

(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**  
**FIRST SEMESTER [MCA] Internal Examination, October 2017**

**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) Write any three operations that can be performed on a directory with the help of Linux commands.
  - (b) Discuss Multiprocessor Systems?
  - (c) Compare the working of LCD and Plasma display units.
  - (d) Distinguish short term and long term schedulers.
  - (e) Discuss briefly the working principle of magnetic storage.
  - (f) Explain any three characteristics of modern Operating Systems.
  - (g) Give the truth table for :  $A'B + B'(C + A)'$
  - (h) Write assembly language code in one-byte instruction format to carry out following expression:  $X = (A + B) / C$
  - (i) Design the logic circuit of  $A + (B'.C + D')$ .
  - (j) Discuss the importance and significance of decision trees.

**UNIT - I**

2. (a) Solve the following: 5
- 1.  $(1100111001.01)_8 = (?)_{16}$
  - 2.  $(57.C)_{16} = (?)_{10}$
- (b) List down all the arithmetic microoperations performed by a microprocessor. 5  
And draw a neat diagram of a combined adder-subtractor circuit.
3. (a) Explain direct, indirect, implicit and immediate addressing modes used in 5  
microprocessor 8085, with an example of each.
- (b) Show the results after performing arithmetic shift left and right operations on 5  
following 8-bit registers:
- 1. Reg A = 10001101
  - 2. Reg B = 00111001

**UNIT - II**

4. (a) Explain testing phase in detail along with various types of testing which are 5  
conducted on a software product.
- (b) Discuss the role of Software Development Life Cycle (SDLC) model in Software 5  
Engineering? Also, explain prototype model with its features.
5. (a) Draw a decision table for the following case study for sanctioning loan to a 5  
customer:
- When a customer applies for a loan, he is requested to submit his address proof and Id proof. If he doesn't submit any of the documents, the loan request is completely rejected. The loan is sanctioned based on the purpose of the loan. If

loan is requested for purchasing a home or for paying annual income tax, then the annual salary of the customer is verified. If it is more than the loan amount requested, loan is sanctioned immediately. If loan is requested for some other purpose, loan request is reviewed manually.

- (b) Discuss various types of scanning devices available in the market and explain the working of Bar code readers. 5

### UNIT - III

2. (a) What is Disk Fragmentation? Explain how fragmentation occurs during disk allocation and how it can be avoided. 5
- (b) Explain demand paging scheme in detail. Also count number of page faults for a given CPU reference string, using LFU scheme: 5
- Ref string:** 1 2 3 3 3 4 2 5 1 4 3 4 2 3 3 2 5 3 1 1 2
- Assume number of available frames: 4
3. (a) Discuss critical section? Give any one solution to critical section problem which satisfy mutual exclusion condition. 5
- (b) Explain the differences between hierarchical and network data model. Also, list various reasons contributing to the success of relational data model. 5