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Roll No.

Total No. of Pages : 2

BT-4/J07

8655

Digital Electronics

Paper : EE-204-E

Time : Three Hours]

[Maximum Marks : 100

Note :- Attempt FIVE questions, selecting at least ONE from each unit.

UNIT-I

- 1. (a) Differentiate between XOR and XNOR gates. Derive their boolean equations and their logic circuits. Write the truth table of 3-Input XOR and XNOR gates. 10
- (b) Differentiate between Excess-3, Gray and Error detection and Correction Codes. How the Error detection and the Correction Codes are implemented for error and correction ? 7
- (c) What is the difference between Positive logic and Negative logic ? What is the concept of noise margin in binary states. 3
- 2. (a) State and prove De-Morgan's Theorem. 4
- (b) Make the conversions of :
 - NAND to NOT
 - NAND to OR
 - NOR to NAND
 - AND to OR. 8
- (c) What is the difference between Binary number and the BCD number ? 4
- (d) What is the difference between Binary system and Octal no. system ? 4

UNIT-II

- 3. (a) What is the concept of overlapping and Redundant group in the K-map ? Explain with an example. 5

- (b) Discuss in detail 2's complement Adder Subtractor Unit with its Block diagram consisting of full Adders. 10
- (c) What is the difference between Parallel Adders and Serial Adders ? Explain. 5
4. (a) Discuss the multiplexer with its logic circuit and explain its applications. 10
- (b) What is the difference between Decoders and Encoders ? Explain Encoder circuit in detail with its logic diagram. 10

UNIT-III

5. (a) What is the difference between race condition and undefined state ? How the Race condition is removed in JK Flip Flop ? Explain. 8
- (b) Draw the circuit of MOD-9 counter asynchronous mode and explain. 8
- (c) Write the applications of counter. 4
6. (a) Discuss the R-2R ladder DAC in detail. Discuss the advantages of R-2R ladder over Binary Weighted Resistive Type Network. 10
- (b) Discuss the Successive Approximation Type ADC. 10

UNIT-IV

7. (a) What are the advantages of TTL over DTL ? How these advantages come in TTL ? Explain in detail with the help of TTL circuit. 10
- (b) What is the three state switch ? Discuss its circuit with its application in computers. 10
8. (a) What is the difference between static and dynamic CMOS logic ? Discuss with Inverter circuit. 10
- (b) DCTL is considered to be a low powered logic family. Why ? Explain with a logic circuit. While HTL is High Powered, why ? Explain with logic circuit. 10