17542

11819

3 Hours / 100 Marks   Seat No.

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.*
   (4) *Figures to the **right** indicate **full** marks.*
   (5) *Mobile Phone, Pager and any other Electronic Communication devices are **not** permissible in Examination Hall.*

Marks

1. A) Attempt **any three** :   12
   a) Define industrial safety. Write any three types of accidents in detail.
   b) Describe the longitudinal method of magnetization.
   c) State advantages and limitations of ultrasonic (any two points each).
   d) List the types of electrodes used in EDM and state their function.

   B) Attempt **any one** :   6
   a) Explain the process of cold welding using ultrasonic. State its advantages over conventional welding.
   b) Give expression for the current density for induction heating. State effect of various parameters on heating, also state the range of frequency used.

2. Attempt **any four** :   16
   a) Draw and explain the circuit of transistorized piezoelectric oscillator to generate ultrasonic waves.
   b) List and explain about the factors to be considered in selection of components for NC and CNC machining.
   c) Explain with block diagram the principle of dielectric heating.
   d) Name different recording techniques in MPT. Describe any one in detail.
   e) What is NDT ? List the different methods of NDT.
   f) State the safety procedures to be followed to prevent accidents.

3. Attempt **any four** :   16
   a) Describe in detail the production magnetization method with neat diagram.
   b) Draw the block diagram of DNC system and explain.

  c) Draw and explain the block diagram of ultrasonic flaw detector using pulse echo method.

  d) Draw the block diagram of surface hardening of steel using induction heating and explain.

  e) State the functions of dielectric fluid used in EDM and the types of fluids used.

4. A) Attempt **any three** : 12

  a) What is a part programming ? Explain the use of G and M codes in detail.

  b) List any four features of modern industry.

  c) Explain the following terms :

  ISO and EIA codes for programming.

  d) State the factors for selection of frequency requirement in induction heating.

  B) Attempt **any one** : 6

  a) Draw and explain the graph showing variation of current density against distance X from the metal surface for induction heating. State the equation for relative current density.

  b) Compare longitudinal and circular method of magnetization.

5. Attempt **any four** : 16

  a) Describe dry method and wet method for MPT.

  b) Name four non-traditional machining. State its importance in industry.

  c) Draw and explain the magnetostriction method for generation of ultrasonic waves and write formula for frequency.

  d) State advantages and disadvantages of magnetic crack detection in detail.

  e) Draw the schematic diagram of EDM and state its principle.

  f) Explain the input media used in NC/CNC machines.

6. Attempt **any four** : 16

  a) State piezoelectric effect and write any four materials which exhibit property.

  b) Explain absolute and incremental system used in CNC machines.

  c) State any four losses taking place in dielectric heating process.

  d) Draw and explain ultrasonic level measurement in detail.

  e) Describe with neat diagram of magna flux method.

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