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(3rd Semester)

BACHELOR OF COMPUTER APPLICATION

Paper No. : BCA-305

(Computer Organization and Architecture)*Full Marks : 75**Time : 3 hours***(PART : B—DESCRIPTIVE)***(Marks : 50)**The figures in the margin indicate full marks
for the questions*

1. (a) Using 4×1 multiplexers, design a common bus system for four registers and explain how it works. 8
 - (b) Write the graphic symbol for three-state buffer. 2
- Or*
- (c) Explain different types of shift microoperations with suitable examples. 6

- (d) What is a binary adder? Construct a circuit diagram for a 4-bit binary adder using full-adder. 4

2. (a) Write and explain the three basic computer instruction code formats. 6
- (b) Explain four phases of an instruction cycle. 4

Or

- (c) Explain the categories of computer programs with examples. 7
- (d) Explain the fields of an assembly language program. 3

3. (a) Explain one-address, two-address and three-address instructions. 6
- (b) Write the major characteristics of RISC architecture. 4

Or

- (c) Describe any four addressing modes. 6
- (d) Write the major characteristics of CISC architecture. 4

4. (a) Discuss the three modes of data transfer to and from peripherals. 6
- (b) What is asynchronous data transfer? Explain by giving a suitable diagram. 4

(3)

Or

- (c) Explain Direct Memory Access (DMA) by giving a suitable block diagram. 6
- (d) Write the flowchart of the communication of CPU and IOP. 4
5. (a) Write the block diagram and function table of 128×8 RAM chip and explain how it works. 8
- (b) What is content addressable memory? 2

Or

- (c) Explain associative, direct and set-associative mapping by giving a suitable diagram. 10

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Subject Code : III/BCA/305

Booklet No. A

Date Stamp

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To be filled in by the Candidate

DEGREE 3rd Semester
(Arts / Science / Commerce /
.....) Exam., **2017**

Subject

Paper

INSTRUCTIONS TO CANDIDATES

1. The Booklet No. of this script should be quoted in the answer script meant for descriptive type questions and vice versa.
2. This paper should be ANSWERED FIRST and submitted within 1 (one) Hour of the commencement of the Examination.
3. While answering the questions of this booklet, any cutting, erasing, over-writing or furnishing more than one answer is prohibited. Any rough work, if required, should be done only on the main Answer Book. Instructions given in each question should be followed for answering that question only.

To be filled in by the Candidate

DEGREE 3rd Semester
(Arts / Science / Commerce /
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Roll No.

Regn. No.

Subject

Paper

Descriptive Type

Booklet No. B

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Examiner(s)

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(3rd Semester)

BACHELOR OF COMPUTER APPLICATION

Paper No. : BCA-305

(Computer Organization and Architecture)

(PART : A—OBJECTIVE)

(Marks : 25)

The figures in the margin indicate full marks for the questions

SECTION—I

(Marks : 15)

I. Tick (✓) the correct answer in the brackets provided :

1×10=10

1. The microoperation that specify binary operations for strings of bits stored in register is called

- (a) shift microoperations ()
- (b) arithmetic microoperations ()
- (c) logic microoperations ()
- (d) data microoperations ()

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(2)

2. The register that holds an address for the memory unit is called

(a) DAR ()

(b) MAR ()

(c) IR ()

(d) PC ()

3. A group of bits that instruct the computer to perform a specific operation is called

(a) operation code ()

(b) bit code ()

(c) instruction code ()

(d) byte code ()

4. The instruction that stores the content of AC into the memory word is

(a) LDA ()

(b) STA ()

(c) BUN ()

(d) ISZ ()

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(3)

5. Input or output devices attached to the computer are also called

(a) peripherals ()

(b) DMA ()

(c) I/O strobe ()

(d) controllers ()

6. The standard binary code for the alphanumeric characters is

(a) HEX ()

(b) B-coding ()

(c) ASCII ()

(d) EBBDIC ()

7. Which of the following is an auxiliary memory?

(a) RAM ()

(b) Register ()

(c) Cache memory ()

(d) Magnetic disk ()

(4)

8. When a program attempts to reference a page that is still in auxiliary memory, it is called

(a) page miss ()

(b) page hit ()

(c) page fault ()

(d) paging ()

9. A set of common instructions that can be used in a program many times is called

(a) assembly language ()

(b) subroutine ()

(c) program loops ()

(d) common instruction ()

10. The collection of all status bit conditions in the CPU is called

(a) program status word ()

(b) status bits ()

(c) bit ratio ()

(d) program bits ()

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(5)

II. Indicate *True (T)* or *False (F)* by a Tick (✓) mark :
1×5=5

1. $R1 \leftarrow R2$ denotes transfer of information from R2 to R1.

(T / F)

2. Effective addresses are defined as the address of the operand in a computation-type instruction.

(T / F)

3. A status command is issued to activate the peripheral and to inform it what to do.

(T / F)

4. An address in main memory is called physical address.

(T / F)

5. Translation of symbolic program into binary is done by compiler.

(T / F)

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(6)

SECTION—II

(Marks : 10)

III. Answer the following questions :

2×5=10

1. What is register transfer language?

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(7)

2. Differentiate between machine language and assembly language.

(8)

3. Distinguish between data transfer instruction and data manipulation instruction.

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(9)

4. What is memory-mapped I/O?

5. What is a bootstrap-loader?
