



UTTARAKHAND OPEN UNIVERSITY, HALDWANI (NAINITAL)
उत्तराखण्ड मुक्त विश्वविद्यालय, हल्द्वानी (नैनीताल)

mCA 1st YEAR 2nd SEMESTER ASSIGNMENT

Last Date of Submission: 15 May, 2012

Course Title: Computer Organization & Architecture

Course Code: MCA-05

Year: 2011-12

Maximum Marks: 40 Marks

Section 'A'

Section 'A' contains 08 short answer type questions of 5 marks each. Learners are required to answer 4 questions only. Answers of short answer-type questions must be restricted to 250 words approximately.

1. With truth table and logic diagram for the following circuits also explain them:
 - a. Half adder
 - b. Full adder
 - c. Half-subtractor
 - d. Full-subtractor
2. (a) What is racing? To get rid of racing what technique is used?
(b) Discuss the functions of I/O interface units in a computer.
3. (a) Describe the methods for determining which I/O device has requested an interrupt.
(b) Discuss memory hierarchy in detail.
4. (a) What is the function of cache memory? Explain the term cache hit and cache miss.
(b) Discuss memory disk caching with level 1 and level 2 cache.
5. (a) Differentiate between associate mapping and set-associate mapping.
(b) Differentiate between fixed-head systems and movable head-systems.
6. (a) What are the design element of a Bus and explain each design element in detail?
(b) Discuss advantages and disadvantages of different addressing modes.
7. Give reasons why concept of multiprocessor architecture are still relevant today.
8. (a) Discuss significance of pipelining.
(b) Explain pipeline hazard with the merits and demerits of pipelining.

Section 'B'

Section 'B' contains 04 long answer-type questions of 10 marks each. Learners are required to answers 02 questions only.

1. (a) Which kind of application is most suited for SISD class of multiprocessor architecture also explains two variant of SIMD class of multiprocessor architecture?
(b) State and explain the associated problems with the shared memory in shared memory variant of MIMD multiprocessor architecture.
2. (a) Draw a decimal to BCD encoder.
(b) Draw a mod-8 counter and explain its working principle.
(c) Draw a logic diagram with output wave form of a 4-bit Serial in -Parallel out shift register for an input of 1101. Explain its operation.
3. (a) Discuss about the hardwired implementation of the control unit.
(b) Differentiate between hardwired and micro programmed implementation of the control unit.
4. (a) What are the basic components of the computer system? Explain how those components work together to perform the different functions of a computer.
(b) Discuss the concept of direct memory access.
(c) Distinguish between combinational circuit and sequential circuit.

