

Con. 2910-11.

(3 Hours)

[Total Marks : 100

- N.B. : (1) Question No. 1 is **compulsory**,  
(2) Attempt any **four** questions out of remaining **six** questions.  
(3) Draw **neat** sketches wherever **required**.

1. (a) Explain the following concepts of product design in brief. Concurrent engineering, reverse engineering and standardisation. 6  
(b) Draw a neat block diagram of horizontal column and knee type milling machine and name atleast eight important parts. 8  
(c) Explain with neat sketch, point to point and continuous path motion control systems for CNC machines. 6
2. (a) Explain with neat sketches the following lathe operations : Taper turning, Reaming, Parting and knurling. 10  
(b) Explain in brief operation of welding and brazing processes. Also write tools and materials required and difference between these processes. 10
3. (a) Differentiate between thermoplastics and thermosetting plastics. 5  
(b) What is the need of operation planning ? Explain the steps involved in planning a process. 8  
(c) Write a note on TQM which should include its important principles, elements and advantages. 7
4. (a) What are control charts ? Explain the control charts for attributes and variables. 7  
(b) Explain with neat sketches open loop and closed loop motion control systems in NC/CNC machines. Also write their advantages. 8  
(c) List common part design attributes and part manufacturing attributes used to classify the parts in Group technology. 5
5. (a) Define Robot. What is the need of robot in manufacturing ? What are the components of robots ? List any ten applications of robots in manufacturing. 10  
(b) Write and explain any ten ergonomic principles concerning physical design of the workstations. 10
6. (a) What is Enterprise Resource Planning (ERP) ? What is its need and what are its advantages ? 8  
(b) Explain the seven wastes that have been identified in manufacturing industries in JIT approach. 7  
(c) Explain the extrusion process with neat sketch. 5
7. Write short notes on :— 20
  - (a) Types of capacities in capacity planning
  - (b) Difference between product layout and process layout
  - (c) Master production schedule
  - (d) Role of demand management in make to order environment.