

FIFTH SEMESTER B.C.A. DEGREE EXAMINATION, NOVEMBER 2020

(CUCBCSS—UG)

B.C.A.

BCA 5B 08—COMPUTER ORGANIZATION AND ARCHITECTURE

(2017 Admissions)

Time : Three Hours

Maximum : 80 Marks

Section A*Answer all questions.**Each question carries 1 mark.*

1. The time required for a gate or inverter to change its state is called _____.
2. How many 3-line-to-8-line decoder are required for a 1-of-32 decoder ?
3. What type of register would shift a complete binary number in one bit at a time and shift all the stored bits out one at a time.
4. Synchronous counters eliminate the delay problems encountered with asynchronous counters because :
5. _____ is a group of bits that instruct the computer to perform a specific operation.
6. Which register holds the address of the next instruction to be executed ?
7. What is control memory ?
8. How many bits are reserved for CD field in a microinstruction.
9. _____ stores the binary information in SRAM.
10. For every active word stored in memory, the corresponding bit in the _____ is set to 1.

(10 × 1 = 10 marks)

Section B*Answer at least five questions.**Each question carries 3 marks.**All questions can be attended.**Overall ceiling 15.*

11. Describe the operation of Exclusive OR gate and Exclusive NOR gate.
12. Draw the logic diagram and truth table of T flip-flop.

Turn over

13. What is serial in parallel out shift register ?
14. What do you mean by stored program organization ?
15. List the registers for the basic computer.
16. What do you mean by Microprogram ?
17. Explain about the microinstruction format.
18. Write a short note on Virtual Memory.

(5 × 3 = 15 marks)

Section C

Answer at least five questions.

Each question carries 5 marks.

All questions can be attended.

Overall ceiling 25.

19. Draw the logic diagram corresponding to the following Boolean expressions :
 - (a) $BC + AB + ACD$; and (b) $(A + B)(C + D)(A' + B + D)$.
20. Explain the working of SR flip-flop with neat diagram.
21. Explain the working of D flip-flop.
22. Explain the three instruction code formats.
23. Explain about the control unit with figure.
24. What are the various program control instructions.
25. Explain about the address sequencing.
26. Write a note on memory mapping.
27. Explain the role of memory management hardware.

(5 × 5 = 25 marks)

Section D (Essay Questions)

Answer any three questions.

Each question carries 10 marks.

28. Explain the working of ripple carry adder with suitable example. Also explain the motivation behind carry look ahead adder with figures.

29. Explain the working of JK flip-flop. Also explain about the master slave JK flip-flop and its motivation behind the basic JK flip-flop.
30. Write a note on timing and control of basic computer.
31. Discuss about the design of basic computer.
32. Discuss about the input-output organization.

(3 × 10 = 30 marks)