

Roll No. ....

Total Pages : 03

PMCA/M-23

24625

COMPUTER ORGANIZATION &  
NETWORKING FUNDAMENTALS

CSDE-11

Time : Three Hours]

[Maximum Marks : 80

**Note :** Attempt *Five* questions in all. Q. No. 1 is compulsory.  
Attempt *Four* more questions selecting *one* question  
from each Unit.

1. Answer the following questions in brief :  $4 \times 4 = 16$

- What is software ? How do you classify software ?  
Explain.
- What are universal gates ? Why are they called  
universal gates ? Justify.
- What is flip-flop ? Distinguish between synchronous  
and asynchronous flip-flop.
- What is Internet ? How is it different from intranet ?  
Explain.

Unit I

2. Explain the following I/O devices :  
Optical mouse, Pen drive, Scanner and laser printer. 16

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P.T.O.

3. Perform the following conversions :

(a)  $(23.75)_{10} = ( ? )_{16} = ( ? )_8 = ( ? )_2$  8

(b) Perform in 2's complement representation : 8

$(-19)_{10} + (12)_{10}$

Unit II

4. (a) Explain the following :

truth table, minterms, maxterms, XOR gate and  
equivalence gate. 8

(b) Simplify the following Boolean expression using  
K-map : 8

$F(w, x, y, z) = \Sigma(0, 1, 2, 4, 5, 6, 8, 9, 12, 13, 14)$

5. (a) What is decoder ? Design 2-to-4 line decoder with  
enable input. 8

(b) What is BCD adder ? Design a BCD adder to add  
two BCD digits. 8

Unit III

6. (a) What is JK flip-flop ? Draw its circuit diagram and  
characteristic table. Also discuss race around  
condition in this flip-flop. 8

(b) What is D-type flip-flop ? Draw its circuit diagram,

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characteristic table and excitation table. 8

7. (a) Distinguish between synchronous and asynchronous counter. Design a 4-bit synchronous binary counter. 8

(b) What is register ? Design a 4-bit register with parallel load. 8

#### Unit IV

8. (a) What is computer network ? Explain ring, 2D mesh and tree topologies used in computer networks. 8

(b) Explain the following hardware components: NIC, repeaters, gateways and media converters. 8

9. Explain the following terms :

FTP, HTTP, URL, Modem. 16