

INDUSTRIAL ELECTRONICS

3K4-IEI-18

Time : 3 hrs.

M.M : 100

Note :—

1. Part 'A' may be attempted in first 6 pages of Answer Sheet.
भाग 'क' के सभी उत्तर, उत्तर-पुस्तिका के प्रथम छः पृष्ठों में ही करने हैं।
2. Part 'B' in rest of the Sheets of Answer Sheet.
भाग 'ख' के उत्तर, उत्तर-पुस्तिका के अगले शेष पृष्ठों में लिखिये।
3. Answers may be given in English or Hindi.
प्रश्नों के उत्तर अंग्रेजी अथवा हिन्दी में दीजिये।

PART - 'A'**1. Attempt any ten questions :**

(10x2=20)

- (a) What type of losses occur in thyristor during working condition?
- (b) How a thyristor can be protected against excess dv/dt ?
- (c) How SCR differs from TRIAC?
- (d) Define Heat sink Efficiency.
- (e) Draw the VI characteristics of SCR and mark the holding current and latch current.
- (f) Plot frequency response of an ideal Op-Amp.
- (g) Enlist some applications of LAN.
- (h) What is the purpose of signal conditioner?
- (i) Draw single phase halfwave rectifier circuit.
- (j) Draw VI characteristics of an UJT.
- (k) What is meant by inverter?
- (l) Why thyristors are not preferred for inverters?
- (m) Mention the type of voltage regulators.

2. Attempt any five Questions :

(5x4=20)

- (a) Explain the working principle of Diac and mention its application.
- (b) Explain the differences between SCS and SBS.
- (c) Explain the differences between natural and forced turn off methods in thyristor.
- (d) Explain the principle of dielectric heating.

- (e) Define heat sink transfer co-efficient and explain its importance in thyristors.
- (f) Explain the working of Time delay relay circuit using Triac.
- (g) Explain application of phase controlled rectification and AC phase control circuits in Fan speed control.
- (h) What are characteristics of an Ideal OP-AMP?

PART- B

Attempt any three Questions :

(3x20=60)

- 3. (a) Explain the working of SCR. with the help of a circuit diagram.
(b) Explain the various methods to turn ON a thyristor.
- 4. (a) Describe the working principle of single phase AC voltage and controller with the help of circuit diagram wave forms.
(b) Describe the operation of series inverter with aid of diagrams. what are the disadvantages of basic series inverter?
- 5. (a) Explain the basic principle of operation of UJT and describe how it can be used for thyristor triggering.
(b) Explain construction and working of an Alarm Circuit.
- 6. With the help of neat diagram and output wave forms. Explain working of a 3 phase half wave rectifier circuit and derive expression for output dc voltage.
- 7. (a) Explain the characteristics of instrumentation amplifier in respect of
 - (i) Input impedance
 - (ii) Output impedance
 - (iii) CMRR and
 - (iv) DC offset
(b) Explain the differences between instrumentation amplifier and OP-AMP. What is the need of isolation amplifiers?