

CS/BCA/EVEN/SEM-2/BCA-201/2015-16



**MAULANA ABUL KALAM AZAD UNIVERSITY OF
TECHNOLOGY, WEST BENGAL**

Paper Code : BCA-201

**COMPUTER ARCHITECTURE & SYSTEMS
SOFTWARE**

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own
words as far as practicable.*

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following :

10 × 1 = 10

- i) Gray code for decimal 7 is
 - a) 1111
 - b) 1011
 - c) 0100
 - d) 0101.
- ii) Cache memory is implemented using
 - a) Dynamic RAM
 - b) EEPROM
 - c) EPROM
 - d) ROM.
- iii) Number of address lines required for access of 512 bytes RAM is
 - a) 9
 - b) 6
 - c) 10
 - d) 8.

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[Turn over

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- iv) Which mode of addressing is used in the instruction : **MOV A, B** ?
- a) Register Indirect Addressing
 - b) Register Addressing
 - c) Immediate Addressing
 - d) Direct Addressing.
- v) Which of the following is an advantage of Modular Programming ?
- a) It needs careful documentation as it may affect the other parts of the program
 - b) Special programs are to be developed to produce the desired data for testing of modules
 - c) If a change is to be made, it is made in the particular module
 - d) none of these.
- vi) What does the following program perform ?
- ```
LDA 2501 H
ADD A
ADD A
STA 2502 H
HLT
```
- a) Shifts an 8-bit number by 2 bit
  - b) Shifts a 16-bit number by 2 bit
  - c) Adds an 8-bit number twice
  - d) Moves a number after adding.

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- vii) A multiplexer is also known as a/an
- a) Encoder
  - b) Data selector
  - c) Decoder
  - d) Register.
- viii) The performance of a memory level is frequently measured in terms of a quantity called
- a) bit ratio
  - b) nor ratio
  - c) no ratio
  - d) hit ratio.
- ix) The CPU activates the ..... output to inform the external DMA that the buses are in the high-impedance state.
- a) bus request
  - b) bus grant
  - c) cycle stealing
  - d) none of these.
- x) ..... is connected to the address lines of the system bus.
- a) Instruction register
  - b) Program counter
  - c) Memory address register
  - d) Memory buffer register.

**GROUP - B**

**( Short Answer Type Questions )**

Answer any *three* of the following.  $3 \times 5 = 15$

2. Explain Virtual Memory with the help of a diagram.
3. Explain vectored interrupts with a diagram.
4. Explain direct and indirect addressing with the help of diagrams.
5. What is the difference between 1-pass and 2-pass assemblers ?
6. Write an assembly language program to subtract two 8-bit numbers.

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**GROUP - C**

**( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

7. What are the 16-bit registers available in 8085 microprocessor ? Write about them. What is 'Bootstrap Loader Program' stored in ROM ? What are the elements of machine instruction ?  $2 + 3 + 5 + 5$
  8. Write short notes on any *three* of the following :  $3 \times 5$ 
    - a) Addressing Modes
    - b) DMA
    - c) Content Addressable Memory (CAM)
    - d) Cache Memory.
  9. What is the difference between RISC and CISC processors ? Explain the concept of sequential processing pipelining and parallel processing with example. What are the elements of a machine instruction ? What is meant by memory access time ?  $4 + 6 + 3 + 2$
  10. Explain Temporary, General Purpose and Special Purpose register organisation in brief.  $5 + 5 + 5$
  11. What is parallel processing ? Describe the working principle of pipelining. Explain the major characteristics of an RISC processor.  $5 + 5 + 5$
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