

[6662]-202

F.Y. B.Sc. (Computer Science)

ELECTRONICS

ELC-151-T : Principles of Digital Electronics
(Revised 2024 Pattern) (Semester - II)

Time : 2 Hours]

[Max. Marks : 30

Instructions to the candidates:

- 1) All questions are compulsory.
- 2) Figures to the right indicate full marks.
- 3) Draw neat diagram whenever necessary.
- 4) Use of scientific calculator is allowed.

Q1) Answer the following questions: (Any 5)

[5×1=5]

- a) What is 2's (Two's) complement of a number "1000"?
- ~~b)~~ What is full form of ASCII code?
- c) Give truth table of 2i/p NAND gate.
- d) What is function of ALU?
- e) Define the term "minterm".
- f) What are the total number of cells present in 3 variable K-map?
- g) What is Encoder?

Q2) Answer the following questions: (Any 5)

[5×2=10]

- ~~a)~~ Draw Logic symbol and truth table of 2-i/p Ex-OR gate.
- ~~b)~~ Construct OR-gate using NAND gate.
- c) Convert the following number
 $(25)_{10} = (?)_2$
- ~~d)~~ Convert the following number
 $(35)_{10} = (?)_{\text{gray}}$
- e) Define propagation delay & Fanout with respect to Logic families.
- f) Prove that $\bar{A} + AB = \bar{A} + B$.
- g) Write 7 segment code for digit '3' considering common anode display.

R.T.O.

Q3) Answer the following questions: (Any 2)

[2×5=10]

- a) What is an Excess-3 code Do the following subtraction using 2's complement method. $(100)_{10} - (25)_{10}$.
- b) Simplify the following expression by K-map.

$$Y = \bar{A}\bar{B}\bar{C}D + \bar{A}BCD + \bar{A}BC\bar{D} + \bar{A}B\bar{C}D + A\bar{B}CD + A\bar{B}\bar{C}D + ABCD + ABC\bar{D}$$

- c) What is controlled inverter? Explain 4-bit universal Adder/subtractor.

Q4) Answer the following questions: (Any 2)

[2×2½=5]

- ~~a) Give comparison between TTL & CMOS Logic family Any 3 points.~~
- b) Draw neat diagram of 4 to 1 multiplexer & write its truth table.
- ~~c) Write a short note on K-map.~~
- d) State & prove De-morgans second theorem.

