

S.D.E.

M.C.A. Sem – I (CBCS - 2018 Course) : SUMMER - 2019

SUBJECT : COMPUTER ORGANIZATION & ARCHITECTURE

Day : Friday
Date : 03/05/2019

S-2019-5241

Time : 10.00 AM TO 1.00 PM
Max. Marks : 70

N. B. :

- 1) Attempt **Any FOUR** questions from **Section-I** and **Any TWO** questions from **Section-II**.
- 2) Answers to both the sections should be written in the **SAME** answer book.
- 3) Figures to the right indicate **FULL** marks.

SECTION-I

- Q.1 Compare various generations of computer. (10)
- Q.2 Explain various types of flip-flops. Compare their merits and demerits. (10)
- Q.3 Design a 4 bit adder-subtractor circuit and explain its operation. (10)
- Q.4 Explain the functioning of interrupt cycle with help of flowchart. (10)
- Q.5 Analyze the memory hierarchy in terms of speed, size and cost. (10)
- Q.6 Explain the asynchronous data transfer with handshaking method. (10)
- Q.7 Write short notes on **Any TWO** of the following : (10)
- a) RISC
 - b) Input output interface
 - c) Hacking

SECTION-II

- Q.8 a) Simplify the following Boolean functions using K-map. (08)
- i) $F(A,B,C,D) = \sum (4,6,7,15)$
 - ii) $F(A,B,C,D) = \sum (3,7,11,13,14,15)$
- b) Simplify by using Boolean algebra. (07)
- i) $AB + A(CD + CD')$
 - ii) $(BC' + A'D)(AB + CD')$
- Q.9 The sequential circuit has two D flip flops A and B, two inputs x and y and one output z. The flip flop input equations and circuit output is as follows. (15)
- $$D_A = x'B + yA$$
- $$D_B = xA + y'B$$
- $$z = y'B + x'A$$
- i) Draw the logic diagram.
 - ii) Tabulate the state table.
 - iii) Draw the state diagram.
- Q.10 Discuss the functioning of Binary counter with help of circuit diagram. (15)

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