

Code :9A12301

R9

II B.Tech I Semester(R09) Supplementary Examinations, May 2011
DIGITAL LOGIC DESIGN AND COMPUTER ORGANIZATION
(Computer Science & Systems Engineering, Information Technology)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. (a) Explain the basic functional units of a computer and explain each unit in detail.
 (b) Determine the base of the numbers in each case for the following operations to be correct:
 - i. $14/2=5$
 - ii. $54/4=13$
 - iii. $24+17=40$
2. (a) Explain why NOR is gate called Universal gate.
 (b) Prove the following Boolean expressions:
 $(A' + B)(A + B) = B$
 $(A' + C)(B + D') = AC' + BD'$
3. (a) Draw the block diagram of a quadruple 2-to-1 line multiplexer and explain its operation using function table.
 (b) What is a shift register? With a neat diagram explain the operation of a 4-bit shift register.
4. With an example explain how multiplication of two fixed point binary numbers using Booth's algorithm. Also draw the hardware circuit for implementing the same.
5. (a) What are conditional branch instructions? Explain the commonly used flags for conditional branching.
 (b) Discuss with examples three address instructions and one address instructions.
6. (a) Explain how the transfer of contents of register R1 to register R2 is accomplished.
 (b) Draw and explain the microinstruction sequencing organization.
7. (a) Differentiate between static RAM and Dynamic RAM.
 (b) Give a detailed note on organization of Cache Memory.
8. (a) Show the connection of I/O devices to the single-bus structure and explain.
 (b) Discuss the approach used to transfer large blocks of data at high speeds.
