Q.P. Code : 36122

First Semester B.C.A. Degree Examination,
November/December 2019

(CBCS – Freshers)

Computer Science

Paper BCA 104 T – COMPUTER ORGANIZATIONS

Time : 3 Hours] *[Max. Marks : 70*

Instructions to Candidates : Answer all the Sections.

SECTION – A

I. Answer any **TEN** of the following. Each carries **2** marks : **(10 × 2 = 20)**

1. Define Logic gate. Mention the basic logic gates.

2. Write the Logic diagram and truth table of EX-OR and EX-NOR gate.

3. Define Minterm and Maxterm.

4. What is number system? List the types of number system.

5. Perform $1101_{(2)} - 0011_{(2)}$ using 2's complement.

6. Define computer organization.

7. What are the different phases of an instruction cycle?

8. Explain why interrupts are required.

9. Mention the components of CPU.

10. What is shift instruction? Give example.

11. Define Auxiliary Memory.

12. List the types of mapping procedures of Cache Memory.

SECTION – B

II. Answer any **FIVE** of the following questions. Each question carries **10** marks : **(5 × 10 = 50)**

13. (a) Explain Universal gates with a neat diagram and Truth table. **(5)**

(b) What is JK flip flop? What are the advantages over SR flip flop? Explain. **(5)**

14. (a) Write the *k*-map representation for the following and solve : **(5)**

$F(W, X, Y, Z) = \sum(0, 1, 4, 5, 7, 15, 2, 10)$

(b) Explain 1's complement method of subtraction with example. **(5)**

15. Convert the following : **(10)**

(a) $20.356_{(10)}$ to $(\ ?\ )_2$

(b) $(1010.01)_2$ to $(\ ?\ )_{10}$

(c) $(10.27)_{(10)}$ to $(\ ?\ )_8$

(d) $(12676.25)_8$ to $(\ ?\ )_{10}$

(e) $10110_{(2)}$ to Gray code.

16. Explain the design of basic computer with flowchart. **(10)**

17. (a) Explain the categories of instruction formats with an example. **(5)**

(b) Explain data transfer and manipulation instruction. **(5)**

18. Explain instruction formats and its types using the following expression $X = (A+B) * (C + D)$. **(10)**

19. (a) Define Virtual memory. What is the advantage of using virtual memory? **(5)**

(b) Explain error detection and error correction codes. **(5)**

20. (a) With a neat sketch explain the working principle of DMA. **(5)**

(b) Explain in detail Hierarchy of Memory. **(5)**