



SN – 458

V Semester B.C.A. Degree Examination, November/December 2014  
(Y2K8 Scheme)

COMPUTER SCIENCE

BCA 502 : Computer Architecture

100 Marks – 2013 – 14 & Onwards

90 Marks – Prior to 2013 – 14

Time : 3 Hours

Max. Marks : 90/100

**Instruction :** Section – D for 2011-12 Batch and onwards **only**.

SECTION – A

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

(10×2=20)

- 1) Write the symbol, expression and truth table of XNOR gate.
- 2) What is excitation table and state diagram ?
- 3) Mention the different logic families of IC.
- 4) Write the truth table and expression for octal-to-binary encoder.
- 5) What are 9's and 10's complement ?
- 6) What is excess-3 gray code ?
- 7) Differentiate direct addressing and indirect addressing.
- 8) What are FGI and FGO ?
- 9) Mention the major components of CPU.
- 10) List the different types of interrupts.
- 11) What is handshaking ?
- 12) What is associative memory ?



## SECTION – B

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

(5×5=25)

- 13) Explain working JK flip-flop with neat diagram.
- 14) Explain 4-bit register with parallel load.
- 15) Discuss the parity generator and parity checker.
- 16) Explain the different registers in basic computer.
- 17) Explain interrupt cycle with neat flowchart.
- 18) Mention the major characteristic features of CISC and RISC.
- 19) Explain DMA controller with a block diagram.
- 20) Write a note on memory hierarchy in a computer system.

## SECTION – C

III. Answer **any three** questions. **Each** carries **fifteen** marks.

(3×15=45)

21) a) Simplify the following Boolean function using K-map.

$$F(w, x, y, z) = \sum (0, 2, 3, 4, 7, 9, 10, 11) \text{ and } d(w, x, y, z) = \sum (5, 6, 12, 15)$$

b) Explain different binary codes with example.

(7+8)

22) Design a sequential circuit with two JK flip-flops A and B and input x. When  $x = 1$ , the circuit goes through the state transitions from 00 to 01 to 10 to 11 back to 00 and repeat. When  $x = 0$ , the state of the circuit remains unchanged.

23) Explain the complete control functions and micro-operation for basic computer with neat flowchart.

24) a) Explain the different addressing modes with example.

b) Explain the program control instructions.

(8+7)

25) a) Explain the asynchronous data transfer.

b) Explain the working of associative memory.

(7+8)



SECTION – D  
(2011-12 Batch onwards only)

IV. Answer **any one** question. **Each** carries **ten** marks. **(1×10=10)**

26) a) Explain the working of Full-Adder.

b) Explain 4-bit shift register. **(5+5)**

27) a) Explain the common bus system.

b) Write a note on Instruction Formats. **(5+5)**

---