

B.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-2017-1606

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)

* * *