

C. ABDUL HAKEEM COLLEGE (AUTONOMOUS),

MELVISHARAM - 632 509.

SEMESTER EXAMINATIONS, NOVEMBER - 2018

B.SC., COMPUTER SCIENCE / B.C.A., SEMESTER I
U15MCS101 / U15MCA101 – DIGITAL LOGIC AND
MICROPROCESSOR

Time: Three Hours

Maximum: 75 Marks

SECTION - A (10 X 2 = 20 Marks)

Answer **ALL** Questions.

1. Define nibble and byte.
2. How to represent a positive and negative sign in computers?
3. Convert the decimal number 225 to binary and octal.
4. How Excess-3 code works?
5. Draw the circuit for two input AND and OR gates.
6. State the commutative property of boolean algebra.
7. Define quad and octet.
8. Define multiplexer.
9. What is a microprocessor?
10. Mention the use of signals.

SECTION - B (5 X 5 = 25 Marks)

Answer **ALL** Questions.

11. a) Given the two binary numbers $X = 1010100$ and $Y = 1000011$, perform the subtraction of:
a. $X - Y$
b. $Y - X$ using 1's and 2's complements.
(Or)
b) Write about binary logic.
12. a) State and prove Demorgan's theorem.
(Or)
b) Write a short note on rules in boolean algebra.
13. a) Use K-map to simplify the following boolean expression
$$D = ABC + A'BC' + A'BC + ABC' + AB'C.$$

(Or)
b) Express $F = A + B'C$ in sum of products (SOP) and products of sum form (POS).
14. a) Explain the working of full adder with its truth table.
(Or)
b) Explain the working of full subtractor with its truth table.
15. a) Write about the working of status register in 8085.
(Or)
b) Write an assembly language program to add the contents of memory location 0050 and 0051 and store the sum in 0052.

SECTION - C (3 X10 = 30 Marks)

Answer **ANY THREE** Questions.

16. Write a note on the following:

- i) Gray code ii) Excess-3 code
- iii) Error detection code iv) Alphnumeric codes

17. Illustrate the working of digital logic gates with truth table.

18. Use Karnaugh Map to simplify the following Boolean expression.

$$F(W,X,Y,Z)=\Sigma(0,1,2,4,5,6,8,9,12,13,14)$$

19. Explain the working of RS and JK Flip flop with a neat sketch.

20. Draw and explain the architecture of 8085.
