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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.