

(DEC 215)

B. Tech DEGREE EXAMINATION, MAY - 2015

(Examination at the end of Second Year)

Electronics & Communications

Paper - V : DIGITAL ELECTRONICS

Time : 3 Hours

Maximum Marks : 75

Answer question No.1 compulsory

(15 × 1 = 15)

Answer ONE question from each unit

(4 × 15 = 60)

- 1) a) What is meant by radix (base) of number system?
- b) What is Excess-3 code?
- c) What is meant by weighted number system?
- d) Explain about race-around condition & How to avoid it?
- e) Which logic gate is used to compare the I/PS?
- f) Express the function in $y = A + \bar{B}C$ in canonical sop form.
- g) What are the universal gates & why they are called universal gates.
- h) How many Half adders are used to construct full adder.
- i) What is difference between combinational circuit & sequential circuit.
- j) What does 'ECC' stands for?
- k) List the applications of shift register.
- l) $(ECE)_{16}$ convert into Decimal number.
- m) $(1001101)_2$ convert into Gray code.

- n) Which code is called as self complementary code? Explain with example.
- o) What is decoder?

UNIT - I

- 2) a) Convert the $(732)_{10}$ into Binary, octal & Hexadecimal form.
- b) Perform subtraction operation on $68-48$ using 2' complement subtraction method.

OR

- 3) a) Simplify the Boolean function by using K-map
 $F = \Sigma m(0, 1, 2, 5, 7, 9, 12, 13, 15)$
- b) Simplify the given Boolean function by using tabulation method
 $F = \Sigma m(1, 2, 3, 5, 6, 7, 8, 9, 12, 13, 15)$

UNIT - II

- 4) a) Draw & Explain the operation of 4-bit parallel Adder.
- b) Differences between serial adder & parallel adder.

OR

- 5) a) Design Encoder logic diagram to convert decimal number into Binary number.
- b) What is multiplexer? Draw & explain the operation of 8:1 mux.

UNIT - III

- 6) a) Explain the operation & Truth table of SR NAND latch.
- b) Explain the operation of JK flip-flop.

OR

- 7) a) Design MOD-10 Asynchronous counter using JK flip-flop & Draw o/p waveforms.
- b) Difference between synchronous & Asynchronous counters.

UNIT – IV

8) a) Draw the PAL circuit to implement the logic functions listed below.

$$A(x, y, z) = \Sigma(1, 2, 3, 4)$$

$$B(x, y, z) = \Sigma(0, 1, 6, 7)$$

$$C(x, y, z) = \Sigma(2, 6)$$

$$D(x, y, z) = \Sigma(1, 2, 3, 5, 7)$$

b) Discuss the comparison between PROM, PLA, PAL.

OR

9) Briefly Explain about the following logic families

a) RTL

b) DTL

c) TTL

d) ECL

