



School of Woodworking Skills
Session: 2020-21 (Summer Semester)
B. Voc. III Semester,
2nd In-Sem. Examination

Course Code: SCS1302

Time: 1 Hour

Course Name: Advanced Stationary Machines (Set-A)

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 one of the following is the diameter of Scoring Saw blade in Panel Saw Altendorf WA8?

(A) 155 mm

(B) 160 mm

(c) 120 mm

(D) 165 mm

Q.2.Panel Saw can be _____?

(A) Vertical

(B) Horizontal

(C) Both (A) & (B)

(D) None of these

Q.3.Which one of the following is the Tilting angle of Saw blade in Panel Saw Altendorf WA8?

(A) 0 – 45 Degree

(B) 0 – 45 Degree

(C) 0 – 46 Degree

(D) None of these

Q.4.Which one of the following is the maximum work piece thickness in SCM NOVA S 630 Surface Planer?

(A) 300 mm

(B) 250 mm

(C) 305 mm

(D) 255 mm

Q.5.Which one of the following is the minimum length to be machined in SCM NOVA S 630?

(A) 250 mm

(B) 260 mm

(C) 265 mm

(D) 270 mm

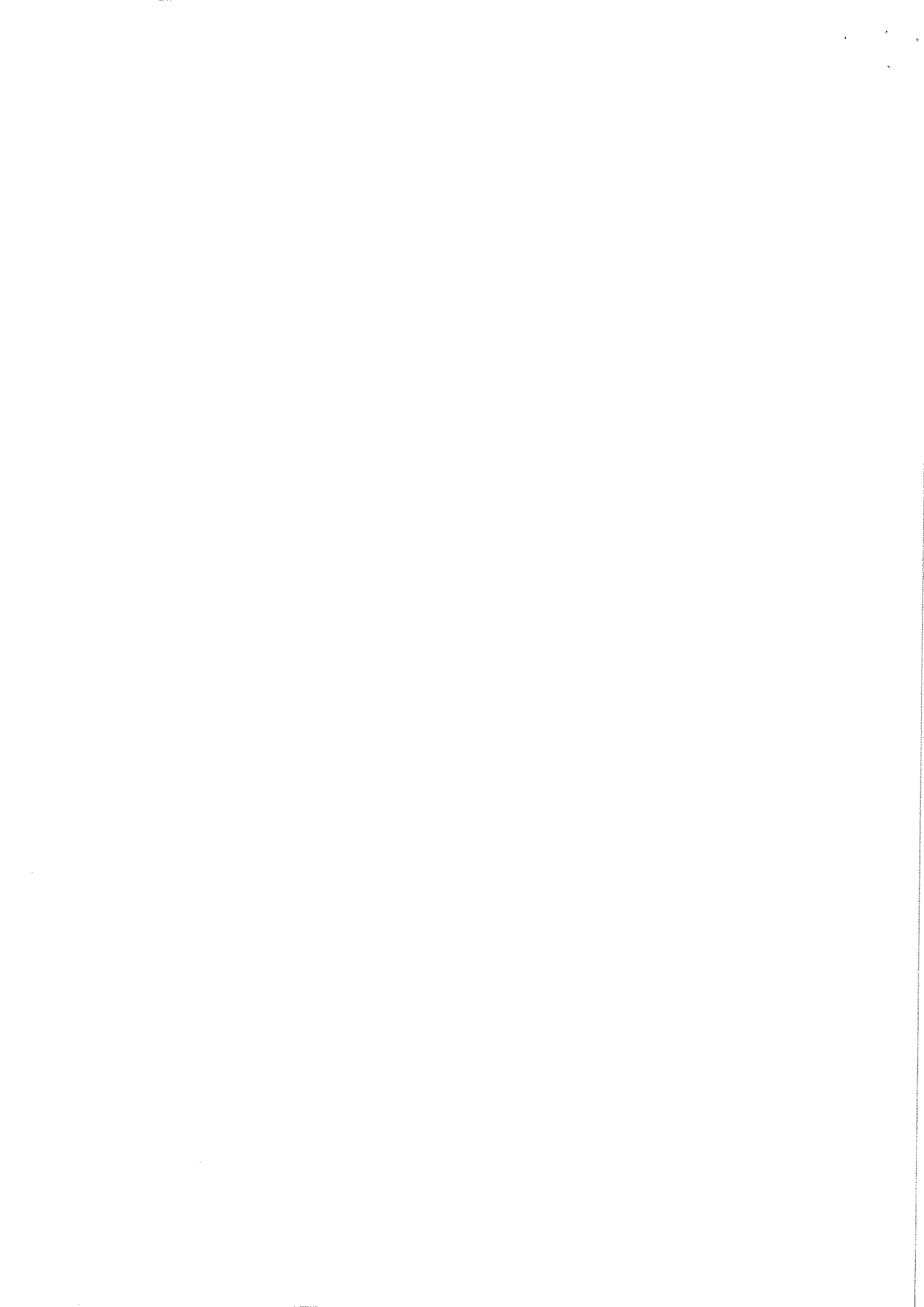
Section – B

03X02 = 06 Marks

Q.6.What are the two functions of Scoring Saw Blade in Panel Saw?

Q.7.Briefly describe the difference between Main Saw Blade and Scoring Saw blade.

Q.8.What are the two things checked before working on Surface Planer Machine?





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Section – C

03X03 = 09 Marks

- Q.9.What are the three operational safety points for using the Panel Saw Machine?
- Q.10.What is Riving Knife? Describe the gap between riving knife and teeth of the Saw blade and highest point of the riving knife with the help of Diagram.
- Q.11.What are the functions of Check latches, Feed Roller and Pressure beam in Thickness Planer Machine?





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- Answer all questions from section A, each question carries one mark.
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Section – A

05X01 = 05 Marks

Q.1.Which one of the following is the diameter of Scoring Saw blade in Panel Saw Altendorf WA8?

- (A) 155 mm (B) 160 mm
(c) 120 mm (D) 165 mm (C)

Q.2.Panel Saw can be_____?

- (A) Vertical (B) Horizontal
(C) Both (A) & (B) (D) None of these (C)

Q.3.Which one of the following is the Tilting angle of Saw blade in Panel Saw Altendorf WA8?

- (A) 0 – 45 Degree (B) 0 – 45 Degree
(C) 0 – 46 Degree (D) None of these (C)

Q.4.Which one of the following is the maximum work piece thickness in SCM NOVA S 630 Thicknesser Planer?

- (A) 300 mm (B) 250 mm
(C) 305 mm (D) 255 mm (A)

Q.5.Which one of the following is the minimum length to be machined in SCM NOVA S 630?

- (A) 250 mm (B) 260 mm
(C) 265 mm (D) 270 mm (B)

Section – B

03X02 = 06 Marks

Q.6.What are the two functions of Scoring Saw Blade in Panel Saw?

ANS: - 1. It is used to create a groove.

2.It avoids chipping while cutting double side laminate boards.

Q.7. Briefly describe the difference between Main Saw Blade and Scoring Saw blade.

ANS: - In conjunction with the main saw blade this sawing aggregate is used for the hogging or the "scoring" of the sensitive coating of a particle or fibreboard or cutting and therefore pre-scoring the cutting edges of the main saw blade.

Through the use of scoring aggregates (short: scorer) splinter free cutting edges are achieved also with hard and frangible surface coating, because the cutting force of the main saw blade are not (any longer) directed against the sensitive cutting edges. The scoring saw blade is approximately 0.1 mm up to maximum 0.2 mm wider than the main saw blade. Scoring aggregates work in a clockwise circle (down-cut) and with a higher speed than aggregates of the main saw.

Utilized are divided scoring saw blades (consisting of two parts, which are adjusted through fine thread or with intermediate rings) or conical scoring saws (cutting width is adjustable through the depth of the cut).

Q.8. What are the two things checked before working on Surface Planer Machine?

ANS:- 1. Check 90 degree between the machine table and fence.
2. Check depth of cut before machining.

Section – C

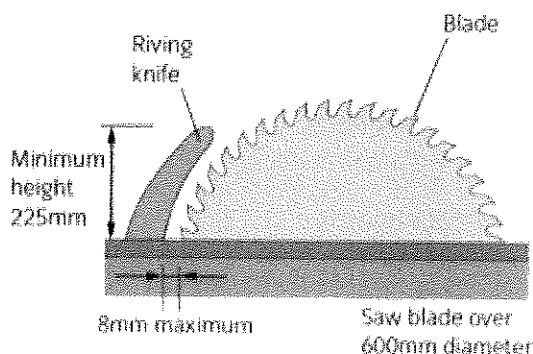
03X03 = 09 Marks

Q.9. What are the three operational safety points for using the Panel Saw Machine?

ANS: - 1. Safety glasses are required.
2. Never saw without piece against supports.
3. Never adjust saw or setup while saw is running.

Q.10. What is Riving Knife? Describe the gap between riving knife and teeth of the Saw blade and highest point of the riving knife with the help of Diagram.

ANS:- A **riving knife** is a safety device installed on a table saw, circular saw, or radial arm saw used for woodworking. Attached to the saw's arbor, it is fixed relative to the blade and moves with it as blade depth is adjusted





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Q.11.What are the functions of Check latches, Feed Roller and Pressure beam in Thickness Planer Machine?

ANS: -

- 1.Check Latches: - Avoid Backless.
2. Feed Roller: - Carries the work piece to the pull-out roller.
3. Pressure Beam: - The pressure bar pushes the work piece on to the table directly before and after the shaft.





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Section – C

03X03 = 09 Marks

- Q.9. Write a short note on butt hinge and write all the installation steps on door frames.
- Q 10. Explain any three types of consumables used for furniture fittings and connections.
- Q 11. Describe concealed hinges and its types with neat sketch.



School of Woodworking Skills
Session: 2020-21 (Summer Semester)
B. Voc. Program, 3rd Semester,
2nd In-Sem. Examination

Course Code: SCS1303

Time: 1 Hour

Course Name: Advanced Assembly and Fittings

Max. Marks: 20

Instruction

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

Section – A

05X01 = 05 Marks

Q 1. Which one of the following hinge is mortised into edge of the door?

- (a) Half Overlay Hinge (b) Butterfly Hinge
(c) Full Overlay Hinge (d) Flush Hinge (b)

Q 2. Which one of the following joint is called dovetail joint?

- (a) The pins and tails have a trapezoidal shape
(b) The mortise hole and the tenon tongue
(c) Joint in which the members overlap
(d) None of these (a)

Q 3. Which one of the following value is standard vertical distance between two holes in adjustable shelf of a cabinet?

- (a) 30 mm (b) 33 mm
(c) 37mm (d) 32 mm (d)

Q 4. Which one of the following part does not belong to Knock down fitting?

- (a) Cam (b) Screw
(c) Connecting dowel (d) Socket (c)

Q 5. Which one of the following fitting is known as detachable connecting fittings?

- (a) Dowel (b) Lamello
(c) Clamax (d) Domino (c)

Section – B

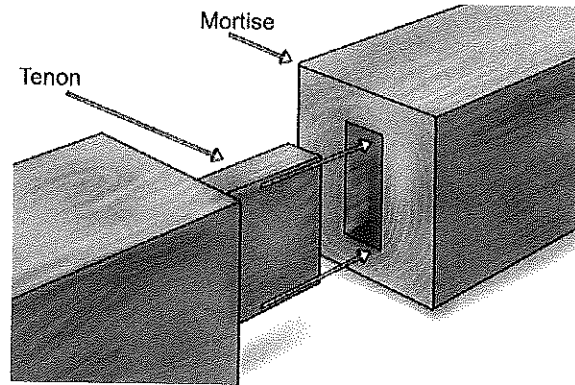
03X02 = 06 Marks

Q 6. Explain Tenon & Mortise joint and write down any two advantage and disadvantage.

Ans.

- A mortise and tenon joint is a type of joint that connects two pieces of wood at an angle of 90.
- Mortise and tenon are two components: the mortise hole and the tenon tongue.

- The tenon is cut to fit the mortise hole exactly and usually has shoulders that seat when the joint fully enters the mortise hole. The joint may be glued, pinned, or wedged to lock it in place.
- Advantage – Very good strength for heavy doors and gates
 - It is both simple and strong
- Disadvantage – Complex production while mortise hole
 - Less accuracy due to tightness/looseness.



Q 7. Describe the procedure of making 32 system hole at the sides of cabinet by using Router and Guide Rail.

Ans. To make machine in center while doing drilling at the side of the cabinet machine needs to set on the center of the drilling template.

1. Place centering mandrel in machine collet.
2. Push machine down and set it in between the hole and lock machine there.
3. Now set machine straight on the template and lock it on template from four of the sides.
4. Now unlock machine take out centering mandrel and set required drill bit.
5. Set machine on drilling template and now we can start work.

Q 8. Write a short description on runners.

Ans. Drawer runners are small devices that are used to facilitate fluid motion during opening and closing.

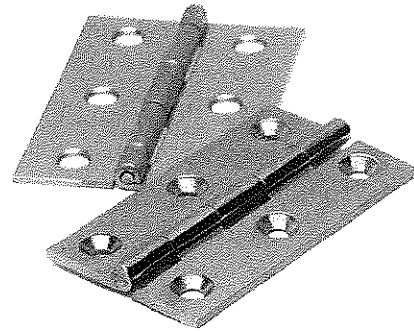
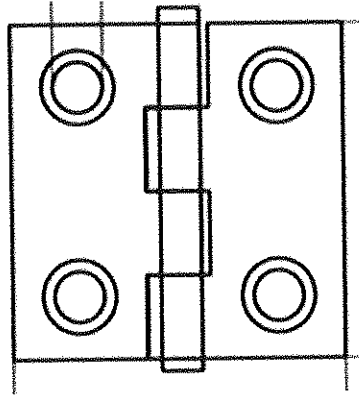
- The simplest drawer runners had a small set of wheels that are attached to the external sides of the drawer.
- Within the base cabinet frame where the drawer is set, a small guiding track will be installed to accept the wheels of the drawer.
- Drawer slides use guides, bearings, or rollers to support drawers and facilitate their motion. They provide smooth action and high lateral stability.
- There are many different types of drawer slides. Examples include:
 - heavy duty drawer slides
 - ball bearing drawer slides
 - full extension drawer slides
 - plastic drawer slides

Section – C

03X03 = 09 Marks

Q.9. Write a short note on butt hinge and write all the installation steps on door frames.

Ans. The hinge is mortised into the edge of the door and the cabinet, Only the knuckle of the hinge is visible when the door is shut. This hinge is Mainly used on inset doors.



- These are also called Mortise Hinge. Usually three or four number of these is mortised into the door and its frame.
- Hinges for use in the interior doors, windows, cabinets and almost all furniture these are the most commonly used type of hinges.
- These are made of steel mostly, while when used for exterior doors one needs to take care of the risk of corrosion, so brass or stainless steel hinge are more appropriate for Interior design projects.

Process to Install -

1. First we have to select the mating parts by hinges and accordingly no of hinges we have to decide.
2. Mark the dimension on work piece according to the hinge plate thickness, width and length on door as well as frame.
3. Measure the knuckle & hinge plate thickness and make routing according to that for material removing in both parts.
4. Check the slot depth and insert hinge in both groove and mark screw position and drilling as screw dimensions.
5. After that we have to assemble mating parts with hinges with screws. Check the required functioning requirement.

Q 10. Explain any three types of consumables used for furniture fittings and connections.

Ans. - 1. Nails - In woodworking and construction, a nail is a pin-shaped object of metal (or wood, called a treenail which is used as a fastener, as a peg to hang something, or sometimes as a decoration. Generally, nails have a sharp point on one end and a flattened head on the other, but headless nails are available.

2. Screws - A screw is a type of fastener, in some ways similar to a bolt, typically made of metal, and characterized by a helical ridge, known as a *male thread* (external thread). Screws are used to fasten materials by digging in and wedging into a material when turned, while the thread cuts grooves in the fastened material that may help pull fastened materials together and prevent pull-out. There are many screws for a variety of materials; those commonly fastened by screws include wood, sheet metal, and plastic.

3. **Glue** - Glue is an adhesive used to tightly bond pieces of wood together. Many substances have been used as glues.

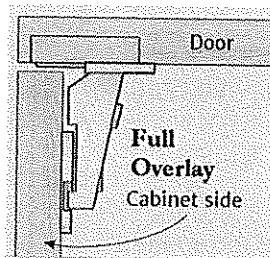
4. **Biscuits joiner** - A biscuit joiner is a wood working tool used to join two pieces of wood together. A biscuit joiner uses a small circular saw blade to cut a crescent-shaped hole (called the mouth) in the opposite edges of two pieces of wood or wood composite panels. An oval-shaped, highly dried and compressed wooden biscuit (Beech wood) is covered with glue, or glue is applied in the slot. The biscuit is immediately placed in the slot, and the two boards are clamped together. The wet glue expands the biscuit, further improving the bond.

Q 11. Describe concealed hinges and its types with neat sketch.

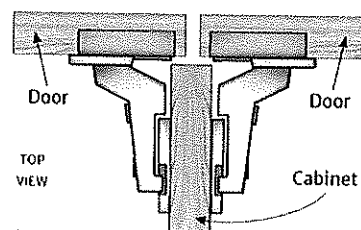
Ans. Concealed hinges are fully concealed behind the cabinet door, so they're not visible when the door is closed. They're self-closing and usually easily adjustable. They are the most common used of the cabinet door hinges. The mounting plate is fitted to the cabinet and a special bit is used to drill out the back of the door to take the cup hinge.

- a) Full overlay hinge
- b) Half overlay hinge
- c) Inset hinge

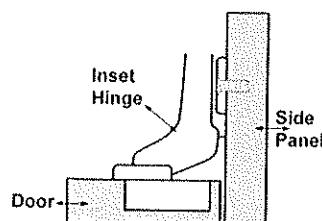
a) **Full overlay hinge** - This hinge is the type of Concealed hinge, overlay doors do exactly what the name implies: They cover the cabinet opening completely, overlapping the cabinet case or face frame on all sides



b) **Half overlay hinge** - Half overlay hinges are intended for pairs of doors in the middle of a run of cabinets, where two doors have their hinges mounted on opposite sides of a shared middle partition.



c) **Inset hinge** - This hinge is the type of Concealed hinge, inset doors fit entirely within the cabinet opening and sit flush with the cabinet sides or face frames when in the closed position





School of Woodworking Skills
Session: 2020-21 (Summer Semester)
B. Voc. Program, 3rd Semester,
2st In-Sem. Examination

Course Code: SCS 1304

Course Name: Carpenter mathematics (SET-A)

Instruction: Calculator without storage is permitted.

Time: 1 Hour

Max. Marks: 20

Section – A

05X01 = 05 Marks

1) $\sin^2(43^\circ) + \cos^2(43^\circ) =$

- (a) 0 b) 1 c) $\tan 43^\circ$ d) None

2) $\frac{2\tan 30}{1+\tan^2 30} =$

- (a) $\sin 60^\circ$ b) $\cos 60^\circ$ c) $\tan 60^\circ$ d) $\sin 30^\circ$

3) $\frac{1-\tan^2 45}{1+\tan^2 30} =$

- a) $\tan 90$ b) 1 c) $\sin 45$ d) 0

4) $\frac{\tan 65}{\cot 25}$ is

- a) 0 b) 1 c) $\frac{1}{2}$ d) $\sqrt{2}$

5) The load or force applied to workpiece for shorter period of time called as

- a) strength b) Hardness c) Impact d) Stiffness

Section – B

03X02 = 06 Marks

6) Define: a) Stiffness b) Shrinkage in wood.

7) In a right triangle ABC, right-angled at B, if $\tan A = 1$, then verify that $2 \sin A \cos A = 1$.

8) if $3 \cot A = 4$, check whether $\frac{1-\tan^2 A}{1+\tan^2 A} = \cos^2 A - \sin^2 A$ or not.



Section – C

03X03 = 09 Marks

9) Explain the influence of moisture content in wood.

10) Prove that $\frac{\sin \theta - \cos \theta + 1}{\sin \theta + \cos \theta - 1} = \frac{1}{\sec \theta - \tan \theta}$ using identity $\sec^2 \theta = 1 + \tan^2 \theta$

11) Prove that $\left(\frac{1 + \tan^2 A}{1 + \cot^2 A}\right) = \left(\frac{1 - \tan A}{1 - \cot A}\right)^2 = \tan^2 A$



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.:

Ankur kumar

School of Woodworking Skills
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Course Code: SCS 1304

Course Name: Carpenter mathematics (SET-A)

Instruction: Calculator without storage is permitted.

Time: 1 Hour

Max. Marks: 20

Section – A

05X01 = 05 Marks

1) $\sin^2(43^\circ) + \cos^2(43^\circ) =$

- (a) 0 b) 1 c) $\tan 43^\circ$ d) None

Ans: b

2) $\frac{2 \tan 30^\circ}{1 + \tan^2 30^\circ} =$

- (a) $\sin 60^\circ$ b) $\cos 60^\circ$ c) $\tan 60^\circ$ d) $\sin 30^\circ$

Ans: a)

3) $\frac{1 - \tan^2 45^\circ}{1 + \tan^2 30^\circ} =$

- a) $\tan 90^\circ$ b) 1 c) $\sin 45^\circ$ d) 0

Ans: d)

4) $\frac{\tan 65^\circ}{\cot 25^\circ}$ is

- a) 0 b) 1 c) $\frac{1}{2}$ d) $\sqrt{2}$

Ans: b)

5) The load or force applied to workpiece for shorter period of time called as

- a) strength b) Hardness c) Impact d) Stiffness

Ans: c)

Section – B

03X02 = 06 Marks

6) Define: a) Stiffness b) Shrinkage in wood.

Ans a) Stiffness is the extent to which an object resists deformation in response to an applied force. Stiffness relates to how a component bends under load while still returning to its original shape once the load is removed. Since the component dimensions are unchanged after load is removed, stiffness is associated with elastic deformation.

Ans b) Wood is a material that continually absorbs or releases moisture until it reaches a balance with its surroundings. In normal use the moisture content of wood varies between 8% and 25% by weight, depending on the relative humidity of the air. On the other hand, an excess of moisture in wood can

cause other problems, including, but not limited to: Preventing adhesives from making a secure bond (Less strength) and Shrinkage as the excess moisture leaves the wood:

Shrinkage occurs as moisture content decreases, while swelling takes place when it increases. Volume change is not equal in all directions. The greatest dimensional change occurs in a direction tangential to the growth rings. Shrinkage from the pith outwards, or radially, is usually considerably less than tangential shrinkage, while longitudinal (along the grain) shrinkage is so slight as to be usually neglected. The longitudinal shrinkage is 0.1% to 0.3%, in contrast to transverse shrinkages, which is 2% to 10%. Tangential shrinkage is often about twice as great as in the radial direction, although in some species it is as much as five times as great. The shrinkage is about 5% to 10% in the tangential direction and about 2% to 6% in the radial direction.

7) In a right triangle ABC, right-angled at B, if $\tan A = 1$, then verify that $2 \sin A \cos A = 1$.

Solution:

$$\tan A = BC/AB = 1$$

$$BC = AB$$

$$\text{Let } AB = BC = k$$

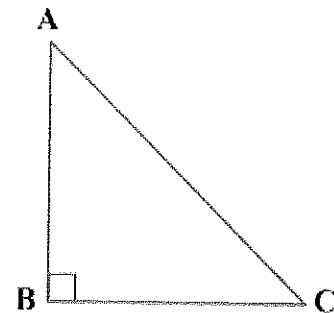
$$AC = \sqrt{(AB^2 + BC^2)}$$

$$= \sqrt{(k^2 + k^2)} = k\sqrt{2}$$

$$\sin A = BC/AC = \frac{1}{\sqrt{2}}$$

$$\cos A = AB/AC = \frac{1}{\sqrt{2}}$$

$$2 \sin A \cos A = 2 \left(\frac{1}{\sqrt{2}}\right) \left(\frac{1}{\sqrt{2}}\right) = 1 \text{ hence proved}$$



8) if $3 \cot A = 4$, check whether $\frac{1 - \tan^2 A}{1 + \tan^2 A} = \cos^2 A - \sin^2 A$ or not.

Given,

Let $\triangle ABC$ be a right angled triangle.

- $3 \cot A = 4$

Hence, $\cot A = \frac{4}{3}$

We know that,

$$\cot A = \frac{\text{Side adjacent to } \angle A}{\text{Side opposite to } \angle A} = \frac{AB}{BC} = \frac{4}{3}$$

Hence, $AB = 4$ and $BC = 3$, $AC = 5$

By applying the Pythagoras Theorem in $\triangle ABC$,

$$(AC)^2 = (AB)^2 + (BC)^2$$

$$= 4^2 + 3^2$$

$$= 16 + 9$$

$$= 25$$

$$AC = 5$$

$$\cos A = \frac{\text{Side adjacent to } \angle A}{\text{Hypotenuse}} = \frac{AB}{AC} = \frac{4}{5}$$

$$\sin A = \frac{\text{Side opposite to } \angle A}{\text{Hypotenuse}} = \frac{BC}{AC} = \frac{3}{5}$$

$$\tan A = \frac{\text{Side opposite to } \angle A}{\text{Side adjacent to } \angle A} = \frac{BC}{AB} = \frac{3}{4}$$

By substituting the above values of trigonometric functions in the LHS of the Equation,

$$\frac{1 - \tan^2 A}{1 + \tan^2 A} = \frac{1 - \left(\frac{3}{4}\right)^2}{1 + \left(\frac{3}{4}\right)^2} = \frac{1 - \frac{9}{16}}{1 + \frac{9}{16}}$$

$$= \frac{\frac{16}{16} - \frac{9}{16}}{\frac{16}{16} + \frac{9}{16}} = \frac{7}{25}$$

By substituting the above values of trigonometric functions in the RHS of the Equation

$$\cos^2 A - \sin^2 A = \left(\frac{4}{5}\right)^2 - \left(\frac{3}{5}\right)^2$$



$$= \frac{16}{25} - \frac{9}{25} = \frac{7}{25}$$

$$\therefore \frac{1 - \tan^2 A}{1 + \tan^2 A} = \cos^2 A - \sin^2 A$$

Hence it is proved.

Section – C

03X03 = 09 Marks

9) Explain the influence of moisture content in wood.

Ans: Wood is a material that continually absorbs or releases moisture until it reaches a balance with its surroundings. In normal use the moisture content of wood varies between 8% and 25% by weight, depending on the relative humidity of the air. On the other hand, an excess of moisture in wood can cause other problems, including, but not limited to: Preventing adhesives from making a secure bond (Less strength) and Shrinkage as the excess moisture leaves the wood:

When dealing with wood for flooring and other applications, the moisture content of that wood can have an enormous impact on the quality of the wood.

1. On the other hand, an excess of moisture in wood can cause other problems, including, but not limited to:
 - a) Preventing adhesives from making a secure bond.
 - b) Promoting the growth of mold in the wood.
 - c) Shrinkage as the excess moisture leaves the wood.
2. Wood is a material that continually absorbs or releases moisture until it reaches a balance with its surroundings. Or, as the experts might say, it's a hygroscopic material.
3. In normal use the moisture content of wood varies between 8% and 25% by weight, depending on the relative humidity of the air.
4. The equilibrium moisture content of wood is a state corresponding to the air temperature and relative moisture, in which the moisture content of the wood remains steady.

10) Prove that $\frac{\sin \theta - \cos \theta + 1}{\sin \theta + \cos \theta - 1} = \frac{1}{\sec \theta - \tan \theta}$ using identity $\sec^2 \theta = 1 + \tan^2 \theta$

Solution:

Since Applying the identity involving $\sec \theta$ and $\tan \theta$, let us first convert the LHS (of the identity we need to prove) in terms of $\sec \theta$ and $\tan \theta$ by dividing numerator and denominator by $\cos \theta$

$$\begin{aligned} \text{LHS} &= \frac{\sin \theta - \cos \theta + 1}{\sin \theta + \cos \theta - 1} = \frac{\tan \theta - 1 + \sec \theta}{\tan \theta + 1 - \sec \theta} \\ &= \frac{(\tan \theta + \sec \theta) - 1}{(\tan \theta - \sec \theta) + 1} = \frac{\{(\tan \theta + \sec \theta) - 1\} (\tan \theta - \sec \theta)}{\{(\tan \theta - \sec \theta) + 1\} (\tan \theta - \sec \theta)} \end{aligned}$$



$$\begin{aligned} &= \frac{(\tan^2 \theta - \sec^2 \theta) - (\tan \theta - \sec \theta)}{(\tan \theta - \sec \theta + 1)(\tan \theta - \sec \theta)} \\ &= \frac{-1 - \tan \theta + \sec \theta}{(\tan \theta - \sec \theta + 1)(\tan \theta - \sec \theta)} \\ &= \frac{-1}{\tan \theta - \sec \theta} = \frac{1}{\sec \theta - \tan \theta}, \end{aligned}$$

which is the RHS of the identity, we are required to prove.

11) Prove that $\left(\frac{1+\tan^2 A}{1+\cot^2 A}\right) = \left(\frac{1-\tan A}{1-\cot A}\right)^2 = \tan^2 A$

Solution:

Taking LHS, $\left(\frac{1+\tan^2 A}{1+\cot^2 A}\right)$

$$\begin{aligned} &= \frac{\sec^2 A}{\operatorname{cosec}^2 A} \\ &= \frac{\sec^2 A}{\operatorname{cosec}^2 A} \\ &= \frac{1}{\cos^2 A} \\ &= \frac{1}{\sin^2 A} \\ &= \frac{1}{\cos^2 A} \times \sin^2 A = \tan^2 A \end{aligned}$$

Taking RHS, $\left(\frac{1-\tan A}{1-\cot A}\right)^2$

$$\begin{aligned} &= \left(\frac{1-\tan A}{1-\frac{1}{\tan A}}\right)^2 \\ &= \left(\frac{1-\tan A}{\frac{\tan A-1}{\tan A}}\right)^2 \\ &= (-\tan A)^2 = \tan^2 A \end{aligned}$$

Hence, L.H.S = R.H.S.



**School of Woodworking Skills
Session: 2020-21 (Summer Semester)**

**B. Voc. III Semester,
2nd In-Sem. Examination**

Set - A

Course Code: SCS1305

Time: 1 Hour

Course Name: Wood Working CNC Machines

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 one of the following is the name of Software used in CNC Router?

- (A) Woodflash (B) Woodflash 4.0
(c) Woodflash 3.0 (D) None of the above

Q.2.How many are the number of faces in Work pieces for machining in CNC Router Machine?

- (A) 6 (B) 4
(C) 5 (D) None of these

Q.3.Which one of the following is the face where we are not able to perform machining?

- (A) Face 1 (B) Face 2
(C) Face 3 (D) Face 6

Q.4.Which one of the following is the face where we do vertical drills?

- (A) Face 1 (B) Face 2
(C) Face 4 (D) Face 5

Q.5.Which one of the following is the rotary axes in CNC Router Machines?

- (A) Axis a (B) Axis b
(C) Axis c (D) All of above

Section – B

03X02 = 06 Marks

Q.6.Define the term CNC.

Q.7.What are the requirements for connections and buildings of CNC Router Machine?

Q.8.Explain the faces of a work piece for machining in CNC Router machine using a diagram.

Section – C

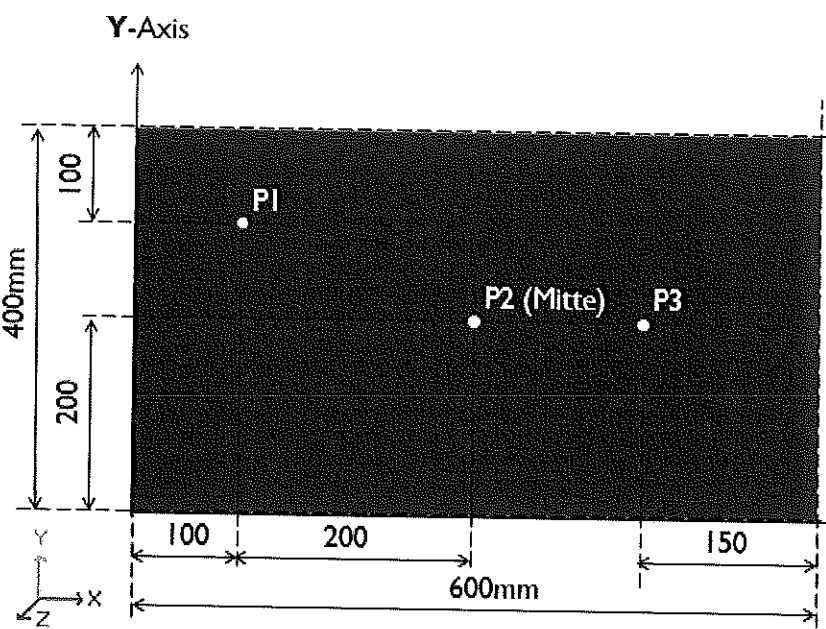
03X03 = 09 Marks

Q.9. What are the advantages of CNC Machines?

Q.10. What are the differences between Conventional machines and CNC Machines?

Q.11. Write the coordinates of the point given in below figure.

Drilling (point) defined:
The hole should be 10mm deep. Please enter the coordinates first absolute and then with variables.



P1	absolut	variable
X		
Y		
Z		

P1	abs	var
X		
Y		
Z		



School of Woodworking Skills
Session: 2020-21 (Summer Semester)
B. Voc. III Semester,
2nd In-Sem. Examination
Set - A

Course Code: SCS1305

Time: 1 Hour

Course Name: Wood Working CNC Machines

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 one of the following is the name of Software used in CNC Router?

- (A) Woodflash (B) Woodflash 4.0
(c) Woodflash 3.0 (D) None of the above (B)

Q.2.How many are the number of faces in Work pieces for machining in CNC Router Machine?

- (A) 6 (B) 4
(C) 5 (D) None of these (A)

Q.3.Which one of the following is the face where we are not able to perform machining?

- (A) Face 1 (B) Face 2
(C) Face 3 (D) Face 6 (B)

Q.4.Which one of the following is the face where we do vertical drills?

- (A) Face 1 (B) Face 2
(C) Face 4 (D) Face 5 (A)

Q.5.Which one of the following is the rotary axes in CNC Router Machines?

- (A) Axis a (B) Axis b (B)
(C) Axis c (D) All of above

Section – B

03X02 = 06 Marks

Q.6.Define the term CNC.

ANS: CNC machines are machine tools that, thanks to the use of Computer-controlled measuring and coordinate systems, are able to automatically produce work pieces with high precision, even for complex shapes. They outperform mechanically controlled machines in terms of precision and speed.

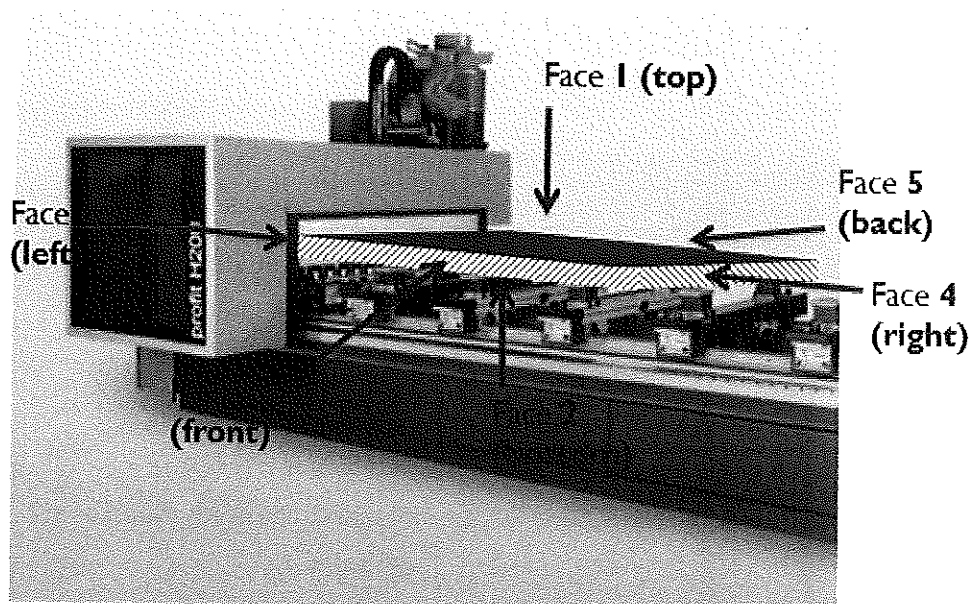
Q.7.What are the requirements for connections and buildings of CNC Router Machine?

ANS:- Requirements for connections and buildings:

1. Electrical connection value, 20 to 30 kW
2. Compressed air, 7bar
3. Suction power, 4000 to 5000 m / h
4. Floor load, 2000 kg / m²
5. Sufficient floor space

Q.8.Explain the faces of a work piece for machining in CNC Router machine using a diagram.

ANS:-



Section – C

03X03 = 09 Marks

Q.9.What are the advantages of CNC Machines?

ANS:-

1. The accuracy of the CNC machine ensures consistent product quality.
2. Increased production speed and increased efficiency.
3. One of the main advantages for the operators of CNC machines is safety.

Q.10. What are the differences between Conventional machines and CNC Machines?

ANS:-

Points of difference b/w CNC and Conventional Machines	
<u>CNC Machine</u>	<u>Conventional Machine</u>
<ul style="list-style-type: none"> • CNC machines can be used continuously for long intervals and only need to be switched off for occasional maintenance. • CNC machines can produce several products, all similar and dead accurate • Less skilled/trained persons can operate the CNC machines. • CNC machines can be updated by using improved software to drive the machines. 	<ul style="list-style-type: none"> • Conventional machines are difficult to operate for several hours at a stretch. The operator has to continuously focus on the job at hand. • Resemblance of the products formed depends on the skill of the operator. Visible differences may occur • Highly skilled operators are required to work on conventional machines • Chances for major improvement in the same conventional machines are very less.

Q.11. Write the coordinates of the point given in below figure.

Drilling (point) defined:
The hole should be 10mm deep. Please enter the coordinates first absolute and then with variables.

The diagram shows a rectangular plate with a width of 600mm and a height of 400mm. The X-axis is horizontal and the Y-axis is vertical. Point P1 is located 100mm from the left edge and 300mm from the bottom edge. Point P2 (Mitte) is at the center of the plate, 450mm from the left edge and 200mm from the bottom edge. Point P3 is located 550mm from the left edge and 200mm from the bottom edge.

P1	absolut	variable
X		
Y		
Z		

P3	abs	var
X		
Y		
Z		

ANS:-

P1	Absolute	Variable
X	100	100
Y	300	Y-100
Z	-10	-10

P3	Absolute	Variable
X	450	X-100
Y	200	Y/2





School of Woodworking Skills
Session: 2020-21 (Summer Semester)
B. Voc. Program, 3rd Semester,
2nd In-Sem. Examination

Course Code: SCS1307

Time: 1 Hour

Course Name: Advanced Carpenter Materials (SET A)

Max. Marks: 20

Instruction: All the questions are compulsory.

Section – A

05X01 = 05 Marks

Q1. Veneering means

- (a) Carving out designs on timber planks
- (b) Chemically treating timber planks
- (c) Thin layer of superior wood glued to inferior wood
- (d) Thin layer of inferior wood glued to superior wood

Q2. Veneers that are visible on the finished work-piece are known as

- (a) Blind veneer
- (b) Covering veneer
- (c) Deck veneer
- (d) Barrier veneer

Q3. In HGP laminate, P stands for

- (a) Pressurized
- (b) Post formed
- (c) Preprocessed
- (d) Penetrated

Q4. European or commonly used grade for laminate is

- (a) EN 532
- (b) EN 338
- (c) EN 438
- (d) None

Q5. The Aluminum Oxide used for wood working as

- (a) adhesive
- (b) cleaning agent
- (c) abrasive
- (d) None

Section – B

03X02 = 06 Marks

Q6. Write briefly on the following veneer defects.

- (a) Furrier
- (b) Glue penetration



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Q7. Explain the advantages and disadvantages of Linoleum.

Q8. Explain the following:

(a) Compact panels

(b) Edge materials

Section – C

03X03 = 09 Marks

Q9. Write the instructions for veneer storage in detail.

Q10. Explain the construction of HP laminate.

Q11. Explain the selection criteria of any abrasive.



School of Woodworking Skills
Session: 2020-21 (Summer Semester)
B. Voc. Program, 3rd Semester,
2nd In-Sem. Examination

Course Code: SCS1307

Time: 1 Hour

Course Name: Advanced Carpenter Materials

Max. Marks: 20

Instruction: All the questions are compulsory.

Section – A

05X01 = 05 Marks

Q1. Veneering means

- (a) Carving out designs on timber planks
- (b) Chemically treating timber planks
- (c) Thin layer of superior wood glued to inferior wood
- (d) Thin layer of inferior wood glued to superior wood (c)

Q2. Veneers that are visible on the finished work-piece are known as

- (a) Blind veneer
- (b) Covering veneer
- (c) Deck veneer
- (d) Barrier veneer (b)

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- (a) adhesive
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- (c) abrasive
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Section – B

03X02 = 06 Marks

Q6. Write briefly on the following veneer defects.

- (a) Furrier
- (b) Glue penetration



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Ans.

Types of errors	Possible Cause	Eliminate errors	Avoidance in the future
Furrier	Dirt or grease	- Cut out the missing part, insert the adhesive and press again	- Check, grind and clean the carrier plate
	Too little glue		- Even adhesive application
Glue penetration	Defects in the veneer	- For dispersion glue (white glue without hardener), brush with warm water and a root or brass brush immediately after removal from the press	- Check the veneer, especially the thickness
	Uneven veneer thicknesses		- Add filler and extender to the 1 adhesive
Glue penetration	Uneven support plate	- other types of adhesive can no longer be removed	- Adjust the adhesive more viscous
	- Adhesive too thin		- Color the adhesive
Glue penetration	- Too much glue applied		
	- Coarse pore veneer		
Glue penetration	- Forget about fillers and extenders		

Q7. Explain the advantages and disadvantages of Linoleum.

Ans:

Advantages

- Environmentally, linoleum has a great deal going for it. The product is made primarily from minimally processed natural ingredients.
- It contains almost no petroleum-based chemicals and no chlorinated chemicals. The resources used are renewable or plentiful. It is fully biodegradable.



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- Compared with the primary competitor in commercial buildings, linoleum is more durable and requires less maintenance.
- From a life-cycle cost standpoint, the lower maintenance requirements will result in significant savings over time.

Disadvantages

- The biggest concern about linoleum is the offgassing of oxidation products from the linseed oil. According to some, this offgassing is significant enough that we should avoid using linoleum.
- Specialized installation and regular maintenance

Q8. Explain the following:

(a) Compact panels

(b) Edge materials

Ans. a) Compact panels can be installed independently without a carrier panel and have a decorative layer on both sides. HPL boards, According to EN 438, 2mm thick are considered compact panels and are available in all qualities. In this way, a hygienically tight, easy-to-clean and versatile plate with closed cutting edges is available. Compact panels are used both indoors and outdoors and are available in thicknesses from 2 to 30mm

Area of application interior

- Hygiene, hospital and laboratory facilities
- bathroom equipment
- shop fittings
- Interior lift panels
- table tops

Quality characteristics

- Self-supporting function, however depending on the size and thickness limited
- flame retardant
- high impact, impact and abrasion resistance
- heat resistant
- easy to clean
- Chemically resistant and hygienically sealed surface.

Ans: b) Edge materials serve to coat the narrow surfaces of chipboard, which represent a wide range of applications in the furniture industry. All cut edges on the fronts and on the body are covered with edge materials. This involves locking the furniture components to protect them from environmental influences such as, for example, dirt, water ingress or

impact loads, etc. In addition, modern edging materials guarantee optimal design options for the piece of furniture due to their variety of materials and designs. Living spaces are becoming more and more individual, every detail is important. The narrow surface and edge as a design element are becoming increasingly important.

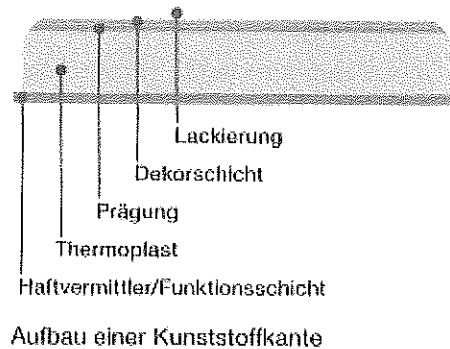


Fig: Construction of a plastic edge

Section – C

03X03 = 09 Marks

Q9. Write the instructions for veneer storage in detail.

Ans. Veneer Storage

Veneers are expensive and easily vulnerable if stored improperly. Therefore, the following instructions for storage must be observed:

- Veneers must be stored in dark or darkened rooms or covered with cloths (risk of yellowing under the influence of light). UV rays cause a change in the wood component lignin, which leads to yellowing of the wood.
- Veneers are very brittle when completely dry. The storage climate should therefore correspond to a wood moisture content of 8 to 10% (relative air humidity of 65 to 75%, i.e. in unheated rooms).
- The climate in the camp should remain as constant as possible. Fluctuations in humidity and temperature cause the veneers to shrink and swell, which can lead to cracking.
- Veneers, separated by type of wood, must be stored on racks. Repositioning the veneers too often leads to cracks.
- Newly purchased veneers are to be entered on the inventory list, used veneers are debited.



Q10. Explain the construction of HP laminate.

Ans:

Construction

Essentially, the decorative laminate (HPL) consists of more than 60% paper. The remaining 30 to 40% consist of hardened phenol formaldehyde resin for the core and melamine formaldehyde resin for the surface layers.

Top layer

The approximately 15 to 80g / m² thin paper, impregnated with melamine resin, is applied to the printed decorative paper to increase the abrasion resistance.

Decorative layer

The decorative layer consists of melamine resin impregnated, printed paper with a thickness of 50 to 160 g / m², which is usually colored through. Thin wood veneers or metal foils impregnated with melamine resin are also used.

Barrier layer

White cellulose paper impregnated with melamine resin is used used with light decorative layers for color blocking.

Core papers

The cellulose kraft paper with a strength of 80 to 300 g / m² is not uncommon bleaches for use and is impregnated with phenolic resins. The number Core papers determine the thickness of the laminate.

Q11. Explain the selection criteria of any abrasive.

Ans:

The selection of a particular abrasive is determined by its action for the type of function to be performed on the material to be processed. The effect of an abrasive material depends on three key characteristics:

Particle shape. The shape of an abrasive may be angular, blocky, semi-round or spherical. Angular particles cut and strip away surface material on impact. Spherical particles do not have any cutting edges and are used to pound orpeen a surface. Grain shape is important as rounded and angular grains behave differently when they impact a substrate such as steel. Angular, sharp particles produce the greatest cutting action and the deepest profile. Round or semi-round particles will cut much more slowly and will produce a more shallow profile.



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Hardness. The hardness of an abrasive is measured using the Mohs scale. Harder particles will be more aggressive in removing surface material.

Particle size. A larger particle removes material faster and it tends to produce a heavier texture or rougher surface on the base material.