

# 17609

**21718**

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

**Marks**

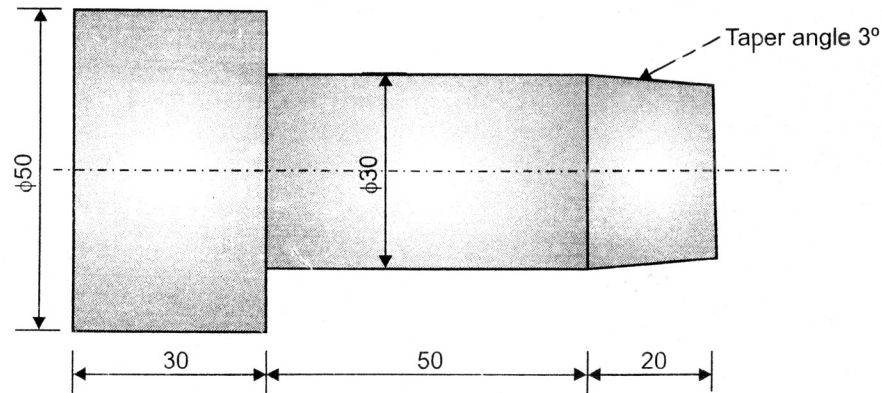
1. a) **Attempt any THREE of the following:** **12**
  - (i) State types of production system. Enlist four features of mass production system.
  - (ii) Differentiate between production and productivity (any four points)
  - (iii) Describe various techniques of improving productivity.
  - (iv) State any four functions of production planning and control.
- b) **Attempt any ONE of the following:** **06**
  - (i) State types of plant layouts. Describe product layout with neat sketch.
  - (ii) Define routing. Explain in short various steps in routing procedure.

P.T.O.

2. Attempt any TWO of the following:

16

- Describe various principles of material handling in details.
- Redraw the sketch, prepare operation sheet and sequence of operations for the component shown in Figure No. 1. Assume suitable cutting parameters.



**Fig. No. 1**

- Define process planning. State the factors affecting process planning and explain it.

3. Attempt any FOUR of the following:

16

- Name the material handling devices for following activities:
  - To move and stack material at height.
  - To lift heavy stones at height
  - To move cement bags at a short and fixed distance.
  - To move chemical from store to storage tank.
- State the information required to determine operation sequence.
- Compare floor inspection and centralized inspection on the basis of
  - Defination
  - Measuring instruments used
  - Suitability
  - Mode of inspection

- d) State the objectives of plant layout.
- e) Draw an outline process chart to change the SIM CARD of a mobile phone.
- f) Differentiate between jigs and fixture (any four points)
- 4. a) Attempt any THREE of the following: 12**
- (i) Describe pull type manufacturing system.
- (ii) Discuss the concept of Kaizen
- (iii) Give the classification of sensors used in robots.
- (iv) How '5s' can be used as a waste management technique?
- b) Attempt any ONE of the following: 6**
- (i) If a worker takes 15 minutes as a standard time for a job in which total allowance is 20% of normal time. If the rating of worker is 100%. Find the actual time required by the worker.
- (ii) Explain general principles of Jig/fixture design.
- 5. Attempt any FOUR of the following: 16**
- a) Describe 3-2-1 principle of location used in Jig and fixture with suitable sketches.
- b) Explain cylindrical locator with neat sketch.
- c) Explain the concept of lean manufacturing.
- d) Explain any one non tactile sensor used in robot.
- e) State types of mechanical joints used in robots. Explain any one with sketch.
- f) Differentiate between hydraulic actuator and pneumatic actuator (any four points)
- 6. Attempt any TWO of the following: 16**
- a) Explain with neat sketch Gantt chart. State its importance and application in production planning and control.
- b) Explain the symbols used in process chart.
- c) Explain various robot configuration with sketches.
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