1. The colour of a Star is an indication of its

(1) distance from the Sun
(2) temperature
(3) luminosity
(4) distance from the earth

Ans : 2

2. The first Indian Satellite was

(1) Aryabhatta
(2) Bhaskara
(3) Rohini
(4) Apple

Ans : 1

Aryabhata, first unmanned Earth satellite built by our country. It was named for the prominent astronomer and mathematician of the 5th century CE. The satellite was assembled at Peenya, near Bangalore, but was launched from within the Soviet Union by a Russian-made rocket on April 19, 1975. Aryabhata was instrumented to explore conditions in Earth's ionosphere, measure neutrons and gamma rays from the Sun, and perform investigations in X-ray astronomy.

3. Aluminium is extracted from

(1) Haematite
(2) Buxite ore
(3) Magnetite
(4) Monazite

Ans : 2

4. Bronze is an alloy whose constituent metals are

(1) Copper and Zinc
(2) Copper and Tin
(3) Copper and Silver
(4) Copper and Aluminium

Ans : 2

5. Limestone is an example of

(1) Sedimentary Rocks
(2) Metamorphic Rocks
(3) Igneous Rocks
(4) Minerals

Ans : 1. (Limestone is a **sedimentary rock** that's also an example of a mixture. It's mainly made of calcium carbonate. It's used widely around the world as a

building material and is easily corroded by acids. Limestone is a sedimentary rock that is made of mostly calcium carbonate (CaCO3).)

6. Which of the following gases is found maximum in air?

(1) Oxygen
(2) Nitrogen
(3) Hydrogen
(4) Carbon dioxide

Ans : 2 (78.3% volume basis)

The air in our atmosphere is composed of molecules of different gases. The most common gases are nitrogen (78%), oxygen (about 21%), and argon (almost 0.9%) on volume basis. Other molecules are present in the atmosphere as well, but in very small quantities.

7. In atmosphere, acid rain is formed by the reaction of sulphur oxides and nitrogen oxides with:

(1) Well water
(2) Pond water
(3) Ocean water
(4) Rain water

Ans : 4

8. Gasoline is obtained from crude oil by the process of

(1) Evaporation
(2) Fractional distillation
(3) Distillation
(4) Filtration

Ans : 2

9. Chemically, baking soda is

(1) Calcium phosphate
(2) Sodium bicarbonate
(3) Sodium chloride
(4) Sodium carbonate

Ans : 2

10. Lime water contains

(1) Sodium hydroxide
(2) Calcium hydroxide
(3) Sodium carbonate
(4) Calcium chloride

Ans : 2. (Note: CaOH)

11. In India, Cooking gas is a mixture of

(1) Carbon monoxide and Carbon dioxide
(2) Butane and Propane
(3) Methane and Ethylene
(4) Acetylene and Oxygen

Ans : 2

12. The term pH stands for

(1) Temperature of a solution
(2) Vapor pressure of a solution
(3) Acidity or basicity of a solution
(4) Ionic strength of a solution

Ans : 3

13. Sky appears blue because

(1) It is actually blue
(2) The atmosphere scatters blue colour more than the others
(3) All colours interfere to produce blue
(4) In white light, the blue colour dominates

Ans : 2

14. What is the name of artificial silk?

(1) Rayon
(2) Linen
(3) Terene
(4) Jacard

Ans : 1.("artificial silk" is just a synonym for **rayon**. When made out of bamboo viscose it is also sometimes called bamboo silk.)

15. Seismology is the study of

(1) Volcanoes
(2) Fossils
(3) Earthquakes
(4) Rainfall

Ans : 3

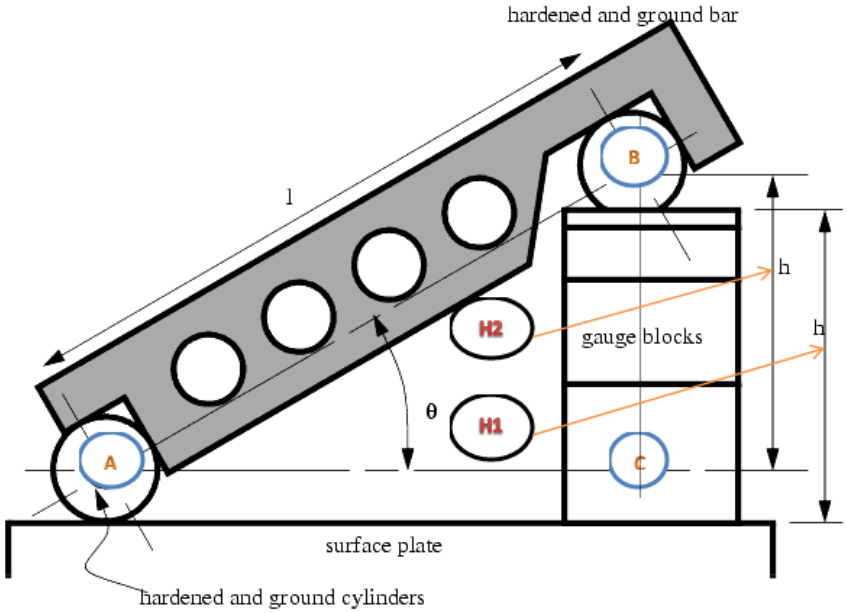
16. Sine bar is made of

(1) High carbon steel
(2) High speed steel
(3) Nickel steel
(4) High chromium corrosion resistant

Ans :4

Sine bars are made from **a high chromium corrosion resistant steel**, and is hardened, precision ground, and stabilized. Two cylinders of equal diameter are placed at the ends of the bar.

A sine bar is used in conjunction with slip gauge blocks for precise angular measurement. A sine bar is used either to measure an angle very accurately or face locate any work to a given angle. Sine bars are made from a high chromium corrosion resistant steel, and is hardened, precision ground, and stabilized.



l = distance between centres of ground cylinders (typically 5" or 10")
h = height of the gauge blocks
θ = the angle of the plate

$$\theta = \text{asin}\left(\frac{h}{l}\right)$$

Two cylinders of equal diameter are placed at the ends of the bar. The axes of these two cylinders are mutually parallel to each other, and are also parallel to, and at equal distance from, the upper surface of the sine bar. Accuracy up to 0.01mm/m of length of the sine bar can be obtained.

The term wringing refers to a condition of intimate and complete contact by tight adhesion between measuring faces. Wringing is done by hand by sliding and twisting motions.

https://openoregon.pressbooks.pub/manufacturingprocesses45/chapter/unit-3-sine-bar/

17. A jigs is a device that:

(1) holds the job
(2) locate the cutting tool

(3) guides the tool
(4) holds, supports, locate the workpiece and also guide the cutting tool

Ans :4 (e.g., drilling jig, reaming jig, etc.)

Jig. It is a work holding device that holds, supports and locates the workpiece and guides the cutting tool for a specific operation. Jigs are usually fitted with hardened steel bushings for guiding or other cutting tools.

17.1 A fixture is a device that:

(1) hold the job
(2) locate the cutting tool
(3) guides the cutting tool
(4) None

Ans. 1.(e.g., milling fixture, welding fixture)

Fixture
It is a work holding device that holds, supports and locates the workpiece for a specific operation but does not guide the cutting tool. It provides only a reference surface or a device.. Examples: Vises, chucks, welding fixtures.

A jig differs from a fixture in that a it guides the tool to its correct position in addition to locating and supporting the workpiece.

18. Hack saw blades are manufactured from

(1) HSS
(2) High carbon steel
(3) Stainless steel
(4) Cast iron

Ans : 1 and 2.

Hacksaw blades (both hand & power hacksaw) are generally made up of high **carbon steel or high speed steel.**
https://cdn.s3waas.gov.in/s367c6a1e7ce56d3d6fa748ab6d9af3fd7/uploads/2018/03/2018031716-1.pdf.

A **hacksaw** is a fine-toothed saw, originally and mainly made for cutting metal. The equivalent saw for cutting wood is usually called a bow saw.

Most hacksaws are hand saws with a C-shaped walking frame that holds a blade under tension. Such hacksaws have a handle, usually a pistol grip, with pins for attaching a narrow disposable blade. The frames may also be adjustable to accommodate blades of different sizes. A screw or other mechanism is used to put the thin blade under tension.

On hacksaws, as with most frame saws, the blade can be mounted with the teeth facing toward or away from the handle, resulting in cutting action on either the push

or pull stroke. In normal use, cutting vertically downwards with work held in a bench vise, hacksaw blades are set to be facing forwards.

https://en.wikipedia.org/wiki/Hacksaw

…….

Hand hacksaw blades are traditional cutting tool for metal and non-metal materials. Applications can be found in household and craft workshops. Blades are made from carbon steel, high speed steel and bimetal material.

Note:Bi-metal blades have a high speed steel cutting edge and are electron-beam welded to alloy steel back, with wavy set. When used with high-tension frames, bi-metal blades provide best performance and safety.

https://www.reedmfgco.com/en/products/general-pipe-working-tools/bi-metal-hack-saw-blades/

19. Measuring tapes are made up of

(1) Steel
(2) HSS
(3) Stainless steel
(4) Low carbon steel

Ans : 1 and 3.

20. The purpose of normalizing is to

(1) Soften Metal
(2) Increase the toughness
(3) Refine the crystal structure
(4) Harden the surface

Ans : 3

21. Number of taps generally used in tapping by hand is

(1) One
(2) Two
(3) Three
(4) Four

Ans : 3

22. Surface roughness on a drawing is represented by

(1) Triangle
(2) Circles
(3) Squares
(4) Rectangles

Ans : 1

The surface roughness on a drawing is represented by **inverted triangles**. The basic symbol consists of two legs of unequal length inclined at approximately 60° to the line representing the considered surface. The symbol must be represented by a thin line.
Surface roughness, often shortened to **roughness**, is a component

of surface texture. It is quantified by the deviations in the direction of the normal vector of a real surface from its ideal form. If these deviations are large, the surface is rough; if they are small, the surface is smooth.
Surface roughness is defined as the irregularities which are inherent in the production process.(e.g. cutting tool or abrasive grit). Roughness It is quantified by the deviations in the direction of the normal vector of a real surface from its ideal form. If these deviations are large, the surface is rough; if they are small, the surface is smooth.
What is Waveness?

Waviness that part of the texture on which roughness is superimposed. It may result from vibrations, chatter or work deflections and strains in the material.It is also impossible to specify precisely where waviness stops, and the shape becomes part of the general form of the part, but using the same criterion we say that:

What is Form?

Form is the general shape of the surface, ignoring variations due to roughness and waviness.

These distinctions are therefore qualitative not quantitative yet are of considerable importance as defining them this way is well established and functionally sound. Roughness is produced only by the method of manufacture resulting from the process rather than the machine. Marks can be left by the tool or grit itself: these will be of a periodic nature for some processes and more random in others.

https://www.taylor-hobson.com/resource-center/blog/2019/october/what-is-surface-roughness

23. SWG stands for

(1) Smithy Wire Gauge
(2) Steel Wire Gauge
(3) Standard Wire Gauge
(4) Straight Wire Gauge

Ans : 3

24. The angle of try square is

(1) 90^o
(2) 45^o
(3) 30^o
(4) 60^o

Ans : 1

A **try square** or **try-square** is a woodworking tool used for marking and checking 90° angles on pieces of wood. Though woodworkers use many different types of square, the try square is considered one of the essential tools for woodworking.

A try square is made of two key parts, the *blade* (also known as a *beam* or *tongue*) and the *stock*, which are fixed together at 90° to form an 'L' shape.

The blade is usually made of wood or steel and is fixed into the stock, which is usually thicker than the blade and made of wood, metal or plastic. Both the stock and the tongue are usually made with parallel edges

https://commons.wikimedia.org/wiki/File:Trysquare.jpg

25. Punch is used

(1) to make hole
(2) for layout work
(3) for scribing lines
(4) to draw arcs

Ans : 1 (A **punch** is a tool, which is **used** to make an indent or a hole in a hard surface.)

Mechanical engineering workshops extensively use various types of punches. Few of the basic types include center punch, prick punch, pin punch and drift punch. Workshops use punches for locating centers for drawing circles, to punch holes in sheet metals, to start holes for drilling, to remove damaged rivets, bolts or pins and to transfer location of holes in patterns. Some punches used are hollow.

Punches are usually classified according to the shape of their points.

Classification and Use of Punches

The most commonly used among these is the prick punch, useful for placing reference marks on metal.

A center punch is useful when making large indentations in metal, such as necessary to engage a twist drill. Usually, a center punch is heavier than a prick punch and has a point ground to an angle of 60Âº.

For driving out damaged rivets, bolts and pins that are bound up in holes, use the drive punch. The drive punch has a flat face instead of a point. The width of

its face defines this type of punch, for example, 1/8-in or 1/4-in. The sides of a drive punch will taper all the way down to the face, but sometimes you may need to use a punch with a straight shank. This is called the pin or drift punch.

Apex Tool Company, 10957 E. State Road 7 Columbus, IN

https://www.apexinds.com/blog/types-punches-uses.html

Commonly, a punch is a rigid metal rod with a pointed tip at one end and a dull end at the other. These punches are generally made of carbon steel or tool steel. They are used in combination with tools like a hammer and chisel to make them properly cut and shape.

TYPES OF PUNCH TOOLS

Types of punches are Centre punch, Prick punch, Solid punch, Transfer punch, Drive punch, Pin punch, Roll pin punch, Hollow punch, Dot punch, Bell punch, Letter stamps, Tablet punch and Automatic punch.

1 CENTRE PUNCH

These are made of high carbon steel. These are made hard and given temper treatment. Their point is made at a 90° angle and the handling part is knurled. Its length is from 35 mm to 125 mm and its width is from 4 to 12 mm.

Their use is generally made to make a centre at the drilling point so that the drill bit's point can rest there properly. If this centre is not made by the centre punch, there are chances of slipping of the point and drilling at the wrong point. This type of centre has been illustrated in Figure.

2 PRICK PUNCH

This is also made of high carbon steel, prick punch is also made hard and tempered. Its point is made at a 30° angle. It is used for marking on jobs of thin metal sheets or to make holes in them. It has been shown in Figure.

3 SOLID PUNCH

Solid punch is used for boring holes in blacksmithy and sheet metal operations. These are used in different measurements according to the jobs. These are produced of high carbon steel, hardened, and tempered.

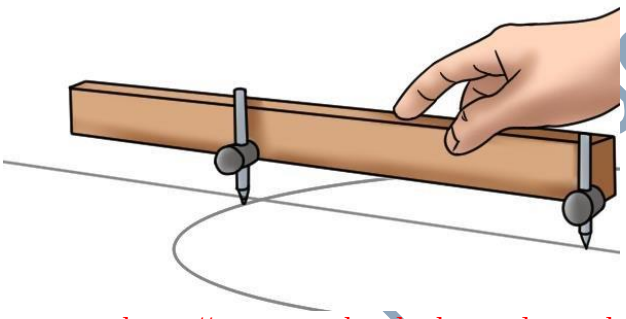
https://www.theengineerspost.com/types-of-punches/

26. Trammel is used

(1) To draw parallel lines
(2) To draw big circles of larger diameter
(3) To divide a straight line
(4) None of the above

Ans : 2 (Trammels are used to measure distance between two points that are too great to be reached with dividers.)

Trammel heads are used **in layout work to scribe circles and arcs** that are too large to be drawn with a divider or compass. Trammel heads can also be used to bisect lines and angles.



https://www.wonkeedonkeetools.co.uk/trammel-heads/what-are-trammel-heads-used-for

27. The thickness of sheets are measured by

(1) Wire gauge
(2) Plug gauge
(3) Feeler gauge
(4) Snap gauge

Ans : 1

28. Counter sunk rivets are used in place where

(1) bridges of iron
(2) in joining chains
(3) in machines
(4) to keep the surface plain

Ans :4.

Countersunk rivets come with a flat head and a tubular or shank rivet running through the length of its body. They are made with stainless steel, carbon steel, or alloy steel which makes them highly durable for high strength applications and suitable for usage in extreme temperatures. These rivets are mainly used in applications where the head of the assembled rivet

has to be flush with the top of the workpiece. This gives the entire assembly an impeccable finish as well.

https://itafasteners.com/products-rivets-inserts-countersunk-head.php

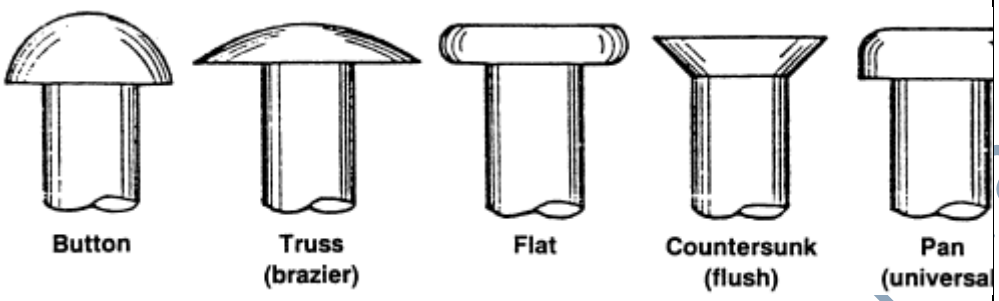


Fig.Standard rivet heads

https://www.goebelfasteners.com/general-types-of-rivets-their-applications/

29. Machinability

(1) tends to increase with increase in hardness of work piece
(2) tends to decrease with increase in hardness of work piece
(3) remains unaffected with hardness of work piece
(4) None of the above

Ans :2

WHAT IS MACHINABILITY?

Machinability is defined as the ease with which a material can be machined to intended geometry and purpose at a satisfactory cost. Good machinability related to removal of material with moderate forces, good surface finish, small chips, and with minimum tool wear. It is difficult to maintain all these objectives at once for a machining operation.

FACTORS THAT AFFECT MACHINABILITY

The machinability depends on the following machining process parameters, conditions and physical properties of workpiece.

Material variables

Microstructure and grain size of workpiece

- Heat treatment of material
- Chemical composition of workpiece such as presence of alloying metal.
- Hardness, tensile strength and ductility of workpiece.

Machining variables

1. Rigidity of tool, fixture, and work holding devices.
2. Tool geometry, tool dullness etc. indirectly affects the machinability.
3. Cutting parameters such as feed, speed, cutting force etc. are

directly affect machinability.

4. Use of cutting fluid.

Advantages of good machinability

Result of good machinability are listed below
High cutting speed can be used.

- High material removal rate
- Low power consumption.
- Tool wear rate is very low and good tool life.
- Good surface finish
- Minimum idle time.

https://www.mecholic.com/2018/08/what-is-machinability-factors-affecting.html

……..

MACHINABILITY INDEX OF METAL

Machinability index is used to compare the machinability of different materials in the various cutting process.

$$\text{Machinability index, I (\%)} = \frac{V_i}{V_s} \times 100$$

V_i = Cutting speed of metal investigated for 20 minute tool life
V_s = Cutting speed of standard steel for 20 minute tool life.

CRITERIA CONSIDERED IN EVALUATING MACHINABILITY

Following are parameters needs to be considered for machinability measurement

Tool life, and types of wear tool subjected to Crater wear, flank wear etc.

- Cutting forces Power consumption.
- Shape, size, type of chips. Tendency to burr. Cutting ratio of chip.
- Efficiency and rate of chip removal.
- Quality and properties of workpiece material.
- Quality of surface finish and dimensional accuracy.
- Temperature at cutting zone.

https://www.mecholic.com/2018/08/machinability-index-criteria.html

……..

30. Scriber is used

(1) to cut the sheets
(2) for marking
(3) for punching
(4) to make circles

Ans :2

A **scriber** is a hand tool used in metal work to mark lines on workpieces, prior to machining. The process of using a scriber is called **scribing** and is just part of the process of marking out. It is used instead of pencils or ink lines, because the latter are hard to see, easily erased, and imprecise due to their wide mark; scribe lines are thin and semi-permanent. On non-coated workpieces marking blue is commonly used to increase the

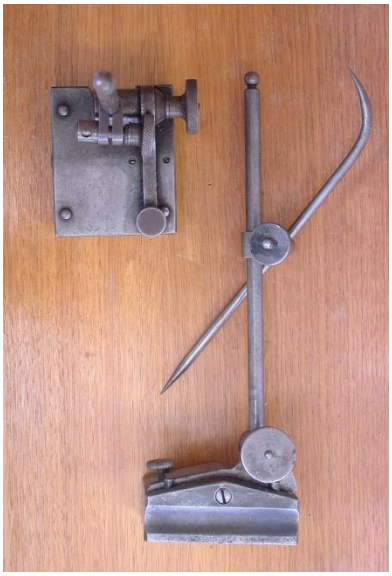
contrast of the mark lines.

They are a rod with a tip made of cast steel that has been hardened and tempered. The point is sharpened to an angle of 30 or 40 degrees.[2] Some scribers have a point at both ends. It is used by dragging the point over the surface of the workpiece to leave a shallow scratch on its surface.

https://en.wikipedia.org/wiki/Scriber

https://en.wikipedia.org/wiki/Scriber#/media/File:Scribers.jpg

A **scriber block** is used to lay out lines at a set height from the base, thus its second name *surface height gauge* or just *surface gauge.*



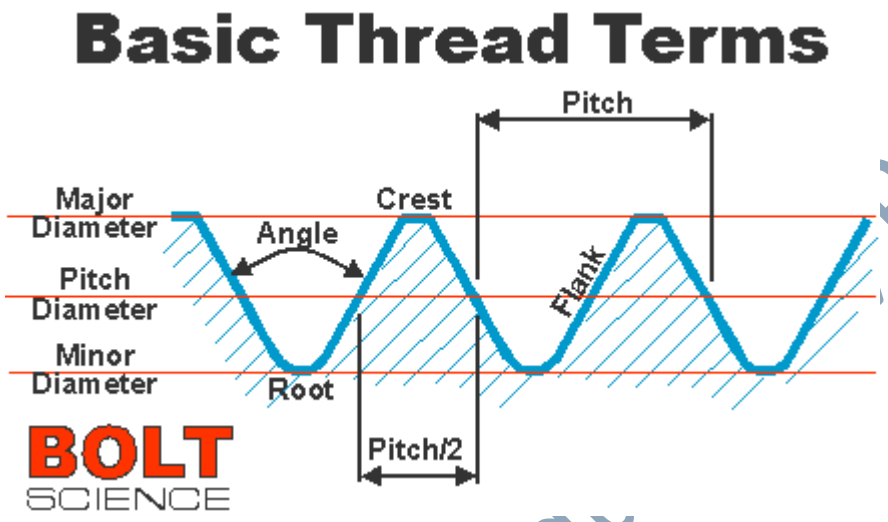
https://en.wikipedia.org/wiki/Scriber#/media/File:ScriberBlock.jpg

31. Nominal diameter of bolt or screw is

(1) larger than the actual diameter

(2) same as the actual diameter
(3) smaller than the actual diameter
(4) none of the above

Ans :



Source: https://www.boltscience.com/pages/screw3.htm

https://www.boltscience.com/pages/screw3.htm

32. The least count on a vernier caliper

(1) 1VSD – 1MSD
(2) 1MSD – 1VSD
(3) 1VSD + 1MSD
(4) 1MSD / 1VSD

Ans : 2 (the formula of Least Count (L.C)= 1 MSD - 1VSD)

Least count

The smallest reading which can be accurately measured with a verniercaliper is called its least count (L.C), it is also known as the vernier constant. It is the difference between one main scale division which is 1 mm and one vernier division which is (0.9).

L.C = 1 mm – 0.9 mm =0.1 mm

How To Calculate Least Count of a Vernier Caliper / Micrometer?
One small division on main scale = 1 mm No. of divisions on Vernier scale = 50 50 Vernier scale divisions = 49 divisions on main scale (or 49 mm) Each division on Vernier scale = (49/50) mm Difference between one main scale division and one Vernier scale division = 1 - (49/50) mm = (50 - 49)/50 = (1/50) mm = 0.02 mm Least Count = 0.02 mm

33. Typical locating devices for cylindrical job used in jigs & fixtures are

(1) Mandrels
(2) V block
(3) Drill jig
(4) Angle plates

Ans : 2

34. In a casting, blow holes are caused by

(1) Liberation of gases
(2) Liberation of powder
(3) Liberation of liquid
(4) All of the above

Ans : 1

35. Indexing is required for cutting of

(1) Gear
(2) Slot
(3) Dove tail
(4) None of the above

Ans : 1

36. To clean a file it is

(1) dipped in water
(2) dipped in dilute alcohol

Ans:4

37. A tank has a leak which would empty the tank in 9 minutes. A tap which can discharge 5 litre of water in a minute is turned on for filling up the tank. Now the tank gets empty in 10 minutes. How many litres does the tank hold?

(1) 400 litre (2) 450 litre (3) 500 litre (4) none of these

Ans: 2

38. The valve used to control flow is the

(1) Globe
(2) Gate (rising stem)
(3) Check
(4) Gate (non-rising stem)

Ans :3

A **check valve**, **non-return valve** or **one-way valve** is a valve that normally allows fluid (liquid or gas) to flow through it in only one direction. Check valves are two-port valves, meaning they have two openings in the body, one for fluid to enter and the other for fluid to leave. There are various types of check valves used in a wide variety of applications. Check valves work automatically and most are not controlled by a person or any external control; accordingly, most do not have any valve handle or stem.

……..
Check valves are mechanical devices that permit liquids and gases to flow in only

one direction, preventing flow from reversing. They are classified as one-way directional valves meaning they have two openings in the body, one for fluid to enter and the other for fluid to leave. Fluid flow in the desired direction opens the valve, while backflow forces the valve closed.

https://www.flomatic.com/valves/check-valves/

……

https://www.mpofcinci.com/blog/flow-control-valve-types/

The most common valve types in flow control industries include:

- Gate valves
- Globe valves
- Pinch valves
- Diaphragm valves
- Needle valves

OTHER TYPES OF FLOW CONTROL VALVES

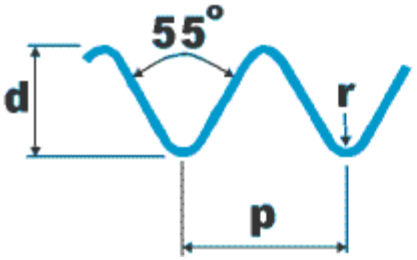
While the five types of flow control valves described above are some of the most commonly used valve types, there are other types of flow control valves with features that make them suitable for different applications. Here's a look at a few other types of flow control valves.

Butterfly valve.
Plug valve.
Ball valve.

39. Angle of BSW thread is

(1) 55^o (2) 60^o
(3) 59^o (4) 29^o

Ans : 1



p = pitch of the thread
d = depth of the thread
r = radius at the top and bottom of the threads
d = 0.640327 p
r = 0.137329 p

Source:https://journeymans-workshop.uk/whitworth.php

40. The least count of an outside micrometer is

(1) 0.02 mm
(2) 0.01 mm
(3) 0.05 mm
(4) 0.5 mm

Ans : 2. (The least count of an outside vernier micrometer is 0.001mm)

41. The property of a metal by the virtue of which it can be drawn into thin wires without fracture is called

(1) Malleability
(2) Ductility
(3) Hardness
(4) Brittleness

Ans : 2

42. A hand tool used for producing external thread on round job is known as

(1) Taps
(2) Die
(3) Reamer
(4) Chaser

Ans : 2

TOOLS FOR EXTERNAL THREADING

External threads are made with the help of a threading die or die-stock.

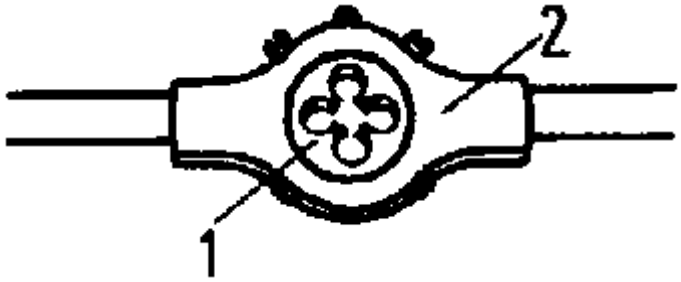


Figure - Threading die

1-Threadingdie
2 - Die holder

43. Drilling and countersinking can be done at a time with

(1) Twist drill
(2) Countersinking drill
(3) Flat drill
(4) Combination drill

Ans : 4

COMBINATION TOOLS

Combination tools are modular tool systems for drilling, countersinking, milling and thread milling which are primarily used in serial production. These sytems can often be applied when the use of a solid carbide tool is uneconomical. This is especially the case by machining large countersinking and chamfering, as the diameter differences between the operations are very large. Thus, significant time savings, rationalisation and quality improvements are possible in the machining of serial parts on CNC machining centers.

https://www.johs-boss.de/en/shell-type-thread-milling-cutters-combination-tools/combination-tools

44. M.S. sheets are coated with _____ to protect it from rusting

(1) zinc (2) gold

(3) silver (4) aluminium

Ans : 1

Note: Method of coating is known as galvanising.

45. The act of making holes in the metallic sheets is called

(1) blanking (2) piercing

(3) drilling (4) perforating

Ans : 2

46. The least count of bevel protractor is _____

(1) 5 min (5') (2) 15 min

(3) 0.5 min (4) 1.5 min

Ans : 1

A simple protractor is a basic device used for measuring angles with a least count of 1° or ½°. Bevel Protractor is an angular measuring instrument capable of measuring angles with a least count of 5'.

Vernier bevel protractor is an angle measuring micrometers used to layout or check an angle of up to 5 minutes precision. Its design consists of a fixed stock and an adjustable blade with a graduated dial. Graduations are made from 0 ° to 90 ° or 0 ° to 180 °. It can be rotated at any angle around a circle and clamped to a certain position by a locking Screw nut.

All its parts are made of high carbon steel and heat treated.

Definition of Vernier Bevel Protractor

Vernier bevel protractor is used to measure the angle of any job or workpiece.

This allows an angle of up to 5 minutes accuracies.

Least Count of Vernier Bevel Protractor = 5 min

https://www.mechical.com/2021/03/vernier-bevel-protractor.html

47. Snips are used to cut sheet metal up to _____

(1) 1.2 mm (2) 2 mm

(3) 1.5 mm (4) 2.5 mm

Ans : 1

A snip also called a hand shear, is used as a pair of scissors to cut thin, soft metal sheets. Snips are used to cut sheet metal up to **1.2 mm thickness**

https://en.wikipedia.org/wiki/Snips

https://en.wikipedia.org/wiki/Snips#/media/File:Left-right-snips.jpg

48. The difference between upper limit and lower limit of size is called

(1) tolerance (2) deviation

(3) allowance (4) clearance

Ans :1

Some Definitions

Tolerance: It is the difference between the upper limit and lower limit of a dimension

Allowance: It is the difference between the basic dimensions of the mating parts. When the shaft size is less than the hole size, then the allowance is positive and when the shaft size is greater than the hole size, then the allowance is negative.

Basic Size: The size with reference to which the limits of size are fixed. Actual Size: Actual measured dimension of the part.

Zero Line: It is a straight line corresponding to the basic size. The deviations are measured from this line. The positive and negative deviations are shown above and below the zero line respectively.

Limits of Size: The two extreme permissible sizes of a part between which the actual size should lie. Maximum Limit of Size: The greater of the two limits of size. Minimum Limit of Size: The smaller of the two limits of size. Shaft: A term used by convention to designate all external features of a part, including those which are not cylindrical.

Hole: A term used by convention to designate all internal features of a part, including those which are not cylindrical.

Allowance: It is the difference between the basic dimensions of the mating parts. When the shaft size is less than the hole size, then the allowance is positive and when the shaft size is greater than the hole size, then the allowance is negative.

Tolerance: It is the difference difference between between the upper limit and lower limit of a dimension.

Tolerance Zone: It is the zone between the maximum and minimum limit size.

Upper Deviation: It is the algebraic difference between the maximum size and the basic size. The upper deviation of a hole is represented by a symbol ES (Ecart Superior) and of a shaft, it is represented by es.

Lower Deviation: It is the algebraic difference between the minimum size and the basic size. The lower deviation of a hole is represented by a symbol EI (Ecart Inferior) and of a shaft, it is represented by ei.

http://home.iitk.ac.in/~nsinha/Metrology.pdf

49. The act of cutting the comers of a metallic sheet making cuboid shaped jobs is called

(1) Notching (2) shearing

(3) Piercing (4) blanking

Ans :1

50. The tool used for gripping small jobs and for cutting and bending the wires is known as

(1) spanner (2) plier

(3) snips (4) wrench

Ans : 2

Box1:Pliers

Pliers, hand-operated tool for holding and gripping small articles or for bending and cutting wire. Slip-joint pliers have grooved jaws, and the pivot hole in one member is elongated so that the member can pivot in either of two positions in order to grasp objects of different size in the most effective way. On some pliers the jaws have a portion that can cut soft wire and nails. For bending wire and thin metal, round-nose pliers with tapering, conical jaws are used. Diagonal cutting pliers are used for cutting wire and small pins in areas that cannot be reached by larger cutting tools. Because the cutting edges are diagonally offset about 15 degrees, these can cut objects flush with a surface.

Britannica, The Editors of Encyclopaedia. "Pliers". ***Encyclopedia Britannica***, 25 Sep. 2008, https://www.britannica.com/technology/pliers. Accessed 9 October 2021.

Box2:Pliers

What are common types of pliers and wire cutters?

Pliers are made in various shapes and sizes and for many uses. Some are used for

gripping something round like a pipe or rod, some are used for twisting wires, and others are designed to be used for a combination of tasks including cutting wire. There are also tools that are used just for cutting wires (as opposed to wire cable and rope). Use the correct pliers or wire cutters for the job.

Side Cutting (Lineman's) Pliers

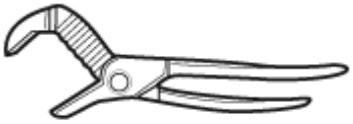
Proper use of side cutting (lineman's) pliers:

- Many applications including electrical, communications and construction work
- Use to grip, splice or cut wires, and strip insulation.

Long Nose Pliers

Proper use of long nose pliers:

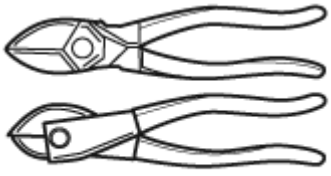
- Use to grip small objects, reach awkward places, holding wires, bend loops, and attach wires
- Work involving smaller gauge wire.



Utility Pliers

Proper use of utility pliers:

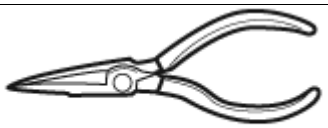
- Use to grip round square, flat and hexagonal objects.
- Can apply limited torque (twisting force) without damaging the work.



Diagonal Cutting Pliers

Proper use of diagonal cutting pliers:

- For work involving cutting and skinning wires, cutting and removing pins, nails and other fasteners.



Flat Nose Pliers

Proper use of flat nose pliers:

- Common pliers, used in many applications and assembly work.
- Use to grip, turn and bend wires.

Slip Joint Pliers

Proper use of slip joint pliers:

- Used to adjust nuts or bolts.

End Cutting Pliers

Proper use of end cutting pliers

- Use for cutting wires, nails, rivets close to work.

https://www.ccohs.ca/oshanswers/safety_haz/hand_tools/pliers.html