1657

Code : 15EE34T

Register Number | | | | | | | | | | |

III Semester Diploma Examination, April/May-2019

DIGITAL ELECTRONICS

Time : 3 Hours] [Max. Marks : 100

Instruction : (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 : 5
   (i) Fan-out
   (ii) Propagation delay
   (iii) Operating temperature
   (iv) Power dissipation
   (v) Positive logic

2. (i) List the various number systems with their radix. 4
   (ii) Define bit and byte. 1

3. List the characteristics of TTL logic family. 5

4. Define Multiplexer. List applications of it. 5

5. What is logic gate ? Write symbol and truth table of AND & XOR gates. 5

6. Explain half adder with truth table. 5

7. Draw the RS flip-flop logic diagram using NAND gates with truth table. 5

8. Define shift register. Mention the applications of shift registers. 5

9. What is interfacing ? Explain interfacing of TTL with switch. 5

PART – B

10. (a) Define parity bit and explain its importance. 4

(b) Add the following : 6

(i) $78_{10} + 98_{(10)} = ?$ BCD

(ii) $1101.101_{(2)} + 111.011_{(2)} = ?$

(iii) $6E_{(16)} + C5_{(16)} = ?$

11. Find the value of 'X' in the following : 10

(i) $93_{(10)} = X_{(2)}$

(ii) $498_{(10)} = X_{(16)}$

(iii) $110.0110_{(2)} = X_{(10)}$

(iv) $B2F8_{(16)} = X_{(10)}$

(v) $AC.6_{(16)} = X_{(2)}$

12. (a) Realize the NAND gate as NOT, AND & OR gate. 5

(b) State Demorgan's theorem with equations. 5

13. (a) What is K-map ? Define POS and SOP terms. 6

(b) Simplify Boolean expression : 4

$Y = \bar{A}\bar{B}C + \bar{A}B\bar{C} + \bar{A}BC + ABC + A\bar{B}C$

14. (a) Define Demultiplexer. Explain operation of 1 : 4 demultiplexer. 5

(b) Explain the working of 10 line – 4 line 74147 IC with pin diagram and truth table. 5

15. (a) Define Encoder and Decoder. 4

(b) List and explain the types of seven segment display with working. 6

16. (a) Explain the working of 4-bit binary synchronous counter using JK flip-flop with block diagram, truth table and timing diagram. 8

(b) Define flip-flop. 2

17. (a) Explain the operation of SISO shift register with truth table and block diagram. 6

(b) List the applications of flip-flops. 4

18. (a) Explain the operation of binary weighted register type DAC. 5

(b) Define Memory. List the types. 5

19. (a) Explain the working of JK flip-flop using NAND gates with truth table. 6

(b) Explain interfacing of CMOS with relay. 4