

(Please write your Exam Roll No.)

Exam Roll No

Bharati Vidyapeeth's
Institute of Computer Applications and Management
A-4, Paschim Vihar, New Delhi-63
Model Question Paper-II [Sem-I]

Paper Code: MCA - 101

Subject: Fundamentals of IT

Time: 3 Hours

Maximum Marks: 75

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

1. Answer all the following questions briefly:- 2.5 x 10 = 25
- (a) Differentiate alpha and beta testing?
 - (b) What is a gateway? Write its features.
 - (c) Discuss the main feature of a prototype model.
 - (d) Distinguish between parent and child processes? How are resources allocated and deallocated to them.
 - (e) What is Virtual memory.
 - (f) List few roles of a DBA.
 - (g) Explain the external and conceptual level schema in 3 tier architecture of DBMS.
 - (h) List different logical shift and arithmetic shift micro operations.
 - (i) What are optical fibre cables.
 - (j) Discuss MAC and LLC sub layers.

UNIT - I

2. (a) Explain different types of logical operations performed by a microprocessor. 6
(b) Draw the circuit diagram using NOR gates only for the following function: 6.5
- $F(A,B,C,D) = \Pi(0,1,2,3,4,6,8,9,10,11,12,14)$
3. (a) Explain different types of instruction formats. And write one-byte instructions for: $Z = (A + B) / C - D$ 6
(b) Discuss the working of XNOR gate with three or more inputs. Also, create a truth table for 4-input XNOR gate. 6.5

UNIT - II

4. (a) Explain in detail the working principle of magnetic and optical storage devices. Also discuss how read and write operations are performed in optical storage devices. 6.5
(b) Explain the difference in various types of display devices. 6
5. (a) Differentiate assembly language and high level language. Also write the roles of assemblers, compilers and interpreters. 6
(b) Design an algorithm to print the sum of the following series: 6.5
 $1 + 2 * 3 + 4 * 5 * 6 + \dots + n$ terms

UNIT - III

6. (a) What is a Process? Explain Process Life Cycle with the help of a diagram. 6
(b) Write any five salient features of modern Operating Systems. Also explain real time systems in detail. 6.5

7. (a) Explain how data is stored in Network data model. And how 1:M and M:N relationships are represented by this model. 6
- (b) For the given set of six processes, calculate average waiting time and average turnaround time, using SJF algorithm: 6.5

Processes	Arrival Time (ms)	CPU Burst Time (ms)
P1	0	5
P2	2	3
P3	3	9
P4	5	4
P5	6	3
P6	8	6

UNIT - IV

8. (a) Discuss wireless communication? List some modern wireless technologies that you use. 6
- (b) Differentiate the roles and features of a hub, switch and a router. 6.5
9. (a) What are twisted pair cables? Write their features, types and their use in networking 6
- (b) Explain the functions performed by data link layer and network layer in detail. Also list various interworking devices and state the layers in which they are used. 6.5