

STUDENT EXAM NO. _____

GANPAT UNIVERSITY
B.TECH SEM. IV MECHANICAL ENGINEERING
CBCS REGULAR EXAMINATION MAY/JUNE-2013
2ME 403-INDUSTRIAL ELECTRONICS

TIME: - 3 HOURS

TOTAL MARKS-70

INSTRUCTIONS:-

1. All questions are compulsory.
2. Figure to the right indicates full marks of the respective question.
3. Support answers with appropriate diagram.

SECTION - I

Que-1 Attempt All.

[12]

- (A) Describe Reverse Recovery characteristics and derive necessary equations.
- (B) What will be the output of Half-wave rectifier? Write down its performance parameters.
- (C) How can we protect motor from over voltage?

OR

Que-1 Attempt All.

[12]

- (A) Describe the three main features available in Dual converter with diagram.
- (B) Write short note on commutation in Thyristor.
- (C) How can thyristors be connected in series?

Que-2 Attempt All.

- (A) Explain one practical application utilizing Variable frequency drive. [3]
- (B) Draw symbol and sectional view of TRIAC? Explain its V-I characteristics. [4]
- (C) Derive necessary equations for diodes with RC and RL loads. [4]

OR

Que-2 Attempt All.

- (A) How can you split a Thyristor in two transistors? [3]
- (B) Explain working of DC chopper circuit with waveforms. [4]
- (C) Write short note on freewheeling diodes with its modes. [4]

Que-3 Attempt All.

[12]

- (A) An automatic street light circuit is having an LDR connected in series with a resistance of 20k. The values of current flowing in the circuit under illumination and dark conditions are 6.45mA and 0.9mA respectively. Find out the resistance of the LDR in (i) illumination condition, (ii) dark condition. The supply voltage is 230 V AC.
- (B) Describe diode V-I characteristics with its regions.
- (C) Write short note on methods to Turn-on a thyristor.

SECTION-II

Que-4 Attempt All. [12]

- (A) Explain with the help of a circuit diagram the variable voltage fixed frequency supply method for speed control of a three-phase induction motor.
- (B) Explain stator voltage control method in AC drives.
- (C) Explain about overload protection of dc motors.

OR

Que-4 Attempt All. [12]

- (A) Describe speed control of single phase induction motor using TRIAC.
- (B) How can DIAC and TRIAC be used to control the illumination?
- (C) Describe cycloconverter scheme for speed control of a single-phase induction motor with diagram.

Que-5 Attempt All.

- (A) Define Latching current, Turn-on time and PLC. [3]
- (B) Explain armature voltage control method with its features. [4]
- (C) Write short note on Morgan chopper. [4]

OR

Que-5 Attempt All.

- (A) Differentiate between Microprocessor and Microcontroller. [3]
- (B) Draw the block diagram of Microprocessor and explain in detail.. [4]
- (C) Explain speed control of dc motor using bridge rectifier. [4]

Que-6 Attempt All. [12]

- (A) Explain field control method of speed control of dc motor with block diagram.
- (B) What is the function of cycloconverter? Explain center tapped transformer configuration of cycloconverter.
- (C) Explain speed control of single phase induction motor using single phase inverter circuit.

END OF PAPER