

Immediately write your Roll No _____
Bharati Vidyapeeth's
Institute of Computer Applications and Management
A-4, Paschim Vihar, New Delhi-63.

Internal Examination 2016-19

Paper Code: MCA 101
Max. Marks: 45

Subject: Fundamentals of IT
Max. Time: 02 Hrs.

Note : Q1. is compulsory and carries 15 marks.
UNIT I, II and III all carry 10 marks each.

Ques1. Attempt any Five

(5*3=15)

- a) What are distributed systems?
- b) What do you mean by SDLC model? Why is it necessary to always adhere to a specific model while developing software?
- c) What is a Page Table. Explain how page table maps the logical address into physical address.
- d) Explain data abstraction in 3-tier architecture of DBMS.
- e) Explain the working of XOR gate with three or more inputs.
- f) What is the purpose of Testing phase in SDLC? Explain types of testing conducted during software development.
- g) Give advantages and limitations of linked allocation and indexed allocation of blocks in file management.

UNIT I

Ques 2. Attempt any two

(2*5=10)

- a) Solve the following:
 1. $(1101110011.00001)_2 = (?)_8$
 2. $(4E7.A1)_{16} = (?)_8$
 3. Write few functions of control bus.
 4. Explain zero byte instruction with an example.
- b) Explain different types of arithmetic microoperations. Also draw a block diagram to find 2's complement of a 4-bit binary number.
- c)
 1. Explain types of branching microoperations.
 2. What are immediate and implicit addressing modes.

UNIT II

Ques 3. Attempt any two**(2*5=10)**

- a) Write a note on types of storage devices and significance of memory hierarchy.
- b) Explain the prototype model with its advantages.
- c) 1. Draw a flowchart to calculate the sum of squares of all the even numbers between 1 to n. Input n from the user.
2. Write a note on types of scanners.

UNIT III**Ques 4. Attempt any two****(2*5=10)**

- a) Write notes on:
 - 1. Independent vs Cooperating processes
 - 2. Types of DBMS Users and roles of DBA
- b) 1. Explain PCB.
2. For the given set of four processes, compare the average turnaround time and waiting time of processes using FCFS and SJF algorithms:

Processes	Arrival Time (ms)	CPU Burst Time (ms)
P1	0	5
P2	3	7
P3	3	3
P4	4	4

- c) What is critical section? Explain race condition and propose an effective solution to overcome this problem by using semaphores.