



17542

21718

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

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|--|-----------------|
| 1. a) Attempt any 3 : | (4×3=12) |
| i) State the causes of accident (any 4). | |
| ii) List various NDT methods. | 2 |
| Give applications of NDT. | 2 |
| iii) Differentiate between Head Shot Method and Coil Shot Method (4 pts). | |
| iv) With the help of block diagram explain annealing of brass and bronze. | |
| b) Attempt any one : | (1×6) |
| i) Draw ISO code of NC programming. | 4 |
| Explain how parity checking is done. | 2 |
| ii) Explain depth of penetration with proper derivation. | 4 |
| State the equation of current density. | 2 |
| 2. Attempt any 4 : | (4×4) |
| i) Draw and explain the principle of EDM. | |
| ii) State piezoelectric effect. | 2 |
| Give different materials which exhibits this property. | 2 |
| iii) Explain ultrasonic cleaning with proper block diagram. | |
| iv) With proper diagram explain central conductor method of magnetisation. | |
| v) List the 4 applications of EDM and state the types of NTM. | |
| vi) Describe any one application of dielectric heating. | |

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**Marks****3. Attempt any 4 :****(4×4)**

- i) State various problems faced in traditional industries. Explain how they are overcome in modern industries.
- ii) Explain electronic acoustic method with neat diagram used in ultrasonic testing.
- iii) Explain how laser can be used for production of ultrasonic wave.
- iv) Explain why localized magnetization is used. Explain any one method with proper diagram.
- v) With proper diagram explain the role of servo motor in EDM.

4. a) Attempt any 3 :**(3×4)**

- i) Mention four features of modern industry.
- ii) Explain angle beam probe and normal probe used in ultrasonic testing.
- iii) Give the classification of NC system in detail.
- iv) Draw and explain the working of wire cut EDM.

b) Attempt any one :**(1×6)**

- i) With proper diagram explain how velocity feedback is given in closed loop system.
- ii) With proper block diagram explain the principle of induction heating. **4**
List applications of induction heating. **2**

5. Attempt any 4 :**(4×4)**

- i) Define industrial safety and list the industrial safety related standards.
- ii) Describe pulse echo method of flaw detection using ultrasonic.
- iii) State the need of demagnetisation. How is it achieved ?
- iv) Describe magnaflux method of wet particle inspection. State two advantages of this method.
- v) State the types of computer aided part programming. Explain any one.
- vi) Compare induction heating and dielectric heating (any 6 points).

6. Attempt any 4 :**(4×4)**

- i) Explain the through transmission method used in ultrasonic testing (4 pts).
 - ii) State magnetostriction effect. **2**
Draw neat diagram of magnetostrictive oscillator. **2**
 - iii) Explain wet and dry method of magnetic particle inspection.
 - iv) Draw and explain block diagram of CNC machines.
 - v) With proper example explain incremental and absolute system used in CNC machines.
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