T.Y. Diploma : Sem. VI

[ME/PG/PT/MH/MI/FE/FG]

Production Engineering & Robotics

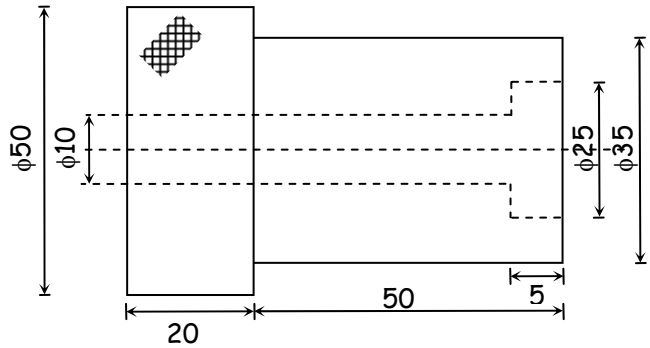
Time : 3 Hrs.] Prelim Question Paper **[Marks : 100**

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.

1. (a) Attempt any **THREE** of the following: **[12]**
(i) State any six techniques used for improving productivity.
(ii) Explain the concept of production system with proper input output model.
(iii) State different activities involved in dispatching function of PPC.
(iv) What is line balancing? Why it is necessary?

(b) Attempt any **ONE** of the following: **[6]**
(i) Discuss in brief important factors to be considered while making 'site selection' for a new industry/plant.
(ii) Differentiate between product layout and process layout on the basis of
(1) Initial investment cost (2) Cycle time
(3) Type of machines used (4) Skill of labour required
(5) Inventory levels (6) Arrangement of machines.

2. Attempt any **TWO** of the following : **[16]**
(a) Name different types of material handling equipments used in industry. Explain any one with neat sketch.
(b) State and explain various factors affecting process planning.
(c) Prepare operation process sheet and decide sequence of operation for the component shown in figure. Assume suitable material and cutting conditions.



3. Attempt any **FOUR** of the following : **[16]**
(a) Suggest appropriate material handling device for
(i) Transporting coal in thermal power plant
(ii) Transporting cotton in ginning unit
(iii) Transporting pallets
(iv) Transporting packed boxes of biscuits within industry.
(b) State and explain the basic principle to be followed to develop a good plant layout.
(c) What are the factors to be considered to determine stages of inspection during process planning?

(d) State and explain how the different operations can be combined?
(e) What are the objectives of method study?
(f) State different components of jigs/fixtures.

4. (a) Attempt any **THREE** of the following : **[12]**
(i) Explain the concept of Kaizen with example.
(ii) Explain the concept of ERP.
(iii) Enlist any four basic components used in robotic systems also write their functions.
(iv) State basic difference between push and pull type of manufacturing system.

(b) Attempt any **ONE** of the following : **[6]**
(i) What is lean manufacturing? State its advantages.
(ii) Construct two handed Process chart for the assembly of Nut and Bolt with summary.

5. Attempt any **FOUR** of the following : **[16]**
(a) Explain 3-2-1 principle of location with suitable example.
(b) Enlist general principles of jig and fixture design.
(c) What is meant by '5S'? State meaning of each "S" in detail.
(d) State any four types of grippers used in robots with one application of each.
(e) Describe spherical configuration used in robot with neat sketch.
(f) Differentiate between jig and fixture with respect to :
(i) Definition (ii) Cost (iii) Construction (iv) Application

6. Attempt any **TWO** of the following : **[16]**
(a) What is scheduling? State internal and external factors affecting scheduling.
(b) A shop floor activity consists of three elements. Calculate the standard time for the activity. The various allowances are given as percentage of normal time.

Elements	A	B	C
Observed time (min)	1.25	1.2	2.85
Rating factor (%)	90	115	85
Relaxation allowances (%)	12	13	8
Delay allowances (%)	3	6	5
Personal allowances (%)	8	6	4

(c) Explain Gantt Chart used in PPC. State its advantages.

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Paper Discussion Schedule for: T.Y. Diploma Sem. VI

Date	Day	Timing	Centre
15 April	Sunday	8 a.m. to 11 a.m.	Dadar
15 April	Sunday	12 noon.to 3 p.m.	Thane