

17609

11819

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) 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.

Marks

1. a) **Attempt any THREE of the following:** **12**
 - (i) Compare a job production with mass production w.r.t. product, machines, layout and example.
 - (ii) Explain technique for improving productivity.
 - (iii) Define productivity index. State it with respect to labour, material and machine.
 - (iv) Explain the concept of line balancing.
- b) **Attempt any ONE of the following:** **6**
 - (i) Explain with neat sketch any two material handling devices used in mass production.
 - (ii) State the meaning of control with its benefits.

P.T.O.

2. Attempt any TWO of the following:

16

- Explain the different types of Automated guided vehicle system and also state its functions and applications.
- Define process planning and explain the steps in process planning.
- Prepare operation sheet and sequence of operation for the component to be manufactured on lathe. Shown in Figure No. 1. Assume suitable cutting parameter.

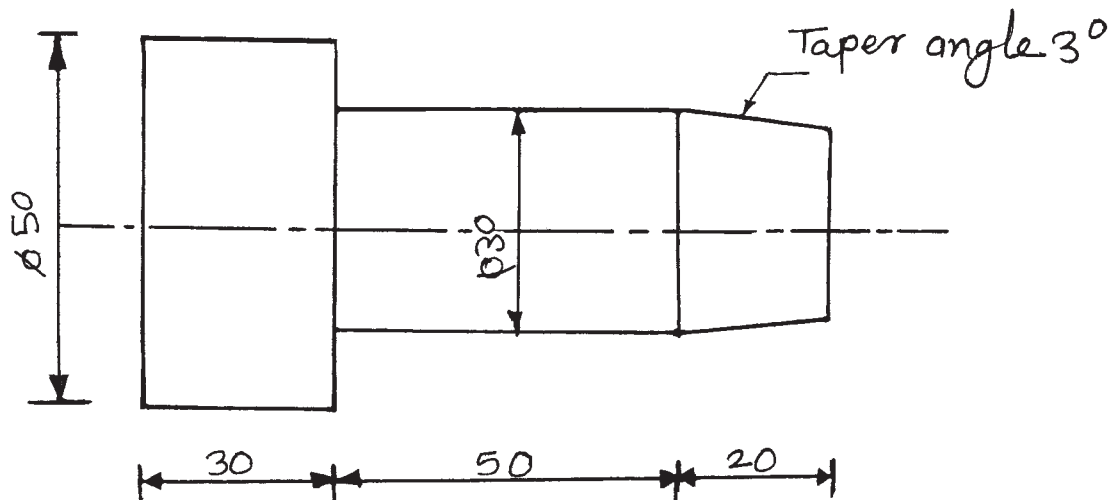


Fig. No. 1

3. Attempt any FOUR of the following:

16

- Explain any four factor that affects selection of site.
- Differentiate between floor and centralized inspection.
- Explain the factor affecting process planning.
- State the symptoms of bad plant layout.
- Define method study. State its objectives.
- Explain 3 - 2 - 1 principle of location with neat diagram.

4. a) **Attempt any THREE of the following:** **12**
- (i) Differentiate between jig and fixture.
 - (ii) State the meaning of each 'S' in '5S'.
 - (iii) Differentiate between pneumatic and hydraulic actuator.
 - (iv) Explain the cycle of Kaizen activity.
- b) **Attempt any ONE of the following:** **6**
- (i) Prepare outline process chart for replacement of battery in a car.
 - (ii) State the characteristics of lean manufacturing. (any six)
5. **Attempt any FOUR of the following:** **16**
- a) Draw the labelled sketch of turning fixture.
 - b) Enlist general principle of jig and fixture design.
 - c) List the time study equipments and its uses.
 - d) Explain degree of freedom in robots.
 - e) Describe the vacuum actuated grippers with example.
 - f) Explain spherical configuration with sketch.
6. **Attempt any TWO of the following:** **16**
- a) Explain the Gantt chart used in production planning and control. State its advantages and disadvantages.
 - b) A particular activity of shop floor consist of 3 elements. The allowances are expressed as percentage of the normal time. Calculate standard time for each of the activity from following data.
- | Sr. No. | Elements | a | b | c |
|---------|--------------------------|------|------|------|
| 1 | Observed time in minutes | 1 | 1.5 | 2 |
| 2 | Rating factor | 125% | 120% | 110% |
| 3 | Allowances | 20% | 15% | 20% |
- c) Describe any two joint types used in Robotic arm and wrist.