

22228

24225

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.  
(2) Illustrate your answers with neat sketches wherever necessary.  
(3) Figures to the right indicate full marks.  
(4) Assume suitable data, if necessary.  
(5) Use of Non-programmable Electronic Pocket Calculator is permissible.  
(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

1. **Attempt any FIVE of the following** **10**
- a) Write specification method of a compression spring.
  - b) Define brazing.
  - c) List operations performed on lathe machines.
  - d) State applications of solar P V technology
  - e) Name four common troubles / faults observed in screw conveyor.
  - f) State advantages of counter flow heat exchanger
  - g) State the need of energy conservation in plastic processing.
2. **Attempt any THREE of the following** **12**
- a) Sketch any four pipe fittings for PVC pipes.
  - b) Explain working set up for soldering and write process sequence of soldering.

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- c) Explain solar heating system with one application.
- d) Write factors governing selection of material handling equipment for specific use.

**3. Attempt any THREE of the following 12**

- a) Explain column and knee type milling machine with sketch.
- b) Sketch direct drive type large wind turbine and explain its working in brief.
- c) Write safety precautions to be observed while handling hoisting equipment and overhead travelling cranes.
- d) Explain modes of heat transfer in injection moulding. state its effect on process performance.

**4. Attempt any THREE of the following 12**

- a) Explain various types of gear drives with their applications.
- b) Explain polyurethane casting process sequence and state its two examples
- c) Explain biomass power system and write its two advantages.
- d) State the need of conveying equipment in plastic industry. write its detail classification with one application of each.
- e) Explain cooling tower with neat sketch. State its importance.

**5. Attempt any TWO of the following 12**

- a) Draw sketches of following and write its applications
  - i) Flexible coupling
  - ii) Adjustable spanner
  - iii) Chipper as power tools
- b) Explain working principle of following with sketches
  - i) Lathe machine
  - ii) Power hacksaw
- c) Identify the types of plastic parts used in solar P V system and wind turbines. Justify their selection.

**6. Attempt any TWO of the following****12**

- a) Identify common troubles and suggest remedies for following power transmission system -
    - i) Rope drive
    - ii) Chain drive
    - iii) Gear drive
  - b) Explain with sketch and state its use
    - i) Sortation conveyor
    - ii) Pallet truck
  - c) Explain factors governing selection of heat exchangers. Explain shell and tube type exchanger with sketch.
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