I.M.C.A. SEM–II (2014 COURSE) CBCS : WINTER - 2017

SUBJECT : COMPUTER ORGANIZATION & ARCHITECTURE

Day : **Thursday**
Date : **09/11/2017**

Time **10.00 AM TO 01.00 PM**
Max. Marks : 100

W-2017-1660

N.B.

1) Answer any **FOUR** questions from Section – I and any **TWO** questions from Section – II.
2) Figures to the right indicate **FULL** marks.
3) Answers to both the sections should be written in **SEPARATE** answer book.

SECTION - I

Q.1 What is a flip-flop? Explain types of it. **(15)**

Q.2 Discuss functioning of 4 to 1 line multiplexer with help of a circuit diagram. **(15)**

Q,3 Explain various memory reference instructions with suitable example. **(15)**

Q.4 Describe mapping techniques of cache memory in detail. **(15)**

Q.5 Draw the block diagram of a computer with I/O processor and discuss the process of CPU - IOP communication in detail. **(15)**

Q.6 Explain functioning of 4 bit adder-subtractor with help of block diagram. **(15)**

Q.7 Write the short note on any **TWO** of the following: **(15)**

a) CISC
b) Assembler
c) Instruction codes

SECTION - II

Q.8 Solve the following: **(20)**

a) Find 2's complement: $(1110101)_2$
b) $(11111)_2 * (111)_2$
c) $(10000011)_2 - (11000011)_2$
d) Convert the expression in proper notation and solve it with stack: [(3+4)*(3-1)]+(4 * 9)
e) Show that : (A+B)' (A'+B')'= 0

Q.9 A sequential circuit has two D flip-flops, A and B, one inputs x and one output z. The flip-flop input equations and circuit output is as follows: **(20)**

$D_A = x' + x'B$
$D_B = x'B + x A$
$Z = x' A + A' B'$

Draw the logic diagram, State table and state diagram.

Q.10 With the help of circuit diagram explain the structure and functioning of 4 bit bidirectional shift register with parallel load. **(20)**

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