

**BACHELOR IN COMPUTER
APPLICATIONS****Term-End Examination****December, 2008****CS-64 : INTRODUCTION TO COMPUTER
ORGANISATION**

Time : 3 hours

Maximum Marks : 75

Note : Question number 1 is **compulsory**. Answer any **three** questions from the rest.

1. (a) Perform the following arithmetic operations using 8-bit registers. Use binary signed 1's complement notation. Indicate overflow/underflow, if any : 6

(i) $-84 + 42$

(ii) $83 - (-45)$

(iii) $84 - 38$

(iv) $-52 - 48$

- (b) Simplify the following boolean functions using Sum-of-Product form, using K-Maps. 6

$$F(A, B, C, D) = \Sigma(0, 2, 3, 7, 8, 13, 14)$$

- (c) Write a program for evaluating the following expression using zero address instruction format $A + B * C / D - E$. 6
- (d) What is the need of an Input-Output Processor ? Suggest a method by which an Input/Output Processor can be connected to slow devices. 4
- (e) What is an interrupt ? Why do they occur ? What is IVT in 8086 micro-processor ? How is it useful in Interrupt processing ? Explain this with the help of an example for 8086 micro-processor. 8

2. (a) Draw the logic circuit for one stage of full adder. Draw the block diagram for adding two four-bit numbers. 5

- (b) The 8-bit registers, initially have the following values :

$$AR = 10110110 \quad BR = 10010101$$

$$CR = 11100101 \quad DR = 00111010$$

Determine the values in each register after the execution of the following sequence of micro-operations. 5

(i) $AR \leftarrow AR \wedge BR$

(ii) $BR \leftarrow CR \oplus DR$

(iii) $DR \leftarrow DR - CR$

(iv) $CR \leftarrow AR + DR$

- (c) What is the purpose of Single Error Correcting (SEC) code ? What do you mean by error correction ? Explain with the help of an example. 5
3. (a) What is bus arbitration ? Explain the Daisy Chaining and Polling schemes with the help of diagram for each. 6
- (b) Describe the need of multiplexer in a system. How is it different from decoder ? Draw logic diagrams of 2×1 multiplexer and 2×4 decoder. 5
- (c) Explain any four differences between horizontal and vertical micro-instruction formats. 4
4. (a) What is the need of many addressing modes in a machine ? Give four addressing modes that must be present in a machine. Justify your selection. 5
- (b) How does CALL instruction improve the 8086 assembly programming ? Explain two differences between FAR and NEAR procedure calls in 8086 micro-processor with the help of a suitable example for each case. 6
- (c) Explain four important differences between associative mapping & set associative mapping in cache. 4

5. (a) What is RAID ? What are RAID levels ? Explain any two giving data distribution and advantages/disadvantages of that level. 5
- (b) What is a synchronous counter ? How is it different from ripple counter ? Where are ripple counters used ? Draw the logic diagram of 3-bit ripple counter. 5
- (c) Write a program in 8086 assembly language to transfer an array of 10 elements stored in memory to another location in the memory. Make suitable assumptions, if any. 5