

T.Y. Diploma : Sem. VI  
[ME/PG/PT/MH/MI/FE/FG]  
**Production Engineering & Robotics**  
Prelim Question Paper



Time : 3 Hrs.]

[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) Define productivity? State the factors which improves productivity.
  - (ii) Explain the factors affecting process planning.
  - (iii) Compare between various types of production systems with respect to
    - (a) Product
    - (b) Layout
    - (c) Machines used
    - (d) Cost of product
  - (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) Explain how Gantt chart is used in project planning with proper example.
2. Attempt any **TWO** of the following : [16]
- (a) Enlist any four factors which affect selection of material handling system. Explain which type of material handling system is suitable for :
    - (i) Unloading two wheelers from truck
    - (ii) Stacking of pallets in store racks.
  - (b) What is process planning? Explain the steps in process planning?
  - (c) How inspection stages are determined? State the significance of operation sheet.
3. Attempt any **FOUR** of the following : [16]
- (a) State different types of plant layout. Explain any one type.
  - (b) Explain the concept of AGV? State its any two applications.
  - (c) State the advantages and disadvantages of combined operations.
  - (d) What is group technology? Give its applications.
  - (e) Differentiate between Jig and Fixture.
  - (f) Write any four objectives of method study.
4. (a) Attempt any **THREE** of the following : [12]
- (i) Describe 3 - 2 - 1 principal of location used in Jig and fixture with suitable sketches?
  - (ii) Explain the concept of ERP.
  - (iii) Enlist any four basic components used in robotic systems also write their functions.
  - (iv) Explain the importance of '5S' ("Five S") concept.
- (b) Attempt any **ONE** of the following : [6]
- (i) Construct two handed process chart for the assembly of Nut and Bolt with summary.

- (ii) If a worker takes 15 minutes as a standard time for a job in which total allowances is 20% of normal time, If the rating of worker is 100%. Find the actual time required by worker.

5. Attempt any **FOUR** of the following :

[16]

- Explain the cycle of Kaizen activity.
- State the functions of drill bushes. State the advantages of renewable bush over other type bushes.
- Explain string diagram with sketch.
- Explain pull type manufacturing system.
- Explain the basic components of Robots.
- What are grippers? Explain vacuume actuated gripper in brief.

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

[16]

- (a) Enlist the various functions of PPC.

Describe : (i) Scheduling

(ii) Routing in details

- (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) Describe any two joint types used in robotic arm and wrist.

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

Date	Day	Timing	Centre
9 April 2017	Sunday	9 a.m. to 11 a.m.	Dadar, Nerul
9 April 2017	Sunday	12 p.m.to 2 p.m.	Thane

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