

TED (15) – 4032
(REVISION — 2015)

Reg. No.
Signature

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019

DIGITAL ELECTRONICS & MICROPROCESSORS

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Define radix and radix point.
2. State De Morgan's theorem.
3. What is Karnaugh map ?
4. Define modulo $-n$ counter.
5. List the Special Purpose Registers (SPR) used in 8085 microprocessor. (5 × 2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Realize the logic expression $Y = \bar{B}\bar{C} + \bar{A}\bar{C} + \bar{A}\bar{B}$ using basic gates.
2. List any six different performance parameters and characteristics of logic families.
3. Design and explain a full adder circuit using XOR, AND & OR gates.
4. Justify the JK flip - flop as a universal flip flop.
5. Draw and explain the block diagram of SISO shift register.
6. List any six applications of counters.
7. Explain the instruction format of 8085 microprocessor. (5 × 6 = 30)

PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

UNIT — I

- III (a) (i) Convert $(4ECE.43F)_{16}$ to octal number.
 (ii) Convert the decimal number 46.2 into binary number. 8
- (b) Draw the symbols and truth tables of the following logic gates.
 (i) OR (ii) AND (iii) NOT (iv) NAND
 (v) NOR (vi) XOR (vii) XNOR 7

OR

- IV (a) Implement the logic gates for the following expressions.
 (i) $(A + B)(C + D + E)$ (ii) $(A + B + \bar{C})(D + \bar{E})$ 8
- (b) Explain the general classification of logic families. 7

UNIT — II

- V (a) State and prove the basic theorems of Boolean algebra. 8
- (b) Construct and explain the logic circuit for 4 to 1 line multiplexer. 7

OR

- VI (a) Explain the operation of encoders and decoders. 8
- (b) Describe the working of master slave JK flip flop. 7

UNIT — III

- VII (a) Compare between combinational circuits and sequential circuit. 8
- (b) Draw and explain a 3 bit Up - Down synchronous counter. 7

OR

- VIII (a) Explain the working of the following ADC's with block diagram.
 (i) Successive approximation ADC (ii) 3 bit flash ADC 8
- (b) Draw and explain the four bit Parallel In - Serial Out shift registers constructed by D - flip-flops and NAND gates for entering data. 7

UNIT — IV

- IX (a) Draw the pin diagram of 8085 and explain the function of each pin. 8
- (b) Explain any seven features of 8085 microprocessor. 7

OR

- X (a) Draw and explain the functional block diagram of 8085 microprocessor. 8
- (b) Explain various addressing modes of 8085 microprocessor with justification. 7