



BRAINWARE UNIVERSITY

Term End Examination 2019 - 20

Programme – Master of Science in Computer Science

Course Name – Advanced Computer Architecture

Course Code – MCS301

(Semester – 3)

Time allotted: 3 Hours

Full Marks: 70

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group –A

(Multiple Choice Type Question)

20 x 1 = 20

1. *Choose the correct alternative from the following (Answer any Twenty)*
 - (i) Boolean algebra is also known as
 - a. Counting algebra
 - b. Switching algebra
 - c. Transistor algebra
 - d. Gate algebra
 - (ii) If the searched data is found in the desired memory, it is said to be
 - a. hit ratio
 - b. miss
 - c. hit
 - d. hit rate
 - (iii) The fastest data access can be obtained using
 - a. SRAM
 - b. DRAM
 - c. Cache
 - d. Register
 - (iv) Which of the following is used to store intermediate result?
 - a. Accumulator
 - b. MAR
 - c. MDR
 - d. Program Counter
 - (v) DMA stands for
 - a. Discrete memory architecture
 - b. Discrete memory access
 - c. Direct memory architecture
 - d. Direct memory access
 - (vi) The method which offers higher speeds of I/O transfers is
 - a. interrupts
 - b. memory mapping
 - c. program controlled I/O
 - d. direct memory access

- (vii) Booth's algorithm is used for performing binary
 - a. addition
 - b. multiplication
 - c. division
 - d. subtraction
- (viii) Which is a part of Flynn's classification?
 - a. MIMD
 - b. SISD
 - c. MISD
 - d. all of above
- (ix) In half subtractor, the difference circuit is implemented using
 - a. XOR
 - b. OR
 - c. AND
 - d. NOT
- (x) The feature of RAM that makes it not suitable for permanent storage
 - a. Slow
 - b. volatile
 - c. unreliable
 - d. bulky
- (xi) Which of the following has smallest capacity?
 - a. cache memory
 - b. RAM
 - c. secondary memory
 - d. registers
- (xii) Write Through technique used in which memory for updating the data?
 - a. Virtual memory
 - b. Cache memory
 - c. Main memory
 - d. Auxiliary memory
- (xiii) Virtual memory consists of
 - a. SRAM
 - b. DRAM
 - c. Magnetic memory
 - d. None of these
- (xiv) Memory unit accessed by content is called
 - a. ROM
 - b. Virtual memory
 - c. Programmable memory
 - d. Associative memory
- (xv) MIMD stands for
 - a. Multiple instruction multiple data
 - b. Memory instruction multiple data
 - c. Multiple instruction memory data
 - d. Multiple information multiple data
- (xvi) An interface that provides a method for transferring binary information between internal storage and external devices is called
 - a. I/O interface
 - b. Input interface
 - c. Output interface
 - d. I/O bus
- (xvii) If the value $V(x)$ of the target operand is contained in the address field itself, the addressing mode is
 - a. Immediate
 - b. direct
 - c. indirect
 - d. implied

- (xviii) An interface that provides I/O transfer of data directly to and from the memory unit and peripheral is termed as
- | | |
|--------|---------------------|
| a. DDA | b. Serial interface |
| c. BR | d. DMA |
- (xix) A register capable of shifting its binary information either to the right or the left is called a
- | | |
|----------------------|---------------------|
| a. parallel register | b. serial register |
| c. shift register | d. storage register |
- (xx) SISD stands for
- | | |
|-------------------------------------|-------------------------------------|
| a. Single instruction single data | b. Single information single data |
| c. Sequence instruction single data | d. Single instruction sequence data |
- (xxi) Run time mapping from virtual to physical address is done by
- | | |
|---------------------------|------------------|
| a. memory management unit | b. CPU |
| c. PC | d. none of above |
- (xxii) A memory used to store frequent used data
- | | |
|------------------|----------------|
| a. stack pointer | b. accumulator |
| c. cache | d. disk buffer |
- (xxiii) Cache memory-
- | | |
|----------------------------------|---|
| a. has greater capacity than RAM | b. is faster to access than CPU Registers |
| c. is permanent storage | d. faster to access than RAM |
- (xxiv) The addressing mode, where the operand value is implicitly specified
- | | |
|--------------|-------------|
| a. implied | b. direct |
| c. immediate | d. indirect |
- (xxv) Virtual memory is –
- | | |
|---|--|
| a. an extremely large main memory | b. an extremely large secondary memory |
| c. an illusion of an extremely large memory | d. None of these |

Group – B

(Short Answer Type Questions)

4 x 5 = 20

Answer any *four* from the following

- | | |
|--|-----|
| 2. What is the difference between Computer Organization and Computer Architecture? | 5 |
| 3. What is pipelining? What are the types of pipelining? | 5 |
| 4. What is cache memory? Write the difference between static RAM and dynamic RAM. | 2+3 |
| 5. Explain the concept of ripple carry adders. | 5 |

- | | | |
|----|---|---|
| 6. | Differentiate between fixed point and floating point numbers. | 5 |
| 7. | Explain carry look ahead adder. | 5 |

Group – C

(Long Answer Type Questions)

3 x 10 = 30

Answer any *three* from the following

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|-----|---|----|
| 8. | Multiply 8 and 4 using booth's algorithm. | 10 |
| 9. | What are the different stages of an instruction cycle? | 10 |
| 10. | (a) What is propagation delay? | 2 |
| | (b) How it can be reduced in carry look ahead adder? Explain with suitable diagram. | 8 |
| 11. | (a) What is coherence property in memory organization? | 2 |
| | (b) Explain the two methods used for coherence property. | 8 |
| 12. | Multiply -3 and 4 using booth's algorithm. | 10 |
