

Duration: 3hrs

[Max 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 Draw characteristics of power BJT, power MOSFET & IGBT
 - b Explain equivalent circuit of an OP-AMP.
 - c Implement basic gates using NAND gate.
 - d List the features of MSP 430.
 - e Compare AC and DC motors.
- 2 a What is GTO? Explain switching characteristics of GTO. **[10]**
- b Explain BLDC motor. State its advantages. **[10]**
- 3 a Draw and explain Astable mode of operation of IC 555. **[10]**
- b Explain the different peripherals of MSP430 microcontroller. **[10]**
- 4 a Compare CMOS logic family with TTL logic family. **[10]**
- b Draw and explain single phase full wave fully controlled rectifier with the help of waveforms for R load. **[10]**
- 5 a Explain the application of piezo-electric actuator drive. **[10]**
- b Draw and explain the circuit diagram and waveforms of single-phase bridge inverter with R load. **[10]**
- 6 a Explain instrumentation amplifier. State its advantages and disadvantages. **[10]**
- b Draw and explain UJT triggering method of SCR. **[10]**