April 2025

<u>Time - Three hours</u> (Maximum Marks: 100)

- [N.B. Answer all the questions, choosing any two subdivision from each question. Each subdivision carries 10 marks.]
- 1. (a) Convert the decimal number (38)₁₀ into the equivalent binary number, octal number and hexa-decimal number.
 - (b) Discuss about the ASCII and Unicode binary code standards.
 - (c) Explain the AND, Ex-OR and NAND logic gates with truth table and logic diagram.
 - (d) Realise Ex-OR and OR gate using NOR gate.
- 2. (a) Discuss about simplification of three variable logic function using K-maps with an example.
 - (b) Describe about full subtractor with its circuit diagram.
 - (c) Explain the working of 4 to 10 line decoder with its circuit diagram.
 - (d) Write a note on digital comparator.
- 3. (a) Discuss about the types of flip flops.
 - (b) Describe about serial to parallel conversion and parallel to serial conversion in shift registers.
 - (c) Explain the working of synchronous down counter.
 - (d) Discuss about the decade counter with neat diagram.

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- 4. (a) Describe about sensors and its types.
 - (b) Write about the successive approximation A/D converter.
 - (c) Discuss about R-2R ladder D/A converter with neat circuit diagram.
 - (d) Write a note on motor and solenoid.
- 5. (a) Define the following: memory read, memory write, access time and memory capacity.
 - (b) Describe about the operations of SD card and solid state hard drive.

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- (c) Describe about PLA architecture with its diagram.
- (d) Explain about the types of Random Access Memory (RAM).

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