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E—21—2019

FACULTY OF SCIENCE

B.Sc. (Computer Science) (First Year) (First Semester) EXAMINATION

MARCH/APRIL, 2019

(CBCS Pattern)

COMPUTER SCIENCE

(Fundamentals of Digital Logic)

(Monday, 22-4-2019)

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

Time—3 Hours

Maximum Marks—75

N.B. :— (i) All questions are compulsory.

(ii) Figures to the right indicate full marks.

1. Solve the following (any *five*) : 15
 - (a) Explain universal gates NAND, NOR with circuit diagram and truth table.
 - (b) Explain Excess-3 code in detail.
 - (c) Explain SOP, POS with an example.
 - (d) Explain Demultiplexer (4 : 1) in detail.
 - (e) Explain Decoder in detail.
 - (f) Explain D-FF and T-FF in detail.
 - (g) Explain synchronous counter in detail.
2. Solve any *two* of the following : 10
 - (a) Explain Ex-OR, Ex-NOR logic gates in detail.
 - (b) Draw the logic diagram for the following output :
$$y = ABC + \overline{ABC} + ABD$$
 - (c) Explain DeMorgan's first and second law in detail.

P.T.O.

3. Solve any *two* of the following : 10
- (a) Solve the following :
- (i) $(11011)_2 \times (101)_2 = ?$
- (ii) $(111010) - (01010) = ?$
- (b) Explain full adder in detail.
- (c) Explain Error detection and correction code in detail.
4. Solve any *two* of the following : 10
- (a) Explain 32 bit multiplexer using two 16 : 1 multiplexer.
- (b) Explain pain, quad, octate using *k*-map with an example.
- (c) Explain encoder in detail.
5. Solve any *two* of the following : 10
- (a) Explain clocked SRFF in detail.
- (b) Explain JK flip-flop in detail.
- (c) Explain JK-MS flip-flop in detail.
6. Solve any *two* of the following : 10
- (a) Explain Registers in detail.
- (b) Explain shift registers in detail.
- (c) Explain Asynchronous counter in detail.
7. Solve any *two* of the following : 10
- (a) Explain digital to analog converter in detail.
- (b) Explain I/O buses in detail.
- (c) Explain block diagram of microprocessor.