Q1 - Define engineering drawing. Why drawing is called universal language of engineers?

Ans1:-A drawing drawn by an engineer having engineering knowledge for the drawing purposes is an engineering drawing. It is meant for communicating his ideas, thoughts and designs to others. Engineering drawing is a starting point of all engineering branches such as Mechanical, Production, Civil, Electrical, Electronics, Computer science, Chemical etc. It is spoken, read, and written in its own way. Engineering drawing has its own grammar in the theory of projections, its idioms in conventional practices, its punctuations in the types of lines, its abbreviations, symbols and its descriptions in the constructions.

Q2 - Name different types of drawing instruments.

Ans2 – Drawing board, T-square, Set Square, Scales, Pencil and sand paper block, Drawing pins or cello-tape, Duster or handkerchief, eraser etc.

Q3 – Why pencil is rotated in finger while drawing a long line?

Ans3 – The pencil is rotated in finger while drawing a long line in order to get a line of uniform thickness throughout.

Q4 – How will you test the set square and T-square?

Ans4 – Testing of T-square – (i) Check all screw heads and tighten, if necessary
(ii) In order to check the T-square, first of all draw a horizontal line. Now reverse the T-square and again draw a horizontal line with working edge. If both the lines coincide with each other, then the working edge of Tsquare is alright. If there is a difference in two lines, then working edge is not correct and the line gives twice the error of the working edge. This error should be rectified by scraping the edge with a scraper or a sharp knife.

Testing of set-squares – The straightness of edges of the set-square can be checked by drawing a vertical line. Then reverse the set-square and draw again vertical line. If there is any difference between the two vertical lines then working edge is not correct and the line gives twice the error. This error can be removed by straightening the edges by means of a scraper or sand paper.

Q5 – What are the standard sizes of drawing sheets according to I.S.I. and which is suitable for drawing work?

Ans5 – The standard size of sheets according to I.S.I. are A0 (1189 X 841), A1 (841 X 594), A2(594 X 420), A3(420 X 297), A4(297 X 210) and A5(210 X 148). Drawing sheet of size 594 X 420 i.e. A2 size is generally used by engineering students as it is very handy and easy for drawing work in class.

Q6 – What are the ways of sharpening a pencil for good and accurate work and which type of pencil is more
suitable for drawing work?

Ans6 – There are two ways of sharpening a pencil (i) a small piece of sand paper of zero grade, pasted upon a piece of wood. (ii) Sharpeners. Usually hard pencils such as H, 2H etc are used for making the engineering drawing.

Q7 – Why cello-tape is used instead of drawing pins, now a day?

Ans7 – Now a days, cello tapes are used in place of drawing pins for its practical convenience as the drafter, Tsquare and set-squares can be moved easily over the tape.

Q8 – What is layout of drawing sheet?

Ans8 – The selection of suitable scale and allotment of proper space for margin, title block, parts list, revision panel, folding marks etc. on the drawing sheet is known as layout of drawing sheet.

Q9 – Why is the layout of sheet is necessary?

Ans9 – Layout of the drawing on the drawing sheet is necessary in order to make its reading easy and speedy.The title blocks, parts list etc will provide all the required information.

Q10 – List out the contents of title block and material list

Ans10 – The title block should contain at least the following informations.
(i) Name of the institution
(ii) Name of title of drawing
(iii) Name, Class and Roll no. of the student
(iv) Scale
(v) Drawing number
(vi) Symbols denoting the method of projection

Q11 – What is material list

Ans1 –

S.No.	**Material**	**Quantity**
	Nut	25
	Bolt	5

Q12 – What do you mean by convention or code?

Ans 12 – The representation of any matter by some sign or mark on the drawing is known as convention or code. The conventions make the drawing simple and easy to draw.

Q13 – What do you understand by thickness of lines?

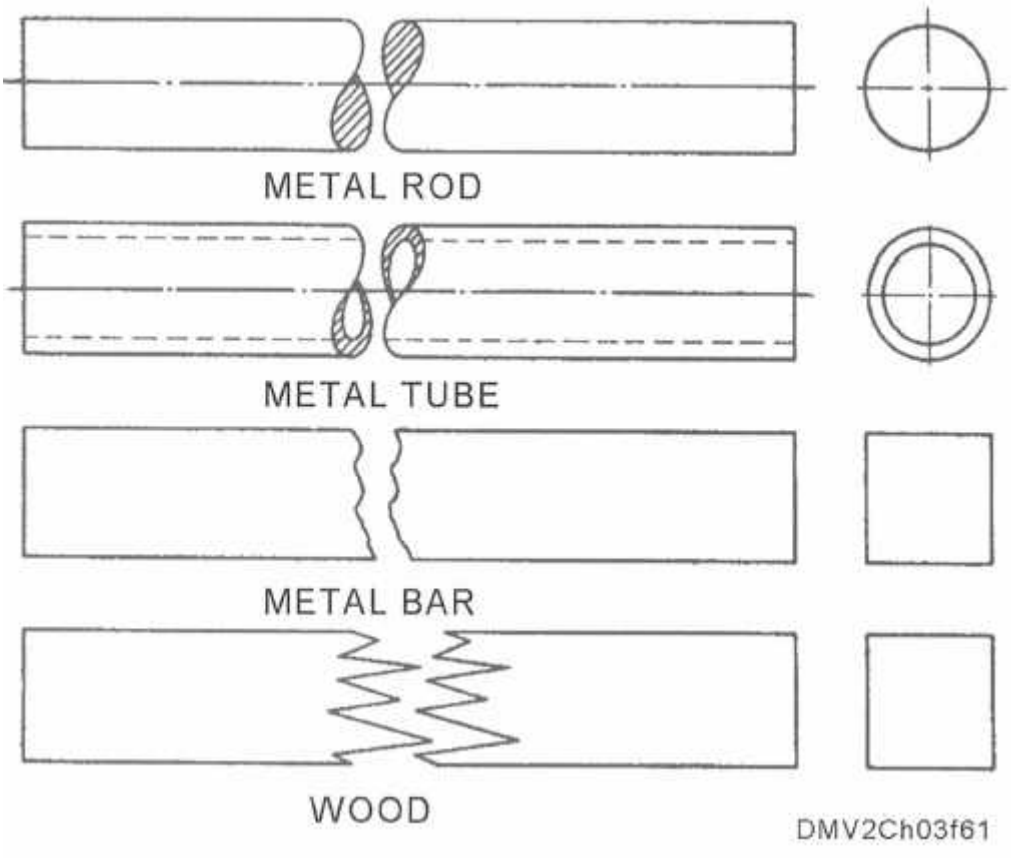
Ans13 – There are three distinct thickness of lines used in engineering drawing. These lines are specified as **thick, medium and thin** lines. The line specified as thick is usually 3 times thicker and the line specified as medium is 2 times thicker than a thin line.

Q14 – Why a cutting plane is drawn in a drawing?

Ans14 –The cutting plane is drawn in a drawing to show the inner details of an object.

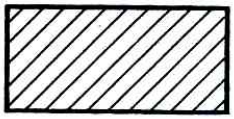
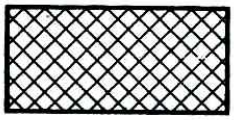
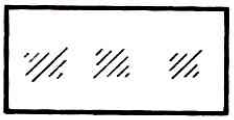
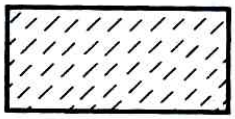
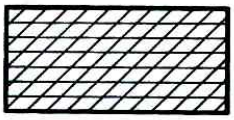
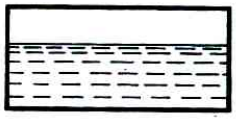
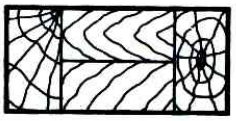
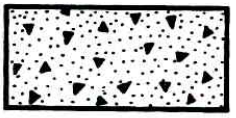
Q15 – What is the necessity of convention breaks and convention of materials?

Ans15 – Long members of uniform cross-section such as rods, shafts, pipes etc. are generally shown in the middle by the **conventional breaks** so as to accommodate their view of whole length on the drawing sheet without reducing the scale. The exact length of the member is shown by the dimension.



Q16 – Why the conventional representation of common features are adopted on the drawing?

Ans16 – The conventional representation of common features are adopted on the drawing to save the unnecessary time or space on the drawing.

TYPE	CONVENTION	MATERIALS
METALS		STEEL, CAST IRON, COPPER AND ITS ALLOYS, ALUMINIUM AND ITS ALLOYS, ETC
		LEAD, ZINC, TIN, WHITE-METAL, ETC
GLASS		GLASS
PACKING AND INSULATING MATERIALS		PORCELAIN, STONEWARE, MARBLE, SLATE, ETC
		ASBESTOS, FIBRE, FELT, SYNTHETIC RESIN PRODUCTS, PAPER, CORK, LINOLEUM, RUBBER, LEATHER, WAX, INSULATING & FILLING MATERIALS
LIQUIDS		WATER, OIL, PETROL, KEROSENE, ETC
WOOD		WOOD, PLYWOOD, ETC
CONCRETE		

Q17 – What are the main requirements of lettering?

Ans17:- 1) The knowledge of shape and **proportion (7:4, 5:4)** of each letter.

2) The knowledge of the order and direction of the **strokes** (single, double) used in making letters.
3) The knowledge of the general **composition** of letters. (Gothic, Roman)
4) The knowledge of rules for combining letters into words and words into sentences.

Q18 – What is lettering?

Ans18 – The art of writing the alphabets A, B, C,…….Z and numbers such as 1, 2, 3……0 etc. is known as lettering.

Q19 – What is layout of drawing sheet?

Ans 19 – The selection of suitable scale and allotment of proper space for **margin, title block, parts list**, revision panel, folding marks etc. on the drawing sheet is known as layout of drawing sheet.

Q20 – What do you mean by uniformity of letters?

Ans20 – The uniformity of lettering means keeping the **height, inclination, spacing** and strength of letters to be same. It is very essential for good lettering in engineering drawing.

Q21 – What do you mean by normal, compressed and extended lettering?

Ans21 – Normal lettering: - The normal lettering has normal height and width and are used for general purposes. The width of the normal letter is about 0.67 times of the height of the letter. (h=70mm, w=47mm)

Compressed lettering: - The compressed lettering is those which are written in the narrow space. These are used when the space is limited. The widths of the compressed letters are less than height.

Extended lettering: - The extended lettering are those which are wider than normal letters but of the same height.

Q.22 In which of the following type of dimensioning, the dimensions are arranged only in a straight line?

Ans 22:- In chain dimension, the dimensions are arranged only in a straight line.

Q23 – What do you mean by single stroke letters?

Ans 23:- Single stroke letters means that the thickness of the line of the letter should be such as is obtained in one stroke of the pencil. Single stroke letters are of two types.
1) Vertical
2) Inclined (75deg. With horizontal)

Q24 – What is the gothic and roman lettering?

Ans 24 – Gothic lettering – The lettering in which all the alphabets are of uniform width or thickness is known as gothic lettering. It can be divided into following groups.

(i) Vertical or Upright vertical gothic lettering

(ii) Inclined or Italic gothic lettering

Roman lettering – The lettering in which all the alphabets are composed of thick and thin elements is known as roman lettering and can either be vertical or inclined.

Q25 – What do you mean by freehand lettering?

Ans25 – The art of writing the alphabets without the use of drawing instrument is called freehand lettering. The freehand lettering is of the following types.

(a) Vertical or upright freehand gothic lettering.

(i) Single stroke vertical freehand gothic lettering.

(ii) Lowercase vertical freehand gothic lettering.

(b) Inclined or italic freehand gothic lettering.

(iii) Single stroke italic freehand gothic lettering.

(iv) Lower case italic freehand gothic lettering.

Q26 – What should be the grade of pencil used for lettering?

Ans26 – HB and H grade pencils sharpened to a conical point should be used for lettering. To keep the stroke of the letters uniform, the pencils should be rotated between the thumb and fingers while lettering. Hard pencils such as 2H or 3H should be used to draw guidelines.

Q27 – What is the importance of dimensioning?

Ans27:-1) Dimensioning expresses all the sizes and other information necessary to define the object.

2) It must be done with due regard to manufacturing processes and inspection requirements.

3) The dimensioning also includes expression of tolerances necessary for the correct functioning of the part given to be assembled.

Q28 – What is dimensioning?

Ans28 – The art of writing the various sizes or measurements on the finished drawing of an object is known as dimensioning.

Q29 – What do you understand by the term notation of dimensioning?

Ans29 – The notation of dimensioning consists of dimension lines, extension lines, arrow heads, dimension figures, notes, symbols etc.

Q30 – What is a leader or pointer line? How a leader should be drawn?

Ans30 – A leader is a thin continuous line drawn from note of the figure to show where it applies. It is terminated by an arrow head or a dot. The arrow head touches the outline, whereas the dot is placed within the outline of the object.
The leader is generally drawn at any convenient angle, usually 30º, 45º, and 60º but not less than 30º.

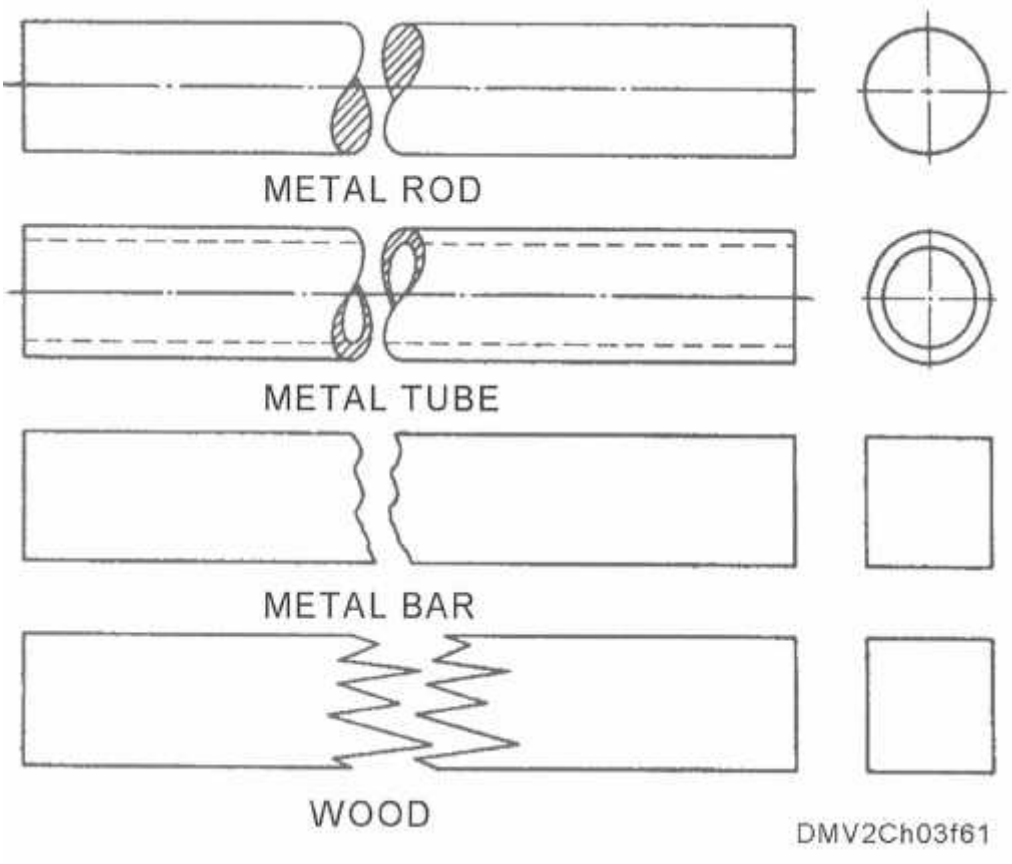
Q31 – Explain with the help of a simple sketch (i) size dimensions (ii) location dimensions.

Ans31 – Size dimension – The dimensions which indicate the various sizes of the object such as length, breadth, diameter etc. are known as size dimensions. These dimensions are represented by letter 'S'.
Figure.

Location dimension – The dimensions which locate the position of one feature w.r.t. the other feature are known as location dimensions. Distances between the centre lines of the holes from the edges are given by location dimensions. These dimensions are marked by letter 'L'.
Figure.

Q32 – What are the aligned system and unidirectional system of dimensioning?
Or
What are the different methods of dimensioning?

Ans32:-1) **Aligned Method**: - In aligned system, the dimensions shall be placed parallel to and above the dimension lines, preferably in the middle and not by interrupting the dimension lines. Here the dimensions can be read from the bottom or from the right side of the drawing.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