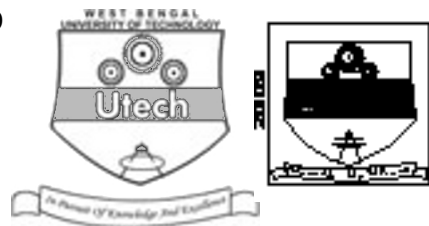


## COMPUTER ORGANIZATION AND ARCHITECTURE ( SEMESTER - 4 )

CS/B.TECH (IT, ECE(O), EEE, EIE(O) )/SEM-4/CS-404/09



1. ....  
Signature of Invigilator

2. ....  
Signature of the Officer-in-Charge

Reg. No.

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Roll No. of the  
Candidate

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CS/B.TECH (IT, ECE(O), EEE, EIE(O) )/SEM-4/CS-404/09

ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE – 2009

## COMPUTER ORGANIZATION AND ARCHITECTURE ( SEMESTER - 4 )

Time : 3 Hours ]

[ Full Marks : 70

### INSTRUCTIONS TO THE CANDIDATES :

1. This Booklet is a Question-cum-Answer Booklet. The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No. 3.
2. a) In **Group – A**, Questions are of Multiple Choice type. You have to write the correct choice in the box provided **against each question**.  
b) For **Groups – B & C** you have to answer the questions in the space provided marked 'Answer Sheet'. Questions of **Group – B** are Short answer type. Questions of **Group – C** are Long answer type. Write on both sides of the paper.
3. **Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
4. Read the instructions given inside carefully before answering.
5. You should not forget to write the corresponding question numbers while answering.
6. Do not write your name or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
7. **Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.**
8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification**.
9. Rough work, if necessary is to be done in this booklet only and cross it through.

**No additional sheets are to be used and no loose paper will be provided**

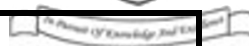
### FOR OFFICE USE / EVALUATION ONLY

Marks Obtained

	Group – A										Group – B					Group – C					Total Marks	Examiner's Signature
Question Number																						
Marks Obtained																						

.....  
Head-Examiner/Co-Ordinator/Scrutineer

4462 (08/06)



**DO NOT WRITE ON THIS PAGE**

[ Full Marks : 70

**( Multiple Choice Type Questions )**

- 4462 (08 / 06)



4

v) What is the 2's complement representation of - 24 in a 16 bit micro-computer ?

a) 0000 0000 0001 1000

b) 1111 1111 1110 0111

c) 1111 1111 1110 1000

d) 0001 0001 1111 0011.



vi) The technique of placing software in a ROM semiconductor chip is called

a) PROM

b) EPROM

c) FIRMWARE

d) Microprocessor.

vii) The logic circuit in ALU is

a) entirely combinational

b) very cheap memory

c) content addressable memory

d) slow memory.

viii) The principle of locality justifies the use of

a) Interrupts

b) Polling

c) DMA

d) Cache Memory.

ix) Conversion of ( FAFAFA ) 16 into Octal form is

a) 76767676

b) 76575372

c) 76737672

d) 76727672.

x) Associative memory is a

a) pointer addressable memory

b) very cheap memory

c) content addressable memory

d) slow memory.



5  
**GROUP – B**

**( Short Answer Type Questions )**

Answer any *three* of the following questions.



3 × 5 = 15

2. Describe Stack base CPU.
3. Write three points to differentiate I/O mapped IO and Memory Mapped IO.
4. Write a short note on Bus Organization using tristate buffer.
5. Write  $+7_{10}$  in IEEE 64 bit format.
6.
  - a) Where does DMA mode of data transfer find its use ?
  - b) What are the different types of DMA controllers and how do they differ in their functioning ?

2 + 3

**GROUP – C**

**( Long Answer Type Questions )**

Answer any *three* of the following questions.

3 × 15 = 45

7.
  - a) Describe the function of major components of a digital computer with neat sketch.
  - b) Explain the role of an operating system in a computer system.
  - c) Explain the relative advantages and disadvantages of parallel adder over serial adder.
  - d) What is the difference between carry-look ahead adder and carry ripple adder ?
8.
  - a) Give the Booth's algorithm for multiplication of signed 2's complement numbers.
  - b) Multiply ( + 15 ) and ( – 11 ) using Booth's algorithm.
  - c) Give the flowchart for division of two binary numbers using restoring division algorithm and explain.

7 + 4 + 2 + 2

5 + 5 + 5



9. a) Give the merits and demerits of the floating point and fixed point representations for storing real numbers.
- b) What are biased exponents ?
- c) What are guard bits ?
- d) Convert  $-32.75$  to IEEE 754 single-precision floating point.
- e) Using IEEE single-precision floating point numbers to compute  $13.25 + 4.5$ .



$$4 + 2 + 2 + 3 + 4$$

10. a) Compare RISC with CISC.
- b) What do you mean by pipeline processing ?
- c) What are instruction pipeline and arithmetic pipeline ?
- d) Differentiate between polled I/O and interrupt driven I/O.
- e) Distinguish between vectored and non-vectored interrupts.  $4 + 2 + 2 + 3 + 4$
11. a) What do you mean by logical address space and physical address space ?
- b) Explain with an example how logical address is converted into physical address and also explain how page replacements take place.
- c) Write the advantages of virtual memory system.
- d) i) How many address lines are present in a  $256 \text{ k} \times 8$  RAM ?
- ii) How many such RAMs will be required to construct  $1 \text{ M} \times 32$  memory bank ?
- iii) How many such RAMs will be required to construct  $512 \text{ k} \times 32$  memory bank ?

$$2 + 4 + 3 + (3 \times 2)$$

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END