BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Woodworking Skills

Session: 2021-22 (Winter Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: SCS1301 **Time: 1 Hour**

Course Name: Advance Power Tools **Max. Marks: 20**

Instruction:

- Answer all questions from section A, each question carries one mark.
- Answer all question from section B, each question carries two marks.
- Answer all question from section C, each question carries three marks.

Section – A

05X01 = 05 Marks

Q. 1 LR 32 system is used in which machine

(A) Router (B) Jig Saw

(C) Circular Saw (D) Both A&C

Q. 2 Which one of the following accessories uses with MFS template for making Groove?

(A) Guide Rail (B) Coping Ring

(C) Side Stops (D) None of these.

Q. 3 In the given option which accessories prevent the kick back in hand circular saw.

(A) Guide Rail (B) Riving Knife

(C) Side Stops (D) None of these.

Q. 4 Which one of the following accessories is used in LR 32 System?

(A) Centering mandrel (B) Longitudinal Stop

(C) Side Stops (D) All of these.

Q. 5 Which of the following diameter of cutter used for 4x20 domino?

(A) 10 mm (B) 4 mm

(C) 8mm (D) 5 mm

Section – B

03X02 = 06 Marks

Q. 6 Write short note on Zeta P2 machine.

Q. 7 State the principle of Domino machine.

Q. 8 Draw the diagram of router bit with its parts name.

Section – C

03X03 = 09 Marks

Q. 9 Explain the router principle with diagram.

Q. 10 What is LR 32 system? Write down the accessories name of it?

Q. 11 Explain the procedure to change the blade of circular saw.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Answer Key

School of Woodworking Skills

Session: 2021-22 (Winter Semester)

B. Voc. Program, 3rd Semester,

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Section – A

05X01 = 05 Marks

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(A) Centering mandrel (B) Longitudinal Stop

(C) Side Stops (D) All of these. (d)

Q. 5 Which of the following diameter of cutter used for 4x20 domino?

(A) 10 mm (B) 4 mm

(C) 8mm (D) 5 mm (c)

Section – B

03X02 = 06 Marks

Q. 6 Write short note on Zeta P2 machine.

Ans. Function of Zeta P2 are as follows:

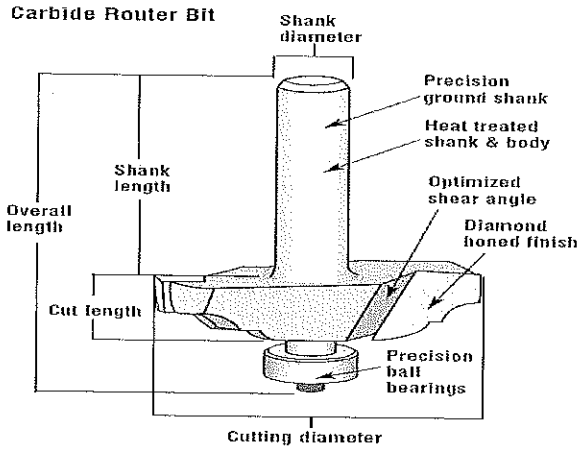
1. Automatic Vertical movement create the Profile groove which enables to make the stronger joint.
2. It enables the fast locking system.
3. Easy assembling and disassembling.

Q. 7 State the principle of Domino machine.

Ans. It states that the simultaneous rotation and pendulum movement of the cutter allows smooth working and creates holes without scorch marks

Q. 8 Draw the diagram of router bit with its parts name.

Ans.



Section – C

03X03 = 09 Marks

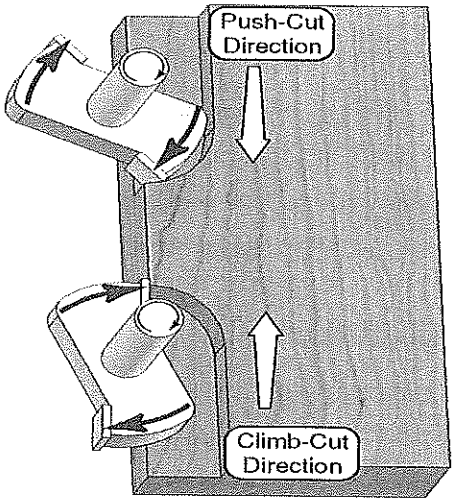
Q. 9 Explain the router principle with diagram.

Ans. **Push Cutting** Feeding the router in opposite direction of router bit direction is known as push cutting.

It prevents the Kick back while working exteriorly.

Climb Cutting Feeding the Router in the same direction as the direction of rotation of router bit is known as climb cutting

It is best suited while working interiorly.



Q. 10 What is LR 32 system? Write down the accessories name of it?

Ans. **LR 32 System**

The festool Hole Guide System can be used in basically two modes, free-form and as a 32 mm system hole guide. In free form-form operations, most common use would

be to create a series of shelf pin holes in cabinets. The name of the 32 mm system originates from the centre to centre spacing of the holes in the drill pattern. These holes controls the locations of door hinges, drawer glides, other hardware and the locations of the parts that make up the cabinet itself.

Accessories

1. Guide plate
2. Centering mandrel
3. Indexing rail
4. Side stops
5. End stops

Q. 11 Explain the procedure to change the blade of circular saw.

Ans. Steps to change the blade of circular saw are as follows:

1. Take out the Allen key which is placed at the top of the circular saw.
2. Tilt up the fast fix from its position and take the saw blade below from its zero position.
3. Rotate the nut and loosen it
4. Carefully take out the blade from its position.
5. Put the new saw blade according to the work piece.
6. Tight it with the help of Allen key.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Woodworking Skills

Session: 2021-22 (Winter Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: SCS1304 **Time: 1 Hour**

Course Name: Carpenter Mathematics **Max. Marks: 20**

Instruction:

- Answer all questions from section A, each question carries one mark.
- Answer all question from section B, each question carries two marks.
- Answer all question from section C, each question carries three marks.

Section – A

05X01 = 05 Marks

Q. 1 General notation of Cartesian coordinates system is:

(a) (x,y,z) (b) (r, θ, z)

(c) $(r, \theta, \emptyset)$ (d) None of these

Q. 2 Location of the point (3, 4) and (-7, 8) in Cartesian coordinates:

(a) I, II quadrants (b) III, IV quadrants

(c) II, III quadrants (d) II, IV quadrants

Q. 3 $1+\tan^2 A$ is

(a) $\cot^2 A$ (b) $\text{Sec}^2 A$

(c) $\text{Cosec}^2 A$ (d) $\text{Sin}^2 A$

Q. 4 $\frac{tan27}{cot63^\circ} =$

(a) 2 (b) 1

(c) 0 (d) None

Q. 5 sec(90-A) is

(a)sin A (b) tan A

(c) cosec A (d) None

Section – B

03X02 = 06 Marks

Q. 6 Prove that

$1+\tan^2 A = \text{Sec}^2 A$

Q. 7 Evaluate following

$$\frac{\text{Cos } 45}{\text{Sec } 30+\text{Cosec}30}$$

Q. 8 Calculate the distance between the coordinate A(5,2) and (6,3).

Section – C

03X03 = 09 Marks

Q. 9 Find a relation between x and y such that the point (x,y) is equidistant from the points (8, 1) and (4, 5).

Q. 10 Given tan A =4/3,

find the other trigonometric ratios of the angle A.

Q. 11 Consider Δ ACB, right-angled at C, in which AB = 29 units, BC = 21 units and ∠ ABC = θ

Determine the values of

$$\cos^2 \theta + \sin^2 \theta$$

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Answer Key

School of Woodworking Skills

Session: 2021-22 (Winter Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: SCS1304 **Time: 1 Hour**

Course Name: Carpenter Mathematics **Max. Marks: 20**

Instruction:

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Section – A

05X01 = 05 Marks

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(a) I, II quadrants (b) III, IV quadrants

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Q. 3 $1+\tan^2 A$ is

(a) $\cot^2 A$ (b) $\text{Sec}^2 A$

(c) $\text{Cosec}^2 A$ (d) $\text{Sin}^2 A$ (b)

Q. 4 $\frac{tan27}{cot63^\circ} =$

(a) 2 (b) 1

(c) 0 (d) None (b)

Q. 5 sec(90-A) is

(a)sin A (b) tan A

(c) cosec A (d) None (c)

Section – B

03X02 = 06 Marks

Q. 6 Prove that

$1+\tan^2 A = \text{Sec}^2 A$

Solution $\text{Sin}^2 A + \text{Cos}^2 A = 1$

Divide entire equation by $\text{Cos}^2 A$ we get

$1+\tan^2 A = \sec^2 A$

Q. 7 Evaluate following

$$\frac{\cos 45}{\sec 30 + \operatorname{cosec} 30}$$

Solution

$\cos 45° = \frac{1}{\sqrt{2}}$

$\sec 30° = \frac{1}{\cos 30°}$

$= \frac{1}{\frac{\sqrt{3}}{2}}$

$= \frac{2}{\sqrt{3}}$

$\operatorname{cosec} 30° = \frac{1}{\sin 30°}$

$= \frac{1}{\frac{1}{2}}$

$= \frac{2}{1} = 2$

Q. 8 Calculate the distance between the coordinate A(5,2) and (6,3).

Ans. $AB^2 = (6-5)^2 + (3-2)^2$

$AB = 2^{0.5}$

Section – C

03X03 = 09 Marks

Q. 9 Find a relation between x and y such that the point (x,y) is equidistant from the points (8, 1) and (4, 5).

Solution: Let P(x, y) be equidistant from the points A(7, 1) and B(3, 5).

We are given that AP = BP. So, AP2 = BP2

i.e., $(x - 8)2 + (y - 1)2 = (x - 4)2 + (y - 5)2$

i.e., $x2 - 16x + 64 + y2 - 2y + 1 = x2 - 8x + 16 + y2 - 10y + 25$

i.e., x – y = 3

Q. 10 Given tan A =4/3,

find the other trigonometric ratios of the angle A.

Solution

Therefore, if BC = $4k$, then AB = $3k$, where k is a positive number.

Fig. 8.8

Now, by using the Pythagoras Theorem, we have

$$AC^2 = AB^2 + BC^2 = (4k)^2 + (3k)^2 = 25k^2$$

So, $AC = 5k$

Now, we can write all the trigonometric ratios using their definitions.

$$\sin A = \frac{BC}{AC} = \frac{4k}{5k} = \frac{4}{5}$$

$$\cos A = \frac{AB}{AC} = \frac{3k}{5k} = \frac{3}{5}$$

Therefore, $\cot A = \frac{1}{\tan A} = \frac{3}{4}$, $\operatorname{cosec} A = \frac{1}{\sin A} = \frac{5}{4}$ and $\sec A = \frac{1}{\cos A} = \frac{5}{3}$.

Q. 11 Consider Δ ACB, right-angled at C, in which AB = 29 units, BC = 21 units and ∠ ABC = θ

Determine the values of

$$\cos^2 \theta + \sin^2 \theta$$

Solution

$$AC = \sqrt{AB^2 - BC^2} = \sqrt{(29)^2 - (21)^2}$$

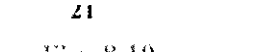

Fig. 8.10

$$= \sqrt{(29 - 21)(29 + 21)} = \sqrt{(8)(50)} = \sqrt{400} = 20 \text{ units}$$

So, $\sin \theta = \frac{AC}{AB} = \frac{20}{29}$, $\cos \theta = \frac{BC}{AB} = \frac{21}{29}$.

Now, (i) $\cos^2\theta + \sin^2\theta = \left(\frac{20}{29}\right)^2 + \left(\frac{21}{29}\right)^2 = \frac{20^2 + 21^2}{29^2} = \frac{400 + 441}{841} = 1$,

and (ii) $\cos^2\theta - \sin^2\theta = \left(\frac{21}{29}\right)^2 - \left(\frac{20}{29}\right)^2 = \frac{(21 + 20)(21 - 20)}{29^2} = \frac{41}{841}$.

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School of Woodworking Skills

Session: 2021-22 (Winter Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: SCS1307 **Time: 1 Hour**

Course Name: Advance Carpenter Materials **Max. Marks: 20**

Instruction:

- Answer all questions from section A, each question carries one mark.
- Answer all question from section B, each question carries two marks.
- Answer all question from section C, each question carries three marks.

Section – A

05X01 = 05 Marks

Q.1 Which part of the trunk is responsible for the production of new wood?

(a) Pith (b) Cambium

(c) Sapwood (d) Bast

Q.2 In which season wood grows very quickly?

(a) Summer (b) Autumn

(c) Spring (d) None of them

Q.3 Which property of wood is responsible for heat transfer?

(a) Thermal Conductivity (b) Density

(c) Specific Gravity (d) None of them

Q.4 What is the SI unit of density?

(a) Kg/m^3 (b) g/cm^3

(c) kg/m^2 (d) None of them

Q.5 What are spermatophytes?

(a) Angiosperm (b) Gymnosperm

(c) Both A & B (d) None of them

Section – B

03X02 = 06 Marks

Q.6 Write the short notes on followings-

(a) Density

(b) Specific gravity

Q.7 Draw the labelled diagram of the tree.

Q.8 If the specific gravity of a wood is 0.4 then calculate density of it in g /cm3.

Section – C

03X03 = 09 Marks

Q.9 Discuss any three mechanical property of wood.

Q.10 Explain any three layer or component of trunk with diagram.

Q.11 Discuss the spermatophytes in detail

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Answer Key

School of Woodworking Skills

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Course Code: SCS1307 **Time: 1 Hour**

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Section – A

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Q.5 What are spermatophytes?

(a) Angiosperm (b) Gymnosperm

(c) Both A & B (d) None of them (C)

Section – B

03X02 = 06 Marks

Q.6 Write the short notes on followings-

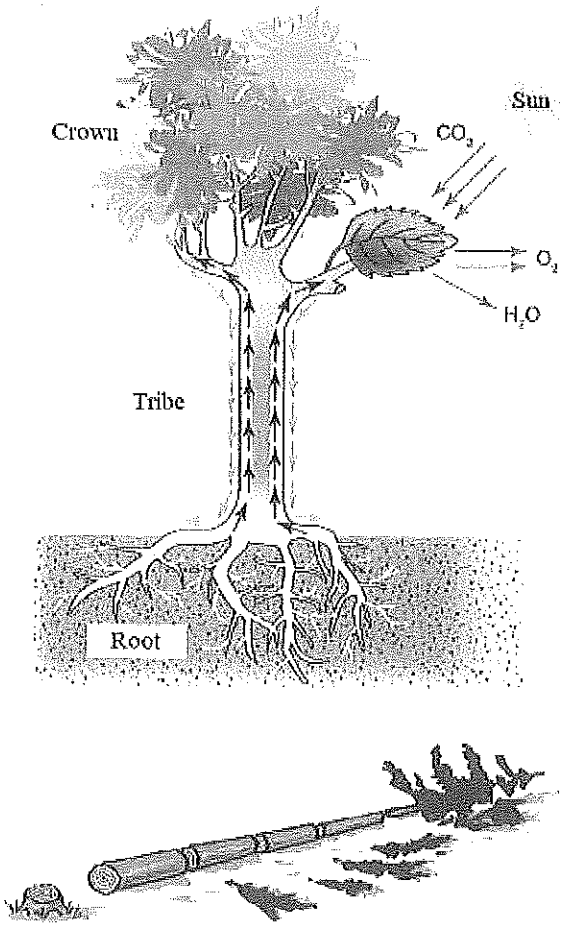
(a) Density

(b) Specific gravity

Ans. Density - It is the ratio of mass to the volume of a substance i.e. how much mass of an object is present in the unit volume

Specific gravity - It is the ratio of specific gravity of a substance to the specific gravity of a standard substance (i.e. water)

Q.7 Draw the labelled diagram of the tree.



Q.8 If the specific gravity of a wood is 0.4 then calculate density of it in g /cm3.

Ans. Density = 0.4 x1000=4000 kg/m3
= 4 g/cm3

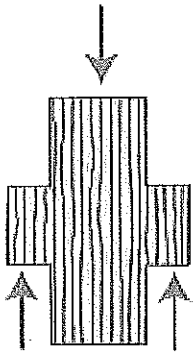
Section – C

03X03 = 09 Marks

Q.9 Discuss any three mechanical property of wood.

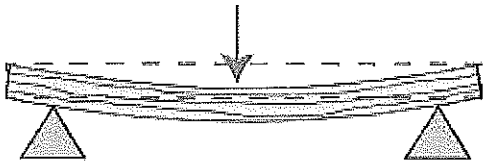
Ans. *Shear strength*

Shear or shear strength is the resistance that the wood offers to loads that the wood fibers want to shift in the longitudinal direction.



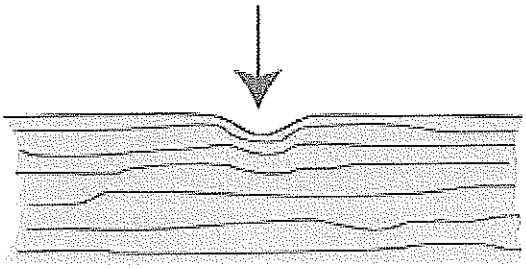
Elasticity

Elastic materials do not retain their deformation caused by stress, but return to their original shape. Particularly elastic woods are: ash, hickory, wenge.



Hardness

The hardness is the resistance that the wood offers to local impressions. The harder a material, the smaller the trace left by the pressed-on body (Brinell hardness), or the greater the effort required to achieve the same impression (Janka hardness).



Q.10 Explain any three layer or component of trunk with diagram.

Ans

The base layers

If you look at the cross-section of a trunk, you will see that it consists of different zones or layers.

The marrow / marrow tube lies at the center of the trunk and is responsible for the tree growing tall.

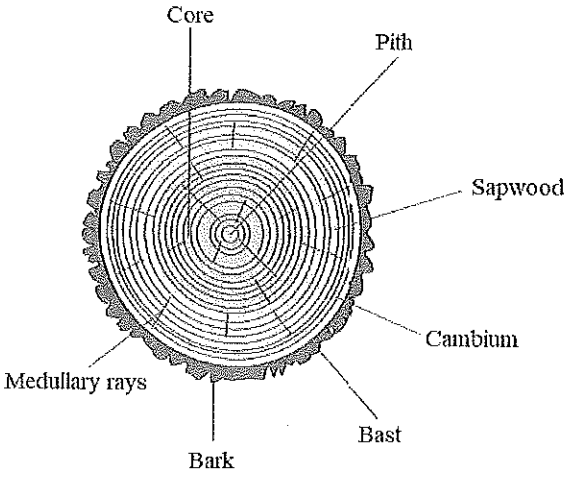
The core (the heartwood) lies in the inner part of the trunk. Heritage comes from old wooden cells that store nutrients. Most of the wood you use as a carpenter comes from this part of the tree because heartwood is more resistant than sapwood. Heartwood can be a darker color than sapwood. This varies depending on the type of wood.

The sapwood (sapwood) has the task of transporting water and nutrients from the roots to the leaves. Sapwood is less durable than heartwood. Sapwood can be lighter in color than the heartwood. This varies depending on the type of wood.

The cambium is the growth layer of the tree. It is a thin, sensitive layer. The cambium is responsible for the production of new wood during the growing season of the tree (spring and summer).

The bast is under the bark. It transports the nutrients produced in the leaves into the tree trunk.

The bark is the outermost layer of the tree. Their function is to protect the tree against extreme temperatures, pests and diseases. The bark is called bark together with the bast.



Q.11 Discuss the spermatophytes in detail.

Ans. The plant kingdom is composed of several major divisions. The one that includes all seed plants, spermatophytes, is further divided into two broad groups (separated according to how the seeds are borne). The gymnosperms (naked seeds) include all trees producing softwood lumber, and the angiosperms (covered seeds) include all trees yielding hardwood lumber.

Within the gymnosperms (softwoods), trees of North America that provide commercial softwood timber are classified into four families of the order *Coniferales.* The term conifer thus indicates softwood trees. These trees are characterized by needlelike or scalelike foliage (usually evergreen) and have an excurrent tree form (a straight and dominant main stem with subordinate lateral branching)

The angiosperms (hardwoods) include some 22 families in the United States. Hardwood trees are mostly deciduous, that is. their leaves drop in autumn. Their form tends to be dendritic or deliquescent (characterized by branching and rebranching of the main stem). The higher density range of some species and the attractive heartwood color and figure have earned them a favored place among woodworkers.

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School of Woodworking Skills

Session: 2021-22 (Winter Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: GEN1309 **Time: 1 Hour**

Course Name: Woodworking CAD **Max. Marks: 20**

Instruction: --

Section – A

05X01 = 05 Marks

Q.1 Which of the following workspaces are available in AutoCAD?

(a) 3D basics (b) 3D modelling

(c) Drafting and Annotation (d) All of the above

Q2. In the coordinate system of AutoCAD?

(a) Positive x figures are to the left

(b) Positive x figures are to the right

(c) Positive x figures are in the direction vertically upwards

(d) Positive x figures are in the direction vertically downwards

Q.3 A line drawn with a long section, short dash, and another long section is a _____.

(a) Hidden feature

(b) Center of a circle

(c) Center axis

(d) Center of a radius

Q.4 Which one of the following is an AutoCAD relative polar co-ordinate?

(b) 81,30 (b) @81,30

(c) 30<81 (d) @81<30

Q.5 In order to convert fractional inches into decimal inches _____.

(a) Look on a metric conversion chart

(b) Divide the numerator (top number) by the denominator (bottom number)

(c) Check the engineer's scale

(d) All of the above

Section – B

03X02 = 06 Marks

Q.6 Write any four differences between Artistic drawing & Engineering drawing.

Q.7 Discuss the dimension of various drawing sheets used in Engineering Drawing.

Q.8 Explain any four difference between basic hand drawing and AutoCAD drawing.

Section – C

03X03 = 09 Marks

Q.9 What do you understand by Computer Aided Drawing with its importance in wood working and write down any four advantages of AutoCAD software.

Q.10 Explain six types of lines with sketch and also describe their applications.

Q.11 Explain types of co-ordinate system with the help of an example.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Answer Key

School of Woodworking Skills

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Course Code: GEN1309 **Time: 1 Hour**

Course Name: Woodworking CAD **Max. Marks: 20**

Instruction: --

Section – A

05X01 = 05 Marks

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(c) Drafting and Annotation (d) All of the above (d)

Q2. In the coordinate system of AutoCAD?

(a) Positive x figures are to the left

(b) Positive x figures are to the right

(c) Positive x figures are in the direction vertically upwards

(d) Positive x figures are in the direction vertically downwards (b)

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(a) Hidden feature

(b) Center of a circle

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Q.4 Which one of the following is an AutoCAD relative polar co-ordinate?

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(a) Look on a metric conversion chart

(b) Divide the numerator (top number) by the denominator (bottom number)

(c) Check the engineer's scale

(d) All of the above (b)

Section – B

03X02 = 06 Marks

Q.6 Write any four differences between Artistic drawing & Engineering drawing.

Ans.

S. No.	Engineering Drawing	Artistic Drawing

1.	These drawings reflect technical information about that object to manufacture.	These drawings reflect feelings, emotions, imagination or scene.
2.	The page is signed to become responsible of the designed objects.	The page is signed to become responsible of the artistic value from the picture.
3.	These drawing have only one interpretation (Means).	These drawing have many interpretation.
4.	Drawings have accurate measurement.	Drawings have no measurement

Q.7 Discuss the dimension of various drawing sheets used in Engineering Drawing.

Ans.

S. No.	Size Designation	Trimmed Sheet Sizes (in mm)	
		Width	Length
1.	A0	841	1189
2.	A1	594	841
3.	A2	420	594
4.	A3	297	420
5.	A4	210	297
6.	A5	148	210

Q.8 Explain any four difference between basic hand drawing and AutoCAD drawing.

Ans.

S. No.	Basic Hand Drawing	Auto Cad Drawing
1	It is truly made by hand on paper	We can draw in software computer
2	It has to be store manually cause of hard copy	It has to be store in computer memory
3	More time consuming to draw on paper	Less time consuming cause of electronic medium
4	Correction in drawing is too tough	Correction in drawing is too easy
5	All things have to draw, no any predefined library as AutoCAD	We can access predefined library of AutoCAD

Section – C

03X03 = 09 Marks

Q.9 What do you understand by Computer Aided Drawing with its importance in wood working and write down any four advantages of AutoCAD software.

Ans. Auto CAD is a computer aided design and drafting software used in architecture, construction and manufacturing to prepare the engineering drawings in terms of 2D and 3D by electronic method.

This CAD drawing offers time saving process to drawing. As per high technology we can draft a drawing with help of different predefined library. From this library we can use a lots of shapes, material, accessories of joinery etc. We can also set a template file in which we can fix our all drawing settings as well as some materialistic objects. Saved file we can transfer easily where we want by electronic method. It is also easy in PDF file which they can open to view and print.

Advantages of AutoCAD software-

1. Quicker for time Saves & more productive by electronic design system.
2. It helps to snap object by various points in design.
3. 3D models can be created & directly imported into AutoCAD by using application like SolidWorks etc.
4. Work of drafting can be done easily and you can design and re-design the product in short span of time & also we can attach image, doc file, links, videos etc.

Q.10 Explain six types of lines with sketch and also describe their applications.

Ans.

CONVENTIONS FOR VARIOUS LINES [ACCORDING TO B.I.S. S.P : 46 - 1988]

LINE	DESCRIPTION	GENERAL APPLICATION
A ———	CONTINUOUS THICK	A1 VISIBLE OUTLINE A2 VISIBLE EDGES
B ———	CONTINUOUS THIN STRAIGHT OR CURVED	B1 IMAGINARY LINES OF INTERSECTION B2 DIMENSION LINES B3 PROJECTION LINES B4 LEADER LINES B5 HATCHING B6 OUTLINES OF REVOLVED SECTIONS IN PLACE B7 SHORT CENTRE LINE
C ——~——~——	CONTINUOUS THIN FREEHAND	C1 LIMITS OF PARTIAL OR INTERRUPTED VIEWS AND SECTIONS, IF THE LIMIT IS NOT A CHAIN THIN
D ——/\/\———	CONTINUOUS THIN (STRAIGHT WITH ZIGZAGS	D1 LINE
E — — — — — —	DASHED THICK	E1 HIDDEN OUTLINES E2 HIDDEN EDGES
F - - - - - - - - - -	DASHED THIN	F1 HIDDEN OUTLINES F1 HIDDEN EDGES
G ——— - ——— - ———	CHAIN THIN	G1 CENTRE LINES G2 LINES OF SYMMETRY G3 TRAJECTORIES

Q.11 Explain types of co-ordinate system with the help of an example.

Ans. Types of Co-ordinate system

1 Absolute Coordinate system –

- In the system all points are measured from the origin (0,0).
- To enter the absolute coordinate use format (x,y), where (x,y) is distance from horizontal axis and vertical axis from origin (0,0).

2 Relative Rectangular Coordinate system –

- In this system next point is based on last point entered.
- To enter the rectangular coordinate use format (@ x,y), where (@ x,y) is relative distance from horizontal axis and vertical axis from last point.

3 Relative Polar Coordinate system -

- In this system we used as combination of distance & angle from one point to another.
- To enter the rectangular coordinate use format (@ x<y), where (@ x<y) is relative distance & angle from horizontal axis and vertical axis from last point.
- Angles are +ve when measured counter-clockwise & -ve when measured clockwise.

e.g. –