 Duration: 3hrs 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. 		ion: 3hrs [Max Marks:8	Marks:80]	
		(2) Attempt any three questions out of the remaining five.(3) All questions carry equal marks.		
1		Attempt any FOUR	[20]	
	a	Explain the forward bias mode of operation of the P-N junction diode with neat sketch.	the contraction of the contracti	
	b	Explain the operation of the light emitting diode (LED) with neat sketch.		
	c	Compare or differentiate between clipper & clamper circuits.		
	d	Derive an expression for the ripple factor (γ) of a full wave bridge type rectifier.	4	
	e	Explain the operation of capacitor (C) type filter with neat sketch.		
2	a	Describe the working or operation of a bridge type full wave rectifier with a neat sketch. Draw the input voltage & output voltage waveforms.	[10]	
	b	With a neat sketch, explain the Zener diode as a voltage regulator. Describe its operation for both, varying load resistance with a constant DC supply voltage &	[10]	
	6	a varying DC supply voltage with a constant load resistance.		
3	a	With appropriate mathematical analysis, explain the effect of temperature on the P-N junction diode V-I characteristics.	[10]	
	b	Explain with the help of neat diagram explain the working of combinational clipper circuit using appropriate waveforms.	[10]	
4	a	Describe the V-I & transfer characteristics of N-channel junction field effect transistor (JFET).	[10]	
	b	What are memristors? Explain the operating principle, construction & working	[10]	
	6	of memristors with a neat sketch.		
5	a	With a neat sketch, write a short note on solar cell describing its structure or construction, working & V-I characteristics.	[10]	
	Ъ	Draw circuit diagram and explain the operation of different biasing circuits used for E-MOSFET.	[10]	
6	a	Explain construction and working principle of Single Electron Transistor.	[10]	
U	b	Draw all the different biasing circuits of BJT. Derive the expression of stability factor (S_I) for the voltage divider biasing circuit.	[10]	