



V Semester B.C.A. Examination, October/November 2011
(Y2K8 Scheme)

COMPUTER SCIENCE
BCA 502 : Computer Architecture

Time : 3 Hours

Max. Marks : 90

Instruction : Answer all the Section.

SECTION – A

I. Answer **any ten** questions. **Each** carries **two** marks.

(10×2=20)

1) Simplify the following expression using Boolean algebra.

$$F = ABC + AB\bar{C} + \bar{A}C + A\bar{B}\bar{C}$$

2) What is a binary counter ?

3) What are the two types of ROM's ?

4) Define (r-1)'s complement.

5) What is hardwired control organisation ?

6) Explain STA instruction.

7) Explain control word format.

8) Name the two types of computer architecture.

9) Define Band rate.

10) What is synchronous data transfer ?

11) What is cache memory ?

12) Define hit ratio.

SECTION – B

II. Answer **any five** questions. **Each** carries **five** marks.

(5×5=25)

13) Explain the working of J-K flip-flop with a logic diagram.

14) What is a multiplex ? Explain 4-to-1 line MUX.



- 15) Explain 2's complement method of binary subtraction with example.
- 16) Explain the operation of interrupt cycle with a flowchart.
- 17) Explain various input-output instructions.
- 18) Write a note on isolated versus memory mapped I/O.
- 19) Explain three types of CPU organisation.
- 20) Write a note on set associative mapping.

SECTION - C

III. Answer **any three** questions. Each carries **fifteen** marks. (3×15=45)

- 21) a) A sequential circuit has two D flip-flops A and B, one input x and one output y. The flip-flop input equations and output are as follows. 8

$$D_A = \bar{x} + xA$$

$$D_B = xA + \bar{x}B$$

$$y = B$$

Draw state table and state diagram.
- b) Explain error detection code with a diagram. 7
- 22) a) With a neat diagram explain 4-bit synchronous binary counter. 8
- b) Explain Octal to Binary encoder with diagram. 7
- 23) a) With a neat diagram explain control unit of a basic computer. 8
- b) Explain memory reference instructions with examples. 7
- 24) a) Explain different types of instruction formats with example for each. 8
- b) Compare RISC and CISC computer organisation. 7
- 25) a) Explain asynchronous data transfer using strobe control. 8
- b) Write a note on direct mapping. 7