1933

April 2025

Time – Three hours
(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.

[Turn over.....

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.

(c) Describe about PLA architecture with its diagram.

(d) Explain about the types of Random Access Memory (RAM).
