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**CS-64**

15312

# BACHELOR IN COMPUTER APPLICATIONS

## Term-End Examination

## June, 2011

## CS-64 : INTRODUCTION TO COMPUTER ORGANISATION

*Time : 3 hours* *Maximum Marks : 75*

***Note :*** *Question No. **1** is **compulsory**. Answer any **three** questions from the rest.*

**1.** (a) List the basic key features of a von-Neuman machine. Also draw structure of von-Neuman machine. **5**

(b) What is a combinational circuit ? Draw a combinational circuit for boolean expression **5**

$F = \overline{X} \cdot Y + X \cdot Y + X \cdot \overline{Y}$

(c) Explain need of multiplexer. Also explain how a $4 \times 1$ multiplexer works. **5**

(d) What is a bus ? Explain the working of a shared bus system with an example. **5**

(e) Explain the need of error detection and correction. What is a parity bit ? How a parity bit can be used for the purpose of error detection ? **5**

(f) What is addressing ? List and explain any two addressing schemes with the help of an example of each. 5

2. (a) Simplify the following boolean expression using K-Map 6

$$F(x, y, z, w) = xyzw + x\bar{y}\bar{z} + \bar{x}y\bar{z}w + xw + zw$$

Also, draw the logic circuit for the simplified boolean expression.

(b) What is an interrupt ? Explain use of interrupt in assembly programming with an example. 5

(c) What is a hardwired control unit ? Explain its advantages. 4

3. (a) Draw a combinational circuit for 3-bit odd parity generator. Also make truth table for it. 5

(b) What is random access memory (RAM) ? Briefly explain working of RAM. 6

(c) Perform the following arithmetic operations on 8 bit numbers using 2's complement notation. Indicate overflow/underflow, if any : 4

(i) $57 - 48$

(ii) $-82 + 41$

4. (a) What are four types of segments in 8086 assembly programming ? Explain the use of ASSUME directive with an example. 6

(b) What are the four general purpose registers in 8086 ? Explain uses of each of them. 4

(c) What is redundant array of independent disk (RAID) ? Explain three basic characteristics of RAID. 5

5. (a) Write an assembly program to add two 8 bit numbers. 5

(b) Differentiate between synchronous and asynchronous circuits. Also explain the need of a flip-flop in circuit design with the help of an example. 5

(c) Explain the following terms with the help of an example/diagram/illustrations, if needed. 5

(i) Assembler

(ii) Memory hierarchy.