

Roll No.....

Total No. of Section : 05

Total No. of Printed Pages : 02

Code No. : B-422(A)

Annual Examination - 2017

Class -BCA III

BCA-301

**COMPUTER SYSTEM ARCHITECTURE**

Max.Marks : 50

Time : 3 Hrs.

Min.Marks : 20

**Note :** Attempt one question from each unit. All questions carry equal marks.

**Unit-I**

- Q-1.(a) What do you mean by a Number System? Explain the binary number system in detail.  
(b) What do you mean by 1's and 2's complement in binary number system?

**OR**

- (a) Explain Excess-3 and BCD Code with example.  
(b) Perform the following conversion :  
i. Convert  $(110011)_2$  to Octal  
ii. Convert  $(23)_8$  to Binary  
iii. Convert  $(A3D)_{16}$  to Octal  
iv. Convert  $(1101\ 0011\ 1001\ 1111)_2$  to Hexadecimal  
v. Convert  $(65)_{10}$  to Hexadecimal

**Unit-II**

- Q-2.(a) Explain AND, OR, NOR and XOR logic gates. Draw their symbols and truth tables.  
(b) What are Flip-Flops? Explain the working of RS flip flop.

**P.T.O.**

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**Unit-II**

- Q-2.(a) Explain AND, OR, NOR and XOR logic gates. Draw their symbols and truth tables.  
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**P.T.O.**

(2) Code No. : B-422(A)

**OR**

(a) Simplify the Boolean functions:

$$F(x, y, z, w) = \sum(5, 7, 13, 15)$$

(b) What is the difference between Combinational and Sequential Circuits? Give examples of both.

**Unit-III**

Q-3.(a) What are the different types of Registers available with a Microprocessor?

(b) What is Program Counter? Explain its use.

**OR**

(a) With the help of a block diagram explain the organization of a CPU.

(b) What is a System Bus? Explain its use.

**Unit-IV**

Q-4.(a) Explain the difference between synchronous and asynchronous data transfer.

(b) What are the functions of a device controller?

**OR**

(a) What do you mean by Handshaking?

(b) Explain the different I/O interfaces.

**Unit-V**

Q-5.(a) What is the advantage of having a Cache memory in a processor? What is Hit Ratio?

(b) Explain the memory hierarchy of a modern computer system and comment upon the speed, capacity and cost of the various levels in the hierarchy.

**OR**

(a) What do you mean by Virtual memory? What do you mean by address mapping in virtual memory?

(b) What are the various page replacement techniques?

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