

**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, DECEMBER 2006**

EE 04 503—PULSE AND DIGITAL ELECTRONICS

(2004 admissions)

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

Part A

1. (a) Draw the circuit of transistor switch and explain its function.
- (b) What is meant by multivibrator ? Explain.
- (c) State and prove De Morgan's laws.
- (d) Draw the circuit of half adder and explain with truth table.
- (e) Draw the circuit of D flip-flop and explain.
- (f) Explain the procedure for designing modulo-6 counter.
- (g) What is meant by control bus, address bus and data bus ? Explain.
- (h) Write an assembly language programme for adding two 8 bit numbers.

(8 × 5 = 40 marks)

Part B

2. (a) (i) Explain about switching times and storage time. (6 marks)
- (ii) Explain the circuit of current sweep generator. (9 marks)

Or

- (b) Draw the circuit of bistable multivibrator including commutative capacitor and explain. (15 marks)

3. (a) Simplify the following Boolean function using K-map and write the result in sum of product and product of sum form :

$$Y(A, B, C, D) = \sum m(0, 1, 2, 3, 5, 9, 11) + \sum d(4, 7, 15).$$

Draw the logic circuit for the simplified expressions.

(15 marks)

Or

- (b) (i) Realize 1 of 16 demultiplexer and explain. (7 marks)
- (ii) Write short note on PLA. (8 marks)

4. (a) Draw the circuit of one bit semiconductor static bipolar RAM and explain its operation.

Or

- (b) Design a sequential logic circuit to count the following sequence using JK flip-flops :

1, 3, 7, 4, 1, 3, 7,

(15 marks)

5. (a) Draw the block diagram of basic microcomputer and explain in detail.

Or

- (b) Explain about immediate and indirect addressing modes with an example for each.

(15 marks)

[4 × 15 = 60 marks]