

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Explain with the help of suitable diagram, Light intensity control using thyristors. (CO1)
- Q.24 Explain the basic principle of Dual converter. What are its applications? (CO3)
- Q.25 Explain with the help of circuit diagram of Cycloconverter controlled a.c. drive. (CO4)

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Roll No.

4th Sem./ ECE, ECE
(For Speech and Hearing Impaired)
Subject : Power Electronics

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

- Q.1 A single-phase full wave Centre tap rectifier uses (CO2)
- a) 1 SCR b) 2 SCR
c) 3 SCR d) 4 SCR
- Q.2 In power Electronics, UJT stands for (CO1)
- a) Uni-junction transistor
b) Uni-junction transmitter
c) Both A&B
d) None of these
- Q.3 Class A chopper operates in (CO3)
- a) First quadrant b) Second quadrant
c) Third quadrant d) Fourth quadrant

Q.4 Cycloconverter drives are generally employed in (CO4)

- a) traction
- b) milling
- c) generating low frequencies
- d) generating pulses

Q.5 UPS stands for (CO5)

- a) Uninterruptible personal supply
- b) Uninterruptible power supply
- c) Universal personal supply
- d) Universal power supply

Q.6 DIAC has _____ terminals. (CO1)

- a) 2 b) 3
- c) 4 d) 5

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 SCR is universal device.(True/False) (CO1)

Q.8 Fully controlled rectifier contains mixture of diodes and SCR. (True/False) (CO2)

Q.9 A chopper converts fixed DC voltage to a variable DC output voltage .(True/False) (CO3)

Q.10 Chopper drive can be used for controlling the speed of DC drives.(True/False) (CO4)

Q.11 Online UPS is _____ (Cheaper/costlier) than offline UPS. (CO5)

Q.12 UPS is commonly used in street lighting. (True/False) (CO5)

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Draw V-I characteristics of SCR. (CO1)

Q.14 Write basic idea about the selection of heat sink for thyristors (CO1).

Q.15 Explain , UJT as relaxation oscillator. (CO1)

Q.16 Explain working of single phase half wave controlled rectifier with RL load. (CO2)

Q.17 Explain working principle of inverter. (CO3)

Q.18 Define Chopper. Name its types. (CO3)

Q.19 Write a short note on “Cycloconverter”. (CO3)

Q.20 What are main advantages of AC drives over DC drives? (CO4)

Q.21 Define Battery. What are different types of batteries? (CO5)

Q.22 What do you understand by UPS? What are basic parts of UPS? (CO5)

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SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

- Q.1 In power electronics, SCR stands for. (CO1)
a) Silicon Controlled Rectifier
b) Semiconductor Controlled Rectifier
c) Semi Controlled Rectifier
d) None of these
- Q.2 A single-phase full wave fully controlled bridge uses. (CO2)
a) 1 SCR b) 2 SCR
c) 3 SCR d) 4 SCR
- Q.3 Class B chopper operates in. (CO3)
a) First quadrant b) Second quadrant
c) Third quadrant d) Fourth quadrant
- Q.4 Possible control mode of a dc chopper drive is. (CO4)
a) Power control or motoring mode
b) Regenerative braking mode
c) Dynamic or Rheostatic braking mode
d) All of these

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- Q.5 TRIAC has _____ terminals. (CO1)
a) 2 b) 3
c) 4 d) 5
- Q.6 A UPS consists of. (CO5)
a) Battery charger b) Inverter
c) Battery d) All of these

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 Half controlled rectifier contains mixture of diodes and SCR. (True/False) (CO2)
- Q.8 A DIAC is a unidirectional device. (True/False) (CO1)
- Q.9 Inverter converts _____ (DC/AC) into _____ (DC/AC) (CO3)
- Q.10 The portion of the air gap power which is not converted into the mechanical power is called slip power. (True/False) (CO4)
- Q.11 SMF batteries are _____ (Cheaper/costlier) than lead acid batteries. (CO5)
- Q.12 UPS stands for _____. (CO5)

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SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

- Q.13 How SCR works as switch. (CO1)
- Q.14 Draw V-I characteristics of UJT. (CO1)
- Q.15 Define DIAC. Draw symbol of DIAC. Write any one application of DIAC. (CO1)
- Q.16 Explain working of single phase full wave controlled bridge rectifier. (CO2)
- Q.17 What is Series inverter? Write any two applications of series inverter. (CO3)
- Q.18 Write a short note on "Dual converter". (CO3)
- Q.19 Explain in brief step down chopper and step up chopper. (CO3)
- Q.20 Define Electric drives. Write any two disadvantages of AC drive over DC drive. (CO4)
- Q.21 Write a short note on "Solar power plant and their components" (CO5)
- Q.22 Differentiate between Online UPS and Offline UPS. (CO5)

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SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Explain with the help of suitable diagram, Fan regulator control using Thyristors. (CO1)
- Q.24 Explain the basic principle of Cycle converter. What are its applications? (CO3)
- Q.25 Explain with the help of circuit diagram of dc chopper scheme for speed control of a dc shunt motor. (CO4)

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**4th Semester/ECE, ECE
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Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

- Q.1 The silicon Controlled Rectifier (SCR) is a _____ device.
- a) Unidirectional b) Bidirectional
 - c) Tri directional d) Multidirectional
- Q.2 The triac is _____.
- a) Like a unidirectional SCR
 - b) Like a bidirectional SCR
 - c) Not a thyristor
 - d) A four-terminal device
- Q.3 In a SCR, the 'holding current' refers to _____.
- a) The maximum current an SCR can with stand
 - b) The minimum current needed to keep the SCR in the ON state
 - c) The current flowing through the gate terminal
 - d) The current flowing through the anode terminal

Q.4 After peak point, the UJT operates in the _____ region.

- a) Saturation
- b) Cut-Off
- c) Negative resistance
- d) None of the above

Q.5 In a three phase (50 Hz) full converter, the ripple frequency in output voltage?

- a) 50 Hz b) 300 Hz
- c) 350 Hz d) 100 Hz

Q.6 Material used for making solar cell is _____

- a) Silicon b) Carbon
- c) Sodium d) Magnesium

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 DIAC stands for _____.

Q.8 An SCR is a _____ controlled device.

Q.9 An inverter converts _____.

Q.10 Write the full form of UPS.

Q.11 The SCR is a _____ layer device.

Q.12 A solar cell converts light energy into _____.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Explain any one method of SCR triggering.

Q.14 Write a note on selection of heat sink for thyristors?

Q.15 Explain series inverter.

Q.16 Write a note on role of power electronics?

Q.17 Define electric drives. Write any two disadvantages of AC drive over DC drive.

Q.18 How SCR works as switch, explain.

Q.19 Draw and explain V-I characteristics of UJT.

Q.20 List the components of solar power plants.

Q.21 Write short note on concept of high voltage DC transmission.

Q.22 Explain Fan regulator control using thyristor.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Explain construction and working principle of SCR.

Q.24 Define online and offline UPS. Explain the working of – online UPS. 4+4

Q.25 Write short notes on :

- a) Step down choppers.
- b) Dual converters.

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4th Sem.

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SECTION-A

Note: Multiple type Questions. All Questions are compulsory. (6x1=6)

- Q.1 In the principle of phase control. (CO2)
a) The load is on for some cycles and off for some cycles.
b) Control is achieved by adjusting the firing angle of the devices.
c) Control is achieved by adjusting the number of on off cycles.
d) Control cannot be achieved
- Q.2 Speed control of AC drives, induction heating and static VAR compensation are the applications of (CO5)
a) Dual Converter b) Transformer
c) Chopper d) Cyclo converter
- Q.3 UPS is used to (CO4)
a) Enhance the storage in computer
b) Speed up the processing of CPU
c) Provide back up power in case of black out
d) All of the above

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Q.4 A chopper may be thought as a (CO5)

- a) Inverter with DC input
- b) DC equivalent of an AC transformer
- c) Diode rectifier
- d) DC equivalent of an induction motor

Q.5 When a SCR is in the forward blocking state. (CO1)

- a) All the 3 junctions are reverse biased
- b) The anode and cathode junctions are forward biased but the gate junction is reverse biased
- c) The anode junctions in forward biased but the cathode and gate junctions are reverse biased.
- d) The anode and gate junctions are forward biased but the cathode junctions is reverse biased

Q.6 A TRIAC is a _____ Switch. (CO2)

- a) Bidirectional b) Unidirectional
- c) Manual d) None of the above

SECTION-B

Note: Objective/Completion type questions. All questions are compulsory. (6x1=6)

- Q.7 Heat Sinks are generally given a dull black finish. (True/False) (CO2)
- Q.8 Draw the symbol of a UJT. (CO2)
- Q.9 Gate signal can be used to turn off the SCR (True/False) (CO1)

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- Q.10 Equivalent circuit of a TRIAC has two _____ connected in anti parallel. (CO2)
- Q.11 The chopper operates in _____ quadrant when operated in Class B. (CO5)
- Q.12 HVDC transmission is suitable for long distance bulk power transfer. (True/False) (CO4)

SECTION-C

Note: Short answer type Questions. Attempt any eight questions out of ten Questions. (8x4=32)

- Q.13 Why gate triggering method of SCR is widely used? (CO1)
- Q.14 Draw the circuit of a TRIAC based fan regulator. (CO2)
- Q.15 List the steps for routine maintenance of Lead Acid batteries. (CO4)
- Q.16 What is the need of Heat Sinks? (CO2)
- Q.17 Explain the critical di/dt rating of SCR. (CO1)
- Q.18 Differentiate between natural and forced commutation of SCR? (CO1)
- Q.19 Draw a basic block diagram of any solar power plant. (CO4)
- Q.20 Describe the basic principle of V/F operation of AC drive. (CO5)

- Q.21 In a step down chopper, if $V_s = 100V$ and the chopper is operated at a duty cycle of 75%. Find the output voltage. (CO5)
- Q.22 Explain the two functions of a free wheeling diode. (CO3)

SECTION-D

Note: Long answer questions. Attempt any two questions out of three Questions. (2x8=16)

- Q.23 What is a static UPS? Differentiate between on line and off line UPS. Explain the working of OFF LINE UPS with the help of a block diagram. (2,3,3) (CO4)
- Q.24 Explain the working of a single phase full wave fully controlled bridge converter with the help of waveforms. Why it is called fully controlled? (7,1) (CO3)
- Q.25 Explain the working of a UJT based Relaxation oscillator circuit with the help of circuit diagram and waveforms. (CO2)

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