)

Q-5 (Must be From topics: **MS-Power point & Introduction to MS-Access (6 marks)**)

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GANPAT UNIVERSITY
M. Sc.(IT) SEM-I

U21A3DEL : INTRODUCTION TO DIGITAL ELECTRONICS

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th.	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
3	-	2	30	20	70	30	100	50

Total Sessions: 61 [Theory 44 + Practical 25]

Logic Gates and Boolean algebra: (14)
<ul style="list-style-type: none">Logic Gates: 3 Introduction of Digital Electronics [1], Inverter, OR Gate, AND Gate, NOR Gate, NAND Gate, [1] Demorgan's Theorems, EX-OR Gate, EX-NOR Gate [1]
<ul style="list-style-type: none">Boolean algebra: 11 Boolean Relation [1] , SOP Method and POS Method [2], Algebraic Simplification.(Only for Examples, not for theory)[1], Universal Building blocks (Only for Logic conversion, not for theory) [3], Implementation of Digital circuits using Universal gates, Pair, Quad, Octet [2], K-MAP Simplifications (SOP and POS),Don't care condition [2]
Data Processing Circuit and ALU (12)
<ul style="list-style-type: none">Data Processing Circuits: 6 Combinational circuits and sequential circuits [1], Multiplexer (4 to 1, 8 to 1,16 to 1), Demultiplexer (1 to 4, 1 to 8, 1 to 16) [2], Decoder (1 of 4, 1 of 8,1 of 16) Seven Segment Display, Decoder (1 of 4, 1 of 8, 1 of 10, BCD to Decimal), [2], Encoder (Decimal to BCD, Hexadecimal to BCD)[1]
<ul style="list-style-type: none">Arithmetic Logic Unit: 6 Half Adder, Full Adder, Binary Adder, Subtractor, Signed binary number, 2's complement Adder – Subtractor

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Flip-Flop and Memory: (8)
<ul style="list-style-type: none">• Flip-Flop: 6 NOR Latch, NAND Latch[1], R S Flip Flop, Level clocked R S Flip Flop, Race Condition[2], D Flip Flop, Level clocked D Flip Flop, and Edge Triggered D Flip Flop[2], Propagation Delay Time, Setup Time, Hold Time, J K Flip Flop, T Flip Flop[1]
<ul style="list-style-type: none">• Memory: 2 ROM, PROM (Programmable ROM), EPROM (Erasable Programmable ROM), EEPROM (Electrically Erasable programmable ROM), RAM, Dynamic RAM, Static RAM, Hexadecimal Addresses [2]

Registers and counters: (10)
<ul style="list-style-type: none">• Registers: 5 Parallel In – Parallel Out Register :(Buffer register, Controlled Buffer Register) [1], Serial in – Serial out Register (Shift Register–Shift Left, Shift Right, Controlled Shift left Register) [2], Parallel In – Serial out OR Serial in – Parallel out Register(Shift Register with Broad side load) [2]
<ul style="list-style-type: none">• Counter: 5 Ring Counter, Asynchronous Counter (Ripple Counter, Controlled Ripple Counter) [2], Synchronous Counter. Controlled Synchronous Counter ,(Shift Register with Broad side load) [3]

Reference Books:

- (1) Digital Electronics by R.P.Ajwalia –Atul Prakashan
- (2) Digital Computer Electronics by Malvino & Brown, Third Edition – TMH Publications.
- (3) Digital Principles and applications by Malvino & Leach – TMH Publication.
- (4) Digital Design by M. Morris Mano – BPB Publication.

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Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- 35
Questions must be covered all possible section.

Q-2 (Must be From topics: **Logic Gates and Boolean algebra: (11)**)

Q-3 (Must be From topics: **Data Processing Circuit and ALU (10)**)

Q-4 (Must be From topics: **Flip-Flop and Memory: (6)**)

Q-5 (Must be From topics: **Registers and counters: (8)**)

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GANPAT UNIVERSITY

M.Sc.(IT) SEM- I

U21B4CS1: LANGUAGE & COMMUNICATION SKILLS-I

Credit			Examination Scheme (Marks)					
Th.	Tu.	Pr.	INTERNAL		EXTERNAL		TOTAL	
Th.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.	
4	--	-	30	--	70	--	100	--

Internal Assessment (30)		External Examination (70)	
Theory-I	LSRW (Theory-II+viva)	Theory-I	LSRW (Theory –II+viva)
30/2	30/2	70/2	70/2

Total Sessions: 60 [45 Theory-I + 15 LSRW (Th.-II+viva)]

The following Course Curriculum of **Theory-I** is designed to enable the student to acquire proficiency that is at par with satisfactory accomplishment of Level – 1 (Intermediate ESL).

<u>Fundamentals of Grammar and Usage (12)</u>
<ul style="list-style-type: none"> ▪ Parts of Speech (02) ▪ Tenses(05) ▪ Types of Sentences(1) ▪ Sentence Errors, Punctuation Marks (01+01) ▪ Vocabulary building to encourage the individual to communicate effectively and diplomatically (02)
<u>Technical and Business Communication (11)</u>
<ul style="list-style-type: none"> ▪ Process of Communication (02) ▪ Methods of Communication:- Verbal & Nonverbal Communication (04) ▪ Principles of Effective Business Communication-(4 ‘C’- clarity, conciseness, correctness, courtesy) (02) <p>Barriers to Communication:-Physical, Language, Psychological, Status, Cultural Barriers (03)</p>

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<u>Written Communication (12)</u>
<ul style="list-style-type: none">▪ Nature, Style & Structure /Parts of Letter Writing (02)▪ Essentials of Good Written Communication (01)▪ Informal or Social Letters: - Letters written to friends and family members (03)▪ Formal or Official Letters: -Non Business Formal Letters like General Inquiry, Invitation, Request, Complaint etc (03)▪ Memorandum, Circulars, Notice(03)
<u>Business Etiquettes (10)</u>
<ul style="list-style-type: none">▪ The Golden Rules of Good Business Manners (03)▪ Handling Business Meetings: Informal and Formal Meetings (03)▪ Etiquette of Telephonic Talk: Good Telephone Manners.(02) <p>Body Language, Gestures, Facial expression (02)</p>

Text & Reference Books:

1. Meenakshi Raman & Sangeeta Sharma -Technical Communication, 2006, OUP, New Delhi
2. Rhoda Doctor –Principles and Practice of Business Communication-Sheath publishers.
3. Rajendra pal- Essentials of Business Communication.
4. David Robinson-Business Etiquette, Kogan Page.
5. Wren & Martin; English grammar and composition, 2003.
6. Repidex -Self Letter Drafting Course
7. Prakash Khuman, bhupesh Khuman- Communicative English
8. Chrissie Wrought-Hand Book of Practical Communication Skills- published by Jaico Publishing House.
9. Ray, Reuben; Communication today – Understanding Creative Skills, Himalaya Publishing House, 2001.
10. Asha Kaul-Business Communication, 1998, Prentice-Hall of India Ltd, New Delhi
11. Baugh Sue, How to Write First Class Letters, 1998, Viva Books Pvt. Ltd, New Delhi
12. Lesikar, Raymond V & Pettit John D, Business Communication, 1999, AIIBS Publishers & Distributers, New Delhi
13. Rogets Thesaurus

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Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**

Questions must be covered all possible section.

Q-2 (Must be From topics: **Fundamentals of Grammar and Usage (10 marks)**)

Q-3 (Must be From topics: **Technical and Business Communication (08 marks)**)

Q-4 (Must be From topics: **Written Communication (9 marks)**)

Q-5 (Must be From topics: **Business Etiquettes (08 marks)**)

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M. Sc.(IT) SEM-I

U21A5IIT: INTRODUCTION TO INFORMATION THEORY

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th.	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
3	-		30	-	70	-	100	-

Total Lecture: 40

Introduction to information technology: (7) Data and Information, Features of Information (1),Types of Languages, Low level V/s High level languages, Generations of Programming Language(3),Introduction of Machine, Assembly and Fourth Generation Language (3)
Computer Peripherals: (11) Storage Devices: Floppy Disk, Hard Disk, CD-ROM, DVD (Above all topics Include only principles, types, data storage and Application) (4) Input Devices: Key Board, Mouse, Touch screen, Scanner (Above all topics Include only principles, types and Application) ,Other Input Methods:- OMR,MICR,OCR (4),Output Devices: VDU (Computer Graphics, Working of CRT, Resolution of different VDU), Printer (Characteristic, Classification, Working, principle, Uses)(3)
Fundamental of Computer Network: (14) Concepts of Analog and digital signal, Type of Networks (LAN, MAN, WAN etc)(3),Protocols, Introduction to communication devices (MODEM, NIC (Network Interface Card) (Principles, Baud rate, Application))(3),Introduction of Transmission media (Twisted Pair, Coaxial Cables, Optical Fiber) (3),Introduction of Communication Techniques and Types (Circuit switching, message switching and packet switching with advantage and disadvantage) (3),Introduction of Internet (www, email, search engine, http) (2)
Introduction to language processor, software and micro computer (8) Language Processor: Compilers, Interpreter, Assemblers, Difference between Compiler-Assembler-Interpreter ,Types of Software: System Software, Application Software (4) An Idea Micro Computer, An Actual Micro Computer[Internal Structure

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of Microprocessor(CPU)], Data Bus, Address Bus, Control Bus (3), Memory System for Micro Computer(1)

Reference Books:

- (1)'O' Level Simple: Information Technology by Satish Kumar-BPB Publications
- (2)Fundamentals of computer by V.Rajaraman-PHI Publications.
- (3) Structure computer Organization by Andrew S. Tanenbaum-PHI Publications.
- (4) Computer Networks, Andrew S. Tanenbaum, Prentice Hall of India
- (5) Information Technology concepts by Dr. Madhulika Jain, shashank Jain, satish Jain
Published by BPB publication

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**
Questions must be covered all possible section.

Q-2 (Must be From topics: **Introduction to information technology: (6 marks)**)

Q-3 (Must be From topics: **Computer Peripherals: (10 marks)**)

Q-4 (Must be From topics: **Fundamental of Computer Network: (12 marks)**)

Q-5 (Must be From topics: **Introduction to language processor, software and micro computer (7 marks)**)

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M. Sc.(IT) SEM-II

U22A1ACP: ADVANCE CONCEPTS IN PROGRAMMING

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th.	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
2	1	2	30	20	70	30	100	50

Total Sessions: 68 (38 Theory + 30 Practical)

Array & Strings (8) <ul style="list-style-type: none">• Arrays: (4) Introduction to Array, Concept of Dimensions in arrays, (1) Initialization values in an array, Overflow and Underflow, (2) Concepts in Multidimensional Array. (1)
<ul style="list-style-type: none">• Strings: (4) Introduction, Declaring and initializing string variables, Reading string from terminal, Writing string to screen, (1) Arithmetic operations on characters, Putting string together, String Operations: String Copy, String Compare, (1) String Concatenation And String Length, String Handling functions, Table of strings. (2)
User-Defined Functions: (7) <p>Need for user-defined functions, the form of c function, return values and their types, (1)calling a function, category of functions, (1) no arguments and no return values, arguments with return values, (1) handling of non-integer functions, nesting of functions, recursion, functions with arrays,(2) the scope, visibility and lifetime of variables in functions.(2)</p>
Structures and Pointers: (11) <ul style="list-style-type: none">• Structure and Union (5) Structure definition, Assigning values into members,(1) structure initialization, comparison of structures, (1) arrays of structures, (1) arrays within structures,(1) structures within structures. (1)

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

- **Pointers (6)**

Introduction, Understanding pointers, Accessing the address of variable,(1) Declaring and initializing pointers, Accessing a variable through its pointer, Pointer expressions,(1) Pointer increments and scale factor, (1) Pointers and arrays, Pointers and character strings, (1) Pointers and Functions,(1) Pointers and structures.(1)

File Management and DMA: (7)

- **File Management: (5)**

Introduction, Defining files and its Operations, (2) Error handling during I/O operations, (1) Random access files (1), Command line arguments. (1)

- **Dynamic Memory Allocation**

Introduction, Dynamic memory allocation Functions

The Preprocessors and Debugging: (5)

- **Preprocessor:**

Introduction, Macro Substitution, File Inclusion, Compiler control Directives, ANSI additions (3)

- **Debugging (2)**

Introduction, Program design, Program coding, (1) Common programming errors, Program testing and debugging, Program efficiency. (1)

Reference Books:

1. Programming in C By Pradip dey and Manash Ghosh
2. Programming in ANSI-C By E. Balagurusamy, TMH Publication
3. Let us C By Yashwant Kanetkar, BPB Publication
4. C Programming language By Kernighan, Brian, W, Retchie, Dennis PHI Publication

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**

Questions must be covered all possible section.

Q-2 (Must be From topics: **Array & Strings (8 marks)**)

Q-3 (Must be From topics: **User-Defined Functions: (6 marks)**)

Q-4 (Must be From topics: **Structures and Pointers: (10 marks)**)

Q-5 (Must be From topics: **File Management and DMA: (7 marks)**)

Q-6 (Must be From topics: **The Preprocessors and Debugging: (4 marks)**)

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

GANPAT UNIVERSITY
M. Sc.(IT) SEM-II
U22A2WEB: WEB PROGRAMMING

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th.	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
2	1	2	30	20	70	30	100	50

Prerequisite:

Must know about Basic Methodology of Computer

Must know about Basic Computer Knowledge

Must know about Basic C Language

Total Sessions: 75 (30 Theory + 15 Tutorial + 30 Practical)

Web Design Concepts: (4)

- A brief Introduction to the Internet
- Internet services
- Working of Internet
- Introduction to World Wide Web
- URLs
- Hypertext Transfer Protocol
- Introduction to web server and web browser
- Web Design
- Usability of site
- Web users
- Types of Web users
- Web convention

Java Scripts: (10)

- Client-Side Technologies
- Variables declaration
- If...Else statement
- Switch statement
- Operators statement
- Popup Boxes
- Functions
- Event Handling
- For Loop
- While Loop

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

<ul style="list-style-type: none">• Break Loops• For...In
Introduction to HTML: (8)
<ul style="list-style-type: none">• Understanding HTML• Create a Web Page• Linking to other Web Pages• Publishing HTML Pages• Text Alignment and Lists• Text Formatting Fonts Control• Email Links and link within a Page• Creating Web Page Graphics• Putting Graphics on a Web Page
Advanced HTML: (10)
<ul style="list-style-type: none">• Introduction to web 2.0• Advantages of Web 2.0• When & How to use it ?• Custom Backgrounds and Colors• Advanced Layout with Tables• Working with Frame• Creating HTML Forms• Using Style Sheets• Features of Style Sheet• Body Style• Link Style• List Style• Table Style• font style• Form style sheet• Concept of search engines• searching the Web
Macro-Media and Photoshop (13)
<ul style="list-style-type: none">• Macro-Media (5)
<ul style="list-style-type: none">• Introduction to Dream weaver• Planning and creation of your Site• Site Management• Designing Page Layout• Browsing Menus• Inserting and Formatting Text• Inserting Images• Inserting Tables• Inserting Frames• Working with Forms
<ul style="list-style-type: none">• PhotoShop (8)

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

- Introduction, Basics
- Tool Box
- Selection Modes
- Transformation
- Color Modes and Models
- Adjusting color
- Paintbrush
- Digital Painting
- Layers
- Masks
- Filters

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**
Questions must be covered all possible section.

Q-2 (Must be From topics: **Web Design Concepts: (4)**)

Q-3 (Must be From topics: **Java Scripts: (7)**)

Q-4 (Must be From topics: **Introduction to HTML: (6)**)

Q-5 (Must be From topics: **Advanced HTML: (8)**)

Q-6 (Must be From topics: **Macro-Media and Photoshop (10)**)

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

GANPAT UNIVERSITY
M. Sc.(IT) SEM-II
U22A3BCN : BASIC OF COMPUTER NETWORKS

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th.	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
2	1	2	30	20	70	30	100	50

Objective:

The basic objective of this course is to create awareness about the Computer networks, it's component, protocols and basic design principles.

Total Session: 53 (Theory 31 + Practical 22)

Introduction To Computer Network (4)
Need of Computer Network, Advantages of Computer Network, Uses of Computer Network, Network Models, Categories of Networks and Internetworks, Line Configurations, Network Topologies (Bus, Star, Ring, Star Bus, Star Ring and Physical Mesh)
Study of Reference Models (8)
Study of Reference Models, Need of Layers, Design Issues of Layers, ISO/OSI Model, TCP/IP Model, A Comparison of OSI and TCP Reference Model, Asynchronous Transfer Mode (ATM)
Network Concepts And Components (7)
Network Concepts : Wireless Networks, Layered Approach, Interfaces, Services, Protocols, Brief Study of X.25 Protocol, Intranet and Extranet Network Components : Cabling and Connector Standards, Network Interface Card, Bridges/Switches, Routers, Concentrators, Hubs, Repeaters, Gateways, SDN
TCP/IP protocols (12)
IP, Addressing, sub netting, ARP, IARP, ICMP, IGMP, UDP, TCP, Client-server model, BOOTP, DHCP, DNS, Telnet, FTP, TFTP, SMTP, SNMP, HTTP, WWW.
Practical Approaches (13)

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

1. How to make a LAN Cable with RJ45 connector and crimping tool (Straight cabling and Cross cabling).
2. How to configure an IP address of LAN computers.
3. How to use a LAN computer for sharing a printer and file sharing.
4. How to configure a Wireless Access Point to broadcast Internet.
5. How to configure a server operating system with DNS & DHCP.
6. How to give a remote support to another computer
 - a. For LAN “Remote desktop connection”
 - b. Internet connected pc “Team Viewer”, “VNC”, etc.
7. Firewall configuration.

REFERENCE BOOKS:

- ⇒ Computer Network, S.S.Shinde, New Age International (P) Limited, Publishers
- ⇒ B.A. Forouzan: **Data Communication and Networking**, 2nd Edition, Tata McGraw Hill.

Web Link : <http://www.protocols.com/pbook/tcpip1.htm>

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**
Questions must be covered all possible section.

Q-2 (Must be From topics: **Introduction To Computer Network (6)**)

Q-3 (Must be From topics: **Study of Reference Models (9)**)

Q-4 (Must be From topics: **Network Concepts And Components (9)**)

Q-5 (Must be From topics: **TCP/IP protocols (11)**)

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

GANPAT UNIVERSITY

M. Sc.(IT) SEM-II

U22B4CS2: LANGUAGE & COMMUNICATION SKILLS-II

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th.	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
4	-	-	30	-	70	-	100	-

Internal Assessment (30)		External Examination (70)	
Theory- I	LSRW (Theory -II+viva)	Theory-I	LSRW (Theory II+viva)
30/2	30/2	70/2	70/2

Total Sessions: 60 [45 Theory-I + 15 LSRW (Th.-II+viva)]

The following Course Curriculum of **Theory -I** is designed to enable the student to acquire proficiency that is at par with satisfactory accomplishment of Level – II (Advanced ESL).

Project and Report Writing (7)

- Meaning and Nature of a Report and Project Report, Basics of Report Writing (01+01)
- Characterizes of an effective Report Writing, Types of Reports (01+01)
- Meaning of a Project, characteristics of a project (01)
- Drafting of Report Writing (02)

Application & Resume Writing , Paragraph Writing (7)

- Job Application Letters (02)
- Elements of Structure (01)
- Preparing the Resume (02)
- Paragraph Writing: descriptive, narrative or facts related essays. (02)

Presentations (10)

Effective Presentation Strategies (Factors Affecting the Presentations)

- Analyzing Audience, Communication Environment (01+01)
- Visual Aids, Organizing Content, Kinesics ,Para linguistics (01+01+02+02)

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

- Extemporaneous, Manuscript, Impromptu Presentations (01)
- Boredom Factors in Presentation and How to overcome them (01)

Listening and Interviews (10)

- **Listening (4)**
 - Types of Listening (02)
 - Active versus passive listening (01)
 - Obstacles to the effective listening (01)
- **Interviews (6)**
 - Types of Interviews (02)
 - Skills & Qualities Evaluated in the Job Interviews (02)
 - Failure and Success Factors in Interviews, Mock interviews (01+01)

Group Discussion & Leadership (11)

- **Group Discussion :**
 - GD as a part of Section Process, Characteristics of GD (02)
 - Evaluation Components in GD (knowledge, communication skills, group behaviour, leadership skills) (03)
 - GD based on a Topic, GD based on a Case study (01+01)
- **Leadership (4)**
 - Conventional Leadership, The changing meaning of leadership, Thought Leadership (02)
 - Three Ways of defining leadership (02)

Text & Reference Books:

1. By Meenakshi Raman & Sangeeta Sharma - Technical Communication, 2006, OUP, New Delhi
2. By Rhoda Doctor – Principles and Practice of Business Communication - Sheath publishers
3. By Rajendra Paul - Essentials of Business Communication - Sultan Chand & Sons Publisher
4. Business Communication by D.D. Sehgal, V.K. Mittal and N.C. Garg, Ramesh Book Depot.
5. E. H. McGraw, S. J.; Basic Managerial Skills for All. Fourth Edition, Prentice Hall of India Pvt. Ltd., New Delhi.
6. Stephen R. Covey; The seven habits of highly effective people.
7. Business communication - R.C Bhatiya
8. Barker, Alan, Improve Your Communication Skills, 2007,

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Kagan Page (I) Pvt. Ltd. New Delhi

9. Resumes and Interviews by M Ashraf Rizvi- Tata Mc Graw hill
10. 101 Great resumes-Jaico Publishing House.
11. Taylor, Poul J & O'Driscoll Michael P., The Handbook of interviewing, 2001, Infinity Books, New Delhi

Syllabus based on CBCS effective from June 2010

***Examination of LSRW Modules will be conducted separately from Theory-I**

Question Paper Scheme:

University Examination Duration: 3 Hours.

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**
Questions must be covered all possible section.

Q-2 (Must be From topics: **Project and Report Writing (5 marks)**)

Q-3 (Must be From topics: **Application & Resume Writing , Paragraph Writing (5 marks)**)

Q-4 (Must be From topics: **Presentations (8 marks)**)

Q-5 (Must be From topics: **Listening and Interviews (8 marks)**)

Q-6 (Must be From topics: **Group Discussion & Leadership (9 marks)**)

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Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

GANPAT UNIVERSITY

M. Sc.(IT) SEM-II

U22A5COA : COMPUTER ARCHITECTURE AND ORGANIZATION

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th.	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
3		-	30	-	70	-	100	-

Total Theory Sessions: 38

Data Representation and Number System: 13
Number System: Introduction to Decimal, Binary, Octal, Hexadecimal number. Systems [2], Conversation of number from one number system to another number System [4], Binary Arithmetic: Addition, Subtraction (Simple method, using 1's And 2's Complement method) [2], Multiplication, Division (Simple method and Using Register method) [2]
Representation of Number: Representation & Error detection and correction codes [2], Representation Of Integers, floating-point numbers [1]
Different types of codes: 7
Alphanumeric code (Only ASCII & EBCDIC) [1], Excess-3 Code, Grey Code [1], Parity bit Scheme, Checksum method, Hamming code [1], RICS (Reduced Instruction Set Computers), CISC (Complex Instruction Set Computers). RICS Versus CISC [2], Parallel to Serial and Serial to Parallel conversion [1], Micro Controller (Application only) [1]
Parallel Execution and Flow Control: 7
Execution: Instruction Execution, Parallel Execution [1], Instruction Level (Pipelining, Multifunction) Processor Level (Array processor, Vector processor, Multiprocessor) [3], Addressing Techniques: Immediate Addressing, Direct Addressing, Register Addressing, Indexed Addressing [1], Flow of Control: Sequential Flow of control and branches, Procedures, Subroutine, Traps [2]
Introduction of Microprocessor (8085):11
Microprocessor architecture and its operation [2], 8085 processor (Pin diagram And Block diagram) [2], Instruction Format and Addressing Modes [2]

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Computer Instructions:

Data transfer and I/O Instruction(1), Arithmetic Instruction [2], Logic Instruction, Branch Instruction and assembly programming instruction [2]

Reference Books:

- (1) Digital Electronics by R.P.Ajwalia –Atul Prakashan
- (2) Fundamentals of computer by V.Rajaraman-PHI Publications.
- (3) Digital Principles and Applications by Malvino and Leach –TMH Publications.
- (4) Digital Electronics by William H. Gothmann- PHI Publications
- (5) Structured Computer Organization by TANENBAUM, A.S- PHI Publications
- (6) Computer Organization and Architecture by Willam Stallings
- (7) Microprocessor Architecture Programming and Application with 8085 by Ramesh S. Gaonkar – Wiley Eastern Limited.

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**

Questions must be covered all possible section.

Q-2 (Must be From topics: **Data Representation and Number System: (12 marks)**)

Q-3 (Must be From topics: **Different types of codes: (7 marks)**)

Q-4 (Must be From topics: **Parallel Execution and Flow Control: (7 marks)**)

Q-5 (Must be From topics: **Introduction of Microprocessor (8085): (9 marks)**)

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

GANPAT UNIVERSITY

B.Sc.(IT) SEM-III

U23A1DFS : DATA AND FILE STRUCTURE

Credit			Examination scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th.	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
2	1	2	30	20	70	30	100	50

Total Sessions: 45

Overview of Data Structure (03)
Introduction to data structure, (01) Classification of Data Structure – Primitive data Structure, Non Primitive Data Structure, (01) Linear Data Structure, Non Linear Data Structure(01)
Linear Data Structures (22)
Introduction to Stack, Operations of Stack(3), Applications of Stack – Polish Notation (Prefix, Infix, Postfix)(5), Recursion, Stack Machine(2), Introduction to Queue, Simple Queue, Circular Queue, Double Ended Queue, Priority Queue, Applications of Queue, (5) Introduction to Linked List, Singly Linked List, Doubly Linked List, Circular Linked List, Doubly Circular Linked List, Reverse a List, (4) Merge a List, Multilinked Structures, Applications of Linked List(3)
Non Linear Data Structures (12)
Terminologies of Tree, General Tree, Binary Tree and its Representation, Binary Search Tree, (04) Operations of Binary Search Tree – Insert, Delete, Search, Traversal – PreOrder, InOrder, PostOrder, Threaded Tree (Excluding Algorithms), B Tree and B+ Tree (Excluding Algorithms) (04), Height Balanced Tree (AVL) (Excluding Algorithms), Weight Balanced Tree (Excluding Algorithms), Terminologies of Graph, Representation of Graph, Graph Traversal Algorithms – BFS, DFS(04)

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Searching & Sorting Techniques (08)
Introduction, Types of Searching – Sequential Search, Binary Search (04)
Introduction, Types of Sorting – Selection, Bubble, Insertion, Shell (04)

Reference Books:

- ✓ **An Introduction to Data Structure with Applications** by Tremblay J. and Sorenson,
Publisher- Tata McGraw-Hill international Edition, 1087
- ✓ **Expert Data Structures with C** by R.B.Patel, Khanna Publications, Delhi, India
- ✓ **Classic Data Structures** by Debasis Samanta, PHI Publications
- ✓ **Data Management and File Structures** By Mary E. S. Loomis-PHI Publications
- ✓ **Data Structure Using C & C++** By Langsam, Yedidyah and Augenstein-PHI
Publication

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Section-I

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**

Questions must be covered all possible section.

Section-II

Q-2 (Must be From topics: **Overview of Data Structure (5 marks)**)

Q-3 (Must be From topics: **Linear Data Structures (12 marks)**)

Q-4 (Must be From topics: **Non Linear Data Structures (10 marks)**)

Q-5 (Must be From topics: **Searching & Sorting Techniques (8 marks)**)

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Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

GANPAT UNIVERSITY

B.Sc.(IT) - SEM III

U23A20CP : OBJECT ORIENTED CONCEPTS AND PROGRAMMING

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th.	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
2	1	2	30	20	70	30	100	50

Total Session: 62 (Theory (44) + Practical (18))

Introduction to Java and Basic Concepts: (13)	Reference
<ul style="list-style-type: none"> • Introduction to Java(6) 	
Object-Oriented Paradigm (2) Basic Concepts: Data Abstraction, Encapsulation, Inheritance, Polymorphism, Dynamic Binding (1) What is Java, JDK and JRE ? (1) The main() method, A First Java Program, Compiling and Interpreting Applications (2)	Book(1) 1.1, 1.2, 1.3, 2.8, 2.9
<ul style="list-style-type: none"> • Data types and Variables: (4) 	
Primitive Datatypes, Declarations and scope (1) Variables and constants (1) Numeric Literals, Character Literals, String, String Literals (1) Arrays, Non-Primitive Datatypes (1)	Book(1) 4.3 to 4.9
<ul style="list-style-type: none"> • Operators and Expressions: (3) 	
Expressions, Assignment Operator, Arithmetic Operators, Relational Operators, Logical Operators, Increment and Decrement Operators, Operate-Assign Operators (+=, etc.), The Conditional Operator, Operator Precedence. (2) Implicit Type Conversions , The Cast Operator , Generic type casting (1)	Book(1) 5.2 to 5.14

Decision Making, Branching and Looping (4)	Reference
If..Else statements, Nesting of IF.. Else statements, Else..if ladder. Switch, break and continue Statement (2) While loop, do-while, for loop (1) Enhanced for loop (1)	Book(1) 6.1 to 6.7 7.1 to 7.5

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Introduction to Class, Method and Object: (8)	Reference
Creating class and Methods (1) Calling Methods, Defining Methods, Method Parameters, Creating objects, new keyword, Scope (2) Constructors, destructors and garbage collector (1) Accessing class members and member functions, method overloading, method overriding (1) Static, final, abstract methods and classes, interface (1) Public, private, protected, default, friend access (1) Inheritance : Extending classes, Subclass, Multilevel inheritance, Hierarchical inheritance (1)	Book(1) 8.1 to 8.18
Array, String, Vectors, Interfaces (11)	Reference
<ul style="list-style-type: none"> Arrays, Strings, Vectors: (7) 	
Creating and initializing array, Two-dimensional array, Variable size array (3) String, String array, String methods, StringBuffer class (2) Vectors (1) Wrapper classes , autoboxing and Unboxing (1)	Book(1) 9.2 to 9.7
<ul style="list-style-type: none"> Interfaces : (4) 	
Introduction, Defining and extending interfaces Implementing interfaces (2) Accessing interface variables, Concept of multiple inheritance (2)	Book(1) 10.1 to 10.5
Packages, Exception: (8)	Reference
<ul style="list-style-type: none"> Packages (3) 	
Using system package, Naming conventions, creating packages, accessing package (2) Static import (1)	Book(1) 11.2 to 11.10
<ul style="list-style-type: none"> Managing errors and Exceptions: (5) 	
Types of error, Compile time and run time errors (1) Exceptions, Exception handling code and syntax (1) Try-catch blocks, multiple catch statements. Finally block (2) User-defined exceptions, difference between throw and throws (1)	Book (1) 13.1 to 13.7

Reference Books:

1. Programming with Java 3e by E. Balagurusamy, Tata McGraw Hill Publication
2. Programming java by Sachin Malhotra & Saurabh Chaudhary, Oxford Publication
3. Head first java by Kathy Sierra & Bert Bates, O'Reilly
4. Complete reference Java by Herbert Schildt, Tata McGraw Hill

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

5. The Unified Modeling Language User Guide By Booch, Rumbaugh, Jacobson
Low Price Edition Publication

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Section-I

Q-1 (Attempt any **Seven Out of Ten**: each question must be 5 marks) --- **35**
Questions must be covered all possible section.

Section-II

Q-2 (Must be From topics: **Introduction to Java and Basic Concepts (8)**)

Q-3 (Must be From topics: **Decision Making, Branching and Looping (4)**)

Q-4 (Must be From topics: **Introduction to Class, Method and Object (8)**)

Q-5 (Must be From topics: **Arrays, Strings, Vectors, Interfaces (8)**)

Q-6 (Must be From topics: **Packages, Exception (7)**)

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Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

GANPAT UNIVERSITY

B.Sc. (IT) SEMESTER – III

U23A3DBM: DATABASE MANAGEMENT SYSTEM

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th.	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
3	1	2	30	20	70	30	100	50

Prerequisite:

- Must know about Basic Methodology of Computer
- Must know about basics of data and information
- Working knowledge of any one database like MS Access is preferable

Total Sessions: 60 (45 Theory +15 Tutorials)

<p>Database Concepts and Architecture (08 sessions) (Book 1)</p> <ul style="list-style-type: none">• Introduction of Database, Benefits of Database Approach(01)• Structure of the Database System, Types of Database Users and Roles of Database Administrator(01)• Introduction to RDBMS?, Codd's rules for RDBMS, DBMS Vs. RDBMS (02)• Overview of Database System Architecture, Introduction to Distributed Database(01)• Database terms: Relation, Entity, Attribute, Attribute Value, Primary key, Candidate key, Alternate key (01)• Transaction Control (Overview of Concurrency and Recovery)(02)
<p>Database Design and Normalization (06 Sessions) (Book 1)</p> <ul style="list-style-type: none">• The E/R Model and E/R diagrams, types of relationships (01)• Trivial and nontrivial dependencies, non-loss decomposition and functional dependencies(01) <p>Normalization(03)</p> <ul style="list-style-type: none">• First, second and third normal forms• Boyce / Codd normal form• multi-valued dependencies and fourth normal form• Join dependencies and fifth normal form
<p>Interactive SQL Part – I (15 Sessions) (Book 3)</p> <ul style="list-style-type: none">• Introduction to SQL, Logging into SQL * Plus, Naming Rules and Conventions, Data

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

<p>Types (02)</p> <ul style="list-style-type: none">• Creating a Table, Viewing data in the tables, Sorting data in a table, Delete operations, Updating contents of a table, Modifying the structure of tables, Renaming, Truncating and Destroying tables (06)• Examining objects created by a user (01)• Constraints (I/O and Business rule constraints) (02)• DDL, DML, DCL/TCL, DQL(Select Clause) (01)• Computations on table data(Range Searching Pattern Matching) (02) <p>Security Management using SQL</p> <p>Security using Grant and Revoke Statements (01)</p>
<p>Interactive SQL Part – II (15 sessions) (Book 3 and Book 4)</p> <ul style="list-style-type: none">• Oracle Built-in Functions (Single row Functions and Group Functions)(02)• Set Operators, Sub query(02)• Group by Clause, Having Clause, Group by using ROLLUP and CUBE operator, EXISTS/ NOT EXISTS operator (02)• Different Types of Joins(02)• Index, View, Sequence(03)• Setting environment using SET command(01) <p>Advance features in SQL * Plus (03)</p> <ul style="list-style-type: none">• Code a tree structured Query, Code a Matrix Report in SQL, Dump function(02)• User Management : Creating a new user in Oracle, Assigning rights to the user & changing the password of an existing user(01)
<p>PL/SQL(15 sessions) (Book 3 and Book 4)</p> <p>Introduction to PL/SQL, The PL/SQL Block Structure(01), Control structure(02), Processing a PL/SQL block(01), PL/SQL cursors: What is cursor?, Types of cursor, Cursor FOR loops(03), Exception handling in PL/SQL : Types of exceptions in PL/SQL(03), PL/SQL Named Blocks : Procedure, Function, Trigger(05)</p>

Reference Books:

1. Database System Concepts- Silberschatz, Korth, Sudarshan, Fifth Edition, McGraw Hill
An Introduction to Database Systems by C.J.Date (Eighth Edition)
Database Systems Using ORACLE by Nilesh Shah (Second Edition), Prentice Hall of India
SQL, PL/SQL The Programming Language of Oracle by Ivan bayross(4th Edition), BPB Publications

Web References:

- <http://www.java2s.com/Code/Oracle/CatalogOracle.htm>

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or options can be given

Paper structure:

Section-I

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**

Questions must be covered from all possible section.

Section-II

Q-2 (Must be From topics: **Database Concepts and Architecture (07marks)**)

Q-3 (Must be From topics: **Database Design and Normalization (07marks)**)

Q-4 (Must be From topics: **Interactive SQL Part – I (07marks)**)

Q-5 (Must be From topics: **Interactive SQL Part – II (07marks)**)

Q-6 (Must be From topics: **PL/SQL (07marks)**)

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Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

GANPAT UNIVERSITY

B.Sc. (IT) SEMESTER – III

U23B4EDM: ENVIRONMENT DISASTER MANAGEMENT

Credit		Examination Scheme(Marks)					
		INTERNAL		EXTERNAL		TOTAL	
Th.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
3	0	30	0	70	0	100	0

Total Sessions: 31

<p>Introduction to Environment :(4)</p> <p>Definition, Scope of environment, Element of environment, Importance of environment Studies, Environmental issues for public Awareness, Challenges faced by environment (3), Impact of Technology on the environment, (1).</p>
<p>Ecology & Ecosystems : (4)</p> <p>Introduction: Ecology, Concepts of an ecosystem, major part of ecosystem, type of ecosystem, classification & function of ecosystem(2), Components of ecosystem-Producers, Consumers, Decomposers(2)</p>
<p>Environmental Pollution : (8)</p> <p>Air Pollution: Composition of air, Structure of atmosphere, Ambient Air Quality Standards, Classification of air pollutants, Sources of common air pollutants, Effects of common air pollutants, what we do to reduce air pollution, Carbon credit(3).</p> <p>Noise Pollution: Introduction- Noise Measurement, Sources of Noise Pollution, Ambient noise levels (Noise Standard, Effects of noise pollution, Noise pollution controls (2).</p> <p>Water Pollution: Introduction – Water Quality Standards, Sources of Water Pollution, Classification of water pollutants, Effects of water pollutants, Preventing from water Pollution (2).</p> <p>Current Environmental Global Issues: Global Warming & Green Houses Effects, Acid Rain, Depletion of Ozone Layer (1).</p>
<p>Introduction Disaster Management : (3)</p> <p>What is Disaster? Hazard and types of Hazards (1), vulnerability, risk, capacity (1), Disaster</p>

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Management cycle (1).
Natural Disasters Awareness And Planning for Disaster : (6)
Floods, Earthquakes and Landslides (2), Cyclones and Thunderstorms, Tsunami (2), Drought, Heat wave and Sandstorms (2).
Man made Disasters Awareness And Planning for Disaster: (6)
War and Terrorism, Riots and Demonstrations (2), Residential and Industrial Fires, Transportation Accidents (2), Nuclear Power Accidents (2).

Reference Books:

1. Citizen's guide to disaster management by Satish Modh Publisher:-Macmillan Publishers India,
2. Environment Engineering Vol-I & II, by Dr.S.K.Garg,
3. Introduction to Air Pollution, by R.K.Trivedi & P.K.Goel.-BS Publications,
4. Environmental Pollution Control Engineering, by C.S.Rao,
5. Vol-I- Air Pollution, Vol-II- Water Pollution, Vol-V- Noise Pollution – By S.K.Agarwal – A.P.H.Publishing Corporation,
6. Environmental Studies: R. Rajagopalan,Oxford University Press
7. Environmental Pollution: Causes, Effects & Control by K.C Agrawal
8. Environmental Science by Richard T Wright & Bernard J Nebel
9. Environmental Science by Daniel B Botkin & Edward A Keller
10. Environmental Engineering & Management by Suresh K Dameja
11. Environmental Management by Dr. Swapan C Deb
12. Environment & Ecology by Dr Gourkrishna Dasmohapatra
13. Introduction to Environmental Engineering and Science by Master Gilbert M.

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Note for Examiner:

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given.

Paper Structure:

Section-I

Q-1 (Attempt any seven out of Ten: each question must be 5 Marks)—35 Marks

Questions must be covered from all possible section.

Section-II

Q-2 (Must be From Topics: Introduction to Environment (5 Marks))

Q-3 (Must be From Topics: Ecology & Ecosystems (5 Marks))

Q-4 (Must be From Topics: Environmental Pollution (10 Marks))

Q-5 (Must be From Topics: Introduction Disaster Management (5 Marks))

Q-6 (Must be From Topics: Natural Disasters (5 Marks))

Q-7 (Must be From Topics: Man made Disasters (5 Marks))

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Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

GANPAT UNIVERSITY

B.Sc.(IT) SEM-III

U23A5OST : OPEN SOURCE TECHNOLOGY

Credit		Examination Scheme (Marks)					
		INTERNAL		EXTERNAL		TOTAL	
Th.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
3	--	30	--	70	--	100	--

Total Sessions: 38

Introduction to open source (10)	References
Why open source? , What is Open Source, Open Source Principles, Open Standards requirement for software, Where OSS has succeed, open source successes, Free Software, What is free software, Example of Free, Free Software License provider, Free Software V/s Open Source Software, Public Domain, FOSS does not mean any cost, Why “Free software” is Better than “Open Source”, Why some company use open source software? Why some company don’t use open source software?	Book 1, Chapter 1
Principles and Open source methodology (10)	
History, Open Source Initiatives, Open source standard principles, Methodologies, Philosophy, Software Freedom, Open Source Software Development, Licenses, Copyright, Copyleft, Patent, Zero Margin Cost, Income – generation cost, Opportunities.	Book 1, Chapter 2
Case Studies (10)	
Introduction to Apache, Linux, Mozilla Firefox, Wikipedia, Joomla, GNU Compiler Collection, Open Office, Thunderbird, GIMP – The GNU Image Manipulation Program	Book 1, Chapter 3 Web Reference Link 1, 2
Open Source Ethics (8)	
Open Source Versus Closed Source, Social and Finance impacts of Open Source Technology	Book 1, Chapter 5

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Reference Books & Web References:

1. Open Source Technology, Kailash Vadera & Bhavyesh Gandhi, Laxmi Publication Pvt. Ltd.

WEB References:

2. <http://www.uweb.ucsb.edu/~mguidry/links/>
3. <http://www.opensource.org/>

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Section-I

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**

Questions must be covered from all possible sections.

Section-II

Q-2 (Must be From topics: **Introduction to open source (9 marks)**)

Q-3 (Must be From topics: **Principles and Open source methodology (9 marks)**)

Q-4 (Must be From topics: **Case Studies (9 marks)**)

Q-5 (Must be From topics: **Open Source Ethics (8 marks)**)

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Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

GANPAT UNIVERSITY

B. Sc.(IT) SEM-III

U23A6FMI : FUNDAMENTAL MATHEMATICS FOR INFORMATION TECHNOLOGY

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th.	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
3	-	-	30	-	70	-	100	-

Total Session: 45 (Theory)

Set Theory(16)	Reference Book /Page no
Introduction, Representation of Sets and Elements, Universal Set and Empty Set, Subsets, Equality of two sets, Equivalent sets, Power set, Disjoint set(3), Venn Diagrams(1), Set Operations: Union, Intersection, Difference, Symmetric difference(2), Compliment of a set, Cartesian product of two sets(2), Algebra laws of Set theory(2), Finite set, Infinite set and counting principle(2), Examples related to cardinality of sets.(4)	Book-1 1.1 to 1.10
Counting(7)	
Introduction-Basic Counting Principles, Factorial Notation(1), Binomial Coefficients(1), Permutations, Combinations(2), The Pigeonhole Principle, Ordered and Unordered Partitions(3)	Book-1 6.1 to 6.7
Graph Theory(9)	
Introduction, Data Structures, Graphs and Multigraphs, sub graphs(2) , Finite graphs, Trivial Graph, Isomorphic and Homeomorphic Graphs(2), Paths Connectivity, The Bridges of Konigsberg (2), Traversable Multigraphs, Hamiltonian graphs , Eulerian graphs (2), Complete, regular and Bipartite Graphs(1)	Book-1 8.1 to 8.7
Vectors and Matrices(13)	
Introduction, Vectors Matrices(1), Unit matrix, Square matrix, Transpose of a Matrix, Invertible(Nonsingular) Matrices, Zero matrix or Null Matrix(3) , Row Matrix and Column Matrix , Symmetric Matrix, Skew Symmetric Matrix(2), Upper Triangular	Book-1 5.1 to 5.10

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Matrix, Lower Triangular Matrix(1), Arithmetic Operations on Matrices : Addition , Subtraction and Multiplication of Matrices(3) , Determinants, Elementary Row Operations, Gaussian Elimination(3)	
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REFERENCE BOOKS:

(1) **Discrete Mathematics**:- Seymour Lipschutz and Marc Lars Lipson

Adapted by: Varsha H Patil

(2) **Advanced Mathematics**:-Heena Timani-Books India Publication

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Section-I

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**

Questions must be covered from all possible section.

Section-II

Q-2 (Must be From topics: **Set Theory: (12 marks)**)

Q-3 (Must be From topics: **Counting: (7 marks)**)

Q-4 (Must be From topics: **Graph Theory: (7 marks)**)

Q-5 (Must be From topics: **Vectors and Matrics (9 marks)**)

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Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

GANPAT UNIVERSITY

B. Sc.(IT) SEM-IV

U24A1GUI : GUI PROGRAMMING

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
2	1	2	30	20	70	30	100	50

Total Sessions: 60 (45 Theory + 15 Practical)

Prerequisite:

- **Must have Basic Knowledge of OOPs**
- **Must Have Some Knowledge Of SAD & Software Model**

Introduction of .Net Framework & Client Server Basics (06)

Introduction of .Net Framework (03)

[.Net architecture, Framework 2.0, 3.0, 3.5 Comparison & Overview] (01)
[Managed Code, Assemblies, CLR, Execution Of Assembly's Code, IL, JIT](01)
[Net Framework Class Library, Common Type System, Common Language Specification, Interoperability With Unmanaged Code] (01)

Client-Server Basics (03)

[Discover Client-Server and Other Computing Architectures] (01)
[Understand File Server versus Client-Server Database Deployment] (01)
[Learn About Two Tiers versus Three-Tier Client-Server Model] (01)

VB.Net Fundamentals (10)

[Net Features, Data Types, Variables, Variable Declaration and Arrays] (02)
[Constants and Option Explicit Statement, Assignment Statements, Working with Math Operations, Strings, and Formatting Functions] (03)
[All Control Statements, Loops, Error Trapping, Working with Procedures, Functions, Controlling the Program Starts] (05)

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Understanding .Net Control & Building Blocks (17)

.Net Common Controls: [Control Hierarchy, Label and Link Label, Text Box and Rich Text Box, Picture Box, Group Box and Panel, Button, Check Box and Radio Button, List Box, Checked List Box and Combo Box, Domain Up Down and Numeric Up Down, Month Calendar and Date Time Picker, Tree View and List View, Timer, Track Bar and Progress Bar, HScroll Bar, VScroll Bar, Tab Control and Handling Control Events] (08)

Container Control: [Flow Layout Panel, Group Box, Panel, Split Container, Tab Control, Tab Layout Panel].(02)

Common Dialogs Control: [Color Dialog, Folder Browser Dialog, Font Dialog, Open File Dialog, Save File Dialog]. (03)

Visual Basic.Net Building Blocks (04):

[Forms, MDI-Forms, Exploring Properties](02), [Methods and Events, Menu bar] (01), [Context Menu, Pop up Menu, Message box, Input box] (01)

ADO.Net: (12)

Architecture Of ADO.Net(01), Data Base Manipulation(02), [.Net Data Provider, Data Adapter, Data Set](02), [Data Row, Data Column, Data Relation](02), [Command, Data Reader, Data Adapter](02), [Data Grid View, Stored Procedure](02), [Execute reader, Execute Non Query, Execute Scalar.] (01)

Reference Books:

1. Applied .Net Framework Prog. In Ms Vb.Net By Jeffrey Richter, Francesco Balena- Tmh Publications
2. Microsoft Visual Basic .Net Step By Step By Michael Halvorsan-Phi Publication
3. Visual Basic .Net By Wrox Publication Beginner

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Question Paper Scheme:

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Section:I

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**

Questions must be covered all possible section.

Section-II

Q-2 (Must be From topics: : **Introduction of .Net Framework & Client Server Basics**
(04 marks))

Q-3 (Must be From topics: **VB.Net Fundamentals (06 marks)**)

Q-4 (Must be From topics: **Understanding .Net Control & Building Blocks**
(14 marks))

Q-5 (Must be From topics: **ADO.Net: (11 marks)**)

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Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

GANPAT UNIVERSITY

B.Sc. (IT) SEMESTER – IV

U24A2ADM: ADVANCED DATABASE MANAGEMENT SYSTEM

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th.	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
3	1	2	30	20	70	30	100	50

Prerequisite:

- Must have Basic Knowledge of DBMS & RDBMS

Total Sessions: 60 (45 Theory +15 Tutorials)

Introduction of Oracle Database 10g and Database Configuration Assistant (09)

- **Introduction (5)**

Oracle Database 10g : Overview of Grid Computing, Oracle Database Architecture (1), Database Structures, Oracle Memory Structures, Process Structures, Oracle Instance Management(1), Server Process and Database Buffer Cache, Physical Database Structure, Tablespaces and Data Files(1), SYSTEM and SYSAUX tablespaces, Segments, Extents and Blocks (1), Logical and Physical Database Structures(1)

- **Creating an Oracle Database(4)**

Objectives, Planning the Database, Database Configuration Assistant (DBCA)(1), Using DBCA to create a database, Password Management(2), Creating a Database Design Template, Using the DBCA to Delete a Database(1)

Managing Oracle Instance & Database Storage Structures(14)

- **Managing the Oracle Instance(6)**

Objectives, Management Framework, Starting and Stopping Database Control, Oracle Enterprise Manager (2), Accessing Oracle Enterprise Manager, Using SQL*Plus and iSQL*Plus to Access Your Database ,Setting Up iSQL*Plus for SYSDBA and SYSOPER Access, Calling SQL*Plus from a

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Shell Script(1), Calling a SQL Script from SQL*Plus, Initialization Parameter Files, Simplified Initialization Parameters(2), Viewing and Modifying Initialization Parameters , Database Startup and Shutdown, Viewing the Alert Log, Viewing the Alert History, Dynamic Performance Views(1)

- **Managing Database Storage Structures (8)**

Objectives, Storage Structures, How Table Data Is Stored, Anatomy of a Database Block ,Tablespaces and Data Files(2),Oracle Managed Files (OMF), Space Management in Tablespaces, Exploring the Storage Structure(1), Creating a New Tablespace, Storage for Locally Managed Tablespaces(2) , Tablespaces in the Preconfigured Database, Altering a Tablespace , Actions with Tablespaces, Dropping Tablespaces(1), Viewing Tablespace Information, Gathering Storage Information, Viewing Tablespace Contents(1), Enlarging the Database, What Is Automatic Storage Management? , ASM: Key Features and Benefits, ASM: Concepts (1)

Managing Undo Data, Security in Database and Performance Management(14)

- **Managing Undo Data (3)**

Objectives, Data Manipulation, Undo Data , Transactions and Undo Data, Storing Undo Information1(1), Undo Data Versus Redo Data, Monitoring Undo, Administering Undo, Configuring Undo Retention(1), Guaranteeing Undo Retention, Sizing the Undo Tablespace, Using the Undo Advisor(1)

- **Implementing Oracle Database Security (6)**

Objectives, Industry Security Requirements, Separation of Responsibilities, Database Security, Principle of Least Privilege(2), Applying the Principle of Least Privilege, Monitoring for Suspicious Activity, Standard Database Auditing, Enabling Auditing(1), Uniform Audit Trails, Enterprise Manager Audit Page(1), Using and Maintaining Audit Information, Value-Based Auditing, Fine-Grained Auditing, FGA Policy, Audited DML Statement: Considerations, FGA Guidelines, DBA Auditing(1), Maintaining the Audit Trail, Security Updates, Applying Security Patches(1)

- **Performance Management (5)**

Objectives, Performance Monitoring , Performance Monitoring: Top Sessions, Performance Monitoring: Top Services(1) , SQL Tuning Advisor: Overview ,SQL Tuning Advisor : Options and Recommendations(1), SQL Statistics, Identifying Duplicate SQL, Using the SQL Access Advisor, Managing Memory Components, Enabling Automatic Shared Memory Management (ASMM)(1),Manually Setting Shared Memory Management, Using the Memory Advisor, Dynamic Performance Statistics(1) , Troubleshooting and Tuning Views, Invalid and Unusable Objects(1)

Backup and Recovery in Database(09)

- **Performing Database Backups(5)**

Objectives, Backup Solutions: Overview, Oracle Secure Backup, User-Managed Backup(2), Terminology, Recovery Manager (RMAN), Configuring Backup Settings, Scheduling Backups: Strategy(1), Options, Settings, Schedule, Review Backing Up the Control File to a Trace File, Managing Backups, Flash Recovery Area (2)

- **Performing Database Recovery (4)**

Objectives, Opening a Database, Changing Instance Status, Keeping a Database Open, Loss of a Control File, Loss of a Redo Log File(2), Loss of a Data File in NOARCHIVELOG Mode, Loss of a Noncritical Data File in ARCHIVELOG Mode, Loss of a System-Critical Data File in ARCHIVELOG Mode (2)

Performing Flashback & Moving Data(14)

- **Performing Flashback(5)**

Objectives, Flashback Technology: Benefits, When to Use the Flashback Technology, Flashing Back Any Error(2), Flashback Database: Overview, Reducing Restore Time, Considerations, Enabling Flashback Database(1), Flashback Table, Flashback Drop: Overview, Flashback Time Navigation , Flashback Query, Flashback Versions Query, Flashback Transaction Query(2)

- **Moving Data (9)**

Objectives, Moving Data: General Architecture, Directory Object: Overview, Creating Directory Objects(2), SQL*Loader: Overview, Loading Data with SQL*Loader, SQL*Loader Control File, Loading Methods(1), Data Pump: Overview, Data Pump: Benefits, Data Pump Export and Import: Overview, Data Pump Utility: Interfaces and Modes(3), Fine-Grained Object Selection, Advanced Feature: Sampling, Export Options: Files, Data Pump File Locations, Scheduling and Running a Job, Data Pump File Naming and Size(3)

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Reference Books:

- (1) Oracle Database 10G, The Complete reference by Kevin Loney- Tata Mcgraw Hill Education Pvt. Ltd Publication
- (2) Oracle DBA Bible, by Janathan Gennick, Carol McCullough-Dieter and Gerrit-Jan Linker, WILEY-Dreamtech Publication.
- (3) Using Oracle, by William G. Page – PHI Publication

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or options can be given.

Paper Structure:

Section:I

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**
Questions must be covered all possible section.

Section-II

Q-2 (Must be From topics: : **Introduction of Oracle Database 10g and Database Configuration Assistant (05 marks)**)

Q-3 (Must be From topics: Managing Oracle Instance & Database Storage Structures **(08 marks)**)

Q-4 (Must be From topics: Managing Undo Data, Security in Database and Performance Management **(08 marks)**)

Q-5 (Must be From topics: Backup and Recovery in Database **(06 marks)**)

Q-6 (Must be From topics: Performing Flashback & Moving Data **(08 marks)**)

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Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

GANPAT UNIVERSITY
B. Sc.(IT) SEM-IV
U24A3COG: COMPUTER GRAPHICS

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th.	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
3	-	2	30	20	70	30	100	50

Total Sessions: 70 [Theory 50 + Practical 20]

Graphics Overview (13)
<p>Purpose and Needs of Graphics(1), Applications of Computer Graphics(1), Concept of CRT, LCD, LED and 3D (Differentiate between all) (1)</p> <p>Video Display Devices: Cathode Ray Tubes(1),Random Scan - Raster Scan Monitors, Display, Systems(3), Color CRT Monitors(2),Direct View Storage Tubes(1)</p> <p>Input Devices of Computer Graphics: Keyboard, Touch panels, Light pens, Mouse, Track ball, Space ball, Voice system and Joy sticks(3)</p>
Output Primitives and Attributes (17)
<p>Primitives: Points, Lines, Circles(1),Line Drawing Algorithms(2), Circle Generating Algorithms(2), Filled Area Primitives(2), Scan Line Polygons Fill Algorithm(2), Inside-Outside Tests(2), and Boundary-fill Algorithm(2) etc., Character Generation(1)</p> <p>Attributes of Output Primitives: Line Attributes, Area Fill Attributes, Character Attributes (3)</p>
Two Dimensional Transformation (12)
<p>Basic and Composite Transformation: Translation, Rotation Scaling (3)</p> <p>Other Transformation: Reflection, Shear(2)</p> <p>2D Viewing: Clipping Operations, Line clipping, Area/Polygon clipping, Text clipping, Windowing and Clipping(4)</p> <p>Interactive Picture Construction Techniques: Rubber Band Methods, Zooming, Drawing(1)3D Display Techniques: Parallel Projection, Perspective Projection(2)</p>

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Multimedia (8)

Introduction: Definition, Various facets of Multimedia, Hardware requirement for Multimedia Technology, Classification of Multimedia, Multimedia System Configuration(3)

Audio: Sound card fundamentals, Digital Audio playback and recording, Multimedia Text: Designing Text(2)

Display Design consideration, Content design consideration, Hyper media, Hypertext(2)

Multimedia Animation: Introduction, Two- dimensional and Three dimensional animation (1)

Reference Books:

- (1) Computer Graphics by Donald Hearn & M. Pauline Baker, 1995 - PHI
- (2) Computer Graphics by F.S. Hill, J.R. - MacMillan Publishing Company, 1990
- (3) Multimedia Magic by S. Gokul - BPB Publications, 1998.

Question Paper Scheme:

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Section: I

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**

Questions must be covered all possible section.

Section1: II

Q-2 (Must be From topics: **Graphics Overview: (10 marks)**)

Q-3 (Must be From topics: **Output Primitives and Attributes: (12 marks)**)

Q-4 (Must be From topics: **Two Dimensional Transformation: (9 marks)**)

Q-5 (Must be From topics: **Multimedia: (4 marks)**)

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Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

GANPAT UNIVERSITY

B. Sc.(IT) SEM-IV

U24B4MIS : MANAGEMENT INFORMATION SYSTEM

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
3	-		30	--	70	--	100	--

Total Sessions: 40

<p>MIS and Basic Concepts (14)</p> <p>Why MIS? Useful of MIS.(1) Definition, Problems with MIS, Knowledge requirement with MIS (4) Data, Information and Communication, Definition, Classification and Characteristics of Information (3) Communication: Definition, Communication Systems, Methods of Communication (2) System Concepts – Structure and Elements : Features of Systems Approach, Systems Elements, System Boundaries, Closed and Open Systems, Decoupling (4)</p>
<p>Information Systems in the Enterprise (6)</p> <p>Management Levels: Top, Middle and Bottom. (1) Seven – S Model (1) Major Types of Systems in Organizations: Transaction Processing System(TPS), Knowledge work System (KWS), Office Support System (OSS), Management Information System (MIS), Decision Support System (DSS), Executive Support System (ESS) (3) Relationship of Systems to Another(1)</p>
<p>Planning, Decision Making and IT (9)</p> <p>Planning: Definition, Planning Terms, Levels of Planning, Planning Problems, Formal and Informal Planning, Types and Sources of Planning Information(4) Decision Making: Definition, Programmed and Non – Programmed Decisions, Levels of Decision Making, Prescriptive and Descriptive Decision Models. (4) Information Technology and MIS: IT and Information Systems(1)</p>

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

E- Commerce, M - Commerce & Security (8)
Electronic Commerce: Overview of Electronic Commerce, Benefits of Electronic Commerce, Impact of Electronic Commerce, Business Models of Electronic Commerce. (4) M-commerce : Overview and Comparisons(1) Cryptography, Authentication Protocol and Digital Signature (3)
Case Study (3)
A Case Study on Railway Reservation System, Online Examination System, Library Management System, Payroll Management System(3)

Reference Books:

- (1) Management Information System, Lucey T BPB publication
- (2) Management Information System, by Kenneth C. Laudon, Jane P. Laudon, 8th Edition, Pearson Education Publication
- (3) E-Commerce A Managerial Perspective, by P.T. Joseph, PHI Publication

Question Paper Scheme:

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Section:I

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**
Questions must be covered all possible section.

Section:II

Q-2 (Must be From topics: **MIS and Basic Concepts: (12 marks)**)

Q-3 (Must be From topics: **Information Systems in the Enterprise: (4 marks)**)

Q-4 (Must be From topics: **Planning, Decision Making and IT: (9 marks)**)

Q-5 (Must be From topics: **E- Commerce, M – Commerce, Security & Case Study: (10 marks)**)

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Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

GANPAT UNIVERSITY
B. Sc.(IT) SEM-IV
U24A5NTE: NETWORK TECHNOLOGY-I

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th.	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
3	--	--	30	--	70	--	100	--

Total Sessions: 45 Theory Sessions

Prerequisite:

- Concepts of Data communication and its components
- An overview about the need of layered approach
- Overview of the all the layers and their functionality in the OSI and TCP/IP model
- Similarities and Differences between OSI and TCP/IP model
- Concepts of types of computer networks, topologies and line configurations
- Overview about network components (Networking and internetworking devices)

Multi – access channels(05)

Introduction to multi- access channels ,Issues with multi-access channels, Introduction to Ethernet technology and Wireless LANs

- Introduction, The Channel Allocation Problem
- Multiple Access Protocols :ALOHA, CSMA(Carrier Sense Multiple Access), WDMA(Wavelength Division Multiple Access)(03)
- Ethernet, Wireless LANs, Broadband Wireless,(01)
- Bluetooth Technology (piconet and scatternet) (01)

Internet Addresses and Address Mapping(08)

Classful Internet Addresses, subnet , super net and masking, Mapping Internet Addresses to Physical Addresses (ARP), Internet Protocol: Connectionless Datagram Delivery (IPv4), Overview of IPv6 (08)

- Introduction, Universal identifiers, IP addresses and network connections, Notations for representing IP address (01)
- IPv4: Brief study of IPv4 datagram format, Address space, Classful Internet Addresses ,Address classes(01) ,special purpose IP addresses (01),

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

- Subnet, super net, subnet masking(01)
- Introduction to IPv6, Need for new IP protocol, IPv6 features, IPv6 base header format.(02)
- Concept of physical address, Relationship between network address and physical address, Mapping Internet Addresses to Physical Addresses (ARP) and vice versa (concept of RARP).(01)
- Concept and reason for connectionless and best effort delivery system at network layer. (01)

IP,ICMP and UDP(10)

Internet Protocol: Routing and Forwarding IP Datagram, Congestion Control, Error And Control Messages (ICMP), User Datagram Protocol (UDP)

- Introduction, Forwarding in the Internet, Indirect and Direct delivery, static vs. dynamic routing (01), Routing methods(Next hop forwarding, Default routes, Host specific routes, Network specific routes)(01)
- Overview of Routing algorithms (IP forwarding algorithm).(02)
- Overview of Congestion Control: Congestion Control : Congestion Control Principles, Congestion Prevention Policies.(01)
- Introduction of ICMP, Need for a controlling protocol, Error Reporting versus Error Correction, ICMP message delivery, ICMP message format, Ping, Formats of different type of messages like Echo(Request and Reply), Congestion, Unreachable Destinations, Source Quench, Router Advertisement and Solicitation, etc.(03)
- Introduction of UDP, Need for UDP, UDP message format, UDP Pseudo header. (02)

TCP,VPN and DHCP(07)

Transmission Control Protocol for Reliable Stream Transport Service (TCP), Private Network Interconnection (VPN),Acquiring temporary IP addresses , Bootstrap And Dynamic Host Configuration Protocol

- Introduction, Need for stream delivery, Features of reliable delivery service, How reliability can be provided, Concept of sliding windows, Ports, connections and endpoints, Active and Passive opens, Segments, Streams and sequence numbers, Variable window size and flow control, TCP segment format, Out of band data, TCP options, Acknowledgment, Retransmission and timeouts. (04)
- Introduction to Virtual Private Networks Private and hybrid networks, Introduction to NAT(02)
- Introduction to DHCP, Overview of BOOTP, Using DHCP to get temporary IP Address, DHCP Message format, DHCP Lease mechanism (01)

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Application Layer Protocols and Services(09)

The Domain Name System (DNS), Remote Login And Desktop (TELNET, SSH), FileTransfer And Access (FTP, TFTP, NFS), Electronic Mail (SMTP, POP, IMAP, MIME)

- Need for DNS, Flat versus hierarchical namespace, Appropriateness of Hierarchical name space for assigning unique domain names, Internet domain Names, Domain Name Space, Primary and Secondary servers ,DNS in the Internet, Mapping domain names to addresses, Domain Name Resolution, Efficient translation, Caching, DNS message format, Compression, Inverse mappings, Pointer queries, DNS resource records, Dynamic DNS, DNSSec.(03)
- Introduction, Overview of Local and Remote Connections, Telnet protocol, SSH (02)
- Different ways of sharing a file, Features, TCP Port numbers, FTP:Anonymous FTP, Secure FTP(02)
- Introduction to E-mail protocols, Mailboxes, Names and Aliases, Alias expansion and mail forwarding, SMTP, POP, IMAP, overview of MIME.(02)

Network Security(06)

Securing the networks, use of cryptography methods, Encryption and decryption algorithms , signing digitally and use of firewalls

- Need for securing the networks, Aspects of Network Security (privacy, integrity, authentication, non-repudiation)(01)
- Cryptography (overview and different methods for generating cipher text using cryptography) (01)
- Symmetric-Key Algorithms and Public-Key Algorithms(02)
- Digital Signatures(01)`
- Firewalls(Packet-filter firewalls and Proxy firewalls) (01)

Reference /Text Books (Theory):

- 1) “Internetworking with TCP/IP - (Vol. 1) Principles, Protocols, and Architecture”, Douglas E. Comer, , 5th Edition, Prentice Hall of India (PHI) Publishers.
- 2) ”TCP/IP Protocol Suite”, Behrouz A.Forouzan, 3rd Edition, Tata McGraw-Hill, New Delhi.
- 3) “Computer Networks”, Bhushan Trivedi, Oxford University Press.
- 4) “Data Communications and Networking”, Behrouz A.Forouzan, 4th Edition, Tata McGraw- Hill, New Delhi.
- 5) “Computer Networks”, Andrew S. Tanenbaum, 4th Edition, PEARSON EDUCATION

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Note for Examiner:

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or options can be given.

Paper Structure

Section: I

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**

Questions must be covered all possible section.

Section1: II

Q-2 (Must be From topics: **Multi – access channels (05 marks)**)

Q-3 (Must be From topics: **Internet Addresses and Address Mapping: (07 marks)**)

Q-4 (Must be From topics: **IP, ICMP and UDP: (7 marks)**)

Q-5 (Must be From topics: **TCP, VPN and DHCP: (5 marks)**)

Q-6 (Must be From topics: **Application Layer Protocols and Services: (6 marks)**)

Q-7 (Must be From topics: **Network Security: (5 marks)**)

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Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

GANPAT UNIVERSITY

B. Sc.(IT) SEM-IV

U24A6SEN : SOFTWARE ENGINEERING

Credit			Examination Scheme (Marks)					
			INTERNAL		EXTERNAL		TOTAL	
Th.	Tu.	Pr.	Th.	Pr.	Th.	Pr.	Th.	Pr.
3	-		30	-	70	-	100	-

Total Lecture: 45

Basic of Software Engineering and SDLC Models: [08]

Software Basics : [Software, Software Myths],[1]

Software Process: [Software Process Models, The Capability Maturity Model Integration (CMMI), Process Patterns, Process Assessment, Personal & Team Process Models, Process Technology, Product & Process], [3]

Software Development Models:[The linear sequential Model, The prototyping Model, The RAD Model, Evolutionary Software Process Models, Component – Based Development, Fourth Generation Techniques, Aspect oriented Software Development. [4]

Structured Analysis & Design Methods and Tools of Analysis: [11]

[Data Modeling, E-R Diagram](01), [Structure Chart, Structured Flow Chart](01), [Knowledge and Logic based Representation Techniques, Data Dictionary](02), Data Flow Diagrams(DFD)(03), Decision Tree and Tables (01), [Pseudo code, Structured English](01) , Concept of Object Oriented Modeling(01) ,, Functional Decomposition Diagrams.(01)

Software project planning & Scheduling Techniques: [06]

[Project planning objectives, Software scope, Decomposition Techniques, Empirical estimation models, The Make/Buy Decision] (03),

[Project scheduling and technique : Basic concept, Defining a task set for the software project, Defining a task Network, Scheduling, Earned value analysis (03).

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Software Risk analysis and Management (06)
[Reactive versus proactive risk strategies, Software risks, Risk identification](02),[Risk projection, Risk refinement](02) , [Risk mitigation , monitoring, and management, Safety risks and hazards, The RMMM Plan](02)
Software Quality Assurance & Testing Techniques: (14)
Software Quality Assurance: (07) [Quality Concepts, The Quality Movement, Software Quality Assurance](02), [Software Reviews, Formal Technical Reviews, Formal Approaches to SQA](02), [Statistical Software Quality Assurance, Software Reliability](02), [Mistake Proofing for Software, Introduction to ISO standard](01) Software Testing Technique: (07) Software testing fundamentals(01), Test case design (01), [White-box Testing, Basis path testing] (02), [Control structure testing, Black-box testing](02), [Testing for specialized environments, architectures and application].(02)

Reference Books:

1. Software Engineering – Roger Pressman (6th Edition)
2. The Unified Modeling Language User Guide By Booch, Rumbaugh, Jacobson
Low Price Edition Publication
3. UML: A Beginner’s Guide- Jason T. Roff
4. Analysis and Design of Information Systems By James A. Senn - TMH
5. Introduction to S.A.D. by LEE - Galgotia Publication.
6. Information System Concepts for Management by Henry C.Lucas-McGraw-Hill

Regulations:

M. Sc. (IT) Curriculum Details effective from JUNE-2010 (M.Sc. (IT) -I and II)

Note for Examiner

Q-1 must be common from any topics from syllabus.

Q-2 and onwards must be from specific topics and internal choice or option can be given

Paper Structure

Section-I

Q-1 (Attempt any **Seven** Out of **Ten**: each question must be 5 marks) --- **35**

Questions must be covered all possible section.

Section-II

Q-2 (Must be From topics: **Basic of Software Engineering and SDLC Models:**
(6 marks))

Q-3 (Must be From topics: **Structured Analysis & Design Methods and Tools of Analysis:**
(8 marks))

Q-4 (Must be From topics: **Software project planning & Scheduling Techniques:**
(4 marks))

Q-5 (Must be From topics: **Software Risk analysis and Management (5 marks)**)

Q-6 (Must be From topics: **Software Quality Assurance & Testing Techniques:**
(12 marks))

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