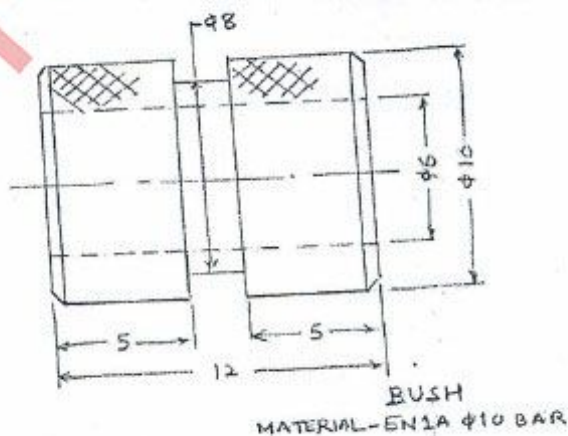


Please check whether you have got the right question paper.

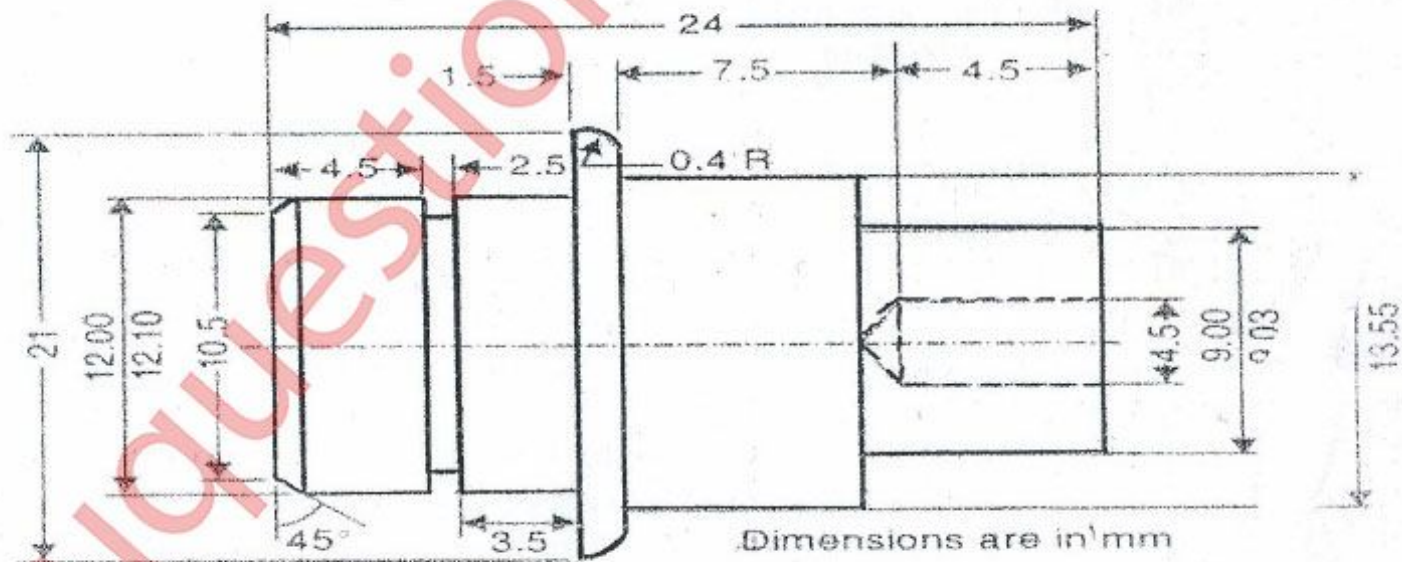
- N.B:
1. Question Number 1 is compulsory. Attempt any 3 questions from the remaining.
  2. Use of speed feed chart, Machine and tooling catalogs, westerman table and other related standard charts is permitted.
  3. Assume suitable data wherever required.
  4. Figures to the right indicate full marks to the questions.

- Q.1 Attempt any four 20
- a) Describe the role of process engineer.
  - b) State four points to differentiate between SPMs and Production Machines.
  - c) Differentiate between Product Critical Area and Process Critical Area.
  - d) Give four reasons to justify need of tolerances in manufacturing.
  - e) What is the purpose of process picture? Explain with example.
- Q.2 10
- a) Explain with suitable example,
    - i) Prequalifying operation
    - ii) Auxiliary operation
    - iii) Basic operation
    - iv) Supporting operation
  - b) Write a note on,
    - i) Equilibrium Theory,
    - ii) Need of alternate locators in work piece control.
- Q.3 15
- a) The component shown in figure is to be produced on single spindle automat (Traub A - 25)
    - i) Design and draw tool layout for the automat.
    - ii) Prepare tabulated result for cam design.
    - iii) Draw the set of cams required for the job.



- b) Define center-less Grinding. Enlist various methods followed during Center-less Grinding. State major advantages and disadvantages of center-less Grinding. 05

- Q.4 a) Write a short note on, (Any Two) 10  
 1) Factors affecting work piece control.  
 2) Tooling used in automat  
 3) Design tolerance stack and Process tolerance stack
- b) Define the terms used in tolerance chart with sketch:- 10  
 i) Stock removal (SR),  
 ii) Working Dimension  
 iii) Total Tolerance  
 iv) Intermediate Dimension
- Q.5 a) Write steps for preliminary part print analysis with example. 10  
 b) What are the functions of product engineer and process engineer? 10
- Q.6 For the Hub made of carbon steel as shown in fig. below,  
 a) Develop basic component drawing with appropriate machining allowance 04  
 b) In standard format prepare detail process sheet including operation no, operation description, tools used, Gauges / Fixture used etc. 12  
 c) Draw tool layout. 04



HUB (Q. NO. 6)

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