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BO—28—2016

FACULTY OF COMPUTER STUDIES

B.C.A. (First Year) (First Semester) EXAMINATION

OCTOBER/NOVEMBER, 2016

(Revised Course)

COMPUTER APPLICATIONS

Paper S1.3

(Digital Electronics and Microprocessor–I)

(Saturday, 26-11-2016)

Time : 10.00 a.m. to 1.00 p.m.

Time—Three Hours

Maximum Marks—80

N.B. :— (i) Attempt All questions.

(ii) Assume suitable data if necessary.

1. Attempt the following : 20
 - (a) What is a gate ? Explain AND, OR gates.
 - (b) Explain decimal and hexadecimal number systems.
 - (c) Explain J-K flip-flop
 - (d) What is counter ? Explain asynchronous counter.

 2. (a) Do the following : 8
 - (i) $(567)_{10} = (?)_2$
 - (ii) $(111001011)_2 = (?)_{16}$
 - (iii) $(7BC)_{16} = (?)_2$
 - (iv) $(1024)_{10} = (?)_8$

 - (b) Explain in detail 'T' type flip-flop. 7
- Or*
- (c) Do the following :
 - (i) $(10110010)_2 + (11110001)_2$
 - (ii) $(111101)_2 - (100011)_2$
 - (iii) $(1110110)_2 + (1110)_2$
 - (iv) $(10.7)_{10} = (?)_2$

 - (d) Explain the construction of basic gates using NOR gates. 7

P.T.O.

3. (a) Draw and explain the block diagram of 8085 microprocessor. 8
 (b) Explain error detecting and correcting codes. 7
 Or
 (c) Explain in detail analog to digital convertor. 8
 (d) What is multiplexer ? Explain the working of multiplexer. 7
4. (a) State and prove de Morgan's theorems, 8
 (b) What is boolean algebra ? Explain commutative and distributive laws. 7
 Or
 (c) Explain BCD and Excess-3 codes. 8
 (d) What is k-map ? Explain with suitable example use of k-map. 7
5. Write short notes on (any *three*) : 15
 (a) Digital signals
 (b) Encoder
 (c) Master slave flip-flop
 (d) I/O buses
 (e) Gray code.