



# 17542

16172

3 Hours / 100 Marks

Seat No.

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- Instructions :** (1) *All questions are compulsory.*  
(2) *Answer each next main question on a new page.*  
(3) *Illustrate your answers with neat sketches wherever necessary.*

**Marks**

1. a) Attempt **any three**: (3×4=12)
- i) List the advantages of modern industry.
  - ii) What is NDT ? List the methods of NDT.
  - iii) Explain the principle of magnetic crack detection.
  - iv) What is high frequency heating ? List different types of high frequency heating.
- b) Attempt **any one** : (1×6=6)
- i) Explain different input media used in NC machines.
  - ii) Explain principle of induction heating. With appropriate diagram. List the applications of induction heating.
2. Attempt **any four** : (4×4=16)
- a) What is industrial safety ? Give safety procedures.
  - b) Explain the principle of magnetostrictive effect of ultrasonic wave generation and draw the transistorized oscillator circuit for the same.
  - c) With neat diagram explain ultrasonic level measurement.
  - d) Explain principle of EDM with appropriate diagram.
  - e) Explain the principle of circular magnetization. List the methods of producing circular magnetization.
  - f) Compare dielectric heating and induction heating.
3. Attempt **any four** : (4×4=16)
- a) List the problems of traditional industry.
  - b) What is NTM ? List the type of energy used in NTM.
  - c) What is couplant ? List the requirement of good couplant.
  - d) Why localized magnetization is needed ? List the methods of localized magnetization.
  - e) What are the functions of dielectric fluid used in EDM ? List the dielectric fluids used in EDM.

**P.T.O.**



4. a) Attempt **any three** :

(3×4=12)

- i) What are the causes of accidents in industry ?
- ii) Explain the principle of pulse-echo method of ultrasonic flaw detector with appropriate diagram.
- iii) Draw the block diagram of CNC machine and explain it in brief.
- iv) Draw the power supply oscillator ckt. for induction heating. Explain its working.

b) Attempt **any one** :

(1×6=6)

- i) Draw and explain the block diagram dielectric heating. Explain different methods of connecting electrodes to the tank circuit.
- ii) What is NC word ? Explain in brief types of words use in manual part programming.

5. Attempt **any four** :

(4×4=16)

- a) Give the classification of CNC machine.
- b) Draw the block diagram of ultrasonic cleaner and explain it.
- c) List and explain the types of electrical sources used for magnetization.
- d) Explain the methods of demagnetization.
- e) List the advantages and disadvantages of EDM.
- f) Explain surface hardening of steel using induction heating.

6. Attempt **any four** :

(4×4=16)

- a) Compare ultrasonic testing and magnetic crack detection testing of NDT (four points).
  - b) List the techniques used in recording the results of magnetic crack detection. Explain any one.
  - c) Explain wet and dry method of inspection.
  - d) What type of feedbacks used in closed loop NC system ? What is their need ? Explain.
  - e) Explain use of following G and M words G00, G90, M03, G01.
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