21819

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) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. **(A) Attempt any THREE :**   **12**

(a) State the advantages of modern industry over traditional industry.

(b) What is NDT ? List the different methods of NDT.

(c) Compare circular & longitudinal magnetization (any four points).

(d) Explain the surface hardening of steel using induction heating.

(B) Attempt any ONE :   **6**

(a) Explain the principle of EDM with a neat sketch.

(b) Describe the principle of dielectric heating. Draw its basic set up. List the applications of dielectric heating.

2. **Attempt any FOUR :** 16

    (a)   Give the features of modern industry.

    (b)   State piezoelectric effect. State different materials which exhibit piezoelectric property.

    (c)   With a neat diagram explain ultrasonic cold welding.

    (d)   Describe with a neat sketch principle of magnetic particle testing (MPT).

    (e)   State the properties of dielectric fluid used in EDM.

    (f)   Explain the principle of induction heating with a neat diagram.

3. **Attempt any FOUR :** 16

    (a)   Describe measures of accident prevention.

    (b)   Draw a neat block diagram of ultrasonic flaw detector using pulse echo method. Describe its operation.

    (c)   State the advantages of ultrasonic testing.

    (d)   Describe with neat diagram magna flux method.

    (e)   Explain the functions of following in EDM :

        (i)   Servomotor

        (ii)   Dielectric fluid

4. **(A)** **Attempt any THREE :** 12

    (a) Write any four types of accident & their causes.

    (b) Explain through transmission method of ultrasonic flaw detector with neat diagram.

    (c) Explain ISO code of programming using NC/CNC.

    (d) State the advantages and disadvantages of dielectric heating.

   (B) **Attempt any ONE :** 6

    (a) Draw the block diagram of CNC machine & state the function of each block.

    (b) Give the comparison between dielectric heating & induction heating.

5. **Attempt any FOUR :** 16

    (a) List out any four problems of traditional industry.

    (b) State the need of demagnetisation and also give the techniques used for demagnetization.

    (c) Describe prod magnetization method with neat diagram.

    (d) List & describe the techniques used for recording results in MPT.

    (e) What is meant by :

        (i) NC

        (ii) CNC

        (iii) DNC

        (iv) CIM

    (f) List four high frequency heating techniques with one application of each.

6. **Attempt any FOUR :** 16

   (a) State the working principle of liquid penetration & eddy current method of NDT and explain.

   (b) Explain ultrasonic soldering.

   (c) What is circular magnetization ? State its principle.

   (d) Draw a neat diagram of wire cut EDM. Describe its operation.

   (e) List the advantages of CNC machines.

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