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	Write note on BLDC Motor.	**[05]**
	b	What is the necessity of inner current loop control circuit for speed control of DC motor	**[05]**
	c	Draw and explain Architecture of generic microprocessor.	**[05]**
	d	Draw and explain Low Pass Filter.	**[05]**
	e	Realize X-OR gate by NAND gate.	**[05]**
2	**a**	With neat circuit diagram and waveforms, explain single phase full wave half controlled rectifier circuit supplying a resistive load	**[10]**
	b	Draw V-I characteristic of SCR and Explain any one force commutation method of SCR.	**[10]**
3	**a**	What is MOSFET? Explain its working .What are similarities between MOSFET and IGBT?.	**[10]**
	b	Draw and explain the working of multiplexer and de- multiplexer.	**[10]**
4	**a**	Explain with the help of a neat circuit diagram how diac can be used to trigger a traic. What are the applications of this circuit?	**[10]**
	b	What are similarities and dissimilarities of microprocessor and micro-controller ?	**[10]**
5	**a**	List various speed control methods of induction motor. Explain voltage control method with a suitable diagram.	**[10]**
	b	Explain the working principle of single phase bridge inverter circuit.	**[10]**
6	**a**	What are inverting and non-inverting amplifiers? Write their gain equations. Draw the circuit diagram for OPAMP as summing amplifier and also write its output voltage equation.	**[10]**
	b	Draw and explain functional diagram of MSP430 micro-controller.	**[10]**

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