1231

Code : 15EE34T

Register Number | | | | | | | |

III Semester Diploma Examination, Nov./Dec. 2017

DIGITAL ELECTRONICS

Time : 3 Hours] **[Max. Marks : 100**

Note : (i) Answer any **six** questions from Part – A. Each question carries **5** marks.
(ii) Answer any **seven** questions from Part – B. Each question carries **10** marks.

PART – A

1. Define IC and list the advantages of IC over discrete components. **5**

2. Explain ASCII and gray codes. **5**

3. Write rules of Boolean algebra. **5**

4. Explain OR & NAND gates with logic diagram, Boolean function and truth table. **5**

5. Define multiplexer. List its applications. **5**

6. Explain Half adder with block diagram, truth table and logic diagram using AND & XOR gates. **5**

7. Explain the operation of 4 bit SISO shift register. **5**

8. Explain the working of JK flip-flop using NAND gates. **5**

9. Explain CMOS interfacing with switch and LED. **5**

PART – B

10. (a) List the advantages and disadvantages of CMOS. **5**
(b) (i) Add $(78)_{10}$ and $(98)_{10}$ in Binary. **3**
(ii) $(AC6)_{16}$ & $(B59)_{16}$ **2**

[Turn over

11. (a) Perform binary subtraction using 2's complement and justify the answer. **6**
    (i) $(0100)_2$ from $(1010)_2$
    (ii) $(111001)_2$ from $(100011)_2$
    (b) Convert the following binary numbers into decimal equivalent. **4**
    (i) 10101.101_2
    (ii) 10110101_2

12. (a) Define parity bit and mention its importance. **5**
    (b) State De-Morgan's theorem with equations. **5**

13. (a) Simplify Boolean expression using K-map and draw the logic diagram.
    $F = \bar{A}\,\bar{B}\,\bar{C} + \bar{A}B\bar{C} + ABC + A\bar{B}C$ **6**
    (b) Explain the commutative and associative laws of Boolean algebra. **4**

14. (a) Explain the working of 10 line to 4 line priority encoder 74147. **8**
    (b) Define combinational logic circuit. **2**

15. (a) Explain the working of 1 : 4 DEMUX with block diagram, truth table and logic diagram. **5**
    (b) Explain seven segment display with a diagram. **5**

16. (a) Explain the working of clocked RS flip-flop using NAND gates. Write the truth table. **6**
    (b) Define level and edge triggering. **4**

17. (a) Explain the working of 4 bit binary asynchronous counter using JK flip-flops with block diagram, truth table and timing diagram. **8**
    (b) List the applications of counters. **2**

18. (a) Explain the working of 3 bit synchronous up counter. **6**
    (b) Define DAC & list the types. **4**

19. (a) Explain the operation of successive approximation ADC with block diagram. **7**
    (b) List the types of memories. **3**