

(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) Draw an inverting and non- inverting amplifier. Write their gain equations.
 (b) Draw the VI characteristics of SCR and define the terms latching current and holding current.
 (c) Implement basic gates using NAND gate.
 (d) What is BLDC motor? List its applications.
 (e) Compare microprocessors and microcontrollers.
- 2.(a) Draw and explain single phase full wave fully controlled rectifier with the help of waveforms for R load. 7
 (b) Illustrate how a DIAC- TRIAC pair can be used for controlling the illumination of a bulb. 7
 (c) Compare AC and DC motors. 6
- 3.(a) Explain Instrumentation amplifier. List its applications. 7
 (b) With neat circuit diagram and waveforms, explain the working principle of single phase bridge inverter circuit. 7
 (c) Select motors for medium power pump and conveyor applications. 6
- 4.(a) List the different applications of a microcontroller. Explain any one in detail. 7
 (b) Explain with block diagram IC555 timer as monostable multivibrator. 7
 (c) Explain GTO. How does it differ from an SCR. 6
- 5.(a) Classify the commutation methods of SCR. Explain any one in detail. 7
 (b) Explain encoder and decoder in digital circuits. Enlist their applications. 7
 (c) Give an overview of a generic microprocessor. 6
- 6.(a) Explain the different peripherals of MSP430 microcontroller. 7
 (b) Explain 180° mode of conduction for a three phase bridge inverter circuit. 7
 (c) With respect to digital circuits, define the following terms: Noise Immunity, Fan Out and Propagation Delay. 6