18. Explain the functions of an 8 : 1 multiplexer.

19. Draw the logic diagram of a hexadecimal up counter and explain the operation.

20. Draw the block diagram of a dual slope ADC and explain the conversion process.

S.No. 1868 **12UEL02**

(For the candidates admitted from 2012-2013 onwards)

B.Sc. DEGREE EXAMINATION, NOVEMBER 2017.

Second Semester

Electronics and Communication

APPLIED DIGITAL ELECTRONICS

Time : Three hours Maximum : 75 marks

SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Find the decimal equivalent of $(24)_8$.

2. Convert $(95)_{10}$ into Excess-3 code.

3. What is the dual theorem of $A \cdot \overline{A} = 0$?

4. $1101 + 1000 = ?$

5. Draw the logic symbol and truth table of OR gate.

6. What is a full adder?

7. Draw the truth table of a D-flip flop.

8. What is a register?

9. Mention the different types of ADC.

10. Find the resolution of an 8-bit DAC.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Convert the decimal number 127 into following codes.

(i) Binary

(ii) BCD

(iii) Hex.

Or

(b) Explain Binary to Gray and Gray to Binary conversion.

12. (a) Perform the following Binary operations.

(i) 10000 – 01111

(ii) 1010 × 110

(iii) 1100 ÷ 0011.

Or

(b) State and prove demorgan's theorem.

13. (a) Realize the basic logic gates using NOR gate.

Or

(b) Explain the functions of a 3-to-8 line decoder.

14. (a) Describe the function of an RS flip flop.

Or

(b) Explain the operation of a 4-bit ring counter.

15. (a) Explain the working principle of a 4-bit weighted resistor DAC.

Or

(b) Draw the block diagram of a counter ramp ADC and explain the operation.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Perform the following conversions

(a) $(101011101)_2 =$ ——————$_{10}$

(b) $(2060)_{10} =$ ——————$_{16}$

(c) $(3764)_8 =$ ——————$_2$

(d) $(1011\ 0001\ 1001\ 01)_2 =$ ——————$_{16}$.

17. Minimize the following logic function using k-map $y = \Sigma m(0,2,3,6,7) + \Sigma d(8,10,11,15)$.