

GANPAT UNIVERSITY, KHERVA

M.C.A. SEM-I

MCA 104: COMPUTER ORGANISATION AND ARCHITECTURE

Teaching Scheme (Hrs Per Week)	
Th.	Pr.
4	--

Examination scheme (Marks)					
INTERNAL		EXTERNAL		TOTAL	
Th.	Pr.	Th.	Pr.	Th.	Pr.
30	--	70	--	100	--

UNIT: I

[25%]

Digital Fundamentals:

- Digital logic: Fundamental building blocks: logic gates, flip-flops, counters, registers, PLA; logic expressions, minimization, sum of product forms
- Number System: Introduction to Decimal, Binary, Octal, Hexadecimal number systems, Conversation of number from one number system to another number system.
- Binary Arithmetic: Addition, Subtraction (Simple method, using 1's and 2's complement method), Multiplication, Division (Simple method and using register method)

UNIT: II

[25%]

Computer Peripherals:

- Storage Devices: Floppy Disk, Hard Disk, CD-ROM, DVD (Above all topics Include only principles, types, data storage and Application)
- Input Devices: Key Board, Mouse, Touch screen, Scanner (Above all topics Include only principles, types and Applications)
- Output Devices: VDU (Computer Graphics, Working of CRT, Resolution of different VDU), Printer (Characteristic, Classification, Working, principle, Uses)
- Communication Devices: MODEM, NIC (Network Interface Card) (Principles, Baud rate, Applications)

UNIT: III

[25%]

Instruction Execution and I/O interface

- Assembly level organization: Basic organization of the Von Neumann machine; control unit; instruction fetch, decode, and execution; instruction sets and types (data manipulation, control, I/O); assembly/machine language programming; instruction formats; addressing modes; subroutine call and return mechanisms; I/O and interrupts
- Interfacing and communication: I/O fundamentals: handshaking, buffering, programmed I/O, interrupt-driven I/O

UNIT: IV

[25%]

• Multiprocessor and alternative architectures:

Flynn's Classification, Pipelining, Multi function execution, Vector Processor, NUMA, UMA, COMA, cache coherence, RISC Vs CISC architecture; branch prediction; pre-fetching; scalability

Reference Books:

- (1) Computer System Architecture By Mano, M. Morris-PHI Publications
- (2) Fundamentals of computer by V.Rajaraman-PHI Publications.
- (3) Digital Electronics by William H. Gothmann- PHI Publications
- (4) Structured Computer Organization By Tananbaum PHI Publications
- (5) Digital Computer Electronics by Malvino & Brown, Third Edition-TMH Publications.

Question Paper Scheme:

University Examination Duration: 3 Hours.

Section-I

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|---|------------|
| Q.1 - Unit-I & II
Objective/ Short Questions | (11 Marks) |
| Q.2 - Unit-I
Descriptive/ Long questions | (12 Marks) |
| Q.3 - Unit-II
Descriptive/ Long questions | (12 Marks) |

Section-II

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|---|------------|
| Q.4 - Unit-III & IV
Objective/ Short Questions | (11 Marks) |
| Q.5 - Unit-III
Descriptive/ Long questions | (12 Marks) |
| Q.6 - Unit-IV
Descriptive/ Long questions | (12 Marks) |

Note: Options should be given in all questions

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