

B.SC. (I. T.) SEM. - I (2011 COURSE) : WINTER - 2017

SUBJECT: COMPUTER ARCHITECTURE

Day: **Thursday**
Date: **21/12/2017**

W-2017-0863

Time: **10.00 AM TO 01.00 PM**
Max. Marks: 80

N.B.:

- 1) Attempt Any **FIVE** full questions
 - 2) Figures to the right indicate **FULL** marks.
 - 3) Draw neat, labeled diagrams **WHEREVER** necessary.
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Q.1 a) Simplify the following expressions using K Maps:- **[08]**

i) $F(A, B, C, D) = \Sigma (4, 6, 7, 15)$

ii) $F(A, B, C, D) = \Sigma (3, 7, 11, 13, 14, 15)$

b) Explain how a D-flip is used to store data. **[08]**

Q.2 An odd parity generator is a device that add an extra bit to data to make the total number of 1's in the data odd. Write the Truth Table for a 3-bit odd parity generator and show its construction using logic gates. Use K- map to simplify the expression. **[16]**

Q.3 What do you understand by multi-core processor? What are their advantages and disadvantages? Give two examples of multi-core processors. **[16]**

Q.4 a) List the functions of an operating system. How are operating systems classified? **[08]**

b) Explain in detail how PnP works, indicating the requirements for PnP. **[08]**

Q.5 a) Explain the principle of locality of reference as related to memory hierarchy. **[06]**

b) Draw the diagram of a 3-bit down counter using T-flip flops. Write its truth table and explain its operation. Where is such a device used in a processor?

Q.6 Write short notes on **ANY TWO** of the following: **[16]**

- a)** Cache memory
- b)** RISC and CISC processors
- c)** Routers and Switches

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