Hall Ticket Number:

Code No. : 13212 O

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (CSE) II Year I-Semester Backlog (Old) Examinations, December-2018

Computer Architecture

Time: **3** hours Max. Marks: **70**

*Note: Answer **ALL** questions in **Part-A** and any **FIVE** from **Part-B***

Part-A (10 × 2 = 20 Marks)

1. Obtain the 2's complement of the binary number 1110011001.
2. What is bus? What is the use of address bus and data bus?
3. What are MAR and MBR? How they are used in the instruction execution.
4. Find out the size of multiplexer and number of multiplexers required to access data on 8 registers each of 16 bits.
5. What is the significance of the register transfer statements IR←M[AR],PC←PC+1
6. Differentiate direct and indirect addressing mode.
7. Distinguish between strobe and handshaking.
8. What is the use of start and stop bit along with character bit in serial asynchronous data transmission technique?
9. What is the Hit Ratio of a cache?
10. When does a page fault occur?

Part-B (5 × 10 = 50 Marks)

(All sub-questions carry equal marks)

11. a) Perform the following arithmetic operations with the decimal numbers using signed-10's complement representation for negative numbers.
    i) (-638) + (+785) *ii)* (-638) - (+185)
    b) What is an overflow? How an overflow can be detected?

12. a) what is a micro operation? Explain arithmetic, logical, shift micro operations with examples.
    b) What is instruction code? Explain about register reference instructions.

13. a) what is an addressing mode? Explain various addressing modes with examples.
    b) Evaluate 10111 * 10011 using booth multiplication algorithm.

14. a) What is an interrupt? Explain the concept of daisy chain priority with a neat diagram.
    b) Draw the block diagram of direct memory access and explain how the data is transferred to or from memory using DMA.

15. a) A computer employs RAM chips of 256 x 8 and ROM chips of 1024 x 8. The computer system needs 2K bytes of RAM, 4K bytes of ROM
    i) How many RAM and ROM chips are needed?
    ii) What is the number of address l9 lines required for each RAM and ROM?
    b) What is the use of auxiliary memory? Discuss about magnetic disk with a neat sketch?

Contd... 2

16. a) Explain the advantages of gray code over binary code

    b) For the binary number 11001100, perform the following operations and write the equivalent decimal number. (Consider an 8 bit register).

    i) Logical shift left ii) Circular shift right iii) Arithmetic shift right

17. Answer any ***two*** of the following:

    a) What do you mean by interrupt cycle? How the interrupt is handled by the computer?

    b) Describe about input – output interface.

    c) Explain about direct mapping in cache memory.

ꕥꕥꕥꕥꕥꕥ