



# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

**School of Woodworking Skills**  
**Session: 2021-22 (Summer Semester)**  
**B. Voc. Program, 1<sup>st</sup> Semester,**  
**1<sup>st</sup> In-Sem. Examination**

**Course Code: SCS1101**

**Time: 1 Hour**

**Course Name: Hand Skill & Transfer of Measurements**

**Max. Marks: 20**

**Instruction:**

1. Answer all question from section A, each question carries one mark.
2. Answer all question from section B, each question carries six marks.
3. Answer all question from section C, each question carries ten marks.

**Section – A**

5X01 = 5 Marks

Q.1 Which one of the following is a marking tool?

- |                        |                       |
|------------------------|-----------------------|
| (a) Manual hand planer | (b) Perforated chisel |
| (c) Try square         | (d) None of them      |

Q.2 Which one of the following saw is used to make dovetail joint?

- |                |                  |
|----------------|------------------|
| (a) Indian saw | (b) Japanese saw |
| (c) Coping saw | (d) Back saw     |

Q.3 Which one of the following is soft wood?

- |          |            |
|----------|------------|
| (a) Teak | (b) Pine   |
| (c) Sal  | (d) Acacia |

Q.4 Which one of the following tools is used to sharp chisel?

- |                   |                      |
|-------------------|----------------------|
| (a) Flat file     | (b) Sharpening stone |
| (c) Both of these | (d) None of these    |

Q.5 Which one of the following is not used to make Tenon?

- |                 |                   |
|-----------------|-------------------|
| (a) Power Tools | (b) Hand saw      |
| (c) Chisel      | (d) Mortise gauge |

**Section – B**

03X02 = 6 Marks

Q.6 Define the term measurement transfer. What are the tools that are essential for marking?

Q.7 Write down the names of three sawing tools and define them.

Q.8 Write down the steps to mark a lap joint.

**Section – C**

03X03 = 9 Marks

Q.9. Draw five marking Symbols and write about their scopes.



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- Q.10. What is a carpenter triangle and why do we use it?
- Q.11. What are the general safety precautions that should be followed in the training center?

*Signature*  
20/09/21



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Answer key

**School of Woodworking Skills**  
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**Time: 1 Hour**

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**Max. Marks: 20**

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3. Answer all question from section C, each question carries ten marks.

**Section – A**

5X01 = 5 Marks

Q.1. Which one of the following is a marking tool?

- (a) Manual hand planer (b) Perforated chisel  
(c) Try square (d) None of them (c)

Q.2. Which one of the following saw is used to make dovetail joint?

- (a) Indian saw (b) Japanese saw  
(c) Coping saw (d) Back saw (c)

Q.3. Which one of the following is soft wood?

- (a) Teak (b) Pine  
(c) Sal (d) Acacia (b)

Q.4. Which one of the following tools is used to sharp chisel?

- (a) Flat file (b) Sharpening stone  
(c) Both of these (d) None of these (b)

Q 5. Which one of the following is not used to make Tenon?

- (a) Hand machine (b) Hand saw  
(c) Chisel (d) Mortise gauge (d)

**Section – B**

03X02 = 6 Marks

Q.6. Define the term measurement transfer. What are the tools that are essential for marking?

Ans. Measurement transfer involves the process in which a drawing is read and the dimension are transferred to the work piece with respect to the measurement given in the drawing. The tools that are essential for marking.

- Try square
- Marking gauge
- Roll meter
- Dowel meter



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- Steel ruler
- Bevel gauge

Q.7. Write down the names of three sawing tools and define them.

Ans. **Crosscut Saw or Ripsaw:**

A crosscut saw is used to make straight cuts across the grain of the wood. The teeth of a crosscut saw are pointed like a knife and cut on both the forward and backward strokes of the blade.

**Back Saw:**

A backsaw is commonly used in cutting joints. It is frequently positioned in a mitre box (device used to guide the angle of a cut) to make very accurate cuts in smooth lumber.

This saw is similar to a crosscut saw, but it has a reinforced, metal spine and finer cutting teeth.

**Coping Saw:**

A coping saw is used to make irregular or curved cuts in wood. This saw's blade is extremely thin and narrow and can make very fine cuts.

Q.8. write down the steps to mark a lap joint.

Ans.

- Drawing reading
- Material verification
- Triangle sign marking
- Measurement transfer
- Sawing operation by hand saw
- Chiseling operation by hand saw
- Final cutting

### Section – C

03X03 = 9 Marks

Q.9. Draw five marking Symbols and write about their scopes.

Ans. **Cross**

The scope of this symbol is

Through out cut.

Continuous separation cut, cut off cut

**Wave line**

The scope of this symbol is

material that is removed throughout

**Hatching**

The scope of this symbol is:

Material that is partially removed, not through-out,

eg. hatching for notches



## **Arrow**

The scope of this symbol is:

Limitation of machining operations, e.g. for groove,

Rebate

## **Cross exactly across the diagonal**

The scope of this symbol is

Mortice hole,

Q.10. What is a carpenter triangle and why do we use it?

Ans. We use symbols to combine work piece together. The symbol that is used to combine is called triangle sign. The aim of drawing symbol is that the individual parts of the work are evaluated at the same time and by each person. Sometimes we use the left part instead of the right part and the top part instead of the bottom because there are several identical pieces of the same size, so we need to number them accordingly and this can be done by making triangle sign. The sign should not be too small. It should be clearly visible. It should be drawn from the bottom to the top and from front to back.

Q.11. What are the general safety precautions that should be followed in the training center?

The following are general safety procedures that apply to almost every work situation.

- Adhere to instructions.
- Read labels and warnings on containers and tools.
- Follow the manufacturer's recommendations for use and maintenance of a specific tool.
- Pay attention to signs posted in the work area.
- Follow the instructor's directions.
- Wear safety glasses in the shop at all times.
- Wear protective gear such as gloves, earplugs, and safety shoes if appropriate.
- Do not wear loose-fitting clothing that could get caught in a moving part.
- Wear a hair net to prevent long hair from getting caught in a tool.
- Keep work areas clean and free of clutter.
- Inspect each tool before using it to make sure it is working properly.
- Tell the instructor about any damaged tool.
- Do not use a tool that is not working properly.
- Return each tool to its proper place of storage





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**Session: 2021-22 (Summer Semester)**  
**B. Voc. Program, 1<sup>st</sup> Semester,**  
**1<sup>st</sup> In-Sem. Examination**

**Course Code: SCS1105**

**Time: 1 Hour**

**Course Name: Carpenter Materials**

**Max. Marks: 20**

**Instruction:**

1. Answer all question from section A, each question carries one mark.
2. Answer all question from section B, each question carries six marks.
3. Answer all question from section C, each question carries ten marks.

**Section – A**

05X01 = 05 Marks

Q.1 Which one of the following is most outer part in wood?

- |                 |                |
|-----------------|----------------|
| (a) Annual ring | (b) Bark       |
| (c) Pith        | (d) Heart wood |

Q.2 Which one of the following is not a process for seasoning in wood?

- |                       |                          |
|-----------------------|--------------------------|
| (a) Natural Seasoning | (b) Chemical Seasoning   |
| (c) Paint Seasoning   | (d) Artificial Seasoning |

Q.3 Which one of the following is natural defect in wood?

- |                    |                    |
|--------------------|--------------------|
| (a) Case hardening | (b) Twisted fibers |
| (c) Wet rot        | (d) Dry rot        |

Q.4 Which one of the following is range of density of soft wood panel?

- |             |                   |
|-------------|-------------------|
| (a) 200-400 | (b) 400-600       |
| (c) 800-900 | (d) None of these |

Q.5 Which one of the followings is an Aspect ratio used in wood panel?

- |                        |                        |
|------------------------|------------------------|
| (a) Length / Area      | (b) Area / Thickness   |
| (c) Length / Thickness | (d) Thickness / Length |

**Section – B**

03X02 = 06 Marks

Q.6. Discuss Kiln seasoning process with its various parameter.

Q.7. Differentiate between hard wood and soft wood based on their wood properties.

Q.8. Discuss various types of adhesives used for panel production.

**Section – C**

03X03 = 09 Marks

Q.9 Differentiate between Ply board and MDF board.



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- Q.10. Draw the Cross Section View of tree and Describe in various terms.
- Q.11. Explain the importance of Wood based panels; discuss any two types of wood panels.

*Handwritten signature and date:*  
9/10/23



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Answer Key

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**Section – A**

05X01 = 05 Marks

Q.1. Which one of the following is most outer part in wood?

- |                 |                |     |
|-----------------|----------------|-----|
| (a) Annual ring | (b) Bark       |     |
| (c) Pith        | (d) Heart wood | (a) |

Q.2. Which one of the following is not a process for seasoning in wood?

- |                       |                          |     |
|-----------------------|--------------------------|-----|
| (a) Natural Seasoning | (b) Chemical Seasoning   |     |
| (c) Paint Seasoning   | (d) Artificial Seasoning | (c) |

Q.3. Which one of the following is natural defect in wood?

- |                    |                    |     |
|--------------------|--------------------|-----|
| (a) Case hardening | (b) Twisted fibers |     |
| (c) Wet rot        | (d) Dry rot        | (b) |

Q.4. Which one of the following is range of density of soft wood panel?

- |             |                   |     |
|-------------|-------------------|-----|
| (a) 200-400 | (b) 400-600       |     |
| (c) 800-900 | (d) None of these | (b) |

Q.5. Which one of the followings is an Aspect ratio used in wood panel?

- |                        |                        |     |
|------------------------|------------------------|-----|
| (a) Length / Area      | (b) Area / Thickness   |     |
| (c) Length / Thickness | (d) Thickness / Length | (c) |

**Section – B**

03X02 = 06 Marks

Q.6. Discuss Kiln seasoning process with its various parameter.

Ans. Kiln Seasoning - The timber is seasoned under controlled temperature and humidity conditions with proper circulation and ventilation system. The rise in temperature should be such that the timber retains the original strength and elastic properties. The required humidity level is maintained to avoid warping and cracking. The drying of timber at uniform rate is well maintained by circulating hot air by fans and a certain amount of steam is added in order to retain correct humidity. The ventilation is provided to avoid overheating and excessive humidity. The timber inside the chamber, on trolley is kept under controlled conditions for



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about fortnight or depending upon the initial water content and required moisture level. The quality of wood is inferior as compared to the one seasoned by natural seasoned methods.

Q.7. Differentiate between hard wood and soft wood based on their wood properties.

Ans.

| Soft wood  | Hard wood  |
|--|--|
| It is resinous wood having a fragrant smell and regular texture. | It is non - resinous wood containing fairly good amount of acid. |
| Straight fiber and good texture.                                 | Fibers are quite close and compact.                              |
| Light in color and weight.                                       | Dark in color and heavy in weight                                |
| annual rings are distinct  | Annual rings are not distinct                                    |
| Good tensile strength and weak shear strength                    | Good as well as shear strength                                   |
| Get split quickly  | Does not split quickly stronger and more durable                 |
| Weaker and less durable  | Stronger and more durable  |
| Catch fire soon cannot withstand high temperature.               | It has an added advantage in its refractoriness.                 |
| It is easy to be worked  | It is difficult to be worked                                     |
|  |  |

Q.8. Discuss various types of adhesives used for panel production.

Ans. Three types of wood adhesives are available:

Type - I exhibits some waterproof properties.

Type - II will perform better in exterior conditions. These adhesives generally have a longer open time and can bond at colder temperatures. Both types I and II can be used for exterior applications, such as outdoor furniture and trim.

Type - III is not water resistant and is designed for interior use only. It is good for interior woodwork and trim projects.

### Section – C

03X03 = 09 Marks

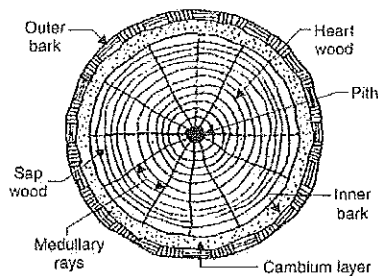
Q.9. Differentiate between Ply board and MDF board.

Ans. MDF stands for medium - density fiberboard, which is an engineered wood composite made up of wood fibers. Because the MDF is composed of small wood fibers, there is no visible wood grain, rings, or knots. The making of the composite uses the fibers, glue, and heat to create a tight bonding board. Both softwood and hardwood are used to manufacture MDF. Generally denser than plywood, this composition creates a stronger material for building. We use a veneer sealant to prevent water damage. Two types of fiberboard are moisture resistant (which is typically blue) and fire retardant.

Plywood is an engineered wood product made up of sheets of wood veneer. The wood veneer boards are pressed and bonded together to create one solid piece. This manufacturing process is called cross-graining and it reduces shrinkage and expansion while improving panel strength consistency. Different grades of plywood are used for different purposes. Plywood grades are affected by many variables including the type of wood ply, thickness, adhesive, and manufacturing/compaction process.

Q.10. Draw the Cross Section View of Trees and Describe in Various Terms.

Ans.



**1. Pith:** It is the inner most part of the tree and therefore the oldest part of exogenous tree when the plant becomes old, the pith dies and becomes dark and fibrous. It varies in shape and size

**2. Heart Wood:** It is the portion surrounding pith. It is strong and dark in colour. This portion is useful for several engineering purpose. It is the dead part of wood. It consists of various annular rings.

**3. Sap Wood:** It is the layer next to heart wood. It denotes contains sap and recent growth. It takes active part in the growth of trees by permitting sap to move in upward direction. Annual rings of sap wood are less sharply divided and are light in colour. The sap wood is also called as laburnum.

**4. Cambium Layer:** It is a thin layer of fresh sap lying among sap wood and the inner bark. It has sap which is not still converted into sap wood. If the bark is removed & cambium layer is exposed to atmosphere, then cells cease to be active and tree dies.

**5. Inner Bark:** It is an inner skin of tree defensive the cambium layer. It provides protection to cambium layer.

**6. Outer Bark:** It is the outer skin of the tree and contain of wood fibres. Sometimes it contains cracks and fissures.

**7. Medullary Rags:** These are thin radial fibres extending from pith to cambium layer. They together hold annular rings. In some of trees they are broken and some other they cannot be prominent.



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Q.11. Explain the importance of Wood based panels; discuss any two types of wood panels.

Ans. Engineered wood products are versatile and available in a wide variety of thicknesses, sizes, grades, and exposure durability classifications, making the products ideal for use in unlimited construction, industrial and home project application.

- Engineered wood products are designed and manufactured to maximize the natural strength and stiffness characteristics of wood. The products are very stable and some offer greater structural strength than typical wood building materials.
- Glued laminated timber has greater strength and stiffness than comparable dimensional lumber pound for pound, is stronger than steel.
- Some engineered wood products offer more design options without sacrificing structural requirements.
- Engineered wood panels are easy to work with using ordinary tools and basic skills. They can be cut, drilled, routed, jointed, glued, and fastened. Plywood can be bent to form curved surfaces without loss of strength. And large panel size speeds construction by reducing the number of pieces to be handled and installed.
- Engineered wood products make more efficient use of wood. They can be made from small pieces of wood, wood that has defects or underutilized species.

Any two panels can be discussed.

MDF stands for medium-density fiberboard, which is an engineered wood composite made up of wood fibers. Because the MDF is composed of small wood fibers, there is no visible wood grain, rings, or knots. The making of the composite uses the fibers, glue, and heat to create a tight bonding board. Both softwood and hardwood are used to manufacture MDF. Generally denser than plywood, this composition creates a stronger material for building. We use a veneer sealant to prevent water damage. Two types of fiberboard are moisture resistant (which is typically blue) and fire retardant. Plywood is an engineered wood product made up of sheets of wood veneer. The wood veneer boards are pressed and bonded together to create one solid piece. This manufacturing process is called cross-graining and it reduces shrinkage and expansion while improving panel strength consistency. Different grades of plywood are used for different purposes. Plywood grades are affected by many variables including the type of wood ply, thickness, adhesive, and manufacturing/compaction process.



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## School of Woodworking Skills

Session: 2021-22 (Summer Semester)

B. Voc. Program, 1<sup>st</sup> Semester,

1<sup>st</sup> In-Sem. Examination

Course Code: SCS1106

Course Name: Hand Drawing

Time: 1 Hour

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 In the given option which pencil will be the Harder  
(A) H (B) 2H  
(C) B (D) 2B
- Q. 2 The Representative factor for reducing scale is  
(A) Equal to 1 (B) Always less than 1  
(C) A&B Both (D)None of them
- Q. 3 SI unit for linear dimension is  
(A) Centimeter (B) Millimeter  
(C) Meter (D)None of them
- Q. 4 Which one will be the size for A3 Sheet in millimeter?  
(A) 420x297 (B) 29.7x21.0  
(C) 297x210 (D) 594x841
- Q. 5 What is the significance of continuous thick line in technical drawing?  
(A) Outlines of the object (B) Hidden surface  
(C) A&B Both (D) line of symmetry

### Section B

03X02 = 06 Marks

- Q. 6 What do you mean by RF write down the formula for calculating the RF?
- Q. 7 What do you understand by drawing? Differentiate artistic drawing and technical drawing.
- Q. 8 Draw the layout of the Drawing sheet.



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### Section C

03X03 = 09 Marks

- Q. 9 Define the straight Line. Write down the any two type of line with its significance.
- Q. 10 Explain the type of drawing sheet use in Technical drawing with Proper Diagram.
- Q. 11 Draw the 3D diagram of a chair.

*Shruti*  
20/1/2019



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Answer Key

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Session: 2021-22 (Summer Semester)

B. Voc. Program, 1<sup>st</sup> Semester,

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Course Code: SCS1106

Course Name: Hand Drawing

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- Answer all questions from section A, each question carries one mark.
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Time: 1 Hour

Max. Marks: 20

### Section A

05X01 = 05 Marks

- Q. 1 In the given option which pencil will be the Harder  
(A) H (B) 2H  
(C) B (D) 2B Ans. B
- Q. 2 The Representative factor for reducing scale is  
(A) Equal to 1 (B) Always less than 1  
(C) A&B Both (D)None of them Ans. B
- Q. 3 SI unit for linear dimension is  
(A) Centimeter (B) Millimeter  
(C) Meter (D)None of them Ans. C
- Q. 4 Which one will be the size for A3 Sheet in millimeter?  
(A) 420x297 (B) 29.7x21.0  
(C) 297x210 (D) 594x841 Ans. A
- Q. 5 What is the significance of continuous thick line in technical drawing?  
(A) Outlines of the object (B) Hidden surface  
(C) A&B Both (D) line of symmetry Ans. A

### Section B

03X02 = 06 Marks

- Q. 6 What do you mean by RF write down the formula for calculating the RF?  
Ans. **Representative factor:** It is a fraction by which an object can be enlarged or reduced on a drawing sheet.



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$$RF = \frac{\text{Drawing length of an object}}{\text{Actual length of an object}}$$

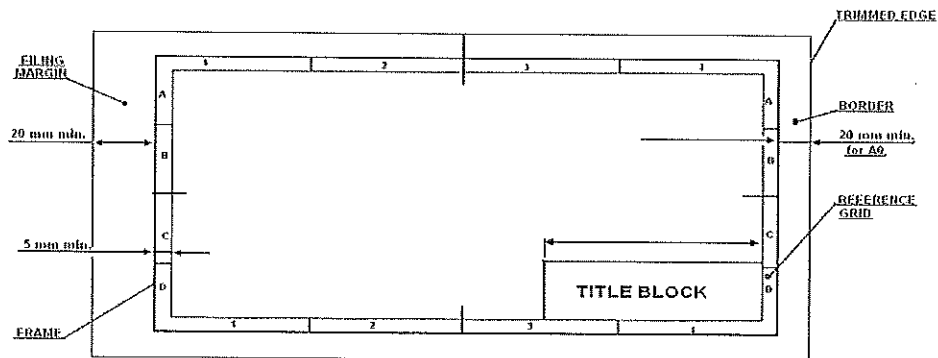
Q. 7 What do you understand by drawing? Differentiate artistic drawing and technical drawing.

Ans. A drawing is a graphical representation of an idea or an imagination on a piece of paper with or without technical specification.

An artistic drawing is drawn by free hand it not requires any technical details like (Dimension, tolerances etc.) while in technical drawing technical details such as dimensions, angle of projection, tolerances etc. are required to mention.

Q. 8 Draw the layout of the Drawing sheet.

Ans.



### Section C

03X03 = 09 Marks

Q. 9 Define the straight Line. Write down the any two type of line with its significance.



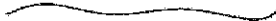
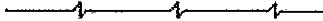



Ans. **Lines**

It is one important aspect of technical drawing. Lines are always used to construct meaningful drawings. Various types of lines are used to construct drawing, each line used in some specific sense. Lines are drawn following standard conventions mentioned in BIS (SP46:2003). A line may be curved, straight, continuous, segmented. It may be drawn as thin or thick. A few basic types of lines widely used in drawings are shown in Table

Types of lines used in engineering drawing.



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| Illustration   | Application  |
|--|--|
| <b>Thick</b><br>  | Outlines, visible edges, surface boundaries of objects, margin lines                                       |
| <b>Continuous thin</b><br>                              | Dimension lines, extension lines, section lines leader or pointer lines, construction lines, boarder lines |
| <b>Continuous thin wavy</b><br>                         | Short break lines or irregular boundary lines – drawn freehand   |
| <b>Continuous thin with zig-zag</b><br>                 | Long break lines   |
| <b>Short dashes, gap 1, length 3 mm</b><br>             | Invisible or interior surfaces   |
| <b>Short dashes</b><br>                                 | Center lines, locus lines<br>Alternate long and short dashes in a proportion of 6:1,                       |
| <b>Long chain thick at end and thin elsewhere</b><br> | Cutting plane lines  |

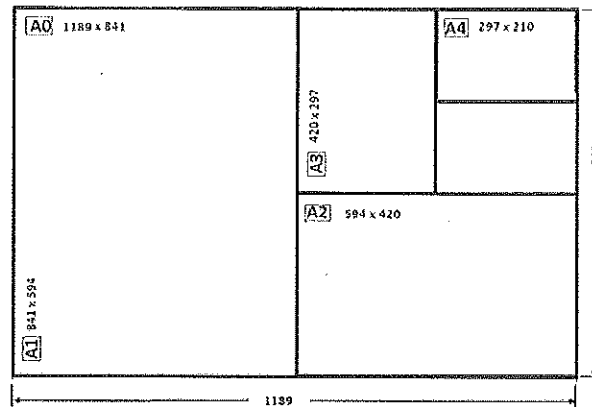
Q. 10 Explain the type of drawing sheet use in Technical drawing with Proper Diagram.

Ans. **Drawing Sheet:** According to the BIS standard size of drawing sheet are as follows

| S. No. | Designation    | Size     |
|--------|----------------|----------|
| 1.     | A <sub>0</sub> | 1189x841 |
| 2.     | A <sub>1</sub> | 841x594  |
| 3.     | A <sub>2</sub> | 594x420  |
| 4.     | A <sub>3</sub> | 420x297  |
| 5.     | A <sub>4</sub> | 297x210  |



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Q. 11 Draw the 3D diagram of a chair.

Ans.

