

# 17609

**11718**

**3 Hours / 100 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.

**Marks**

1. a) **Attempt any THREE of the following:** **12**
- (i) Explain production system with block diagram. Also give two examples.
- (ii) Compare production and productivity with suitable example.
- (iii) Explain any four techniques to improve the productivity of manufacturing firm.
- (iv) State the objectives of production planning and control.
- b) **Attempt any ONE of the following:** **6**
- (i) Suggest and explain with neat sketch material handling device used in process production.
- (ii) Explain Gantt chart used in scheduling with suitable example.

P.T.O.

- 2. Attempt any TWO of the following:** **16**
- a) Prepare operation process sheet and sequence of operation by taking suitable example. Assume suitable cutting parameters.
  - b) Sketch the following layout types.
    - (i) Line layout
    - (ii) Functional layout
    - (iii) Fixed position layout
    - (iv) Combined layout
  - c) Write stepwise procedure of process planning from raw material to finished product.
- 3. Attempt any FOUR of the following:** **16**
- a) Classify material handling devices.
  - b) How operations are combined? Explain with example.
  - c) State the factors affecting site selection for manufacturing industry.
  - d) Explain the concept of ERP.
  - e) Define Jig and fixture. Give two examples of each.
  - f) Why allowances are considered while calculating standard time? Explain.
- 4. a) Attempt any THREE of the following:** **12**
- (i) Sketch any two drill Jig bushes.
  - (ii) How '5S' can be used as inventory reduction technique.
  - (iii) State the applications of robots.
  - (iv) Give the classification of sensors used in robots.

b) Attempt any ONE of the following:

6

- (i) Describe 3-2-1 principle of location with neat sketch.
- (ii) A shop floor activity consists of three elements. Find the standard time for the activity. The allowances are given as % of basic time.

Elements	Observed time (min)	Rating	Allowance
I	1	100 %	20 %
II	2	110 %	15 %
III	3	120 %	10 %

5. Attempt any FOUR of the following:

16

- a) Draw a neat sketch of open type jig and label it.
- b) State the general principles of jigs and fixtures design.
- c) State the benefits and limitations of JIT. (Four each)
- d) Differentiate between hydraulic actuator and pneumatic actuator. (Any four points)
- e) State four types of grippers used in robots with application of each.
- f) Write down basic steps in method study.

6. Attempt any TWO of the following:

16

- a) Describe types of scheduling in detail.
- b) Prepare a two handed process chart for a task of sharpening the pencil with appropriate process chart symbols.
- c) Describe robot configurations with neat sketch. (Any two)

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