

**Bharati Vidyapeeth's
Institute of Computer Applications and Management
A-4, Paschim Vihar, New Delhi-63**

FIRST SEMESTER [MCA] Internal Examination, September 2018

Paper Code: MCA 101

Subject: Fundamentals of IT

Time: 2 Hours

Maximum Marks: 45

Note: Attempt THREE questions in all. Question No. 1 is compulsory and attempt one question from each unit.

1. Answer all the following questions briefly:- 1.5 x 10 = 15
- (a) Discuss the meaning of Instruction format?
 - (b) Discuss the way to rename a file in Linux?
 - (c) Design a circuit diagram of 2X1 Mux.
 - (d) Compare Independent and Cooperating processes in terms of resource sharing.
 - (e) Discuss the roles of a dispatcher program.
 - (f) Elaborate how ALU perform decrement operation on the contents of a 4-bit register? Write logic with example.
 - (g) Discuss few features of multiprocessor OS.
 - (h) Convert $(AB5.C)_{16}$ in octal number system.
 - (i) Discuss different types of branching microoperations.
 - (j) List three DOS commands with syntax and description.

UNIT - I

2. (a) Explain different logic micro-operations. Draw a block diagram to show how an ALU performs a logic micro-operation on contents of two registers. 5
- (b) Explain different types of registers in microprocessor 8085. 5
- (c) Design a circuit diagram for $F(A,B,C) = \Pi(0,2,3,4)$ using NOR gates only. 5
3. (a) Explain circular shift micro-operations. And draw a block diagram to show how circular shift microoperations are performed on a 4-bit register. 5
- (b) Elaborate zero byte instructions? Write instructions in zero byte to evaluate following expression: $Z = A / (B - C) * (D + E)$ 5
- (c) Explain working of XOR and XNOR gates with 2 or more inputs. 5

UNIT - II

4. (a) Discuss in detail how does Interprocess communication take place in case of multiple processes? 5
- (b) Differentiate multiprogramming and multitasking. 5
- (c) Explain Perterson's algorithm for process synchronization. Also explain its features and conditions met. 5
5. (a) Explain how threads are different from processes. Write few points. 5
- (b) Calculate average turnaround and waiting time of following set of processes using SJF scheduling algorithm : 5

Process	CPU burst (in ms)
P1	8
P2	4
P3	6
P4	3
P5	5

- (c) Explain features of distributed operating systems. 5