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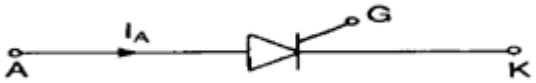
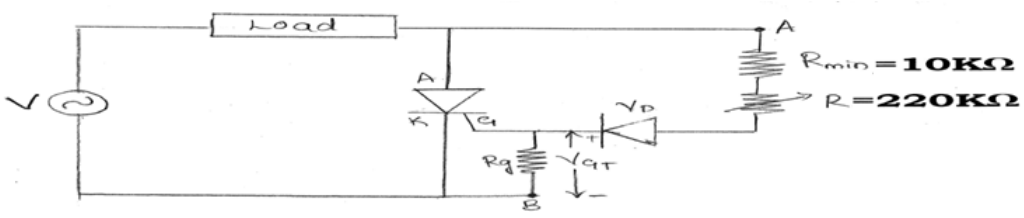
(Accredited by National Assessment & Accreditation Council (NAAC) with 'A' grade)

Department of Electronics & Communication Engg.

Continuous Internal Evaluation – I

Course Name : **POWER ELECTRONICS & APPLICATIONS**	Date :	16/06/2021
Course Code : 18EC6DECPE	Day :	Wednesday
Semester : 6	Timings :	11:15 to 12:45PM
Max Marks : 50 M	Duration :	1½ Hrs.

No.		Question Description	Mks	CO & Levels
Q1	(a)	The symbol shown below is a _____.  i) BJT ii) SCR iii) Rectifier iv) MOSFET	1	
	(b)	SCR is a _____ layer _____ device. i) 4,3 ii) 3,4 iii) 4,4 iv) 3,3	1	
	(c)	Commutation is the process of _____ a thyristor. i) turning on ii) turning off iii) turning on and off iv) All of these	1	
	(d)	Forced commutation takes place when the supply voltage is_____. i) Both AC and DC ii) DC iii) AC iv) AC/DC	1	
	(e)	DC to DC converter is also called _____. i) Rectifier ii) Inverter iii) Copper iv) Chopper	1	
	(f)	Inverter used for home UPS is a good example for_____. i) DC-AC converter ii) AC-AC converter iii) AC-DC converter iv) DC-AC and vice versa	1	
	(g)	Natural commutation takes place when the supply voltage is_____. i) Both AC and DC ii) DC iii) AC iv) AC/DC	1	
	(h)	The three terminals of UJT are _____. i) E1, S1, D2 ii) E1, B1, C1 iii) E1, E2, B1 iv) E, B1, B2	1	
	(i)	_____ firing circuit has firing angle range from 0 to 90 degrees. i) R ii) RC iii) RRC iv) UJT	1	
	(j)	The most commonly employed method to turn on a thyristor is _____ turn ON. i) Source ii) Gate iii) Drain iv) Substrate	1	
Q2		What is Power electronics? Give the classification of power semiconductor devices and explain the different types of power diodes in brief.	10	CO3, L3
Q3		Define the following parameters with respect to the operation of SCR: i) Latching current ii) Holding current. Also explain the control characteristics of SCR and GTO with neat circuit diagrams and waveforms.	10	CO2, L1
Q4		With neat circuit diagram and waveforms explain the working principle of UJT relaxation oscillator. Also derive the expression for periodic time T.	10	CO1, L1

		OR		
Q5		What is a power converter? List the different types of power electronic circuits. Also mention one application of each type.	10	CO1, L2
Q6		Explain the two transistor model of SCR with neat circuit diagram and waveforms.	10	CO2, L2
		OR		
Q7	a)	For the thyristor circuit shown below, the gate voltage required to trigger is 0.7V and the corresponding gate current is 250μA. If the diode is of silicon make and the input voltage V=100sinwt, find the firing angle α at which the thyristor will turn on.  	5	CO1, L2
	b)	Write a note on i) Natural commutation ii) Forced commutation	5	