

B.SC. (I. T.) SEM. - I (2011 COURSE) : SUMMER - 2018

SUBJECT: COMPUTER ARCHITECTURE

Day: **Monday**
Time: **28/05/2018**

S-2018-0970

Date: **02.30 pm to 05.30 pm**
Max Marks: 80

N.B:

- 1) Attempt any **EIGHT** questions.
 - 2) Figures to the **RIGHT** indicate **FULL** marks.
 - 3) Draw neat labeled diagrams **WHEREVER** necessary.
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- Q.1** a) Using De Morgan's theorem & show that; **(05)**
 $A+A'B+A'B' = 1$
- b) Draw the diagram of a half adder using logic gates. **(05)**
- Q.2** a) Explain how a JK flip flop can be converted into D- flip flop. **(05)**
- b) Simplify the following Boolean function using K- map; **(05)**
 $F(A, B, C, D) = \sum(0, 2, 8, 9, 10, 11, 14, 15)$.
- Q.3** Explain the structure of hard disk. How is the data stored on the hard disk? How an error is detected / corrected while reading / writing data on the hard disk? **(10)**
- Q.4** Explain 'RISC' and 'CISC' processors. **(10)**
- Q.5** Draw and explain the basic block diagram of a modern digital computer. **(10)**
- Q.6** Draw the block diagram of a 64KB RAM with 16-bit word length. Show the number of data input lines, data output lines and address lines. Briefly explain its operation. **(10)**
- Q.7** Describe the typical memory hierarchy in modern computer systems. Clearly explain the need for organizing memory in a hierarchy. **(10)**
- Q.8** What is a multiplexer? Describe any one application of multiplexer with appropriate example. **(10)**
- Q.9** Explain any **TWO** of the following: **(10)**
- a) Interrupts
 - b) PCI Bus
 - c) Shift Registers
 - d) ALU

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