Degree/ Branch : BE., Mechanical Engineering Semester/ Year : VII/IV

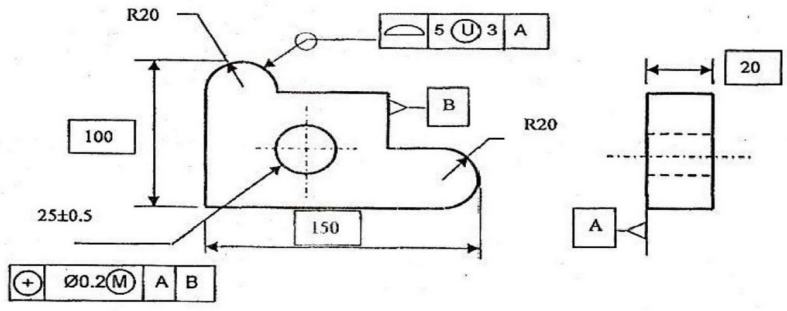
Subject code / Name : ME8793-PROCESS PLANNING AND COST ESTIMATION

Unit -1 Introduction to Process Planning

1. what are the details required for process planning
   - Detailed engineering drawings Knowledge of
   - materials for manufacture Knowledge of
   - manufacturing processes Knowledge of jigs and
   - fixtures
   - Knowledge of the relative costs of materials, processes and tooling Manufacturing
   - parameters (speed, feed etc) and costs
   - Knowledge of inspection/QA procedures and specifications

2. Study the drawing shown in fig and interpret any one geometric tolerance symbol Symbols used for Geometric tolerance

symbol (AU A/M '18)



20 Boxed dimension (theoretically exact) Datum indication

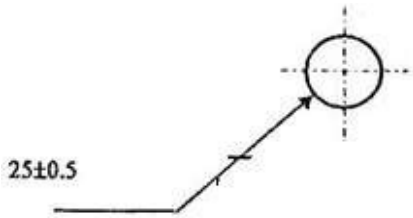
Circular or cylindrical tolerance

Location (position)

3. List the objectives of process planning?
   - To manufacture a product that meets its design specification
   - The manufacture of the product must be cost-effective, that is, maximize the added value, and meet the agreed deadlines, that is, be completed on time.

4. What is bilateral tolerance?)

Bilateral Tolerances are those when variation in actual dimension of the part can be tolerated to both sides of the given Nominal value .e.g. ϕ 25 (+/- 0.5).



Upper deviation : + 0.5; lower deviation: - 0.5

5. Define process planning.

Process planning is defined as the determination of the processes and the sequence of operations required making the product. It consists of devising, selecting and specifying processes, machine tools and other equipment to transform the raw material into finished product as per the specifications called for by the drawings.

6. Write any four cutting tool materials

Carbon steels, High speed steels, cobalt alloys and carbides.

7. write the approaches to process planning ’

- Manual process planning
- Computer Aided process planning
  - Varient approach
  - Generative approach

8. List out factors considered on the selection of machinery

- Volume of production (Quantity to be produced) *i.e.*, no. of components to be produced.
- Quality of finished product, and
- Advantages and disadvantages of the various types of equipment capable of doing the work.

9. Write the Advantages of computer aided process planning

- Efficient processing
- Standardized procedures
- Shorter development time
- Lower hardware costs

10. Define: Contingency allowance

In a shop, there may be small delays due to

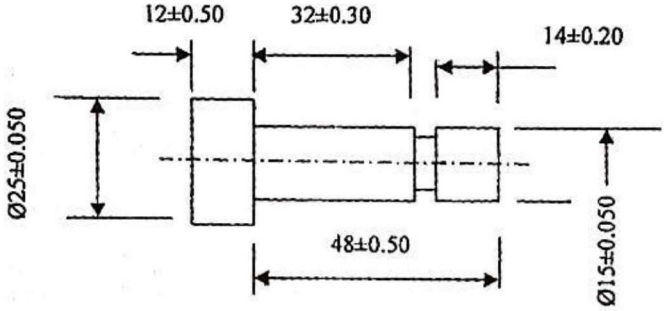
1. Waiting for the inspector.
2. Consulting the supervisor.
3. Obtaining special tools etc.

These delays are of very short duration. The allowance given to compensate these delays is called contingency allowance. Generally 5% of basic time is given as contingency allowance.

Part – B

1. Why is process planning required to estimate cost? State its advantages. Discuss in detail the methods how computer can be used in cost estimations

2. Discuss the production equipment and tool selection for the component shown in **fig undercut diameter is 12mm. (13 marks) (AU N/D '18)**



3. Explain with neat sketch various methods of process planning

4. How will you distinguish retrieval and generative computer aided planning Systems

5. Write down the procedure to be followed during material selection. Discuss the factors that are taken into account in process selection and equipment selection.

6 What are the factors influencing process selection and write down the process Selection parameters

8. Explain how to develop manufacturing logic and knowledge

9. Write short notes on developing manufacturing logic and knowledge

10. Explain the technological frame work of process planning by using a block diagram.

11. In the figure, interpret the meaning of any two
    - **a.** Dimensional tolerance symbols (4 marks)
    - **b.** Form tolerance feature control frames (8 marks)
    - **c.** Surface finish symbols (4 marks)