

(3 Hours)

[Total Marks : 80]

- N.B: (1) Question no.1 is **compulsory**
 (2) Solve any **three** from remaining questions
 (3) Assume **suitable** data if necessary
 (4) **Figures** to the right indicate full marks

1. Solve any 4: 20
- (a) State and prove DeMorgan's theorem.
 (b) Draw the characteristics of power BJT, power MOSFET and IGBT.
 (c) Mention the importance of Instrumentation amplifier and Voltage Follower.
 (d) Compare A.C and D.C motors.
 (e) Explain basic principle of single phase inverter.
2. (a) Draw and explain block diagram of closed loop speed control of DC motor. 7
 (b) Write a short note on selection of motors for various industrial applications. 7
 (c) Compare SCR and TRIAC. 6
3. (a) With neat circuit diagram and waveforms, explain single phase full wave half controlled rectifier circuit supplying a resistive load. 7
 (b) Draw and explain architecture of MSP430 microcontroller 7
 (c) Describe in detail Low Pass filter. 6
4. (a) Draw circuit diagram and waveform of 3 phase bridge inverter with R load (180 degree mode of conduction) 7
 (b) Explain the working principle of a GTO with proper diagram. 7
 (c) Compare Monostable and Astable multivibrators. 6
5. (a) Explain UJT triggering method of SCR. 7
 (b) What is a flip flop? Explain the different types of flip flops. 7
 (c) Compare microprocessor and microcontroller. 6
6. (a) Explain the application of microcontroller in Piezoelectric Actuator Drive. 7
 (b) Explain any one method for the speed control of A.C induction motors. 7
 (c) Write a short note on Multiplexer and Demultiplexer. 6
