PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

16. (a) Explain about Excess-3 and Gray codes.

Or

(b) Explain how the Boolean expression $Y = AB + CD$ can be drawn using.

(i) AND-OR circuit

(ii) NAND-NAND circuit

(iii) AND-OR-INVERT circuit.

17. (a) Simplify the following expression using Boolean algebra.

(i) $AB + A(CD + CD')$

(ii) $(BC' + A'D)(AB' + CD')$.

Or

(b) Simplify $Y = \overline{A}B\overline{C}D + \overline{A}BC\overline{D} + A\overline{B}C\overline{D}$.

18. (a) Explain the following :

(i) Half adder

(ii) Controlled inverter.

Or

(b) Discuss Both algorithm.

19. (a) Discuss about the RS flip flop and JK flipflop.

Or

(b) Explain Master-Slave flip flop.

20. (a) Briefly describe the functions of computer register.

Or

(b) Discuss about parallel in serial out.

———————

Reg. No. : .....

Code No. : 41404 E **Sub. Code : SACS 21/ SASE 21**

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 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. What is the decimal value of binary 1011.11?

(a) 11.0 (b) 11.75

(c) 11.25 (d) 11.01

2. A toggle operation cannot be performed using a single ———— gate.

(a) NOR (b) AND

(c) NAND (d) XOR

3. What is A * A, if * is a Boolean operation defined by A * B = AB + A'B'?

(a) A (b) B

(c) Δ (d) 1

4. $x + xy =$ _____.
   (a) y (b) 1
   (c) 0 (d) x

5. The 2's complement of 1011000 is _____.
   (a) 0100111 (b) 0010100
   (c) 1001001 (d) 1010010

6. The binary subtraction of two number to produces result as _____.
   (a) 10 (b) 11
   (c) 1 (d) 0

7. Find the odd one out _____.
   (a) RS flipflop (b) JP flipflop
   (c) D flipflop (d) Master slave flipflop

8. A group of flip-flops sensitive to pulse is called a _____.
   (a) Resister (b) Gate
   (c) Catch (d) Decoder

9. MRI stands for _____.
   (a) Memory Reference Instruction
   (b) Memory Register Instruction
   (c) Memory Reference Integration
   (d) Memory Register Instruction

10. Ripple counter is _____ counter.
    (a) Synchronous (b) Asynchronous
    (c) Serial (d) Parallel

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Do the following :
    (i) Convert $(0.6875)_{10}$ to binary
    (ii) Convert $(0.513)_{10}$ to octal.

    Or

    (b) Which gates are called a universal logic gates? Why?

12. (a) What is a constructor? Write down the characteristics of constructor function.

    Or

    (b) Write short notes on : Encoders.

13. (a) Explain the features of Member functions.

    Or

    (b) Discuss in detail 2's complement arithmetic with examples.

14. (a) Discuss the principle of clocked RS flipflops.

    Or

    (b) What is D flip-flop? Explain.

15. (a) Write about serial in-parallel out shift register.

    Or

    (b) What are the types of registers? Explain.