



**WEST BENGAL STATE UNIVERSITY**  
B.Sc. Honours 5th Semester Examination, 2021-22

**ELSADSE01T-ELECTRONICS (DSE1/2)**

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.  
Candidates are required to give their answers in their own words as far as practicable.  
All symbols are of usual significance.*

**GROUP-A**

1. Answer any **five** questions from the following: 2×5 = 10
- (a) What is the difference between power diodes and general-purpose diodes?
  - (b) Write down some applications of Power BJTs.
  - (c) What is the holding current in SCR?
  - (d) Power MOSFET is a voltage controlled device — Explain.
  - (e) How does forced commutation differ from natural commutation in connection to switching off a thyristor?
  - (f) What is meant by step-up and step-down chopper?
  - (g) What are the basic features of Bridge Inverters?
  - (h) DIAC can act as AC Switch — Explain.

**GROUP-B**

**Answer any six questions from the following** 5×6 = 30

2. (a) Draw the I-V characteristics of Power BJT. 1
- (b) Briefly explain hard saturation region and quasi-saturation region. 2+2
3. With a neat diagram, explain the principle of operation of a Snubber Circuit. 5
4. (a) Why power MOSFET is a better option over Power BJT? 2
- (b) Discuss this in the light of 'Second Breakdown' phenomenon. 3
5. With the help of basic structure, briefly discuss the working principle of an insulated gate bipolar transistor. 5

6. Draw and explain the working principle of phase controlled full-wave rectifier using SCR. 5
7. With a neat diagram, explain the operation of a dimmer circuit where a DIAC is used to trigger a TRIAC. 5
8. Derive an expression of induced emf for a DC motor. 5
9. Write a short note on Jones Chopper. 5

**N.B. :** *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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