UNIT- I – OVERVIEW OF POWER ELECTRONICS

PART-A & PART-B QUESTIONS

1. Specify the various parts for designing power electronics equipments. **(APR-18)**
2. Define firing angle and extinction angle? **(APR-18)**
3. Write short notes on various types of power electronics. **(APR-18)**
4. Write the diagram explain snubber circuit **(APR-18)**
5. Define dv/dt and di/dt.
6. Explain forward conduction region of SCR.
7. Explain forward blocking region of SCR.
8. Explain reverse blocking region.
9. State thyristor gate requirement
10. Explain power module and advantages of power module.
11. Define holding current and latching current.
12. Define commutation and its types.
13. Specify the various types of forced commutation.
14. State the advantages and disadvantages of GTO and thyristor.
15. Explain class B commutation with circuit diagram.
16. State thyristor gate requirement.
17. Draw the block diagram of power electronics and explain its each block.
18. Specify the various methods for triggering the SCR.
19. Draw the basic structure and symbol of SCR.

PART-C QUESTIONS

1. With the diagram explain the principle of operation of SCR.**(APR-18)**
2. A) With the circuit diagram explain the operation of UJT based triggering circuit.
3. B) with the circuit diagram explain the operation of class B commutation **(APR-18)**
4. Explain IGBT with diagram.
5. With diagram explain the effect of dv/dt and snubber circuit.
6. Explain the VI characteristics of SCR.
7. With the diagram explain the principle of operation of MODFET.
8. Explain any two types of commutation circuits.
9. Explain GTO with diagram
10. Explain intelligent module.
11. Write note on power electronic switch specification.
12. With the diagram explain the effect of dv/dt and snubber circuit.
13. Briefly explain driver and buffer circuit for thyristor.

UNIT- II – LINE COMMUTATED POWER CONTROL CIRCUITS

PART-A & PART-B QUESTIONS:

1. Define cyclo converter **(APR-18)**
2. Explain the principle of phase control in AC voltage controller **(APR-18)**
3. Define line commutated converters and mention its types.
4. Draw the circuit diagram of single phase full converter.
5. Draw the circuit diagram of three phase fully controlled bride with RL load.
6. Define three phase dual converter.
7. Define twelve pulse converter.
8. Define AC voltage controlled and mention its two types of control.
9. Define cyclo converter?
10. Define firing angle and extinction angle.
11. Write short notes o rectifying mode and inverting mode of full converter
12. State the advantaged of circulating current in single phase dual converters.
13. Derive the average DC output voltage of three phase full converter
14. Explain the principle of ON-OFF control in AC voltage controller.
15. Explain the principle of phase control in AC voltage controller.

PART-C QUESTIONS

1. Draw the circuit diagram of single phase full converter and explain its operation. **(APR-18)**
2. With diagram explain the three phase cyclo converter.**(APR-18)**
3. Explain the operation of twelve pulse converter with circuit diagram.
4. With the diagram explain the operation of three phase full wave controller.
5. Explain the operation of single phase controller with inductive load.
6. Explain the operation of twelve pulse converter with circuit diagram.
7. With diagram explain single phase cycloconverter.
8. With diagram explain the operation of three phase dual converter.

UNIT- III – FORCED COMMUTATED OWER CONTROL CIRCUITS.

PART-A & PART-B QUESTIONS:

1. Specify the various types of DC-DC converters. **(APR-18)**
2. Name the various types of PWM technique commonly used inverter. **(APR-18)**
3. With the diagram explain step-up converter. **(APR-18)**
4. Explain sinusoidal pulse width modulation. **(APR-18)**
5. State the application of inverter.
6. Define step down converter and step up converter.
7. Write short notes on rectifying mode and inverting mode of full controller.
8. Explain multiple pulse width modulation.
9. Explain simple DC-DC converter.
10. Specify the applications of switch mode DC-DC conversion.
11. State the applications of inverters.
12. Specify the two modes of operation of three phase inverter.
13. Define modulation ratio.
14. Define the various types of PWM techniques commonly used in inverters.
15. Draw and explain the block diagram of simple DC-DC converter.
16. Write short notes on inverters.
17. Draw the circuit diagram and waveform of single phase bridge inverter.
18. Explain single pulse width modulation.
19. Explain multiple pulse width modulation.

PART-C QUESTIONS:

1. With the diagram explain the continuous conduction mode of BUCK-BOOST converter. **(APR-18)**
2. Explain the operation of CUK DC-DC converter with diagram. **(APR-18)**
3. With the diagram and waveform explain the operation of 120 conduction mode of three phase inverter. **(APR-18)**
4. With the diagram explain sinusoidal PWM of three phase inverter.
5. With the diagram explain the operation of single phase bridge inverter.
6. With the diagram explain step down converter.
7. With diagram explain the continuous conduction mode of step up converter.
8. Explain the principle of operation of single phase half bridge inverter.
9. With diagram explain sinusoidal pulse width modulation.
10. With the proper diagram explain the control of DC-DC converters.

UNIT- IV – APPLICATIONS OF POWER ELECTRONICS

PART-A & PART-B QUESTIONS

1. What are static VAR compensators? **(APR-18)**
2. State the difference between ON-LINE ups OFF-LINE ups.
3. Define uninterrupted power supply and mention its types.
4. Draw the block diagrams of various types of welders.
5. Explain AC solid state relay using opto coupler.
6. Explain switch mode power supplies.
7. Write short note on solid state relays.
8. Explain AC solid state relay using pulse transformer.
9. State the uses of power electronics.
10. Define ON line UPS.
11. Define OFF line UPS.
12. State the power available from wind mill and small hydro system.

PART-C QUESTIONS

1. With the diagram explain the high frequency fluorescent system. **(APR-18)**
2. With the diagram explain high voltage DC transmission system. **(APR-18)**
3. With a diagram explain static AC solid state relay.
4. With a diagram explain static AC circuit breakers.
5. With the diagram explain induction heating.
6. With the block diagram explain a switch mode welder.
7. With the block diagram explain wind/hydro generator.
8. With a diagram explain thyristor switched capacitor.
9. Explain static VAR compensators.
10. With the block diagram explain ON line UPS.

UNIT- V MOTOR DRIVE APPLICATION.

PART-A & PART-B QUESTIONS

1. What is soft start of induction motor? **(APR-18)**
2. Write notes on speed control by varying stator frequency and voltage. **(APR-18)**
3. Define slip and slip speed.
4. Write notes on induction motor drives.
5. Define constant torque region.
6. State the observations of induction motor.
7. Why the DC is drives used in many more applications.
8. Define pull out torque.
9. Define field weakening region
10. Define constant power system.
11. Explain constant power region.
12. Write note on classifications of variable frequency converter.

PART-C QUESTIONS

1. With diagram explain the operation of variable frequency PWM-VSI drives. **(APR-18)**
2. Explain the speed control of slip ring induction motor by using static slip power recovery. **(APR-18)**
3. Explain the basic principle of induction motor operation.
4. Briefly explain induction motor capability below and above the rated speed.
5. With the diagram explain line frequency converters.
6. With the proper diagrams explain switch mode DC-DC converters.
7. With diagram, explain DC motor with separately excited field winding.