

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2018

**POWER ELECTRONICS**

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Define holding current.
2. List any two applications of UJT.
3. List any two speed control methods of  $3\phi$  induction motor.
4. Define inverter.
5. Write any two comparison between SMPS and linear power supply. (5×2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Describe the operation of DIAC.
2. Discuss the two transistor analogy of SCR.
3. Explain with circuit diagram and necessary wave forms the working of parallel inverter.
4. Discuss the working of full wave RC firing circuit for SCR.
5. Explain single phase full converter DC drives.
6. Explain the working of OFFLINE UPS
7. Draw and explain the block diagram of static servo stabilizer. (5×6 = 30)

## PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

## UNIT — I

- III (a) Explain the different triggering methods of SCR. 8  
 (b) Explain the characteristics of UJT. 7

OR

- IV (a) Explain the working of N - channel JFET. 8  
 (b) Explain the VI characteristics of SCR. 7

## UNIT — II

- V (a) Describe with circuit diagram and necessary wave forms the working of single phase bridge converter with RL load and freewheeling diode. 8  
 (b) Explain the variable frequency control used in choppers. 7

OR

- VI (a) Describe with circuit diagram and necessary wave forms the working of single phase half wave converter with R load. 8  
 (b) Explain the working of full bridge inverter. 7

## UNIT — III

- VII (a) Explain the v/f control of three phase induction motor. 8  
 (b) Explain the single phase semi converter DC drives. 7

OR

- VIII (a) Describe the concept of induction cooking system control. 8  
 (b) Explain the stator frequency control of three phase induction motor. 7

## UNIT — IV

- IX (a) With the help of block diagram describe the working of SMPS. 8  
 (b) Describe the working of ONLINE UPS. 7

OR

- X (a) Explain the working of boost converter. 8  
 (b) Describe the specifications of UPS. 7