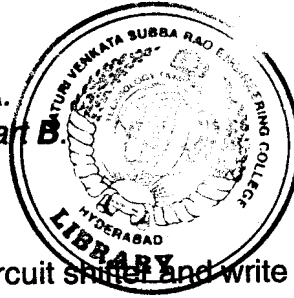


FACULTY OF ENGINEERING
B.E. 3/4 (ECE) I Semester (Main) Examination, Dec. 2011
COMPUTER ORGANIZATION AND ARCHITECTURE

Time: 3 Hours]

[Max. Marks: 75

Note : Answer *all* questions of Part A.
 Answer *five* questions from Part B.

PART – A**(25 Marks)**

1. Draw the Block diagram of 4-bit combinational circuit shifter and write its function table. 3
2. Show the hardware for implementing Booth's algorithm. 3
3. How many clock pulses are required to execute the following micro-operations ? 3
 a) $IR \leftarrow M[Pc]$ b) $AC \leftarrow AC + TR$ c) $DR \leftarrow DR + AC$
4. Differentiate between a memory-mapped I/O and an isolated mapped I/O. 2
5. Explain Flynn's classification of processor. 2
6. Explain Hand-shaking method of Asynchronous data transfer. 3
7. Mention different phases in an instruction cycle. 2
8. What is bootstrap loader ? 2
9. Differentiate between compiler Assembler and language translator. 3
10. Write briefly about multiprocessor. 2

PART – B**(50 Marks)**

11. a) Derive an algorithm in flow chart form for the non-restoring method of fixed point binary division. 6
 b) Draw the logic diagram of a 4-bit adder-subtractor and explain with the help of a truth table. 4
12. Draw the flow chart for interrupt cycle and explain in detail all the phases. 10
13. a) Discuss SIMD processor organization. 4
 b) Explain instruction pipeline conflicts and their remedies. 6

14. a) Explain Daisy-chain interrupt priority and draw the logic circuit for one stage of daisy chain priority arrangement. 6
- b) Explain CPU-IOP communication. 4
15. a) Explain read and write operations with respect to Association Memory. 7
- b) A magnetic disc system has the following 3
- P_s – Average time to position the magnetic head over the track.
- R – Rotation speed in revolutions/sec.
- N_t – No. of bits/track
- N_s – No. of bits/sector
- Calculate the average time T_a that will take to read one sector.
16. a) Explain DMA transfer in detail with all relevant Block diagrams. 6
- b) Draw the circuit diagram of a 4×4 FIFO buffer and explain its operation. 4
17. Write short notes on :
- a) Functional aspects of operating systems 3
- b) RISC/CISC – Differentiate 4
- c) Stored program organization. 3