Assignment – Chapter 3: Tolerances

Questions

7. If a hole goes completely through the feature and it is not clearly shown on the drawing, the abbreviation THRU follows the dimension.

8. True or False: A dimension is said to have a *Unilateral* (single) tolerance when the total tolerance is in one direction only, either (+) or (-).

9. The degree (°) may be divided into smaller units called minutes. There are 60 minutes in each degree. Each minute may be divided into smaller units called seconds.

10. Classes for an **External (male thread)** have a A suffix.

11. Classes for an **Internal (female thread)** have a B suffix.

12. There are three major Thread classes of fits; they are: class1, class2, class3. Explain the differences.

13. Identify the pitch of the following Thread note: 3/8-16 UNC 2B
DOUBLE 1/16.

14. Identify the symbol of a Counterbore and Countersunk: ⌴, ✓.

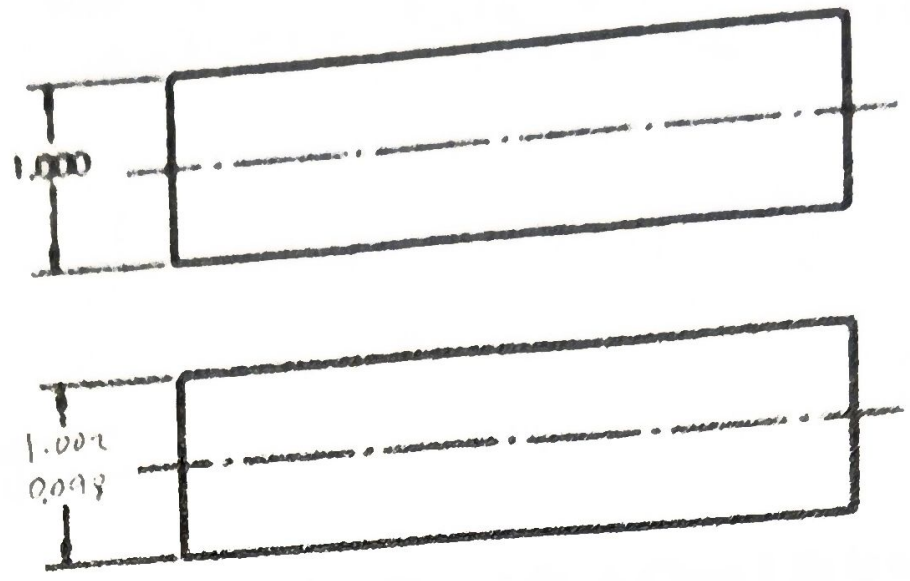
12)

class 1 - loosest fit, assembly with minimal binding.

class 2 - most common, general purpose.

class 3 - closest fit, used for precision

Exercise 3.7: Place a *limit* tolerance of .002 on the below model



Exercise 3.8: Name three of the most common Tolerance Types.

1. Limit
2. Bilateral
3. Unilateral

Exercise 3.9: Identify the following symbols.

Countersink 

Counterbore 

diameter 

hole 

Exercise 3.10: Describe the following hole callouts (symbols and meanings) in detail

⌀ 2500 THRU ALL — hole through entire thickness with diameter 0.25

⌴ ⌀ 5000 ↧ 1250 — counterbore hole with diameter 0.5 and height of 0.125

⌀ .3970 THRU ALL

⌵ ⌀ .7731 X 82°

⌴ ⌀ .7731 ↧ .0402

Exercise 3.11: True/False - The loosest fit is a Class 1 fit. A Class 1 fit is used on parts which require assembly with a minimum of binding.

Exercise 3.12: The two most common Tolerance Standard agencies are American National Standards Institute (ANSI)/(ASME) and the International Standards Organization (ISO). In the ANSI (US) standard: This is a two-part question.

True or False:

T (F) The higher limit is placed below the lower limit.

(T) F When both limits are placed on one line, the lower limit precedes the higher limit.

Exercise 3.13: There are basically two types of dimensioning systems used in creating parts and drawings - *U.S.* and Metric.

True or False: The U.S. system uses the decimal inch value. When the decimal inch system is used, a zero is not used to the left of the decimal point for values less than one inch and trailing zeros are not used.

True or False: The Metric system normally is expressed in millimeters. When the millimeter system is used, the number is rounded to the nearest whole number. Trailing zeros are used.

Exercise 3.14: Identify the illustrated Thread Note.
Remember units.

1/4-20-2 UNC 2A

1.) Pitch of the Thread: 1/20

2.) Major Thread Diameter: 1/4

3.) Internal or External Threads: External

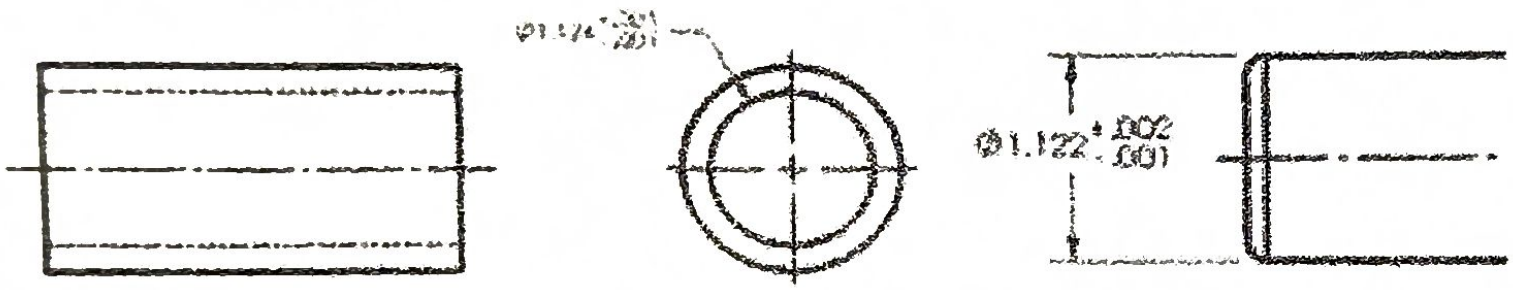
4.) Left Handed or Right Handed Threads: Right handed

5.) Number of Threads per inch: 20

6.) Identify the Thread class: Class 2

7.) Length of the Thread: 2 inches

Exercise 3.15: In the figure below, the tightest fit between the two parts will be when the largest shaft is fit inside the smallest hole. Calculate the Allowance (MMC).



Exercise 3.16: In the figure below, the loosest fit between the two parts below will be when the smallest shaft is fit inside the largest hole. Calculate the maximum clearance between the two parts.