

Question Bank (G scheme)

Name of subject: Principles of Digital Techniques

Subject code: 17320

Unit Test: I

Semester: 3G

Course: EJ/IS/IE

CHAPTER1: NUMBER SYSTEM (12 marks)

3 marks

- 1) Convert the following number to Decimal
 - a) $(110101)_2$
 - b) $(A4)_{16}$
- 2) Convert the following number in to Binary
 - a) $(736)_8$
 - b) $(2F9)_{16}$

4 marks

- 3) Convert the following number in to octal
 - a) $(247)_{10}$
 - b) $(A72)_{16}$
- 4) Convert the following number in to Hexadecimal
 - a) $(123)_8$
 - b) $(95)_{10}$
- 5) Perform the subtraction using $(45)_{10} - (47)_{10}$ using
 - a) 1's Complement method
 - b) 2's Complement method
- 6) Perform the following
 - a) $1001 * 1101$
 - b) $1001 / 0011$

Codes:

- 7) Add $(569)_{10}$ & $(687)_{10}$ in BCD
- 8) Convert the following in to BCD & subtract them using 9's & 10's compliment
 $(637)_{10} - (142)_{10}$
- 9) Convert (any one)
 - a) $(274.6)_{10}$ in to Gray code & XS-3 code.
 - b) $(10110.101)_2$ in to Gray code & XS-3 code.
- 10) Convert Binary to BCD $(110101)_2$ & $(101101)_2$ and add them .
- 11) State the rules for BCD Addition.

CHAPTER 2: LOGIC GATES AND INTRODUCTION TO LOGIC FAMILIES

(16 marks)

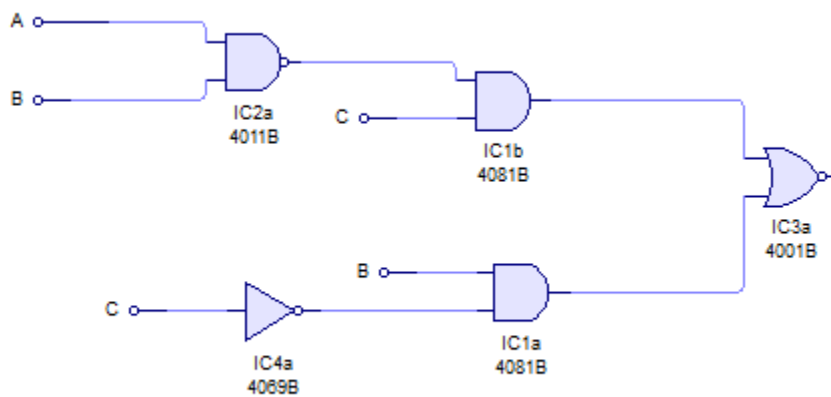
3 marks

- 12) Draw symbol & Truth Table for 2 inputs NOR gate.
13) Explain positive & negative logic in TTL.

4 marks

- 14) State & Prove DE Morgan's Theorem.
15) With sketch realize the expression $Y = (A+B)(B+C)$ using
a) NAND gate only.
b) NOR gate only
16) Identify the IC'S & Draw their PIN configuration.
a) IC 7486
b) IC 7402
c) IC 7432
d) IC 7408

17)



For the above diagram derive the Boolean Expression of Y. Simplify the equation and draw logic diagram using NAND GATE.

- 18) Construct the following Logic Gates (any one)
a) AND gate & EXOR gate using NOR gate
b) NOR gate & AND gate using NAND gate
19) Give any four characteristics of CMOS, TTL & ECL logic families. (Any 2)

CHAPTER 3: COMBINATIONAL LOGIC CIRCUITS (08 marks)

3 marks

20) Minimize the following SOP expression (ANY ONE)

a) $Y = \sum m(0,3,5,6,9,10,12,15)$

b) $Y = \sum m(0, 1, 2, 3, 11, 12, 14, 15)$

c) $Y = \sum m(1, 5, 6, 7, 11, 12, 13, 15)$

4 marks

21) Convert POS in to Canonical POS format (ANY ONE)

a) $Y = (A + B)(A + C)$

b) $Y = (\bar{A} + B)(B + \bar{C})(\bar{A} + \bar{C})$

c) $Y = (A + B)(A + C)(B + \bar{C})$

22) Convert SOP into Canonical SOP format (ANY ONE)

a) $Y = AB + A\bar{C} + BC$

b) $Y = (A.\bar{B}) + (\bar{B}.\bar{C})$

c) $Y = A + B$

23) Convert (ANY ONE)

a) SOP into POS $Y = A\bar{C} + AB$

b) POS into SOP $Y = (A + \bar{B})(B + C)$

24) Simplify following (ANY ONE)

a) $Y = \sum m(1, 3, 7, 11, 15) + d(0, 2, 5)$

b) $Y = \sum m(1, 4, 8, 12, 13, 15) + d(3, 14)$

25) Give the expression of the following using K-MAP & draw logic diagram.

a) FULL ADDER