

Roll No. ....

Total No. of Questions : 9] [Total No. of Printed Pages : 7  
(2034)

**UG (CBCS) IInd Year Annual Examination**

**2846**

**B.A. COMPUTER APPLICATION**

(Computer System Architecture)

(Common with B.Sc. Physical Science DSC-2C)

Paper : COMP201 TH

**Time : 3 Hours]**

**[Maximum Marks : 70**

*Note* :- Attempt *five* questions in all, selecting *one* question each from Parts-B, C, D and E. Question No. 1 (Part-A) is compulsory.

**Part-A**

**Compulsory Question**

1. (i) Logic Gates are the building blocks of all circuits in a computer.

(a) True

(b) False

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(ii) 3-bit binary numbers can be represented by :

- (a) Binary number system
- (b) Decimal number system
- (c) Octal number system
- (d) Hexadecimal number system

(iii) Device which converts signal from binary codes into output codes :

- (a) Encoder
- (b) Decoder
- (c) Multiplexor
- (d) Data Selector

(iv) A Stack organized computer uses instruction of :

- (a) Indirect addressing
- (b) Zero addressing
- (c) Two addressing
- (d) Index addressing

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(v) What is Von Neumann Architecture ?

- (a) SISD
- (b) SIMD
- (c) MISD
- (d) MIMD

(vi) Which of the following is not a visible register ?

- (a) General Purpose Register
- (b) Address Register
- (c) Status Register

(d) MAR

(vii) How is the effective address of base-register calculated ?

- (a) By addition of index register contents to the partial address in instruction
- (b) By addition of implied register contents to the partial address in instruction

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- (c) By addition of index register contents to the complete address in instruction
  - (d) By addition of implied register contents to the complete address in instruction
- (viii) The instruction "JUMP" belongs to
- (a) Sequential control flow instructions
  - (b) Control transfer instructions
  - (c) Branch instructions
  - (d) Control transfer and branch instructions
- (ix) During DMA transfer, DMA controller transfer data :
- (a) Directly between memory and register
  - (b) Directly between the I/O module and main memory
  - (c) Directly from memory to CPU
  - (d) Directly from CPU to memory

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- (x) Peripherals are :
  - (a) Additional devices connected to the computer
  - (b) Needed for the CPU to keep running
  - (c) Programmes we use
  - (d) All of these 1×10=10

**Part-B**

- 2. (a) Draw Block diagram of 4 : 1 Multiplexer and write its truth table.
- (b) What is Combinational circuits ? Give examples. 8,7

*Or*

- 3. (a) Convert the following :
  - (i)  $(5C7)_{16} = (?)_{10}$
  - (ii)  $(2598)_{10} = (?)_{16}$
  - (iii)  $(10110)_2 = (?)_{10} = (?)_{16}$
- (b) Define 1's and 2's Complement of Binary Number with example. 8,7

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**Part-C**

4. (a) Discuss in detail the organization of a basic computer.  
(b) Explain the instruction cycle and its different phases. Also draw the flow chart for instruction cycle. 8,7

*Or*

5. (a) What are the major design issues of control unit ? Discuss the micro programmed approach of control unit design.  
(b) What is stack organization in computer architecture ? 8,7

**Part-D**

6. What do you mean by addressing mode ? Explain the advantages and disadvantages of various addressing modes. 15

*Or*

7. (a) What is difference between assembly language and machine language ?  
(b) How One address instruction format is different from three address instruction format ? Explain with a suitable example. 8,7

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**Part-E**

8. What is Input-output Interface ? Briefly discuss and compare the following I/O schemes :  
(i) Programmed I/O  
(ii) Interrupt driven I/O 15

*Or*

9. (a) Explain how I/O data transfer take place with the help of DMA. In what ways is it better than other I/O data transfer techniques ? Discuss with Examples.  
(b) What do you mean by peripheral device ? Explain any three. 8,7

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**UG (CBCS) IIInd Year (Suppl.) Examination**

**2129**

**B.A. COMPUTER APPLICATION**  
(Computer System Architecture)  
(Common with B.Sc. Physical Science)  
(DSC-2C)

Paper : COMP201 TH

**Time : 3 Hours]**

**[Maximum Marks : 70**

*Note :-* Attempt all questions.

**Part-A**

**(Compulsory Question)**

1. ~~(i)~~ A multiplexer is also called :

- (a) MUX
- (b) Data selector
- (c) Multiplexer
- (d) All of these

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~~(ii)~~ A number system that uses eight digits 0, 1, 2, 3, 4, 5, 6 and 7 is called an :

- (a) Binary number system
- (b) Decimal number system
- ~~(c)~~ Octal number system
- (d) None of these

~~(iii)~~ Electronic circuits that operate on one or more input signals to produce standard output :

- (a) Series circuits
- (b) Parallel circuits
- (c) Logic signals
- (d) Logic gates

~~(iv)~~ Which of the following is used to hold and transfer instructions and data that are being immediately used by CPU ?

- (a) Microprocessor
- (b) Registers
- (c) ROM chips
- (d) Data buses

~~(v)~~ A collection of devices or compu

- (a) Link wire
- (b) Bus
- (c) Bidirection
- (d) Cable

~~(vi)~~ An instruction

- (a) Fatching
- (b) Decodin
- (c) Fetchin
- (d) Fetchi

~~(vii)~~ A machine of :

- (a) Ope
- (b) Ope
- (c) Op
- (d) No

1, 2,  
more  
and  
ing

(vi) A collection of wires that connects several devices or computer parts is called :

- (a) Link wire
- (b) Bus
- (c) Bidirectional wire
- (d) Cable

(vii) An instruction cycle consists of :

- (a) Fetching and decoding
- (b) Decoding and executing
- (c) Fetching, decoding, executing and storing
- (d) Fetching, executing and storing

(viii) A machine language instruction format consists of :

- (a) Operand field
- (b) Operation code field
- (c) Operation code field and operand field
- (d) None of these

(viii) Which addressing mode execute its instructions within CPU without the necessity of reference memory for operands ?

- (a) Implied mode
- (b) Immediate mode
- (c) Direct mode
- (d) Register mode

(ix) In memory-mapped I/O :

- (a) The I/O devices and the memory share the same address space
- (b) The I/O devices have a separate address space
- (c) The memory and I/O devices have an associated address space
- (d) A part of the memory is specifically set aside for the I/O operation

The me  
transfer

- (a) In
- (b) M
- (c) P
- (d) I

2. (a) Draw  
univ  
(b) Red  
Bo

3. (a) P  
2

(b)



1. The method which offers higher speeds of I/O transfer is :

- (a) Interrupts
- (b) Memory mapping
- (c) Program-controlled I/O
- (d) DMA

1×10=10

**Part-B**

2. (a) Draw the symbol and write the truth table of universal gates.

(b) Reduce the following Boolean expression using Boolean laws :

$$Y = AB + \overline{A}B + A\overline{B} + \overline{A}\overline{B}$$

8+7=15

Or

3. (a) Perform the following subtraction using 1's and 2's complement method :

(i)  $(52)_{10} - (65)_{10}$

(ii)  $(101011)_2 - (11010)_2$

(b) Explain briefly about fixed and floating point data representation.

8+7=15

**Part-C**

4. (a) Explain different types of computer registers with common bus system.

(b) What is an interrupt in computer organisation ? Discuss interrupt types and interrupt cycle in brief.

8+7=15

*Or*

5. (a) Explain the design of micro-programmed control unit in detail.

(b) What do you mean by micro-operations ? Discuss their types in detail.

8+7=15

**Part-D**

6. What is an instruction ? Explain various instruction formats by taking suitable examples. 15

*Or*

7. (a) How many types of instruction codes are there in a basic computer system ?

(b) How is the working of direct addressing mode different from register direct addressing mode ?

8+7=15

**Part-E**

8. What are different techniques of data transfer ? Discuss their relative merits and demerits. 15

Or

9. (a) What is the role of input-output interface ? Discuss isolated input-output and memory mapped input-output techniques.
- (b) What is direct memory access and how does it work ? 8+7=15

