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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, APRIL - 2025

POWER ELECTRONICS

[Maximum Marks: **100**]   [Time: **3** Hours]

PART-A
[Maximum Marks: **10**]

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

1. Define latching current.

2. Draw the symbol of SCR and BJT.

3. Mention the classification of inverter.

4. List any two methods of speed control of induction motor.

5. List the classification of UPS.   (5 x 2 = 10)

PART-B
[Maximum Marks: **30**]

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

1. Distinguish between JFET and MOSFET.

2. Describe the series inverter.

3. Write a brief note on constant frequency control used in chopper.

4. Explain stator voltage control of three phase induction motor.

5. Explain the working of semi converter DC drive.

6. Distinguish between linear power supply and SMPS.

7. Compare buck and boost converter.   (5 x 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 VI characteristics of SCR .   (8)

       b. Explain the various triggering methods of SCR.   (7)

OR

IV.   a. Compare JFET and MOSFET.   (7)

       b. Describe the operation of DIAC.   (8)

UNIT – II

V.   a. Describe single phase full wave bridge converter with RL load. (8)

      b. Explain half bridge inverter. (7)

OR

VI.   a. Explain the variable frequency control strategy of DC chopper. (6)

      b. Explain the operation of parallel inverter. (9)

UNIT- III

VII.   a. Explain single phase full converter for DC drive. (8)

      b. Explain the speed control of induction motor using stator frequency control. (7)

OR

VIII. a. Explain V/f control of three phase induction motor. (8)

      b. Explain speed control using fan regulator. (7)

UNIT - IV

IX.   a. Describe the principle of PWM. (8)

      b. Explain the operation of boost converter. (7)

OR

X.   a. Draw and explain the working of offline UPS. (7)

      b. Draw and explain block diagram of static servo stabilizer. (8)

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