(3 Hours)   [Total Marks: 80]

N.B. : (1) Question No 1 is Compulsory.
          (2) Attempt any three questions out of the remaining five.
          (3) All questions carry equal marks.
          (4) Assume suitable data, if required and state it clearly.

1 Attempt any FOUR   [20]

   a Compare between SCR and DIAC

   b Draw and Explain low pass filter

   c What is an operational amplifier? Explain its characteristics

   d Differentiate between microprocessor and microcontroller

   e State and prove De-Morgan's theorems

2 a. Explain 180 degree mode of operation of inverter   [10]

   b. Explain the architecture of MSP 430 microcontroller   [10]

3 a. Draw the circuit diagram of astable multivibrator and explain its operation.   [10]

   b. Define and Explain specification parameter of digital logic family.   [10]

4 a. Explain the working principle of single phase bridge inverter circuit.   [10]

   b. List various speed control methods of induction motor. Explain voltage control
       method with a suitable diagram.   [10]

5 a. What is a 555 timer? Write its applications and explain astable multivibrator with
       associated circuit diagram and waveforms.   [10]

   b. Write difference between assembly programming and C programming also write the
       applications of microcontroller as Speed Measurement using Proximity Sensor. [10]

6 a. Write a note on   a) BLDC Motor   b) Servo Motor   [10]

   b. Draw and explain the working of multiplexer and de-multiplexer.   [10]

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