Nagarjuna Degree College
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Reg. No. [ ][ ][ ][ ][ ][ ][ ][ ][ ]

V Semester B.C.A. Degree Examination, March/April - 2022

COMPUTER SCIENCE

Computer Architecture

(CBCS Scheme)

Paper : BCA 503T

Time : 3 Hours   Maximum Marks : 100

Instructions to Candidates:

Answer all the sections.

SECTION - A

I.   Answer any **Ten** of the following.   (10×2=20)

1.   Draw logical diagram of the boolean function $F = XY' + X'Y$.

2.   Subtract 145 from 245 using 9's compliment.

3.   What is BCD? give an example.

4.   State any two rules of Boolean Algebra.

5.   What are sequential circuits? List any two.

6.   What are three control inputs for registers?

7.   Define opcode & operand.

8.   Explain BSA instruction.

9.   List any two memory reference instructions.

10.   List types of interrupts.

11.   What is serial data transmission?

12.   Define associatives memory.

SECTION - B

II.   Answer any **Five** of the following.   (5×5=25)

13.   Explain any five basic gates with logic symbols.

14.   Solve using K-map $f(W, X, Y, Z) = \sum(0, 5, 7, 8, 11, 13, 15)$.

15.   Explain the operations of instruction cycle with flow chart.

16.   Explain any five register reference instructions.

17.   Write a note on hamming code.

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18. Explain 3×8 priority encoder.

19. Explain DMA controller with block diagram.

20. Explain levels of cache memory.

SECTION - C

III. Answer any **Three** of the following. (3×15=45)

21. a. Explain construction of full adder using NAND gates. (8)

    b. Explain different types of K-Map based on number of variables. (7)

22. Explain Design of Basic computer with flow chart. (15)

23. a. Explain memory reference instructions with control format. (10)

    b. Explain types of CPU organisations. (5)

24. a. Explain Asynchronous data transfer using parallel mode. (10)

    b. Differential between Isolated I/O and memory mapped I/O. (5)

25. a. Explain hard disk with neat diagram. (8)

    b. What is a virtual memory? Explain address space and memory space in detail. (7)

SECTION - D

IV. Answer any **One** of the following. (1×10=10)

26. a. Explain direct and indirect address instructions. (5)

    b. Differentiate between Von-neuman and Harvard architecture (5)

27. a. Explain input - output configuration with a neat diagram. (8)

    b. List any two conditional instructions. (2)