

TB165425D

Reg. No.: .....

Name : .....

**B. Sc. DEGREE (C.B.C.S.S.) EXAMINATION, OCTOBER 2018**  
**(2016 Admission Regular & 2015 Admission Supplementary)**  
**SEMESTER V- CORE COURSE (PHYSICS)**  
**PH5B08TB - DIGITAL ELECTRONICS**

**Time: Three Hours**

**Maximum Marks: 60**

**PART A**

**I. Answer all questions. Each question carries 1 mark.**

1. Define nibble and byte.
2. What is Pair in Karnaugh map?
3. Simplify  $Y = \bar{A}Q + AQ$ .
4. A product of sum method leads to what kind of logic circuit?
5. What is a flip flop?

**(5 x 1 = 5)**

**PART B**

**II. Answer any five questions. Each question carries 2 marks.**

6. Describe full-adder with truth table.
7. Add +123 and -65 using 2's complement method.
8. Give a brief account of the working of OR gate using its diode equivalent circuit.
9. Simplify  $Y=A(A+B)$  and  $Y=A(\bar{A} + B)$
10. Write a brief note on digital IC families.
11. Explain sum of product method with an example.
12. Why NAND and NOR gates are considered as Universal gates.
13. Explain the characteristic features of serial IN- serial OUT shift register.

**(5x 2= 10)**

**PART C**

**III. Answer any five questions. Each question carries 5 marks.**

14. Show the 8-bit addition of these decimal numbers in 2's complement representation:  
(a)+45, +56      (b) +89, -34
15. What are the rules of binary addition and subtraction? Also, find  
(i) 0010 1001 + 0011 0101  
(ii) 0110 1010 - 0101 1011  
(iii) 0110 1001 + 0001 1011
16. Suppose a three variable truth table has a low output for the input conditions 000, 001

- and 010. If all other inputs are high what is the product of sum circuit?  
 17. Draw the sum of product and product of sum for given Karnaugh map;

	$\bar{C}\bar{D}$	$\bar{C}D$	$CD$	$C\bar{D}$
$\bar{A}\bar{B}$	0	0	0	0
$\bar{A}B$	0	0	0	1
$AB$	1	1	1	1
$A\bar{B}$	1	1	1	1

18. Prove that  $A(\bar{A} + C)(\bar{A}B + C)(\bar{A}BC + \bar{C})=0$   
 19. Briefly explain the working of binary adder-subtractor.  
 20. Compare the functionality of a RS flip flop and a T flip flop.  
 21. Explain the functioning of a decade counter.

(5 x 5 = 25)

### PART D

**IV. Answer any two questions. Each question carries 10 marks.**

22. What is Karnaugh Map? Simplify the Boolean expressions  
 (a)  $Y = m \sum(0,1,4,5,8,9,12,13)$   
 (b)  $Y = m \sum(0,1,4,5,6,8,9,12,13,14)$   
 23. Write a short note on (a) Half adder (b) Full adder.  
 24. Distinguish between demultiplexers and decoder. Explain working of 1 to 16 demultiplexer and decoder.  
 25. With necessary diagrams explain the functioning of A/D converter.

(2 x 10 = 20)