

Code No. : 7825

Sub. Code : C 1 A 4

M.C.A. (CBCS) DEGREE EXAMINATION,

NOVEMBER 2008

First Semester

COMPUTER APPLICATIONS

DIGITAL PRINCIPLES AND COMPUTER ARCHITECTURE

(For those who joined in July 2008 onwards)

Time : Three hours

Maximum : 75 marks

**Part A – (10 x 1 = 10 marks)**

**Answer ALL questions**

1. Convert 477 octal into binary.
2. What is meant by combinational logic?
3. What is a flipflop?
4. State the uses of RAM and ROM.
5. What is meant by data representation?
6. What is an Instruction cycle?
7. State the use of CPU.
8. What are floating point arithmetic operations?
9. What is meant by Input-output interface?
10. State the use of cache memory.

**Part B – (5 x 5 = 25 marks)**

**Answer ALL questions choosing either (a) or (b)**

11. (a) Write a note on signed number representation  
(or)  
(b)  $F = XYZ + XY\bar{Z} + \bar{X}YZ + \bar{Y}Z$  simplify using K-map.
12. (a) Draw and explain the operation of a decoder.  
(or)  
(b) Draw and explain the operation of a half subtractor.
13. (a) Write a note on Instruction codes.  
(or)  
(b) Briefly explain about Interrupts..

14. (a) Explain the design of CPU  
(or)  
(b) Explain the types of addressing modes.
15. (a) Write a note on Priority interrupt.  
(or)  
(b) Draw and explain memory hierarchy.

**Part C – (5 x 8 = 40 marks)**

**Answer ALL the questions choosing either (a) or (b)**

16. (a) State and explain Demorgan's law  
(or)  
(b) Simplify  $6AB_H$  into binary,  $677_{\text{octal}}$  into binary.
17. (a) Draw and explain a full subtractor.  
(or)  
(b) Draw and explain the operation of a 3 bit synchronous counter
18. (a) Draw and explain basic computer organization.  
(or)  
(b) Explain the design of accumulator logic.
19. (a) Write a note on General register organization.  
(or)  
(b) Explain division algorithm with example.
20. (a) Write a note on modes of data transfer.  
(or)  
(b) Explain memory organization in detail.