

17609

16172

3 Hours / 100 Marks

Seat No.

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- 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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. a) Attempt any THREE of the following: **12****
- (i) State any six techniques used for improving productivity.
- (ii) What is productivity of materials? How it differs from total productivity?
- (iii) Suggest most appropriate type of production system for manufacturing.
- 1) Sugar
- 2) Nuts and bolts
- 3) Connecting rods
- 4) Plastic bottles
- (iv) State different activities involved in dispatching function of PPC.

P.T.O.

b) Attempt any ONE of the following:

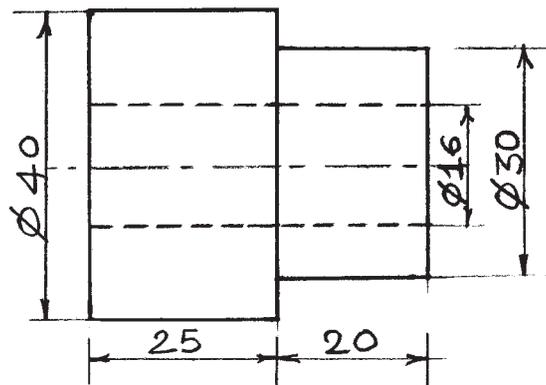
6

- (i) 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.
- (ii) Describe use of Gantt chart for scheduling and recording actual progress of work by considering suitable data.

2. Attempt any TWO of the following:

16

- a) What are the important factors affecting selection of site for a new plant?
- b) Write stepwise procedure for converting raw material into finished product.
- c) Prepare operation process sheet and sequence of operation for component shown in Fig. No.1. Assume suitable cutting parameters.

Fig. No. 1

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 different factors affecting process planning.
- c) What is combined operation? Give two examples of combined operations.
- d) Describe working of screw conveyor with neat sketch.
- e) State basic procedure for carrying out method study.
- f) State different components of jigs/fixtures.

4. a) Attempt any THREE of the following: 12

- (i) What is fool proofing of jigs and fixtures? State its importance.
- (ii) State basic difference between push and pull type of manufacturing system.
- (iii) Give classification of sensors used in robot.
- (iv) Which technique is used for continuous improvement? What is the concept behind it?

b) Attempt any ONE of the following: 6

- (i) A particular activity of shop floor consists of three elements. The allowances are expressed as percentage of normal time. Calculate standard time for each of the activity from following data.

S. No.	Element	a	b	c
1	Observed time in min.	1.5	2.1	1.8
2	Rating factor	125	90	100
3	Allowances	20%	15%	10%

- (ii) What is meant by '5s'? Explain each 'S' in details.

5. Attempt any FOUR of the following:**16**

- a) State any four principles of jig and fixture design.
- b) Draw proportionate sketch of template jig. State its use.
- c) What is lean manufacturing? State its benefits.
- 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) What are the advantages of hydraulic actuators?

6. Attempt any TWO of the following:**16**

- a) What is scheduling? State internal and external factors affecting scheduling.
 - b) (i) Sketch the symbols of following therbligs
 - 1) Transport loaded
 - 2) Search
 - 3) Rest
 - 4) Assemble
 - (ii) Construct two handed process chart for assembly of nut, bolt and washer.
 - c) Describe any two types of joints used in robotic arm and wrist.
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