

(6 pages)

Reg. No. : .....

Code No. : 40603 E

Sub. Code : SACS 21/  
SASE 21

B.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2019.

Second Semester

Computer Science/Software Engineering – Allied

DIGITAL DESIGN

(For those who joined in July 2017 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Operands used for calculations may be expressed in \_\_\_\_\_ system.
  - (a) binary
  - (b) decimal
  - (c) octal
  - (d) hexadecimal

2. When a binary number has 4 bits it is called  
(a) byte (b) decimal  
(c) nibble (d) all the above
3. Bubbled AND gate is equivalent to  
(a) OR (b) NOR  
(c) NAND (d) NOT
4. The IC for NOT gate is  
(a) 7402 (b) 7404  
(c) 7408 (d) 7432
5. Boolean equation can be simplified by  
(a) SOP (b) POS  
(c) Both the above (d) none of the above
6.  $A + \overline{A}B$  is  
(a) A (b)  $\overline{A}$   
(c)  $\overline{B}$  (d)  $A + B$
7. Data selector is  
(a) multiplexor (b) demultiplexor  
(c) encoder (d) decoder

8. There is data input in  
(a) multiplexor (b) demultiplexor  
(c) encoder (d) decoder
9. \_\_\_\_\_ is called a latch.  
(a) Encoder (b) Decoder  
(c) Flipflop (d) Register
10. \_\_\_\_\_ is a group of Flipflop.  
(a) Encoder (b) Decoder  
(c) Register (d) Multiplexor

PART B — (5 × 5 = 25 marks)

Answer ALL the questions, choosing either (a) or (b).  
Each answer should not exceed 250 words.

11. (a) Write short note on Gray code.

Or

- (b) Convert FCA.3 into decimal.

12. (a) State and prove Demorgan's theorem.

Or

- (b) Distinguish between positive and negative logic.

13. (a) Using POS simplify  $\pi M(1, 2, 6)$ .

Or

(b) How will you convert SOP to POS?

14. (a) Define demultiplexor. Explain 1-8 demultiplexor.

Or

(b) With suitable diagram explain BCD to decimal decoder.

15. (a) Explain the function of master slave flipflop.

Or

(b) Describe universal register.

PART C — (5 × 8 = 40 marks)

Answer ALL the questions, choosing either (a) or (b)  
Each answer should not exceed 600 words.

16. (a) What are hexadecimal numbers. Give its application convert the following into hexadecimal numbers.

(i) 3648

(ii) 4823

Or

(b) (i) Explain ASCII code with example.

(ii) What is Excess-3 code? Give its importance.

17. (a) Explain all the basic gates with suitable diagram.

Or

- (b) What are universal gates? Explain its function.
18. (a) Draw the truth table and logic equation and hence logic circuit of  $\sum(3, 5, 6, 7)$ .

Or

- (b) Define K-map. Give its significance using K-map simplify
- $$F(A, B, C, D) = \sum(1, 3, 13, 11, 15, 9).$$
19. (a) Explain the function of encoders with suitable diagram.

Or

- (b) Using 2's complement find
- (i)  $-97 + 37$  (ii)  $-43 - 27$

20. (a) With suitable diagram explain the JK flipflop.

Or

(b) Explain the working function of serial in parallel out register.

---