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B—347—2019

FACULTY OF SCIENCE

B.Sc. (Third Year) (Fifth Semester) EXAMINATION

MARCH/APRIL, 2019

(CBCS Pattern)

ELECTRONICS

Paper-XIII

(Power Electronics-I)

(Monday, 15-4-2019)

Time : 10.00 a.m. to 12.00 noon

Time—2 Hours

Maximum Marks—40

- N.B. :-** (i) All questions are compulsory
(ii) All questions carry equal marks.

1. Attempt any four : 8
- (a) Draw the schematic symbol and characteristics of SUS.
 - (b) What is forward breakover voltage (V_{BO}) ?
 - (c) What is pulse transformer ?
 - (d) Define string efficiency.
 - (e) Why are SCRs connected in series ?
 - (f) Enlist any four power semiconductor devices.
2. Attempt any two of the following : 8
- (a) Explain gate characteristics of SCR.
 - (b) Draw neat structural diagram of insulated gate BJT (IGBT) and explain its operation.
 - (c) Explain the following terms on methods of SCR :
 - (i) dv/dt triggering.
 - (ii) Radiation (Light) triggering.

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3. Attempt any *one* of the following : 8
- (a) Obtain an expression for anode current of SCR by using two transistor analogy of SCR.
 - (b) Explain construction and working of :
 - (i) Depletion enhancement MOSFET.
 - (ii) Enhancement MOSFET.
4. Attempt any *two* of the following : 8
- (a) With a neat circuit diagram explain resistance capacitance full wave trigger circuit.
 - (b) Explain methods of ensuring proper current sharing in parallel connected SCRs.
 - (c) Explain the use of pulse transformer in triggering circuits.
5. Attempt any *one* of the following : 8
- (a) Explain in detail static equalising network. Obtain formula for resistance to be connected in parallel with each SCR.
 - (b) Explain in detail the resistance firing circuit.

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