

422

B. Tech. EXAMINATION, 2020

(Fifth Semester)

(Old Scheme) (Re-appear Only)

(ECE)

ECE204

DIGITAL ELECTRONICS

Time : 2½ Hours]

[Maximum Marks : 100

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Four* questions in all. All questions carry equal marks.

1. (a) Represent the decimal number 346 into :
 - (i) Binary
 - (ii) BCD code
 - (iii) Excess-3 code
 - (iv) Octal-code.
- (b) Perform the following operations :
 - (i) $10111 \div 100$
 - (ii) Add (+19) to (−24).
2. (a) Simplify $f = \bar{C}(\bar{A}\bar{B}\bar{D} + D) + \bar{A}\bar{B}C + \bar{D}$ using *k*-map and realized the minimized expression.
- (b) Minimize $\bar{A}\bar{B}\bar{C}\bar{D} + \bar{A}\bar{B}\bar{C}D + \bar{A}\bar{B}CD + ABC\bar{D} + \bar{A}\bar{B}C\bar{D} + \bar{A}\bar{B}\bar{C}D$ using Boolean algebra.

3. (a) What is full adder ? Design a circuit for full adder using half adder.
(b) Realize a 1 : 16 DE-MUX from four 1 : 4 demultiplexer.
4. (a) Design a MOD-8 UP counter using T-flip-flop.
(b) Explain the operation of bidirectional shift register.
5. (a) Discuss CMOS NAND and NOR gate.
(b) Explain the switching characteristics of $p-n$ junction diode.
6. (a) What are the performance characteristics of ADC ? Discuss each in brief.
(b) What is the advantage of R-2R ladder network DAC over binary weighted resistor DAC.
7. (a) Compare RAM, ROM and EPROM using their structure and storage.
(b) Draw a neat diagram of a PLA and explain the function of each component.
8. Write short notes on any *two* of the following :
 - (a) Error detection and correction codes
 - (b) CPLDs
 - (c) Sample and hold circuit.