IE-352
Section 1, CRN: 48700/1/2
Section 2, CRN: 48703/4/5
Section 3, CRN: 48706/7/8
Second Semester 1434-35 H (Spring-2014) – 4(4,1,2)
"MANUFACTURING PROCESSES – 2"

Tuesday, March 11, 2014 (12/05/1435H)

MIDTERM 1

Name:	Student Number: 4	Section: S/M8/M10

Place the correct letter in the box at the right of each question [$\frac{1}{2}$ Point Each]

1. **Nickel is an example of a(an) …** ☐

   A. ferrous metal

   B. metal-polymer composite

   C. crystalline ceramic

   D. elastomer

   E. non-ferrous metal

2. **The three building blocks of modern manufacturing are …** ☐

   A. materials, processes, and systems

   B. technology, production, and systems

   C. materials, processes, and industry

   D. technology, production, and industry

   E. materials, production, and industry

3. **Sintering is an example of a … process, and involves …** ☐

   A. property-enhancing; pressing powder particles

   B. solidification; heating material under its melting point

   C. property-enhancing; heating material under its melting point

   D. deformation; heating material beyond its melting point

   E. solidification; pressing powder particles

4. **Permanent joining processes DO NOT include …**

   A. brazing

   B. press-fitting

   C. soldering

   D. welding

   E. adhesive bonding

5. **The figure below displays -most likely- what type of production?**

   A. flow line production

   B. batch production

   C. job shop

   D. quantity production

   E. cellular manufacturing

6. **What must always be connected to both manufacturing systems AND processes?**

   A. manufacturing engineering

   B. engineering materials

   C. all manufacturing support systems

   D. quality control system

   E. production planning and control

7. **The device shown below is an example of a(n) …**

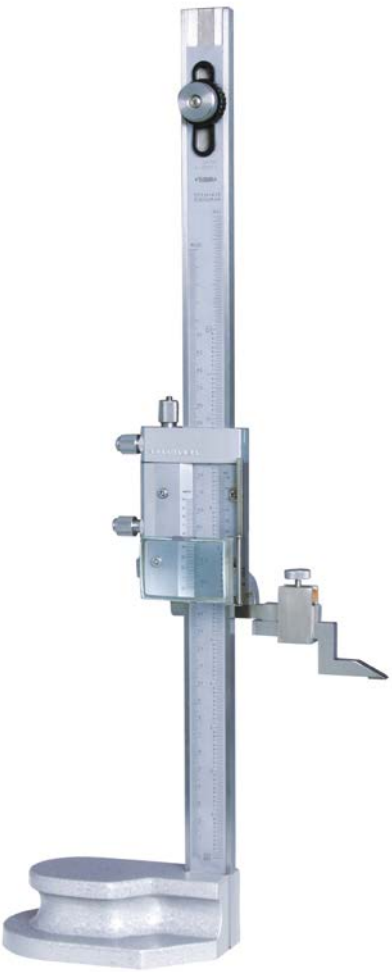
   A. Vernier height caliper

   B. Vernier depth caliper

   C. micrometer depth gage

   D. Vernier micrometer height caliper

   E. micrometer height gage



8. **Figure below shows a… gage, where … and … denote *go* and *no* gages, respectively**

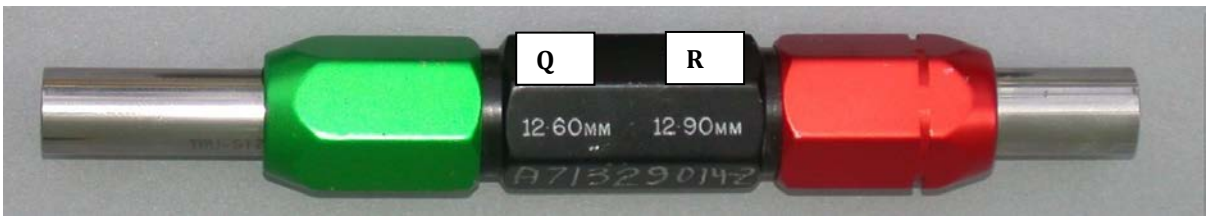
A. plug; *R*; *Q*

B. snap; *Q*; *R*

C. ring; *Q*; *R*

D. plug; *Q*; *R*

E. snap; *R*; *Q*



9. **The correct reading in the … shown below is …**

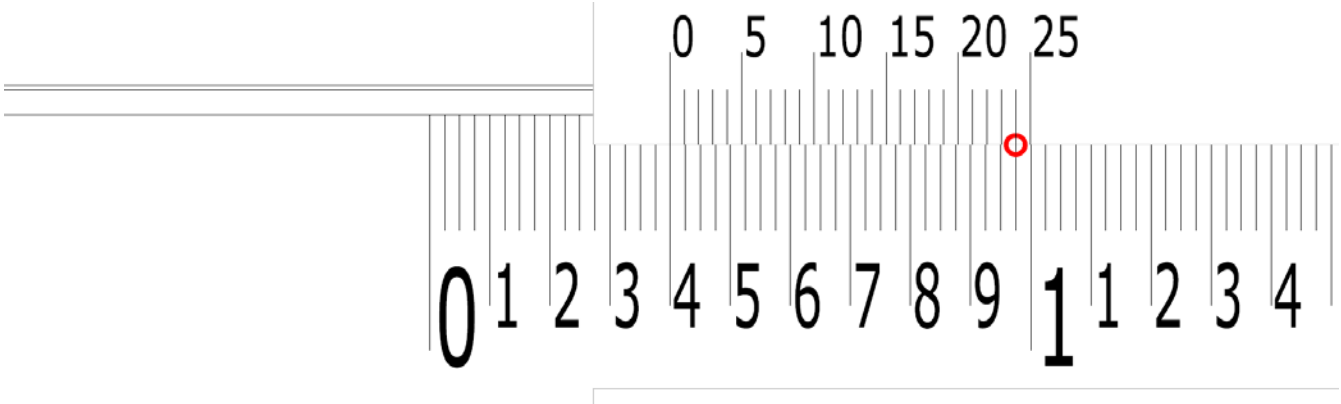
A. Micrometer scale; $0.399\ mm$

B. Vernier scale; $0.399\ in$

C. Micrometer; $3.99\ in$

D. Vernier scale; $0.424\ in$

E. Vernier scale; $4.24\ mm$



10. **The correct reading in the … shown below is …**

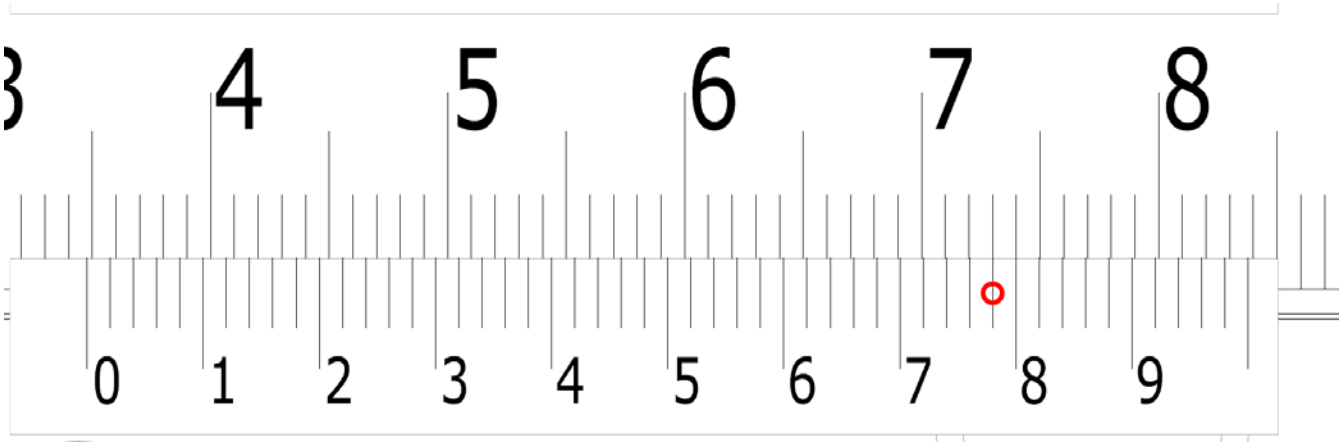
A. Micrometer scale; $34.74\ in$

B. Vernier scale; $34.73\ mm$

C. Vernier scale; $34.78\ mm$

D. Vernier scale; $3.478\ in$

E. Micrometer; $45.78\ mm$



11. **The correct reading in the … shown below is …**

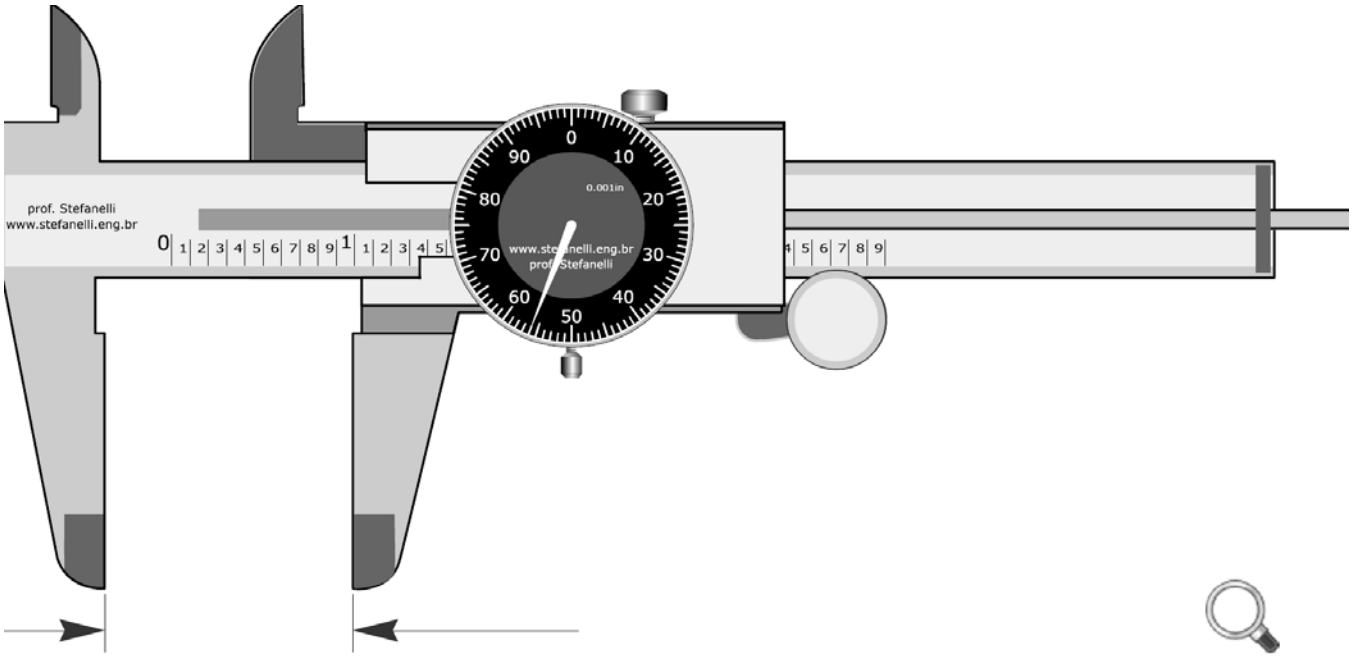
A. Vernier caliper; $1.356\ in$

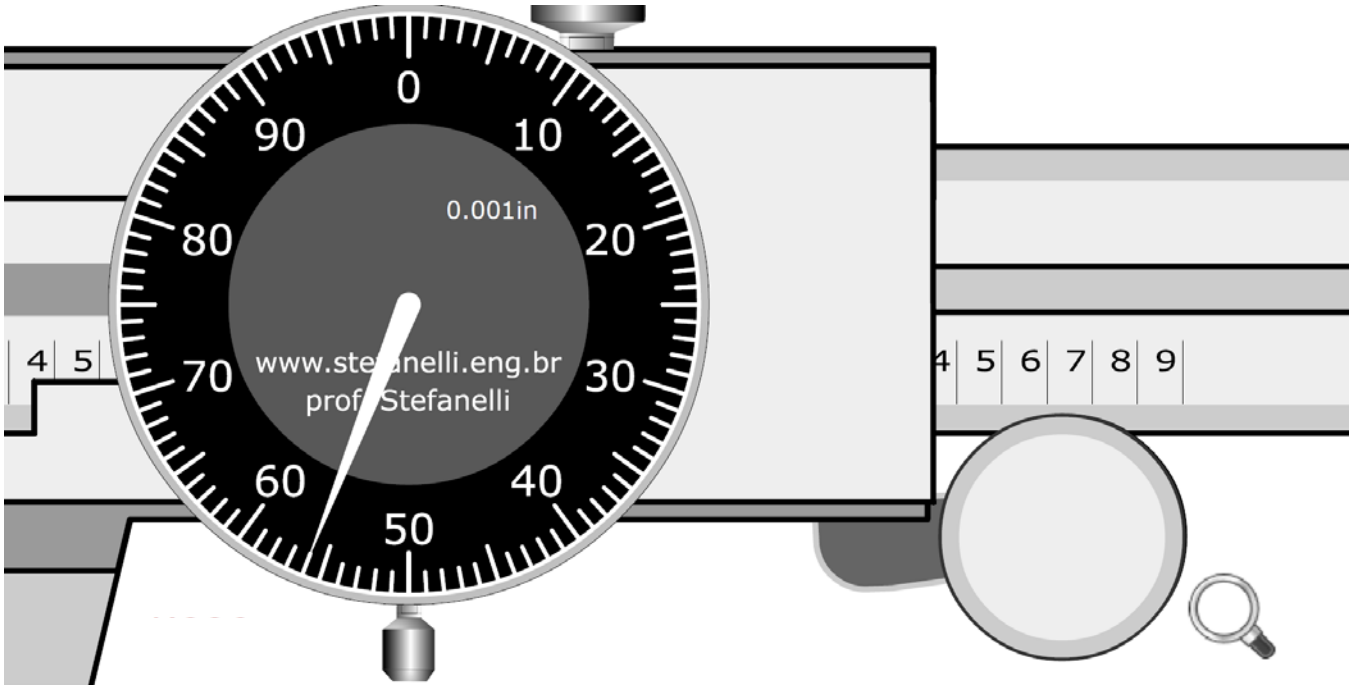
B. dial caliper; $1.56\ in$

C. Vernier caliper; $13.56\ mm$

D. dial caliper; $13.560\ in$

E. dial caliper; $1.356\ in$





12. **The correct reading in the … shown below is …**

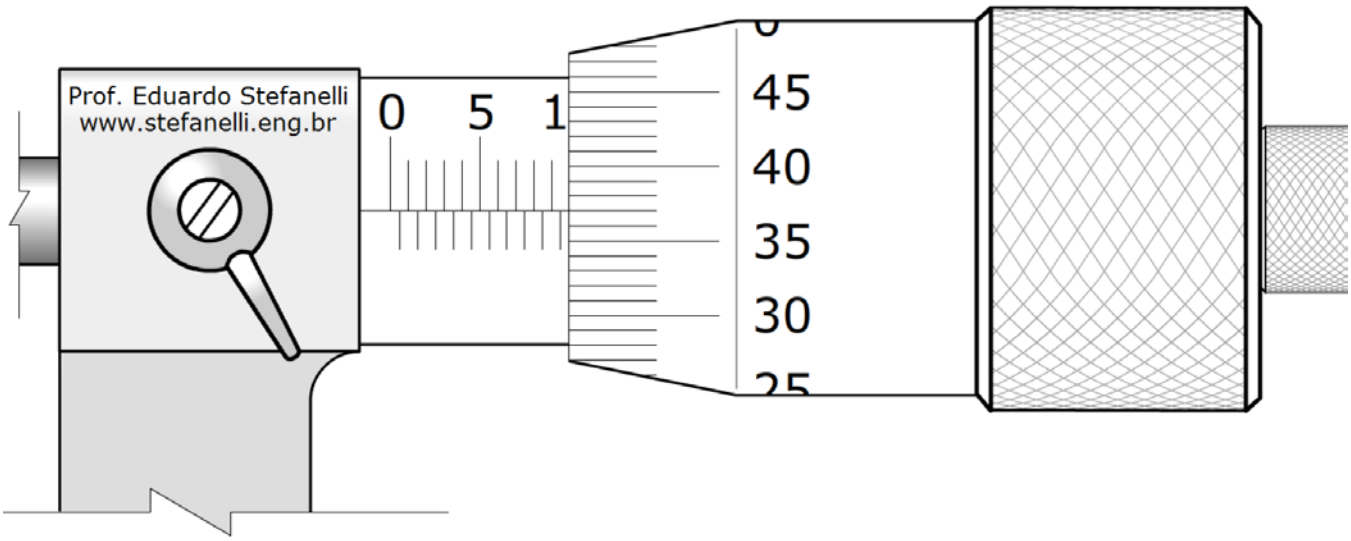
A. inside micrometer; $9.87\ mm$

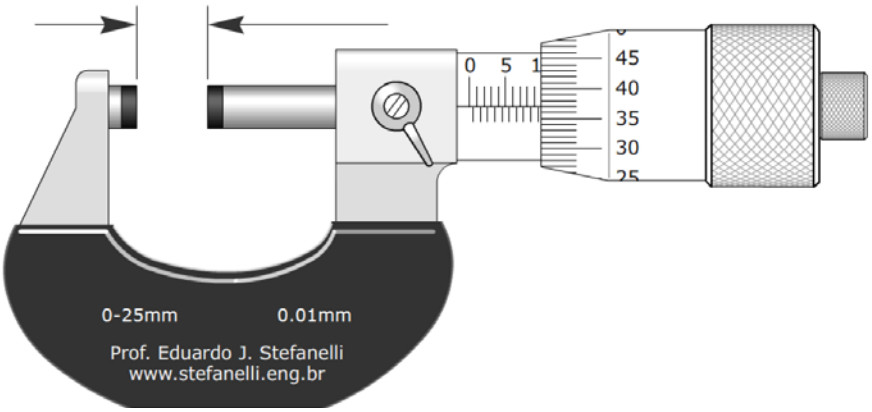
B. outside micrometer; $9.87\ mm$

C. inside micrometer; $10.43\ mm$

D. outside micrometer; $10.87\ mm$

E. outside micrometer; $10.537\ mm$





13. **The correct reading in the … shown below is …**

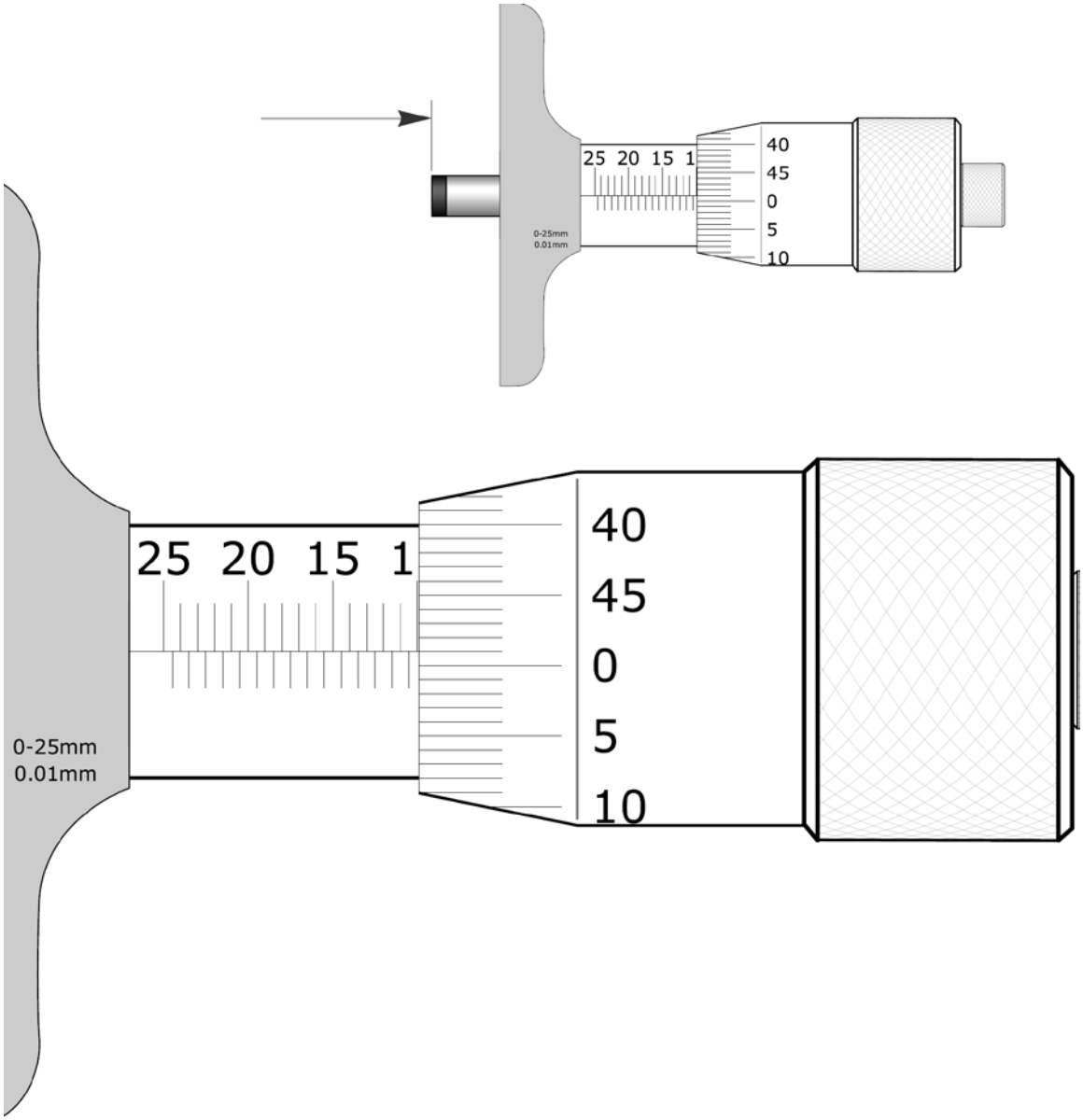
A. depth Vernier; 9.99 mm

B. depth Vernier; 10.01 mm

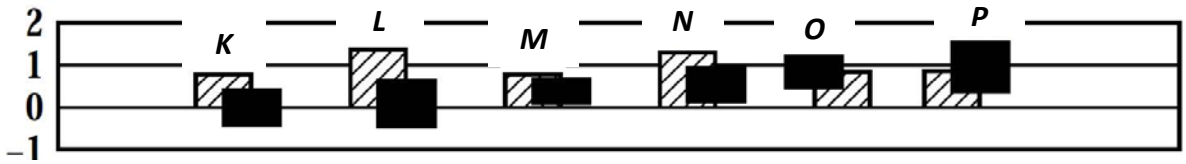
C. depth micrometer; 9.99 mm

D. depth Vernier; 10.49 mm

E. depth micrometer; 10.01 mm



Questions 14-15. Consider the diagram below and answer the questions.



14. **Figure above shows different … fits; fit … has the largest hole tolerance.** ☐

A. transition; L

B. shrink; P

C. interference locational; L

D. interference locational; N

E. transition; M

15. **What is true about fit *O*?** ☐

A. $shaft_{LMC} > hole_{LMC} > shaft_{MMC} > hole_{MMC}$

B. $hole_{LMC} > shaft_{MMC} > shaft_{MMC} > hole_{MMC}$

C. $shaft_{MMC} > shaft_{LMC} > hole_{LMC} > hole_{MMC}$

D. $shaft_{MMC} > hole_{LMC} > shaft_{LMC} > hole_{MMC}$

E. $hole_{LMC} > hole_{MMC} > shaft_{MMC} > shaft_{LMC}$

Questions 16-20. Consider a $6.\frac{5}{16}$" nominal diameter, $FN2$ fit between a shaft and hole.

16. **Respectively,** $shaft_{MMC} =$; $shaft_{LMC} =$…

A. $6.3170\ in;\ 6.3180\ in$

B. $6.3180\ in;\ 6.3170\ in$

C. $6.3175\ in; 6.3165\ in$

D. $6.3141\ in;\ 6.3125\ in$

E. $6.3125\ in;\ 6.3141\ in$

17. **Respectively,** $hole_{MMC} =$; $hole_{LMC} =$…

A. $6.3170\ in;\ 6.3180\ in$

B. $6.3180\ in;\ 6.3170\ in$

C. $6.3175\ in; 6.3165\ in$

D. $6.3141\ in;\ 6.3125\ in$

E. $6.3125\ in;\ 6.3141\ in$

18. **Respectively,** $shaft\ tolerance =$; $hole\ tolerance =$…

A. $0.0055\ in;\ 0.0029\ in$

B. $0.0012\ in;\ 0.0018\ in$

C. $0.0010\ in; 0.0016\ in$

D. $0.0016\ in;\ 0.0010\ in$

E. $0.0018\ in;\ 0.0012\ in$

19. **Respectively,** $min.intereference =$; $max.intereference =$ …

A. $0.0050\ in;\ 0.0024\ in$

B. $0.0024\ in;\ 0.0050\ in$

C. $0.0055\ in; 0.0029\ in$

D. $0.0029\ in;\ 0.0055\ in$

E. $0.0032\ in;\ 0.0062\ in$

20. **What application can this $FN2$ fit be best used in?**

A. application requiring a constant drive pressure resulting in a permanent assembly

B. application where a small amount of clearance or interference is permissible

C. application where accuracy of location is of prime importance

D. application where it is intended to provide a running performance between two parts

E. application where parts can be freely assembled or disassembled