

22664

12425

03 Hours / 70 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. Attempt any FIVE of the following: 10

- a) List down any four functions of process engineering department.
- b) Define Product analysis.
- c) Define the term
 - i) Waviness
 - ii) Lay
- d) Write meaning of any four letters in surface finish symbol as shown in Fig. No. 1

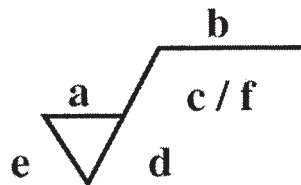


Fig. No. 1

- e) Define Operation sheet.
- f) List down information required for process planning.
- g) Define the term Group Technology.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Explain the functions of Product Engineering department. (Any four functions)
 - b) Explain material selection procedure during process planning.
 - c) Explain process planning procedure.
 - d) State basic requirements for the coding system.
- 3. Attempt any THREE of the following:** **12**
- a) Define the term DFM and list down any four general guidelines for DFM.
 - b) Explain product cycle in manufacturing.
 - c) Prepare the sequence of operations for hexagonal headed bolt.
 - d) Describe any two methods of eliminating operations.
- 4. Attempt any THREE of the following:** **12**
- a) Define a component family and state the procedure to sort the components into families.
 - b) Differentiate between Functional Layout and Group Layout. (Any four points)
 - c) Different between Generative and Variant type CAPP. (Any four points)
 - d) List down any four applications of 3D scanner and explain any one in brief.
 - e) Explain the concept of computer aided process planning (CAPP).
- 5. Attempt any TWO of the following:** **12**
- a) Classify types of inspection methods and explain any one method in detail.
 - b) Prepare a Process sheet for manufacturing washer of size $\varnothing 30$ OD $\times$ $\varnothing 20$ ID $\times$ 3 mm thick from $\varnothing 35 \times 5$ mm thick raw mild steel material.
 - c) Justify contribution of CAPP in implementation of CIM.

6. Attempt any TWO of the following:**12**

- a) Find the maximum and minimum gap using worst case scenario analysis and statistical analysis, then give the size of the gap using bilateral tolerance. Fig. No. 2.

$$a = 500 \pm 1 \text{ mm}, b = 350 \pm 0.7 \text{ mm}, c = 120 \pm 0.1 \text{ mm}$$

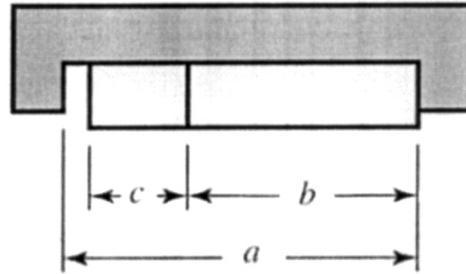


Fig. No. 2

- b) Perform product analysis on Office chair considering following product criteria's.
- i) Material
 - ii) Ergonomics
 - iii) Health and environment
 - iv) Construction method
 - v) Aesthetics
 - vi) Function
- c) Draw group layout of machines for any suitable component family and describe it in detail.
