19. Explain how a full adder can be built using two half adders.

20. Design the BCD Ripple Counter with using state diagram and logic Diagram.

S.No. 5213 **16 SCCCA 7**

(For candidates admitted from 2016–2017 onwards)

B.Sc. DEGREE EXAMINATION, APRIL 2022.

Part III — Computer Applications — Major

DIGITAL COMPUTER FUNDAMENTALS

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20)

Answer ALL questions.

1. List the different number systems?

2. Convert gray code 101011 into its binary equivalent.

3. Define Binary logic.

4. What is a Logic gate?

5. Define 'Min term' and 'Max term'.

6. What is a Karnaugh map?

7. Define Multiplexer.

8. Define Decoder.

9. State the types of sequential circuits?

10. Define Shift registers.

PART B — (5 × 5 = 25)

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

11. (a) Explain briefly about the Binary Arithmetic with example.

Or

(b) Convert the following :

(i) $(118.75)_{10} = (\ ?\ )_2$.

(ii) $(1010000.1010)_2 = (\ ?\ )_{10}$.

12. (a) Explain the positive and negative Logic and Logic characteristics.

Or

(b) Simplify the following expression :

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

13. (a) Express the following Boolean functions in sum of minterms.

$F = A'C + A'B + AB'C + BC$.

Or

(b) Discuss briefly about the don't care condition.

14. (a) Explain the four bit parallel adder with a diagram.

Or

(b) Explain a 1 * 16 bit multiplexer with truth table.

15. (a) What is the operation of RS flip-flop? Explain with TT.

Or

(b) What is a master-slave flip-flop? What are the operations of JK flip-flop?

PART C — (3 × 10 = 30)

Answer any THREE questions.

16. Briefly discuss the error detection and correction methods.

17. Discuss the basic and universal logic gates with Truth Table.

18. Explain the Minimization Technique and simplify using K-map.

$F(W, X, Y, Z) = (4, 5, 10, 11, 14, 15)$.