# CONTINUOUS INTERNAL EVALUATION– 1

| Dept:EC | Sem / Div:3rd ,A&B | Sub:Power Electronics and Instrumentation | S Code:18EC36 |
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| Date:21-10-2020 | Time: 2:30-4:00 PM | Max Marks:50 | Elective:N |
| Note: Answer any 2 full questions, choosing one full question from each part. | | | |

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| QN | | Questions | Marks | RBT | COs |
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| | | **PART A** | | | |
| 1 | a | Describe the different modes of operation of a thyristor with the help of its static V-I characteristic. | 9 | L2 | CO1 |
| | b | Mention and explain different thyristor turn-on methods.Mention the advantages of gate triggering. | 8 | L2 | CO1 |
| | c | Define Power Electronics and explain power electronic system with block diagram. | 8 | L2 | CO1 |
| | | **OR** | | | |
| 2 | a | In detail explain the two transistor model of a transistor. | 9 | L3 | CO1 |
| | b | The latching current of a thyristor circuit is 50mA.The duration of the firing pulse is 50μSec.Given Vs=100v,R=20Ω and L=0.5H are connectedbin series.Will the thyristor device gets turned on? | 7 | L2 | CO1 |
| | c | Explain with circuit diagram and waveforms,how Resistance triggering circuit turns on(trigger) SCRs. | 9 | L2 | CO1 |
| | | **PART B** | | | |
| 3 | a | Explain with the help of neat circuit diagram and waveforms,the operation of a single phase half wave controlled rectifier with resistive load.Derive an expression for the:i)Average load voltage ii)Average load current iii)RMS load voltage. | 10 | L2 | CO2 |
| | b | Explain with an example different types of power electronic converters. | 6 | L2 | CO1 |
| | c | A single phase half wave controlled rectifier has a purely resistive load of R and the delay angle is α=Π/3.Determine i)Rectification efficiency ii)Form factor iii)Ripple factor iv)Transformer utilization factor. | 9 | L2 | CO2 |
| | | **OR** | | | |
| 4 | a | Explain the operation of self commutation by resonating load [Class A] with relevant circuit and waveforms. | 9 | L2 | CO1 |
| | b | With the help of neat circuit diagram describe the operation of single phase full converter with Resistive load. Draw the associated waveforms. And also derive the expression for average load voltage. | 9 | L3 | CO2 |
| | c | Draw the gate characteristic of an SCR and explain it. | 7 | L2 | CO1 |