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[5219]-2001

F.Y. B.C.A. (Science) (II Semester) EXAMINATION, 2017

BCA-201 : COMPUTER ORGANISATION

(2016 PATTERN)

Time : Three Hours

Maximum Marks : 70

N.B. :- (i) Question No. 1 is compulsory.

(ii) Attempt any *two* from Group I and any *two* from Group II respectively.

(iii) Draw neat diagram wherever necessary.

(iv) Figures to the right indicate full marks.

1. (A) Attempt the following : [7]

(1) The decimal equivalent of $(821)_8$ is

(a) 592

(b) 529

(c) 630

(d) 295

P.T.O.

- (2) $A \cdot (\bar{A} + B) = \dots\dots\dots$.
- (a) AB
 - (b) A + B
 - (c) B
 - (d) A
- (3) Multiplexer is an example of $\dots\dots\dots$.
- (a) Sequential circuit
 - (b) Logic circuit
 - (c) Combinational circuit
 - (d) Both (a) and (b)
- (4) The flip-flop in which the output changes at the falling edge of the clock, it is $\dots\dots\dots$.
- (a) Negative flip-flop
 - (b) Negative edge triggered flip-flop
 - (c) Positive edge triggered flip-flop
 - (d) None of the above
- (5) $\dots\dots\dots$ is responsible for performing various arithmetic and logical or shift operations.
- (a) CPU
 - (b) ALU
 - (c) Monitor
 - (d) None of the above

(6) Secondary storage is also known as

- (a) External memory
- (b) Auxiliary storage
- (c) Cache memory
- (d) Both (a) and (b)

(7) NPX is

- (a) Number Processor Extension
- (b) Numeric Processor Extension
- (c) Numeric Point Extension
- (d) Numeric Point Execution

(B) Attempt the following : [7]

- (1) What is positive and negative logic ?
- (2) What is combinational circuit ?
- (3) Define latch.
- (4) What is address bus ?
- (5) Explain the term—phosphorescence.
- (6) State the uses of control register.
- (7) What is burst mode of DMA transfer ?

Group I

2. Attempt the following :

(a) Explain AND gate. Also draw the diode diagram of an AND gate. [5]

(b) Write a short note on Half Adder. [5]

(c) Convert the following : [4]

(i) $(AF9.B0D)_{16} = (?)_2$

(ii) $(23.85)_{10} = (?)_2$

(iii) $(1101101)_2 = (?)_{10}$

(iv) $(457.65)_8 = (?)_{10}$

3. Attempt the following :

(a) State the applications of shift registers. [4]

(b) Explain BCD encoder with its diagram. [4]

(c) What are character codes ? Explain ASCII code with example. [3]

(d) Draw the logic gate to implement : [3]

(i) $AB + AC + A\bar{B}C$

(ii) $\overline{(A + B) \cdot (C + D)}$

(iii) $(A + BD) \cdot (\bar{C} + B)$

4. Attempt the following :

- (a) What is a stack ? What are the different operations on a stack ? [4]
- (b) Write a short note on parallelism. [4]
- (c) What is an interrupt ? What are its types ? [3]
- (d) What is the use of cache ? Explain the terms hit and miss. [3]

Group II

5. Attempt the following :

- (a) Write a short note on general registers in CPU. [5]
- (b) With neat block diagram explain the signals in a DMA controller. [5]
- (c) Write a short note on memory hierarchy. [4]

6. Attempt the following :

- (a) Explain the working of arithmetic pipeline in brief. [4]
- (b) What is a flag register ? Give its structure with explanation. [4]
- (c) Distinguish between serial and parallel data transfer. [3]
- (d) What is internal memory ? Explain processor registers and processor cache. [3]

7. Attempt the following :

(a) Explain ring counter. [4]

(b) Draw the logic gate, state Boolean function and truth table for NAND gate. [4]

(c) Distinguish between edge and level triggered flip-flops. [3]

(d) Solve the following : [3]

(i) $11011.101 + 1010.111$

(ii) Perform $11110 - 1010$ using 2's complement.