Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Carpenter Skills

3rd Semester, End-Sem. Examination

B. Voc. Program, Winter Semester (2018-19)

Course Code: 1301 **Time: 3 Hours**

Course Name: Advanced Handy Machine **Max. Marks: 100**

Instruction:

1.Answer all questions from section A, each question carries one mark.

2.Answer 6 questions out of 8 questions from section B, each question carries five marks.

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

Section – A

20X01 = 20 Marks

Q.1.Which one of the following tool is used for separating the cut in Hand circular saw?

(A) Riving knife (B) Splitting wedge

(C) Both (A) & (B) (D) None of these

Q.2.Which one of the following is the distance between saw and riving knife in Hand circular saw?

(A) 7 mm (B) (0-5) mm

(C) 8 mm (D) 6 mm

Q.3.Which one of the following hand machine is used for straight cutting?

(A) Circular saw (B) Jig saw

(C) Hand planer (D) Both (A) & (B).

Q.4.Which one of the following is the outer clearance for domino dowels results from the machine stop in Domino machine?

(A) 10 mm (B) 15 mm

(C) 18 mm (D) 37 mm

Q.5. Which one of the following accessory is used for straight cut in Hand circular saw?

(A) Reliable guidance (B) Splinter guide

(C) Parallel side fence (D) Both (A) & (B)

Q.6. Which one of the following is the depth taken while using 4 mm cutter in Domino machine?

(A) 28 mm (B) 25 mm

(C) 12 mm (D) 20 mm

Q.7.Which one of the following is the accessory used for making round circles in

Hand router?

(A) Guide rail (B) Coping ring

(C) Thrust ring (D) Bar end

Q.8.Which one of the following machine is used for making Lamello biscuit joint and clamex joint?

(A) Jig Saw (B) Domino

(C) Lamello Classic X (D) Zeta P2

Q.9.Which one of the following is the accessory used for making 32 system drill in Hand router?

(A) Splinter guard (B) Guide rail

(C) Coping ring (D) None of these

Q.10.Which one of the following machine is used for making chamfer and round profile on work piece?

(A) Router (B) Jig saw

(C) Edge router (D) Both (A) & (C)

Q.11.Which one of the followings is an example of fiber board?

(A) Particle board (B) Oriented Strand Board

(C) MDF (D) Ply board

Q.12. Which one of the following raw materials is used for OSB?

(A)Fiber (B) wooden straw

(C) Particles (D) wooden strips

Q.13. Which one of the following is most inner part in wood?

(A) Annual ring (B) Bark

(C) Pith (D) Heart wood

Q.14. Which one of the following is not a factor of wood panel storage?

(A) Moisture (B) Temperature

(C) Light (D) Seasoned air

Q.15. Which one of the following term is related to wood panel storage?

(A) Planning (B) Stacking

(C) Finishing (D) Handling

Q.16. Which one of the following purpose a carpenter triangle is used ?

(A) To avoid confusion (B) Removing material

(C) Evaluation of parts (D) Both (A) & (C)

Q.17. Which one of the following should be checked before marking the work piece for joining?

(A) Wood defects (B) Color difference

(C) Knots (D) All of the above

Q.18. Which one of the following joints is the weakest joint?

(A) Lap joint (B) Bridle joint

(C) Butt joint (D) Dovetail joint

Q.19. Which one the following is a joint without extra connector?

(A) Dovetail joint (B) Dowel

(C) Domino (D) Nail joints

Q.20. Which one of the following is a detachable joint?

(A) Clamex (B) screw connections

(C) Eccentric connections (D) All of the above

Section – B

06X05 = 30 Marks

Q.21.What are the five benefits of using dust collector while cutting with Handy machines?

Q.22.Why is it necessary to use 20 mm depth while using 4*20 mm domino dowels? Explain with the help of diagram.

Q.23.What are the five steps of trimming laminate by Hand router?

Q.24.Discuss four types of natural defects in natural wood.

Q.25.Differentiate between hard wood and soft wood based on their wood properties.

Q.26. Draw the figures of five types of wood joints and explain them.

Q.27.What are the five steps of making 8 mm back wall groove by hand router?

Q.28.What are the five steps of Immersion and Emersion of tool in Hand router?

Section – C

05X10 = 50 Marks

Q.29.What do you understand by Oriented Strand Board, explain raw material used for OSB board?

Q.30.What are the steps for changing the tool of Hand circular saw, Domino and Hand router.

Q.31.Describe any ten parts of Domino machine.

Q.32. Describe all the marks and symbols used in marking and write down their scopes.

Q.33.Describe the work steps of cutting a panel by circular Hand Saw with the help of guide rail.

Dr A Kaur 21/7/19

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Section – A

20X01 = 20 Marks

Q.1.Which one of the following tool is used for separating the cut in Hand circular saw?

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(C) Both (A) & (B) (D) None of these (C)

Q.2.Which one of the following is the distance between saw and riving knife in Hand circular saw?

(A) 7 mm (B) (0 – 5) mm

(C) 8 mm (D) 6 mm (B)

Q.3.Which one of the following hand machine is used for straight cutting?

(A) Circular saw (B) Jig saw

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Q.4.Which one of the following is the outer clearance for domino dowels results from the machine stop in Domino machine?

(A) 10 mm (B) 15 mm

(C) 18 mm (D) 37 mm (D)

Q.5. Which one of the following accessory is used for straight cut in Hand circular saw?

(A) Reliable guidance (B) Splinter guide

(C) Parallel side fence (D) Both (A) & (B) (A)

Q.6. Which one of the following is the depth taken while using 4 mm cutter in Domino machine?

(A) 28 mm B) 25 mm

(C) 12 mm (D) 20 mm (D)

Q.7.Which one of the following is the accessory used for making round circles in Hand router?

(A) Guide rail (B) Coping ring

(C) Thrust ring (D) Bar end (D)

Q.8.Which one of the following machine is used for making Lamello biscuit joint and clamex joint?

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(A) Jig Saw (B) Domino

(C) Lamello Classic X (D) Zeta P2 (D)

Q.9.Which one of the following is the accessory used for making 32 system drill in Hand router?

(A) Splinter guard (B) Guide rail

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Q.11.Which one of the followings is an example of fiber board?

(A) Particle board (B) Oriented Strand Board

(C) MDF (D) Ply board (C)

Q.12. Which one of the following raw materials is used for OSB?

(A)Fiber (B) wooden straw

(C) Particles (D) wooden strips (B)

Q.13. Which one of the following is most inner part in wood?

(A) Annual ring (B) Bark

(C) Pith (D) Heart wood (A)

Q.14. Which one of the following is not a factor of wood panel storage?

(A) moisture (B) temperature

(C) light (D) seasoned air (C)

Q.15. Which one of the following term is related to wood panel storage?

(A) Planning (B) Stacking

(C) Finishing (D) Handling (B)

Q.16. Which one of the following purpose a carpenter triangle is used ?

(A) To avoid confusion (B) Removing material

(C) Evaluation of parts (D) Both (A) & (C) (D)

Q.17. Which one of the following should be checked before marking the work piece for joining?

(A) Wood defects (B) Color difference

(C) Knots (D) All of the above (D)

Q.18. Which one of the following joints is the weakest joint?

(A) Lap joint (B) Bridle joint

(C) Butt joint (D) Dovetail joint (C)

Q.19. Which one the following is a joint without extra connector?

(A) Dovetail joint (B) Dowel (A)

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(C) Domino (D) Nail joints

Q.20. Which one of the following is a detachable joint?

(A) Clamex (B) screw connections

(C) Eccentric connections (D) All of the above (D)

Section – B

06X05 = 30 Marks

Q.21.What are the five benefits of using dust collector while machining with Handy machines?

ANS: Five benefits of using dust collector while cutting with Handy machines are described below:

1.Increases the life of machine.

2.Makes the working environment clean.

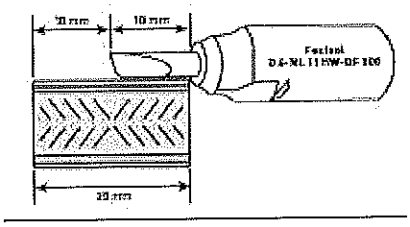
3.It helps in keeping the machine clean.

4.It sucks dust while machining. Due to this dust does not go into the air.

5.It helps in cleaning workshop.

Q.22.Why is it necessary to use 20 mm depth while using 4*20 mm domino dowels? Explain with the help of diagram.

ANS: Use a routing depth of 20 mm when working with 4*20 mm domino dowels and 4 mm cutter. However, the true routing depth is 10 mm, because the specialist cutter has been shortened by 10 mm due to the risk of fracture. This domino can only be positioned centrally.



Q.23.What are the five steps of trimming laminate by Hand router?

ANS: Steps for trimming laminate by Hand Router:

1.Insert the trimming tool in hand router.

2.Connect dust collector with Hand Router.

3.Clamp the work piece to be trimmed.

4.Start the machine and plunge tool till the corner of work piece. So, excess laminate will trim.

5.Move Hand Router in backward and forward direction.

Q.24.Discuss four types of natural defects in natural wood.

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ANS: **1. Knots**: -these are the bases of branches or limbs which are broken or cut off from the tree. The portion from which the branch is removed receives nourishment from the stem for a pretty long time and it ultimately results in formation of dark hard rings which are known as knots.

2. Shakes: -these are longitudinal separations in wood between the annual rings. These are cracks which partly or completely separate fibers of wood. The separations make the wood undesirable when Appearance is important.

3. Chemical stain: -the wood is sometimes discolored by the chemical action caused with it by some external agency. This is known as chemical stain.

4. Rind galls: -the rind means bark and gall indicates abnormal growth. Hence peculiar curved swelling found on the body of tree are known as rind gall. They develop at points from where branches are improperly cut off or removed. They are rarely found in a tree

Q.25.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 week shear strength	Good tensile as well as shear strength
Get split quickly	Does not split quickly
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.26. Draw the figures of five types of wood joints and explain them.

ANS: Butt joint: - The end of a piece of wood is butted against one another piece of wood. This is the simplest and weakest joint.

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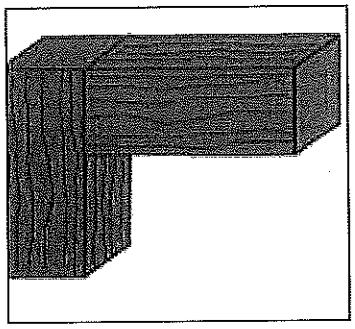
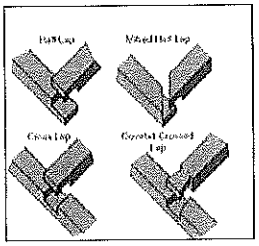
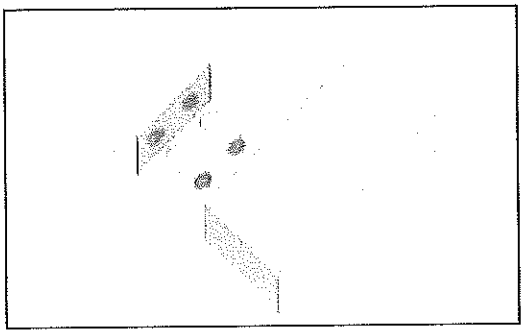


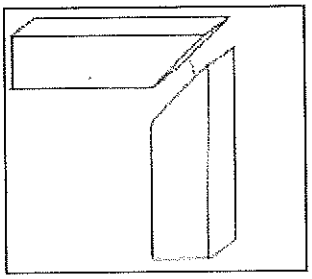
Lap joint: - The end of a piece of wood is laid over and connected to another piece of wood. This the next simplest and weakest joint.



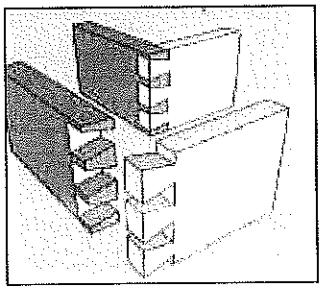
Dowel joint: - The end of the piece of wood is butted against another piece of wood. This is reinforced with the help of dowel pins. This joint is quick to make in the with production line machinery and so is a common joint in the furniture industry.



Miter joint: - In these types of joints two wooden pieces are beveled over each other at a 45-degree angle.



Dovetail joint: - a form of box joint where the finger is locked together by diagonal cuts. More secure than a finger joint.



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Q.27.What are the five steps of making 8 mm back wall groove by hand router?

ANS: Work steps of making a 8 mm back wall groove with the Hand router are described below:

Step 1: Cut the work piece according to the given size.

Step 2: Take the Hand router machine and set 8 mm grooving tool.

Step 3: Make template according to groove size and panel size or set parallel side fence in Router machine and set length according to groove size and panel size.

Step 4: Set depth according to the groove.

Step 5: Connect Hand router with dust collector for electrical power and dust collecting.

Step 6: Start the machine and rout to given depth.

Q.28.What are the five steps of Immersion and Emersion of tool in Hand router?

ANS: Immersion

The following steps are required:

1.Position the router on the work piece.

2.Start the motor.

3.Lower the spindle continuously to the desired cutting depth.

4.Fix the depth by tightening the knob.

5.Immediately push the router in the desired direction to avoid the burn marks.

Emersion

The following steps are required:

1.At the end of the milling process, stop the machine.

2.Release the clamping knob.

3.Let the milling tool diverge from the work piece by means of a stroke.

4.Do not switch off the motor until the milling cutter has completely cleared the Work piece.

Section – C

05X10 = 50 Marks

Q.29.What do you understand by Oriented Strand Board, explain raw material used for OSB board?

ANS: Oriented strand board (OSB), also known as flake board, sterling board is a type of engineered wood similar to particle board, formed by adding adhesives and then compressing layers of wood strands (flakes) in specific orientations. It was invented by Armin Elmendorf in California in 1963. [1] OSB may have a rough and variegated surface

with the individual strips of around 2.5 cm × 15 cm (1.0 by 5.9 inches), lying unevenly across each other and comes in a variety of types and thicknesses.

Oriented strand board is manufactured in wide mats from cross-oriented layers of thin, rectangular wooden strips compressed and bonded together with wax and synthetic resin adhesives (95% wood, 5% wax and resin. The adhesive resins types used include: Urea-formaldehyde (OSB type 1, non-structural, non-waterproof); isocyanate based glue (or PMDI Poly-Methylene diphenyl isocyanate based) in inner regions with Melamine-Urea-formaldehyde or Phenol formaldehyde resin glues at surface (OSB type 2, structural, water resistant on face); Phenol formaldehyde resin throughout (OSB types 3 and 4, structural, for use in damp and outside environments).

The layers are created by shredding the wood into strips, which are sifted and then oriented on a belt or wire cauls. The mat is made in a forming line. Wood strips on the external layers are aligned to the panel's strength axis, while internal layers are perpendicular. The number of layers placed is determined partly by the thickness of the panel but is limited by the equipment installed at the manufacturing site. Individual layers can also vary in thickness to give different finished panel thicknesses (typically, a 15 mm (0.6 in) layer will produce a 15 cm (5.91 in) panel thickness. The mat is placed in a thermal press to compress the flakes and bond them by heat activation and curing of the resin that has been coated on the flakes. Individual panels are then cut from the mats into finished sizes.

Types of OSB

- OSB/0 – No added formaldehyde
- OSB/1 – General purpose boards and boards for interior fitments (including furniture) for use in dry conditions
- OSB/2 – Load-bearing boards for use in dry conditions
- OSB/3 – Load-bearing boards for use in humid conditions
- OSB/4 – Heavy-duty load-bearing boards for use in humid conditions

Q.30.What are the steps for changing the tool of Hand circular saw and Domino.

ANS: **Steps for changing the tool of Hand circular saw:**

1. Unplug the saw for safety.
2. Although not required, you may wish to remove the outrigger splinter guard for better clearance.
3. Set the blade depth gauge to at least 25 mm, or below.
4. Raise the Fast Fix latch lever.
5. Press upward on the plunge lock release button and plunge the saw down until it locks into position.
6. Using the arbor wrench (stored in the auxiliary handle) loosen the arbor bolt by turning it counter clockwise.
7. Remove the arbor bolt and flange.
8. Lift the blade off the inboard arbor flange, and slide the blade out of the blade guard over the top of the riving knife.

Steps for changing tool of Domino:

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1.Disconnect from the main electric connection and raise the unlocking lever using an open ended spanner.
2.Separate the motor unit and guide frame.
3.Press the spindle lock on the motor unit and loose the cutter.
4.Put in the new cutter using spanner, keeping the spindle lock pressed.
5.Before inserting a new cutter, ensure that the machine, the guide frame and the guides are clean and free from chippings.

Q.31.Describe any ten parts of Domino machine.

ANS:

S.no	Part name	S.no	Part name
1	Secondary handle	8	Extractor stub
2	Locking lever lock	9	Motor unit/Guide frame unlocking
3	Domino hole depth locking lever	10	Routing height adjustment clamping lever
4	Angle stop clamping lever	11	On/off switch
5	Material thickness preselect slider	12	Domino hole width rotary switch
6	Mains connection	13	Stop catches
7	Spindle lock		

Q.32. Describe all the marks and symbols used in marking and write down their scopes.

ANS:

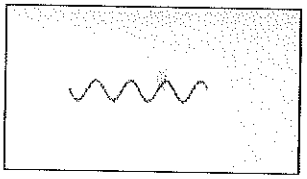
Cross: - The scope of this symbol is

Throughout cut

Continuous separation cut, final cut, final cut off

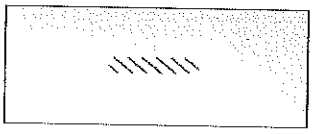
Wave line: - the scope of this symbol is

The material that is removed throughout.



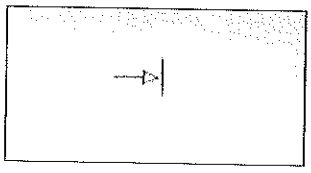
Hatching lines: - the scope of this symbol is

Material that is partially removed, not throughout



Arrow: - the scope of the symbol is

Limitations of machining operations e.g. for groove rebate



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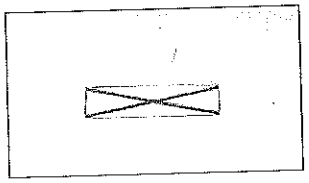
Cross exactly across the diagonal: -

The scope of this symbol is

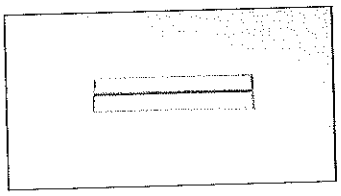
Mortice hole



Line (long stroke)

The scope of this symbol is

Housing mortice.



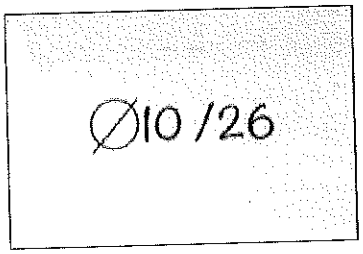
Machining depth

The field of application of this marking are

Indication of the depth of the mortice hole

Indication of drilling depth

Indication of groove depth



Q.33.Describe the work steps of cutting a panel by circular Hand Saw with the help of guide rail.

ANS: Work steps of cutting a panel by circular Hand Saw with the help of guide rail are mentioned below:

Step 1: Take required panel from the storage.

Step 2: Follow the triangle law and mark according to ratio.

Step 3: Mark a fixed dimension on two sides of work piece.

Step 4: Place the guide rail on the scribe line and clamp the guide rail.

Step 5: Put the circular saw on the guide rail and set the required depth.

Step 6: Connect the dust collector with the circular saw for electrical power and dust collection.

Step 7: Start the machine and cut the given panel.

Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Carpenter School Skill

3rd Semester, End-Sem. Examination

B. Voc. Program, Winter Semester (2018-19)

Course Code: SCS 1302 **Time: 3 Hour**

Course Name: Advance Standard machine **Max. Marks:100**

Instruction:

- Answer all questions from section A, each question carries one mark.
- Answer only six questions from section B, each question carries five marks.
- Answer all questions from section C, each question carries ten mark.

Section – A

05X01 = 05 Marks

Q.1. Which one of the following is the function of riving knife?

(a) It avoids kick back (b) it keeps the work piece in motion

(c) It makes the cut smooth (d) all of them

Q.2. Which one of the following is the distance between riving knife and main saw in panel saw?

(a) 5-8 mm (b) 1-2 mm

(c) 8-10 mm (d) 3-5 mm

Q.3. Which one of the following distance between the work piece and the safety cover of the band saw is the correct setting?

(a) 50 mm (b) 25 mm

(c) 10 mm (d) it does not matter

Q.4. Which one of the following is controlled on the outfeed table of the surface planner?

(a) Angle (b) thickness

(c) height (d) depth

Q.5. which one of the following is the function of scoring saw blade?

(a) It is used to avoid chip out (b) used to make curves

(c) Used to make a groove (d) none of them

Q.6.Which one of the following is the unit in much carbon footprint is measured.

(a)kilogram (b) liter

(c) ton (d) none of them

Q.7.Which one of the following is the 2nd step of waste management procedure.

(a) treatment (b) collection

(c) segregation (d) disposal

Q.8, Which one of the following is the main contributor to carbon footprint.

(a) industry
(b) green plants
(c) forests
(d) none of them

Q.9.Which one the following is the definition of recycling.

(a) art of making waste into a resource
(b) art of making resource into waste
(c) manufacturing new products
(d) none of them

Q.10.Which one of the following is the main contributor to greenhouse effect.

(a) Dust and smoke
(b) industrial waste
(c) carbon and its compounds
(d) all of them

Q.10.Which one of the followings is an example of fiber board?

(a) Particle board
(b) Oriented Strand Board
(c) MDF
(d) Ply board

Q.11. Which one of the following raw materials is used for OSB?

(a)Fiber
(b) wooden straw
(c) Particles
(d) wooden strips

Q.12. Which one of the following is most inner part in wood?

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

Q.13. Which one of the following is not a factor of wood panel storage?

(a) moisture
(b) temperature
(c) light
(d) seasoned air

Q.14. Which one of the following term is related to wood panel storage?

(a) planning
(b) stacking
(c) finishing
(d) handling

Q15. Which of the Following Cutting Produces Smooth surface and is trouble free?

(a)Longitudinal cutting
(b)cross cutting
(c)end grain cutting
(d)Cross end grain cutting

Q16. Which of the Following Cutting Produces Slightly roughed surface?

(a)Longitudinal cutting
(b)cross cutting
(c)end grain cutting
(d)None of them

Q16. Which of the Following Shape Cutting Edge is Carried out in processing of solid wood and wood based panel?

(a)Wedge Shape
(b)Hexagonal Shape
(c)Trapezoidal Shape
(d)Triangular Shape

Q.18.Which of the Following Tool is used in levelling while installation?

(a)Spirit Level
(b)level bevel
(c)Level Meter
(d)Dumpy Level

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Q.19. Which of the following is the minimum depth of the thicknesses planner machine?

(a) 5mm (b) 10m

(c) 12mm (d) 20 mm

Q.20.Which of the following is the function of surface planner machine?

(a) cutting (b) right angle

(c) sanding (d) none of them

Section – B

06X05 = 06 Marks

Q.21. Write down the step by step instruction how to turn on a machine with a star delta starter.

Q.22. Write down the setting of the fence on the surface planner step by step.

Q.23. Write down the function of the protection hood on the panel saw.

Q.24.Write down the general waste management procedure.

Q.25. Discuss four types of natural defects in natural wood.

Q.26. Differentiate between hard wood and soft wood based on their wood properties.

Q.27. Write down all steps to change the circular saw blade.

Q.28. What do you understand by Pre-splitting explain with figure?

Section – C

05X10 = 09 Marks

Q.29. Explain the difference of the cutting effect between a high and low position of the saw blade on the panel saw.

Q.30.Write down the safe and efficient hand position while working on the surface planner.

Q.31. What are the main contributors of carbon footprint and how can we reduce our carbon footprint?

Q.32. What do you understand by Oriented Strand Board, explain raw material used for OSB board?

Q.33. What are the cutting angle of hand tools and Rotating tools.?

Dr Alam
01/7/19

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of carpenter school

III Semester, End-Sem. Examination

B. Voc. Program, winter Semester (2019-20)

Course Code: SCS1302 **Time: 3 hours**

Course Name: Standard machine **Max. Marks:100**

- **Instruction:**
- Answer all questions from section A, each question carries one mark.
- Answer only six questions from section B, each question carries five marks.
- Answer all questions from section C, each question carries ten mark.

Section – A

05X01 = 05 Marks

Q.1. Which one of the following is the function of riving knife?

(a) It avoids kick back (b) it keeps the work piece in motion (a)

(c) It makes the cut smooth (d) all of them

Q.2. Which one of the following is the distance between riving knife and main saw in panel saw? (d)

(a) 5-8 mm (b) 1-2 mm

(c) 8-10 mm (d) 3-5 mm

Q.3. Which one of the following distance between the work piece and the safety cover of the band saw is the correct setting? (c)

(a) 50 mm (b) 25 mm

(c) 10 mm (d) it does not matter

Q.4. Which one of the following is controlled on the outfeed table of the surface planner? (a)

(a) Angle (b) thickness

(c) height (d) depth

Q.5. which one of the following is the function of scoring saw blade? (a)

(a) It is used to avoid chip out (b) used to make curves

(c) Used to make a groove (d) none of them

Q.6.Which one of the following is the unit in much carbon footprint is measured? (c)

(a)kilogram (b) litre

(c) ton (d) none of them

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Q.7.Which one of the following is the 2nd step of waste management procedure? (c)

(a) treatment
(b) collection
(c) segregation
(d) disposal

Q.8. Which one of the following is the main contributor to carbon footprint? (a)

(a) industry
(b) green plants
(c) forests
(d) none of them

Q.9.Which one the following is the definition of recycling? (a)

(a) art of making waste into a resource
(b) art of making resource into waste
(c) manufacturing new products
(d) none of them

Q.10.Which one of the following is a the main contributor to greenhouse effect? (d)

(a) Dust and smoke
(b) industrial waste
(c) carbon and its compounds
(d) all of them

Q.11.Which one of the followings is an example of fiber board? (c)

(a) Particle board
(b) Oriented Strand Board
(c) MDF
(d) Ply board

Q.12. Which one of the following raw materials is used for OSB? (b)

(a)Fiber
(b) wooden straw
(c) Particles
(d) wooden strips

Q.13. Which one of the following is most inner part in wood? (a)

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

Q.14. Which one of the following is not a factor of wood panel storage? (c)

(a) moisture
(b) temperature
(c) light
(d) seasoned air

Q.15. Which one of the following term is related to wood panel storage? (d)

(a) planning
(b) stacking
(c) finishing
(d) handling

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Q.16. Which of the Following Cutting Produces Smooth surface and is trouble free? (a)

(a)Longitudinal cutting (b)cross cutting

(c)end grain cutting (d)Cross end grain cutting

Q17. Which of the Following Cutting Produces Slightly roughed surface? (b)

(a)Longitudinal cutting (b)cross cutting

(c)end grain cutting (d)None of them

Q18. Which of the Following Shape Cutting Edge is Carried out in processing of solid wood and wood based panel? (a)

(a)Wedge Shape (b)Hexagonal Shape

(c)Trapezoidal Shape (d)Triangular Shape

Q.19.Which of the Following Tool is used in levelling while installation? (a)

(a)Spirit Level (b)level bevel

(c)Level Meter (d)Dumpy Level

Q.20. which of the following is the minimum depth of the thicknesses planner machine? (a)

(a) 5mm (b) 10m

(c) 12mm (d) 20 mm

Section – B

06X05 = 06 Marks

Q.21. Write down the step by step instruction how to turn on a machine with a star – delta starter.

Ans.

1. Turn on the main switch.
2. Switch off the emergency stop switch.
3. Then turn-on the starter button till star.
4. After some time turn on the starter button till delta.

Q.22. Write down the setting of the fence on the surface planner step by step.

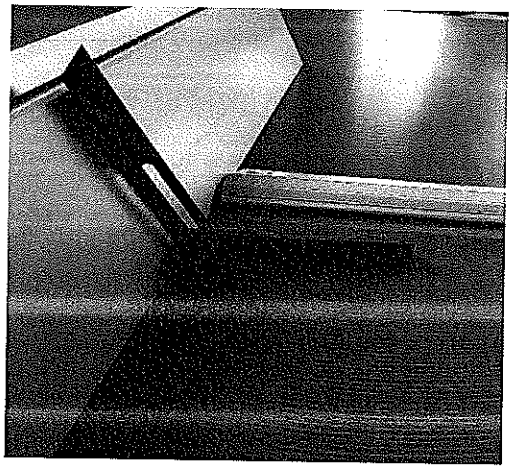
Ans.

Right angle –

- Suitable for small parts planning right angle the angle stop is set to 90^0 is controlled on the outfeed table with a precise angle.

Bevels –

- Chamfer and sloop planning, the stop is adjusted with the bevel.
- This is controlled on the outfeed table.



Q.23. Write down the function of the protection hood on the panel saw.

Ans.

Protective hood function –

1. Protective hood use protection against contact with the circular saw blade.
2. Preventing a work piece kickback.
3. Protection against splintering wood parts, branches and sawdust extraction of the chips.

Sawblade protection hood for straight cut
Protection hood for mitre cut

Q.24.Write down the general waste management procedure.

Ans.

In order to solve the problem of waste management we need to follow some procedures to make a better waste management programme.

Collection: it is the its step to collect waste within homes and business sites and gather it in a centralized location.

Segregation: it is the process of separating the waste by material for disposal. For e.g. plastic waste are separated to different containers and wood waste are separated to different containers.

Transportation: it is the process in which the waste is transported from the collecting point to the treatment point.

Treatment: it is the process in which the waste is treated so that it does not harm the environment.

Disposal: recycling, landfills, waste-to-energy plants, etc.

An effective waste management programme follows this procedure if any of this step is altered it may effect the entire programme.

Q.25. Discuss four types of natural defects in natural wood.

Ans.

Ans. 1. Knots: -these are the bases of branches or limbs which are broken or cut off from the tree. The portion from which the branch is removed receives nourishment from the stem for a pretty long time and it ultimately results in formation of dark hard rings which are known as knots.

2. Shakes: -these are longitudinal separations in wood between the annual rings. These are cracks which partly or completely separate fibers of wood. The separations make the wood undesirable when Appearance is important.

3. Chemical stain: -the wood is sometimes discolored by the chemical action caused with it by some external agency. This is known as chemical stain.

4. Rind galls: -the rind means bark and gall indicates abnormal growth. Hence peculiar curved swelling found on the body of tree are known as rind gall. They develop at points from where branches are improperly cut off or removed. They are rarely found in a tree

Q.26. Differentiate between hard wood and soft wood based on their wood properties.

Ans.

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.

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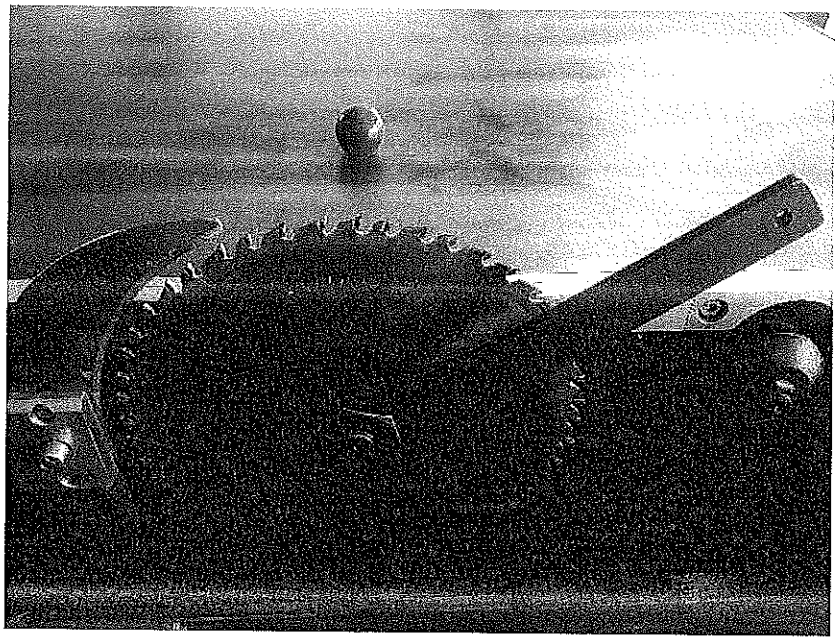
Light in color and weight.	Dark in color and heavy in weight
annual rings are distinct	Annual rings are not distinct
Good tensile strength and week shear strength	Good tensile as well as shear strength
Get split quickly	Does not split quickly
Weaker and less durable	stronger and more durable
Catch fire 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.27. Write down all steps to change the circular saw blade.

Ans.

1. Press main switch off.
2. Switch on the emergency stop switch.
3. Set the saw to the upper limit setting and cutting angle should be 0^0.
4. Remove the safety hood.
5. Place the sliding table at upper limit.
6. Open the safety Gard, block the circular saw shaft.
7. Unscrew the nut with ring spanner in the clock wise (sawing-) direction.
8. Releases nut in running direction.
9. Remove the saw blade.
10. Never put the saw blade and machine tools directly on the machine table, otherwise cutting teeth could be damaged.
11. Clean the blade holder flange.
12. Select the suitable blade and place in shaft.
13. Fit the flange and nut.
14. Tight the nut against running direction.
15. Release the locking device.



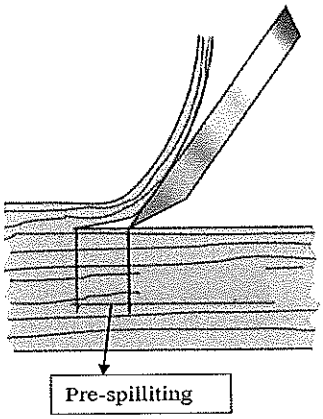
Unscrew the nut with ring spanner in the clock wise (sawing-) direction.

Q.28. What do you understand by Pre-splitting explain with figure?

Ans.

The pre-splitting arises mainly in longitudinal wood cutting. It precedes the cutting edge along the wood fiber, causing the cutting process to be uncontrolled. The wood splits sooner than it are cut, resulting in uncontrolled cutting and thus insufficient surface quality. One of numerous measures to reduce the pre-split is the chip breaker.

The chip breaker kinks (form or cause to form a sharp twist or curve) the chip early and thus prevents the pre-splitting. With the hand plane this is achieved by the double, In milling this task is taken by the chip breaker.



Section – C

05X10 = 09 Marks

Q.29. Explain the difference of the cutting effect between a high and low position of the saw blade on the panel saw.

Ans.

Ans.

Effect	High saw blade position	Low saw blade position
Cut cleanness	If saw blade is in high position, then more chip vu n-- out will be produce on the bottom side.	If saw blade is in low position then the chip out on the bottom side will be less.
Security	Lower risk of kickback / cutting pressure directed down to the machine table.	Greater risk of kick back / cutting pressure tend to be directed towards the operator(feed resistance increases)
Service life of saw blade	Higher due to shorter cutting path in work piece.	Lower due to longer cutting path in work piece and more cutting pressure.

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Q.30.Write down the safe and efficient hand position while working on the surface planner.

Ans.

Safe and efficient work –

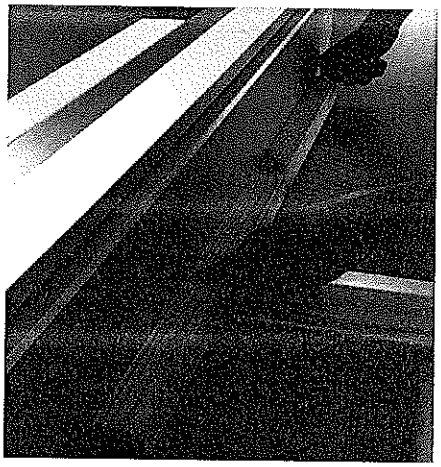
- Hand position
- Pressure distribution

Hand position when planning –

- When planning the wood, the hand should be open and flat on the work piece.
- The fingers are closed.
- The concave side of the work piece placed on the feed table.

Hand position when planning –

When planning wood, the thumbs are on the top edge and the other fingers rolled and the push the work piece against the stop.



Pressure distribution –

When planning the work piece, the pressure on the work piece should be on the dressing table.

Q.31. What are the main contributors of carbon footprint and how can we reduce our carbon footprint?

Ans.

- **Energy** – Here, carbon footprint emissions are collective, coming from a variety of sources, namely industrial processes, transport, electricity and fuel emissions.
- **Industrialization** – Since the industrial revolution began during the middle of the twentieth century, CO2 has continued to rise unchecked and at alarming rates.
- **Agriculture** – Most agricultural processes within developed and developing nations are still being carried out commercially with the result that mass production of livestock has led to large levels of methane gas being released into the atmosphere.
- **Waste** – No matter which process or activity is being carried out, the waste from these is excessive. It is also having a harmful impact on the earth's natural resources (flora, fauna and the oceans).
- **Human action (and inaction)** – Ultimately, the way humankind has become accustomed to doing things every day, keeping pace with the need to do things more quickly and with more convenience, has contributed towards the exponential increase in carbon footprints on an annual basis.

We can reduce our carbon footprint by: -

- Plant more and more trees.
- Save water
- Go vegan kill less animals
- Drive less
- Use public transport
- Turn off lights you're not using and when you leave the room.
- Use led lights
- Reuse and recycle
- Eat locally-produced and organic food.
- Add solar panels to the roof of your home.

Q.32. What do you understand by Oriented Strand Board, explain raw material used for OSB board?

An Oriented strand board (OSB), also known as flake board, sterling board is a type of engineered wood similar to particle board, formed by adding adhesives and then compressing layers of wood strands (flakes) in specific orientations. It was invented by Armin Elmendorf in California in 1963. [1] OSB may have a rough and variegated surface with the individual strips of around 2.5 cm × 15 cm (1.0 by 5.9 inches), lying unevenly across each other and comes in a variety of types and thicknesses.

Oriented strand board is manufactured in wide mats from cross-oriented layers of thin, rectangular wooden strips compressed and bonded together with wax and synthetic resin adhesives (95% wood, 5% wax and resin. The adhesive resins types used include: Urea-formaldehyde (OSB type 1, non-structural, non-waterproof); isocyanate based glue (or PMDI Poly-Methylene diphenyl diisocyanate based) in inner regions with Melamine-Urea-formaldehyde or Phenol formaldehyde resin glues at surface (OSB type 2, structural, water resistant on face); Phenol formaldehyde resin throughout (OSB types 3 and 4, structural, for use in damp and outside environments).

The layers are created by shredding the wood into strips, which are sifted and then oriented on a belt or wire calls. The mat is made in a forming line. Wood strips on the external layers are aligned to the panel's strength axis, while internal layers are perpendicular. The number of layers placed is determined partly by the thickness of the panel but is limited by the equipment installed at the manufacturing site. Individual layers can also vary in thickness to give different finished panel thicknesses (typically, a 15 mm (0.6 in) layer will produce a 15 cm (5.91 in) panel thickness. The mat is placed in a thermal press to compress the flakes and bond them by heat activation and curing of the resin that has been coated on the flakes. Individual panels are then cut from the mats into finished sizes.

Types of OSB

- OSB/0 – No added formaldehyde
- OSB/1 – General purpose boards and boards for interior fitments (including furniture) for use in dry conditions
- OSB/2 – Load-bearing boards for use in dry conditions
- OSB/3 – Load-bearing boards for use in humid conditions
- OSB/4 – Heavy-duty load-bearing boards for use in humid conditions ns.

Q.33. What are the cutting angle of hand tools and Rotating tools.?

Ans. Cutting angle of Hand tool

Clearance angle α

Without clearance angle, no cutting is possible.

Wedge angle ß

The cutting edge of cutting tools is created by the wedge-shaped convergence of two surfaces. The cutting surface is referred to as rake face, mirror, tooth or knife face. The counterface is referred to as an open space, bevel, 'bale or tooth back.

Rake angle y

The rake angle has a decisive influence on the chipping property. This angle is specifically adapted to the respective purpose.

Saw

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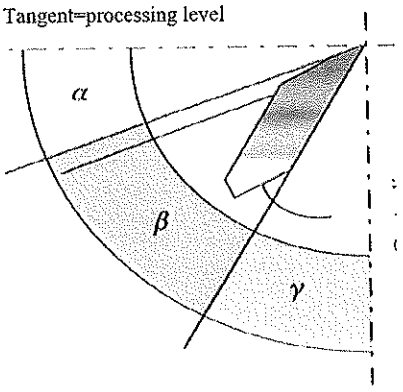
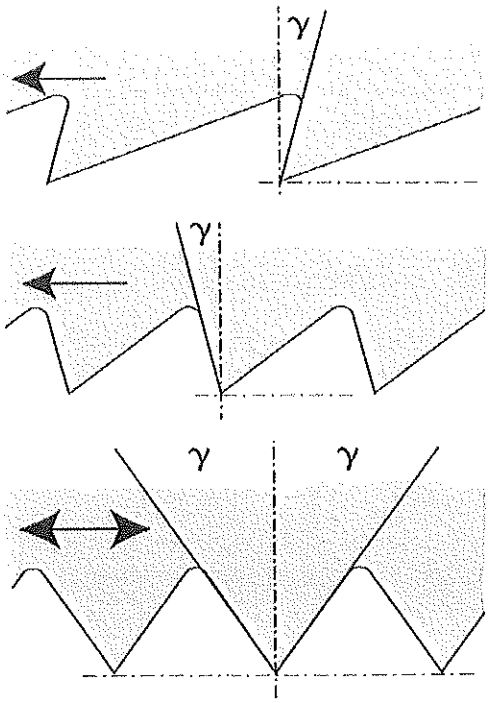
Since sawing work takes place in all three fiber directions, different saws are necessary. These differ mainly by the different rake angles.





Rake angle greater than 10^0
These serrated or serrated saw teeth are applicable to longitudinal wood cutting. They ensure optimum power transmission to the wood fiber, which tends to be torn out of the wood texture, resulting in a high cutting performance. The power development is gross.

Rake angle negative
The negative rake angle develops a less strong force on the wood fiber and is therefore used mainly for cross cutting wood.

Double-sided saw
The double-sided sawtooth with negative rake angle is used for fox tails and fine saws.

Operation of the saw
The saw penetrates, unlike the planter, in the wood. Therefore, a saw must also be machined laterally, and the chips must be transported out of the saw groove. During the forward movement of the sawtooth this penetrates into the wood. Depending on the rake angle, the effect is machined or scraped. It is the task of the Saw tooth flank to separate the fibers. The tooth spaces transport the sawdust from the saw groove.
So, that the sawtooth edges do not get caught when penetrating into the wood, the saw cut must be greater than the sheet thickness. This can be achieved by "cupping" or "upsetting" or by conical or corrugated saw blades, as they are found in the iron saw. Also, the size of the saw teeth affects the saw cut. A large tooth pitch causes a coarser cut than a small tooth pitch.

Rotating tool
Thanks to a sophisticated cutting geometry, modern tools are able to produce a surface finish that does not require post-processing. The tools are machine and material-specific,

depending on the purpose, aligned, which requires the user a high level of expertise. The angles of the cutting geometry are indicated by letters of the Greek alphabet.

Clearance angle (Alpha)α

The clearance angle (alpha) lies between the free surface and the tangent of the circle diameter. Perpendicular to the tangent, the center line passes through the cutting tip. Without clearance angle, no cutting is possible.

Wedge angle (Beta)β

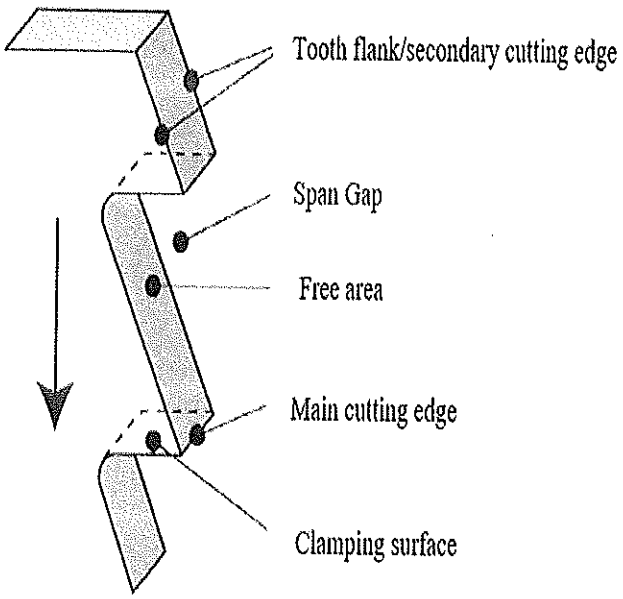
The wedge angle beta is formed from the free surface and the rake surface. The aim is a slender angle as slim as possible and able to be cut. Since hard and brittle cutting materials require relatively large and thus less cutting wedge angle, this opens up a conflict of objectives. A large wedge angle inevitably leads to a small rake angle.

Rake angle (gamma)γ

The angle between the center line and the rake face is called the rake angle gamma. A large rake angle increases the cutting ability; a small or negative rake angle leads rather to scraping effect. However, the small rake angle has the advantage that it does the same thing as a chip breaker, it reduces the pre-split.

Flank angle Alpha

The flank angle Alpha denotes the angle of attack in the tool level. When grooving, folding and similar machining, the flanks of the cutting edge must not rub on the work piece, so the flanks of the cutting edge are provided with a flank angle.



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of carpenter school

III Semester, End-Sem. Examination

B. Voc. Program, winter Semester (2019-20)

Course Code: SCS1303 **Time: 3 hours**

Course Name: Fitting **Max. Marks:100**

Instruction:

- Answer all question from section A, each question carries one marks.
- Answer any six question from section B, each question carries five marks.
- Answer all question from section C, each question carries ten marks.

Section – A

20X01 = 20 Marks.

Q.1. Which one of the following Concealed hinge is used for single cabinets?

(a) half overlay hinge (b) full overlay hinge

(c) inset hinge (d) b and c

Q.2. Which one of the following is the Concealed hinge mounted on middle partition of the cabinet?

(a) half overlay hinge (b) full overlay hinge

(c) inset hinge (d) but hinge

Q.3. Which one of the following function of runner?

(a) used to facilitate fluid motion during opening and closing.

(b) it is produce friction

(c) it is keep in ideal condition

(d) none of them

Q.4. Which one of the following lock is not permanently attached to anything else?

(a) Mortise Lock (b) cam lock

(c) pad lock (d) knob lock

Q.5. which one of the following runner attached on the bottom edge of each drawer side?

(a) nylon runner (b) steel ball bearing runner

(c) soft close runner (d) none of them

Q.6. Which one of the following function of hinge?

(a) connect two solid object (b) it is keep in ideal condition

(c) it is self-closing (d) none of them

Q.7.hich one of the following is the mounting position of the butt hinge?

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(a) edge of the door and cabinet (b) middle of the door

(c) both of them (d) none of them

Q.8. Which one of the following is continuous hinge?

(a) piano hinge (b) full overlay hinge

(c) inset hinge (d) but hinge

Q.9.Which one of the following hinge used for the removable doors?

(a) piano hinge (b) full overlay hinge

(c) slip hinge (d) but hinge

Q.10. Which one of the following is soft-closing runner?

(a) nylon runner (b) steel ball bearing runner

(c) plastic drawer slide (d) none of them

Q.11. Which one of the following function of stopper in the sliding doors?

(a) it gives motion (b) it keeps in ideal motion

(c) it works like breaker (d) none of them

Q.12. Which one of the following function of stopper in the sliding doors?

(a) it gives motion (b) it keeps in ideal motion

(c) it works like break (d) none of them

Q.13. What finish applied to wood to enhance its grain appearance?

(a) Wood stain (b) Varnish

(c) Wax d) Primer

Q.14. What is the common thinner solvent being use for oil paint?

(a) Water (b) Paint thinner

(c) Wax (d) Custard oil

Q.15. Which is not a basic paint application system?

(a) Thinning (b) Primer

(c) Undercoating (d) Finishing

Q.16. Which one of the following process is not the part of protective layers?

(a) Oiling (b) Waxing

(c) Painting (d) Levelling

Q.17. Which one of the following grit belongs to very coarse sandpaper?

(a) 40 (b) 80

c) 150 d) 220

Q.18. Why do we put primer before painting?

(a) Adhesion (b) Uneven surface filler

(c) Dries earlier (d) Dust proofing

Q.19. Most common cause of paint defects?

(a) Product expires
(b) Surface preparation
(c) Weather condition when applied
(d) Mixture of thinner and base paint

Q.20. Which one of the following material used for filling holes in wood for equalizing?

(a) Oils
(b) Polish
(c) Putty
(d) Paints

Section – B

06X05 = 30 Marks

Q.21. What is a furniture fitting? Write down the application of runner and hinge.

Q.22.Explain the any two types of hinges with figure.

Q.23.What is the function of locks? Explain the any three type of locks.

Q.24. Describe the need of surface treatment and write the name of selection factor to choose appropriate surface treatment process.

Q.25. Define preliminary working preparation for surface finishing process.

Q.26. Briefly explain the sequential steps involved in installation of sliding door runner.

Q.27. Briefly explain the any four types of drawer runner.

Q.28.Briefly explain the sequential steps involved in oiling the table top.

Section – C

05X10 = 50 Marks

Q.29. Briefly explain the sequential steps involved in installation of butt hinge.

Q.30. What is runner? Briefly explain the sequential steps involved in installation of nylon runner in the cabinet.

Q.31. What are concealed hinges? Explain the full overlay hinge and a half overlay hinge with figures.

Q.32. Describe any five application techniques to apply protective layers on wooden material surface.

Q.33. Describe environmental safety and protection consideration during surface treatment process.

Dr A Rao
01/7/19

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of carpenter school

III Semester, End-Sem. Examination

B. Voc. Program, winter Semester (2019-20)

Course Code: SCS1303 **Time: 3 hours**

Course Name: Fitting **Max. Marks:100**

Instruction:

- Answer all question from section A, each question carries one marks.
- Answer any six question from section B, each question carries five marks.
- Answer all question from section C, each question carries ten marks.

Section – A

20X01 = 20 Marks.

Q.1. Which one of the following Concealed hinge is used for single cabinets? (d)

(a) half overlay hinge (b) full overlay hinge

(c) inset hinge (d) b and c

Q.2. Which one of the following is the Concealed hinge mounted on middle partition of the cabinet? (a)

(a) half overlay hinge (b) full overlay hinge

(c) inset hinge (d) but hinge

Q.3. Which one of the following function of runner? (a)

(a) used to facilitate fluid motion during opening and closing.

(b) it is produce friction

(c) it is keep in ideal condition

(d) none of them

Q.4. Which one of the following lock is not permanently attached to anything else? (c)

(a) Mortise Lock (b) cam lock

(c) pad lock (d) knob lock

Q.5. which one of the following runner attached on the bottom edge of each drawer side? (a)

(a) nylon runner (b) steel ball bearing runner

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Q.6. Which one of the following function of hinge? (a)

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(c) both of them (d) none of them

Q.8. Which one of the following is continuous hinge? (a)

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Q.9.Which one of the following hinge used for the removable doors? (c)

(a) piano hinge (b) full overlay hinge

(c) slip hinge (d) but hinge

Q.10. Which one of the following is soft-closing runner? (b)

(a) nylon runner (b) steel ball bearing runner

(c) plastic drawer slide (d) none of them

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(a) Wood stain (b) Varnish

(c) Wax d) Primer

Q.14. What is the common thinner solvent being use for oil paint? (b)

(a) Water (b) Paint thinner

(c) Wax (d) Custard oil

Q.15. Which is not a basic paint application system? (c)

(a) Thinning (b) Primer

(c) Undercoating (d) Finishing

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Q.16.Which one of the following process is not the part of protective layers? (d)

(a) Oiling (b) Waxing

(c) Painting (d) Levelling

Q.17. Which one of the following grit belongs to very coarse sandpaper? (a)

(a) 40 (b) 80

c) 150 d) 220

Q.18. Why do we put primer before painting? (a)

(a) Adhesion (b) Uneven surface filler

(c) Dries earlier (d) Dust proofing

Q.19. Most common cause of paint defects? (d)

(a) Product expires (b) Surface preparation

(c) Weather condition when applied (d) Mixture of thinner and base paint

Q.20. Which one of the following material used for filling holes in wood for equalizing (c)

(a) Oils (b) Polish

(c) Putty (d) Paints

Section – B

06X05 = 30 Marks

Q.21. What is a furniture fitting? Write down the application of runner and hinge.

Ans.

Furniture hardware are those products that are used to support the furniture look, design and durability. Furniture hardware products include furniture frames, furniture legs, furniture arms, windows, doors, and cabinets etc. Common examples include hinges, handles.

- Hardware is commonly available in brass, steel, aluminium, stainless steel, and iron material.
- The products that are used to make cabinets working come under cabinet hardware like cabinet fasteners, brackets, latches, hinges, pulls, locks, etc. Cabinet hardware are small components that make cabinets functional. These products are made of materials like plastics, metals and may be glasses.
- Window hardware does not include window itself rather they are smaller components that are used to install, fix and protect windows, such as window extrusions, fasteners, handles, hinges, locks and many more.

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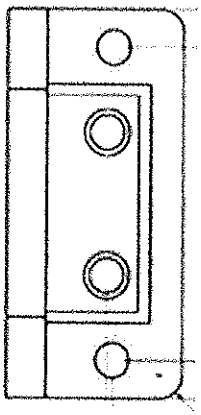
Q.22.Explain the any two types of hinges with figure.

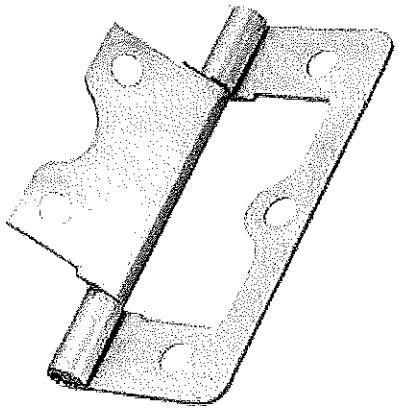
Ans.

Flush hinges or non mortis hinge -

Flush hinges are Used similar to butt hinges, except they are not mortised into the door or cabinet.

- Easier to fit than the butt hinge but the load capacity of this hinge is less than butt hinge.
- These are smaller hinges that take less space than butt hinges as they allow one leaf to fit inside the other
- Couple of advantages of using the flush hinges are that they do not require a corner to be cut in the door on which they are installed and don't leave any space or gap between frame and the door, giving a very clean consistent look.



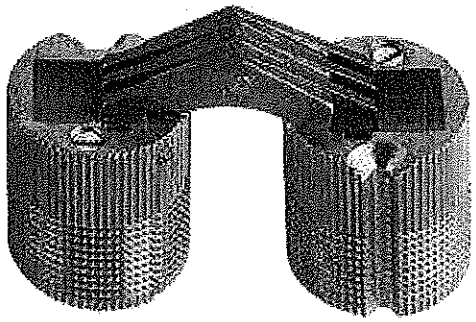


Barrel hinge -

Appearing similar to a barrel, this hinge is easy to install as the joint is simply a hole that is drilled into the work piece.

Application:

These are generally used for gates and applications having low loads on the radius.



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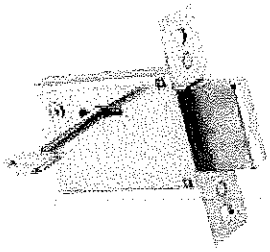
Q.23.What is the function of locks? Explain the any three type of locks.

Ans.

Door locks are essential. They provide safety and security like no other appliance or tool. They act as the barrier to keep your facility and workspace safe and help maintain privacy. Efficacy is fundamental when seeking out locks for your facility.

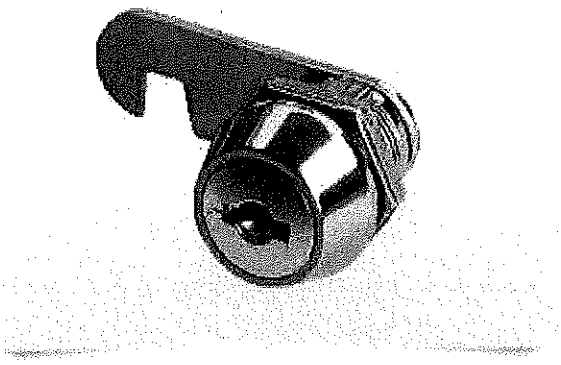
Mortise Locks -

Mortise_locks are powerful locks used on external doors. However, they are available in both light and heavy duty models. They are comprised of an internal system which makes them more of locksets than just locks. These locksets can house either knobs or levers and are often comprised of a cylindrical body. They are threaded and utilize mortise components added within the door. A box lock is set within the mortise, which is a deep recess in the edge of the door. Mortise locksets stay secure by using a set screw and a cam which creates the locking mechanism. The cylinder component comes in various heights and lengths for different types of doors



Cam Locks -

Cam locks are used in a variety of applications but are most frequently found in filing cabinets, mailboxes, and lower security OEM applications. They come in several different lengths and can use a variety of tailpieces or "cams" to interface with another locking mechanism. There is a very large variety of cam options, and we suggest you see our Cams/Tailpieces page. They can rotate clockwise or counter-clockwise and the amount of rotation can be limited to 90 or 180 degrees.



Q.24. Describe the need of surface treatment and write the name of selection factor to choose appropriate surface treatment process.

Ans.

The surface finishing in woodworking describe some final surface treatment that protects the wood and enhance its appearance. In addition of the protection of finishes at surface, protection may be needed throughout the wood, namely against fungi and insects. Some woodworkers want to preserve wood in its natural state, while other wish to change the wood in both color and smooth appearance as matt finish with high gloss.

- It is necessary to protect wood surfaces from dirt, and to create a surface that can be cleaned easily.
- Finish also protect against color due to light or atmospheric pollutants.
- Finish's most important function is to impede the exchange of moisture with the atmosphere, thus helping to avoid the consequences of dimensional change

Selection of appropriate surface treatment: -There are different types of surface treatments. The most suitable one depends on the following factors-

- Desired appearance
- Desired protection
- Purpose – type of use (Application)
- Environmental considerations
- Price

Q.25. Define preliminary working preparation for surface finishing process.

Ans.

Preliminary work is define as preparing the surface for high-quality surface treatment. Wood must be smooth, clean and free from blemishes before applying surface finish process.

A. **Filling holes & Cracks** – At wood selection time, you should reject poor quality material with cracks, holes, dead knots, but due to buying condition in short time we have to choose less than perfect sample. After selection carefully, cracks can open up at a later stage and we have to deal with before apply a finish by putty, wax.
B. **Sanding** - If the work pieces are not yet flat, you must grind them flat by pre-sanding. You can use lower grade sanding grit for this. With the subsequent fine sanding you achieve a smooth wooden surface. Depending on the type of wood and the type of surface treatment, use higher grade sanding grits for more fine sanding.
C. **Levelling** - In order to achieve a uniform intake of the stain, it may be advisable to level the wood surface. For this you can use a sprit level as levelling tool, which you apply evenly to the wood.

D. **Dust off** - At the end of the preliminary work, it is important that you dust the wood thoroughly so that the subsequent surface treatments adhere well.

Q.26. Briefly explain the sequential steps involved in installation of sliding door runner.

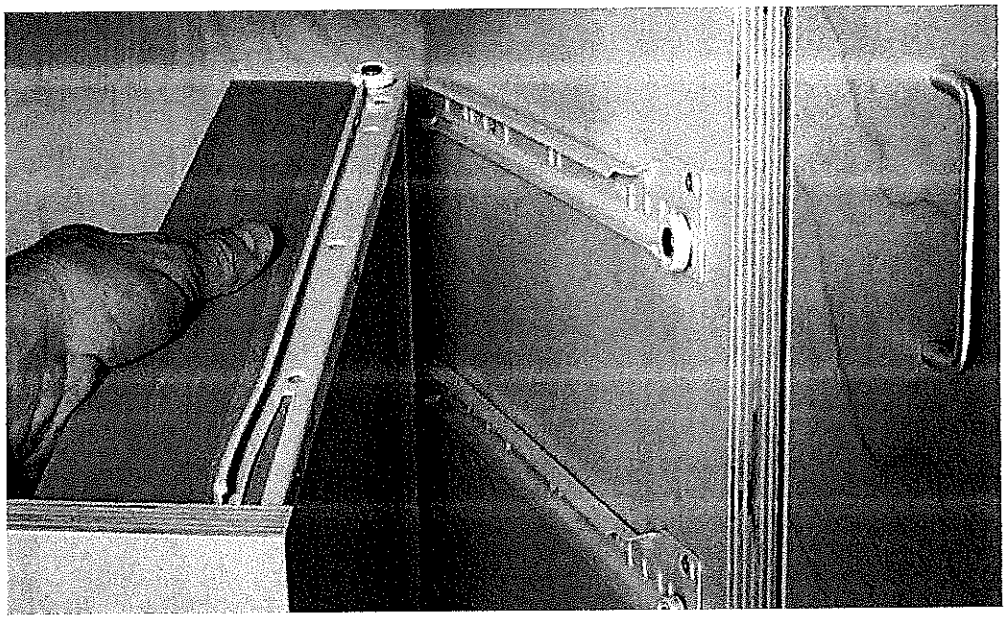
Ans.

- We will read the drawing, according to drawing we calculate the door dimension and runner dimension.
- According to the sliding door dimension we mark the all dimension on the door.
- For the attachment of the wheel we make a groove by hand router, groove will make top on the door thickness.
- Then we fixed the both wheel on the both side of the door.
- The wheel attachment should be inside of the groove of the door.
- Then we have another part this name is sliding rail.
- The sliding rail fixed on the wall from top of the door.
- Then we insert the door inside the sliding rail.
- Then we see equal gap between the door, if gap is not equal the we will do equal gap between the both door.

Q.27. Briefly explain the any two types of drawer runner.
Ans.

Nylon Roller –
Roller slide are mounted to the bottom edge of each drawer side, so they are not doing support to drawer bottom.

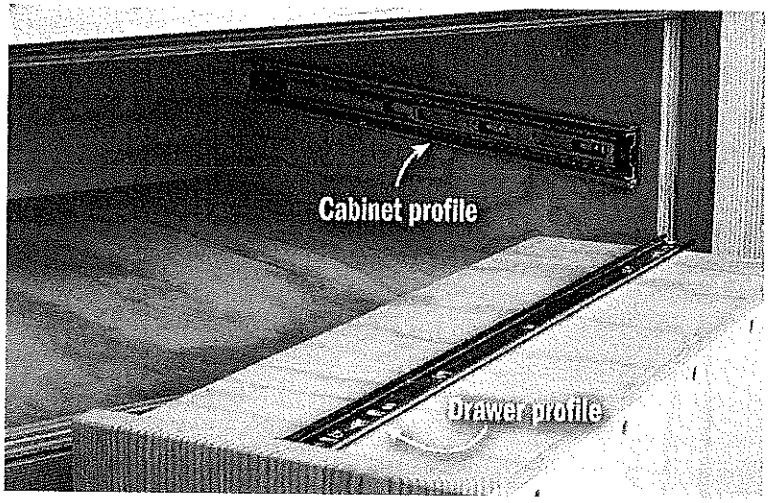
- These are typically used in conjunction with epoxy-coated steel drawer slide members. They provide a very smooth, quiet movement and are usually less expensive than ball bearing drawer slides.



Steel Ball Bearing –

Often called precision ball bearing slides, these slides offer a superior fit and feel compared to standard nylon rollers slides. The outward and inward movement of the slide either telescopic or progressive and will handle much heavier loads than nylon roller slides; even

up to 200 lbs. Certain steel ball bearings slides, such as ones used in industrial applications can hold up to 500 lbs. in heavy file drawers.



Q.28.Briefly explain the sequential steps involved in oiling the table top.

Ans.

- First we will sand the table top 80P sanding paper then 120P sanding paper.
- With the help off carton we clean the table top.
- Then we will do oiling.
- With the help of carton, we will do oiling across the grain then along the grain.
- Then with the help of scorch we distribute the oil every place.
- With the carton we clean the oil from the table.
- After oiling we leave the table for 24 hours.
- After 24 hours we will do same oiling process.

Section – C

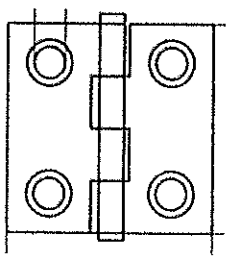
05X10 = 50 Marks

Q.29. Briefly explain the sequential steps involved in installation of butt hinge.

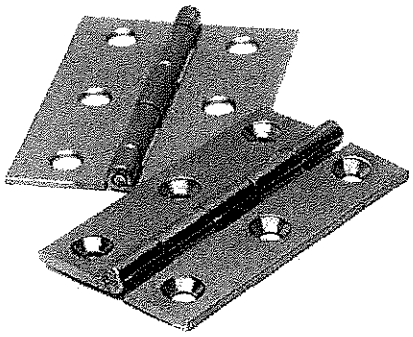
Ans.

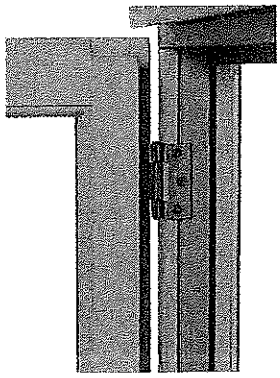
Butt Hinge -

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.30. What is runner? Briefly explain the sequential steps involved in installation of nylon runner in the cabinet.

Ans.

Runners –
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.

Process to Install –

1. First we have to select the cabinet where we want attached the runners.
2. Mark the dimension on cabinet drawer according to the runner dimension.
3. According to the runner dimension we will do drill on the drawer.

4. Then we will attach the runner on the drawer.

5. Runner should be run smoothly after the installation.

Q.31. What are concealed hinges? Explain the full overlay hinge and a half overlay hinge with figures.

Ans.

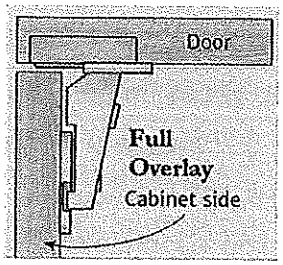
Concealed hinges -

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. Full overlay hinge

a. Half overlay hinge
b. Inset hinge

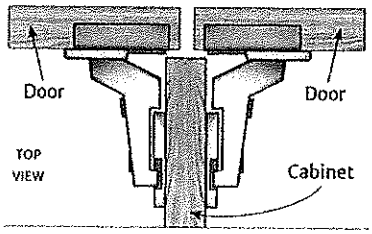
Full overlay hinge –

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



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.



Q.32. Describe any five application techniques to apply protective layers on wooden material surface.

Ans.

There are several techniques to apply surface materials. Each technique depends on the size of material, and number of work pieces to be treated and surface materials.

A. **To brush** - Painting is especially suitable for small areas. When painting paint, make sure that the paint is sufficiently fluid so that the brush strokes are not visible.

B. **Roll** - Flat work pieces can be surface treated with the roll efficiently and in relatively good quality. This technique is not suitable for the surface treatment of inside corners. Paints and oils are rolled up in serial industrial production. For single parts and small series, this technique is not suitable, the rolling machines have to be laboriously cleaned.

C. **Wipe** - Oils and waxes can be applied with a white cloth and massaged into the wood. Pickling is often applied by wiping with a sponge.

D. **Splash** - With syringes you can achieve a very good surface quality. In addition, you can process especially paints quickly. A disadvantage is the spray, which arises during spraying and must be aspirated in order not to get to other parts or into the respiratory tract.

E. **Diving** - When diving, whole work pieces are immersed in a bath of surface material and then hung to drip and dry. This technique is used primarily for priming window sashes and window frames where top quality is not required.

Q.33. Describe environmental safety and protection consideration during surface treatment process.

Ans.

Work safety - Surface treatment produces a lot of sanding and spray dust. In addition, it often smells strongly of solvents. This endangers your respiratory system, eyes, hands and brain. If you do not protect yourself, you will not immediately feel the consequences. But over the years, your organs are damaged. Your life will be difficult.

- Protect yourself against the sanding dust with the dust mask
- Protect yourself against spray mist and solvents with a Respirator with activated carbon filter
- Protect yourself with goggles and gloves against the Contact with dangerous substances
- Read the processing instructions on the packaging
- Only work in well-ventilated rooms or in rooms with a suction system
- Flaps soaked with oil and wax can ignite themselves. Therefore, always soak them with water or spread them over the entire surface and dispose of them in metal containers.
- Never smoke during surface treatment. Solvent-containing vapors and dust could ignite and cause an explosion.

- When spraying for a long time, wear a closed protective suit, as the solvents can also enter the human body through the skin.

Environmental Protection -

- Environmental protection is becoming increasingly important in surface treatment. Toxic substances and chemicals should be avoided as far as possible.
- Oils, waxes and water-based paints contain rather less irritating and environmentally harmful ingredients and are therefore suitable for an environmentally friendly surface treatment.
- Please note that surface product residues must not be flushed down the drain, but must be properly disposed of. Collect the leftovers and hand them over to the disposal point.

School of Carpenter Skills

3rd Semester, End Term. Examination

B. Voc. Program, Winter Semester (2018-19)

Course Code: SCS1304 **Time: 3 Hour**

Course Name: Carpenter Mathematics **Max. Marks: 100**

Instructions:

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

Section – A

Q 1. Which one of the following is the volume of cylinder, were "r" is radius and "h" is height of the cylinder?

(A) $V = 2\pi r^2 h$ (B)$V = \pi R^2 h$ (C)$V = \pi r^2 h2$ (D) $V = \pi r^2 h$

Q 2. Which one of the following is the value of sin 30?

(A) 0 (B) 1/2 (C) 1 (D)None of these

Q 3. Which one of the following is the area of trapezoid?

(A) $\frac{b(a+h)}{2}$ (B) $\frac{h(a-b)}{2}$ (C) $\frac{h(a+b)}{2}$ (D) $\frac{a(b+h)}{2}$

Q 4. How many inches are there in 1 meter?

(A)60.80 inch (B)58.9 inch (C) 39.3 inch (D)61 inch

Q 5. Which one of the following is the value of $10/10^5$?

(A) 0.01 (B) 0.001 (C) 0.0001 (D)None of these

Q 6. Which one of the following is the Conversion Scientific notation conversion of 0.0001?

(A)10^5 (B)10^{-4} (C)10^6 (D)10^{-6}

Q 7. Which one of the following is the Volume of Sphere?

(A) $\frac{b(a+h)}{2}$ (B) $\frac{h(a-b)}{2}$ (C) $\frac{h(a+b)}{2}$ (D) None of these

Q 8. Which one of the following is the Area of cylinder, were "r" is radius and "h" is height of the cylinder?

(A) $V = 2\pi r(r + h)$ (B)$V = \pi R^2 h$ (C)$V = \pi r^2 h2$ (D) $V = \pi r^2 h$

Q 9. Which one of the following is the value cos 270 ?

(A) 1/2 (B) 0 (C) 1 (D)None of these

Q 10. Which one of the following is 5% of 50?

(A) 2.5 (B) 7.5 (C) 3 (D) 7

Q 11. Which one of the following is the value Sin 180?

(A) 0 (B) 1 (C) 1/2 (D)None of these

Q 12. Which thickness is not available in case of particle board.

(A)18 mm (B) 36 mm (C) 26 mm (D) 21 mm

Q 13. Which one of the following is equal to density?

(A) mv (B) $\frac{m}{v}$ (C) m + v (D) None of these

Q.14. Which one of the following is Area of Cube?

(A) $2\pi r(r+h)$ (B) $6L^2$ (C) $\frac{h(a+b)}{2}$ (D) None of these

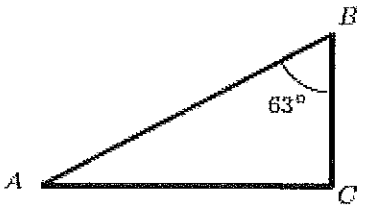
Q 15. Which one of the following is the value of $10^3/10^5$?

(A) 0.01 (B) 0.001 (C) 0.0001 (D)None of these

Q.16. What is the measure in degrees of the angle A = 2π/6?

(a) 150° (b) 60° (c) 100° (d) 120°

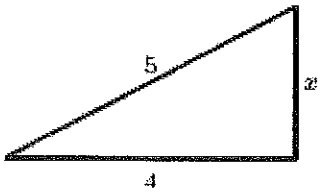
Q.17. What is the measure of angle A in the right triangle below?



(a) 17° (b) 27°

(c) 17° (d) 90°
(b)

Q.18. What is the value of x in the figure below?



(a) 1 (b) 9

(c) 20 (d) 3

Q.19. Which of the following is not an identity?

(a) $\sin^2 a+\cos^2 a = 1$ (b) $\sin a = \tan a * \cos a$

(c) $1 + \cot^2 a = \csc^2 a$ (d) $1 - \sec^2 a = \tan^2 a$

Q.20. In which quadrant is the terminal of an angle in standard position whose measure is π/6?

(a) Quadrant I (b) Quadrant II

(c) Quadrant III (d) Quadrant IV

Section – B

Q.21 Find out the density of Walnut wood of 200 mm^3 piece with mass 600 gm.

Q.22. Calculate tan(270°+α).

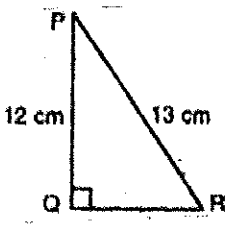
Q.23. Find out the value of $\sin^2(63°) + \cos^2(63°)$

Q.24. Calculate the exact value of sin (-585°).

Q.25. Find out the exact value of sin75°sin15°

Q 26. The length of sides AB and side BC of a right angle triangle ABC are 12 cm and 5 cm respectively. Find the length of side AC.

Q 27. In adjoining figure, find tan P – cot R :



Q. 28. What do you mean by thickness swelling in timber? Calculate thickness swelling fraction for teak wood of 18 mm with increment of 10% in thickness as of original thickness?

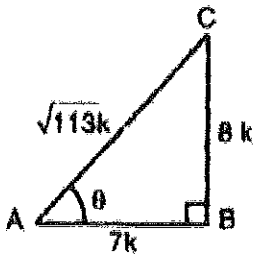
Section – C

Q.29. A cabinet having total height of 2500mm having 5 shelfs inside with equal space. Calculate distance between shelfs when whole cabinet is made by 18 mm thickness MDF board.

Q30 If $\cot\theta = \frac{7}{8}$, Evaluate

(i) $\frac{(1+\sin\theta)(1-\sin\theta)}{(1+\cos\theta)(1-\cos\theta)}$ (ii) $\cot^2\theta$

Consider a triangle ABC in which ∠ A = 9 and ∠ B = 90° Let AB = $7k$ and BC = 8k



Q31 Calculate the value of $sin945_{\circ}$

Q 32. Ram purchased a table in 5600 Rs and sold it with 20% profit. find out the selling price, if Ram wants to earn double of its profit by keeping selling price same what should be the purchasing price.

Q 33. In Δ ABC, right angled at B, AB = 24 cm, BC = 7 cm. Determine:

(i) sin A cos A (ii) sin C cos C

Dr A Rana
01/7/19

School of Carpenter Skills

3rd Semester, End Term. Examination

B. Voc. Program, Winter Semester (2018-19)

Course Code: SCS1304 **Time: 3 Hour**

Course Name: Carpenter Mathematics **Max. Marks: 100**

Instructions:

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

Section – A

Q 1. Which one of the following is the volume of cylinder, were "r" is radius and "h" is height of the cylinder?

(A) $V = 2\pi r^2 h$ (B)$V = \pi R^2 h$ (C)$V = \pi r^2 h2$ (D) $V = \pi r^2 h$ **(D)**

Q 2. Which one of the following is the value of sin 30?

(A) 0 (B) 1/2 (C) 1 (D)None of these **(B)**

Q 3. Which one of the following is the area of trapezoid?

(A) $\frac{b(a+h)}{2}$ (B) $\frac{h(a-b)}{2}$ (C) $\frac{h(a+b)}{2}$ (D) $\frac{a(b+h)}{2}$ **(C)**

Q 4. How many inches are there in 1 meter?

(A)60.80 inch (B)58.9 inch (C) 39.3 inch (D)61 inch **(C)**

Q 5. Which one of the following is the value of $10/10^5$?

(A) 0.01 (B) 0.001 (C) 0.0001 (D)None of these **(C)**

Q 6. Which one of the following is the Conversion Scientific notation conversion of 0.0001?

(A)10^5 (B)10^{-4} (C)10^6 (D)10^{-6} **(B)**

Q 7. Which one of the following is the Volume of Sphere?

(A) $\frac{b(a+h)}{2}$ (B) $\frac{h(a-b)}{2}$ (C) $\frac{h(a+b)}{2}$ (D) None of these **(C)**

Q 8. Which one of the following is the Area of cylinder, were "r" is radius and "h" is height of the cylinder?

(A) $V = 2\pi r(r + h)$ (B)$V = \pi R^2 h$ (C)$V = \pi r^2 h2$ (D) $V = \pi r^2 h$ **(A)**

Q 9. Which one of the following is the value cos 270 ?

(A) 1/2 (B) 0 (C) 1 (D)None of these **(B)**

Q 10. Which one of the following is 5% of 50?

(A) 2.5 (B) 7.5 (C) 3 (D) 7 **(A)**

Q 11. Which one of the following is the value Sin 180?

(A) 0 (B) 1 (C) 1/2 (D)None of these **(A)**

Q 12. Which thickness is not available in case of particle board.

(A)18 mm (B) 36 mm (C) 26 mm (D) 21 mm **(D)**

Q 13. Which one of the following is equal to density?

(A) mv (B) $\frac{m}{v}$ (C) m + v (D) None of these **(B)**

Q.14. Which one of the following is Area of Cube?

(A) $2\pi r(r+h)$ (B) $6L^2$ (C) $\frac{h(a+b)}{2}$ (D) None of these **(B)**

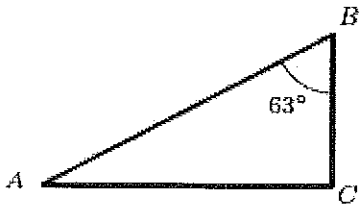
Q 15. Which one of the following is the value of $10^3/10^5$?

(A) 0.01 (B) 0.001 (C) 0.0001 (D)None of these **(A)**

Q.16. What is the measure in degrees of the angle A = 2π/6?

(a) 150° (b) 60° (c) 100° (d) 120° **(B)**

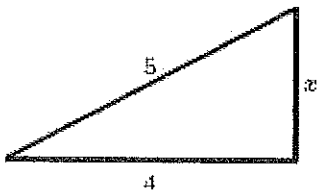
Q.17. What is the measure of angle A in the right triangle below?



(a) 17° (b) 27°

(c) 17° (d) 90°
(b)

Q.18. What is the value of x in the figure below?



(a) 1 (b) 9

(c) 20 (d) 3 (b)

Q.19. Which of the following is not an identity?

(a) $\sin^2 a+\cos^2 a = 1$ (b) sin a = tan a * cos a

(c) $1 + \cot^2 a = \csc^2 a$ (d) $1 - \sec^2 a = \tan^2 a$ **(c)**

Q.20. In which quadrant is the terminal of an angle in standard position whose measure is π/6?

(a) Quadrant I (b) Quadrant II

(c) Quadrant III (d) Quadrant IV **(a)**

Section – B

Q.21 Find out the density of Walnut wood of 200 mm^3 piece with mass 600 gm.

Ans. 600\200= 3 gm/ mm^3

Q.22. Calculate tan(270°+α).

Ans. $\tan(270_\circ+\alpha)=tan(3\pi/2+\alpha)=-cot\alpha$

Q.23. Find out the value of $\sin^2(63°) + \cos^2(63°)$

Ans. 1

Q.24. Calculate the exact value of sin (-585°).

Ans. $\sin(-585°)=-\sin(585°)=-\sin(2\pi+225°)=-\sin225°=-\sin(\pi+45°)=\sin45°=2\sqrt{3}$

Q.25. Find out the exact value of $\sin75°\sin15°$

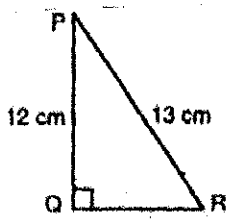
Ans. $\sin75°\sin15°=\sin(90°-15°)=\cos15°\sin15°=12sin30_\circ=14$

Q 26. The length of sides AB and side BC of a right angle triangle ABC are 12 cm and 5 cm respectively. Find the length of side AC.

Ans

Using Pythagoras theorem

Q 27. In adjoining figure, find tan P – cot R



Using Pythagoras theorem,

$PR^2 = PQ2 + QR2 \quad \Rightarrow \quad (13)^2 = (12)^2 + QR^2$

$\Rightarrow QR^2 = 169 - 144 = 25 \quad \Rightarrow \quad QR = 5$ cm

$$\therefore \quad \tan P - \cot R = \frac{QR}{PQ} - \frac{QR}{PQ} = \frac{5}{13} - \frac{5}{13} = 0$$

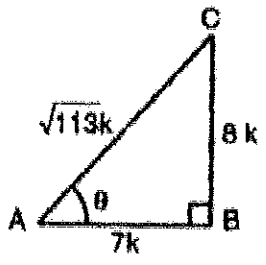
Q. 28. What do you mean by thickness swelling in timber? Calculate thickness swelling fraction for teak wood of 18 mm with increment of 10% in thickness as of original thickness?

Q.29. A cabinet having total height of 2500mm having 5 shelfs inside with equal space. Calculate distance between shelfs when whole cabinet is made by 18 mm thickness MDF board.

Q30 If $\cot\theta = \frac{7}{8}$, Evaluate

(i) $\frac{(1+\sin\theta)(1-\sin\theta)}{(1+\cos\theta)(1-\cos\theta)}$ (ii) $\cot^2\theta$

Consider a triangle ABC in which $\angle A = 9$ and $\angle B = 90^0$ Let AB = $7k$ and BC = 8k



Then, using Pythagoras theorem,

$$AC = \sqrt{(BC)^2 + (AB)^2} = \sqrt{(8k)^2 + (7k)^2}$$

$$= \sqrt{64k^2 + 49k^2} = \sqrt{113k^2} = \sqrt{113}k$$

$$\therefore \quad \sin\theta = \frac{BC}{AC} = \frac{8k}{\sqrt{113}k} = \frac{8}{\sqrt{113}}$$

$$\cos\theta = \frac{AB}{AC} = \frac{7k}{\sqrt{113}k} = \frac{7}{\sqrt{113}}$$

(i) $$\frac{(1+\sin\theta)(1-\sin\theta)}{(1+\cos\theta)(1-\cos\theta)} = \frac{1-\sin^2\theta}{1-\cos^2\theta} = \frac{1-\frac{64}{113}}{1-\frac{49}{113}} = \frac{113-64}{113-49} = \frac{49}{64}$$

(ii) $$\cot^2\theta = \frac{\cos^2\theta}{\sin^2\theta} = \frac{49/113}{64/113} = \frac{49}{64}$$

Q31 Calculate $sin945^\circ$

Solution:

$sin945^\circ \sin945^\circ == sin(720^\circ+225^\circ)\sin(720^\circ+225^\circ) =$

$sin(225^\circ+2*360^\circ)\sin(225^\circ+2*360^\circ) = sin225^\circ \sin225^\circ =$

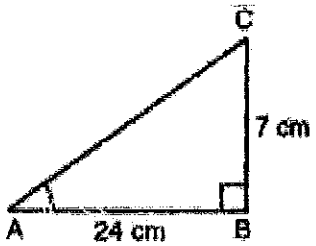
$sin(225^\circ-360^\circ)\sin(225^\circ-360^\circ) = sin(-135^\circ)\sin(-135^\circ) = -sin135^\circ - \sin135^\circ = -$

Q 32. Ram purchased a table in 5600 Rs and sold it with 20% profit. find out the selling price, if Ram wants to earn double of its profit by keeping selling price same what should be the purchasing price.

Q 33. In Δ ABC, right angled at B, AB = 24 cm, BC = 7 cm. Determine:

(i) sin A cos A (ii) sin C cos C

Let us draw a right angled triangle ABC, right angled at B.



Using Pythagoras theorem.

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

$= (24)^2 + (7)^2 = 576 + 49 = 625$

$\Rightarrow AC = 25$ cm

(i) $\sin A = \frac{BC}{AC} = \frac{7}{25}$, $\cos A = \frac{AB}{AC} = \frac{24}{25}$

(ii) $\sin C = \frac{AB}{AC} = \frac{24}{25}$, $\cos C = \frac{BC}{AC} = \frac{7}{25}$

Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Carpenter Skill

B. Voc. Program, Winter Semester (2018-19)

3rd Semester, End-Sem. Examination

Course Code: SCS1305 **Time: 3 Hours**

Course Name: Wood working CNC Machine **Max. Marks: 100**

Instruction: (if any)

Instruction:

1.Answer all questions from section A, each question carries one mark.

2.Answer 6 questions out of 8 questions from section B, each question carries five marks.

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

Section – A

20X01 = 20 Marks

Q.1 Glue application unit applies glue to which of the following in Edge banding machine?

(a) Work piece

(b) Edge banding tape

(c) Both work piece and edge banding tape

(d) Can be set to apply glue to either work piece or tape.

Q.2 Which one of the following is the main principle of operation of Beam saw?

(a) Saw carriage can travel partial/full distance

(b) beam saw pressure to hold the work pieces together.

(c) CNC controlled operation.

(d) All the above.

Q.3 Which one of the following is the purpose of SPD in Beam saw?

(a) For sawing purpose.

(b) For transporting the work piece.

(c) For aligning the work piece.

(d) For positioning the work piece.

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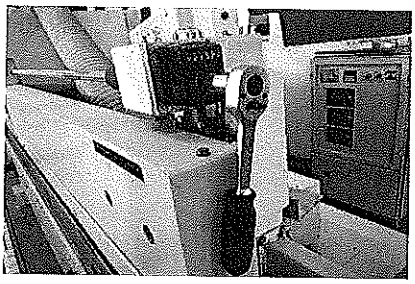
Q.4.What setting can you make with this counter in Edge banding machine?

(a) Edge banding material thickness

(b) Edge banding material length

(c) Work piece thickness

(d) Work piece length.



Q.5 What function does the clipping unit perform and when in Edge banding machine?

(a) Clip leading edge of tape, when the tape enters the line point.

(b) Clips the leading edge of tape, when the tape leaves the line point.

(c) Clips the trailing edge of tape, when the tape enters the line point.

(d) Clips the trailing edge of tape, when the tape leaves the line point.

Q.6.Assume if one of the post-pressure roller does not function, what will happen in Edge banding machine?

(a) It has no effect on edge banding.

(b) Poor quality banding at the edges.

(c) Poor quality banding at the center

(d) Poor quality banding at both edges and center.

Q.7. Which one of the following is the size of main saw blade of Homag beam saw HPP 130?

(a) 300*4.4*50 (b) 400*4.4*60 (c) 300*5.4*50 (d) 300*4.4*60

Q.8. Which of the following is the saw blade projection of Homag Beam saw HPP 130?

(a) 50 mm (b) 60 mm (c)70 mm (d) 40 mm

Q.9. What is the compressed air pressure consumption in the Homag CNC beam saw HPP 130?

(a) 8 bar (b) 6 bar (c) 5 bar (d) 7 bar.

Q.10.Which one of the following is the panel with defined dimension?

(a) Strip (b) Part (c) Off cut (d) Processed part

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Q.11.Which one of the following is the maximum working dimensions of a work piece in Homag Beam saw HPP 130?

(a) 3400*50 mm (b) 3200*60 mm (c) 3200*50 mm (d) 3700*60 mm

Q.12 Which one of the following is the diameter of the grooving saw in Homag CNC router PTP 160?

(a) Ø125 mm
(b) Ø150 mm
(c) Ø175 mm
(d) Ø200 mm

Q.13. Which one of the following is the function of buffing unit in Edge banding Machine?

(a) Clean the edges
(b) Polish the edges
(c) Removes extra material
(d) Makes a profile

Q.14 Which one of the following surfaces is possible to operate with the CNC router in single setup?

(a)1,2,3,4 (b)1,2,3 (c)1,2,3,4,5,6 (d) 1,2,3,4,5

Q.15 Which one of the following glue types are use in the Edge banding machine?

(a) Water based glue (b) PUR (c) Hot melt glue (d) Contact glue

Q.16 Which one of the following is a property of the pre-milling Unit/aggregate in Edge banding machine?

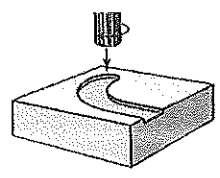
(a) Trim the edge
(b) Cut the length
(c) Clean extra material
(d) Rounding the edges

Q.17 Which one of the following material can't be cut on the beam saw?

(a) MDF
(b) Laminated MDF
(c) Glass
(d) Solid wood panel

Q.18 Which one of the following picture is an example of 2D Path Control?

(a)



(b)

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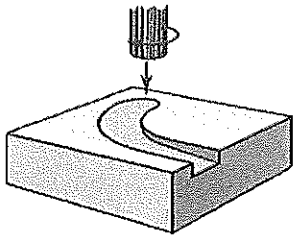
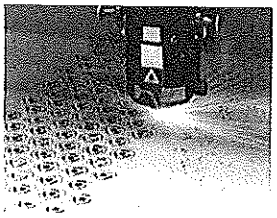
(c)



(d)



Q.19 Which one of the following drive converts the circular motion of the electric motor into a linear feed?

(a)First Drive
(b)Final Drive
(c)Belt Drive
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Q.20 Which one of the following is the Form of HMI?

(a) Human Machine Interface
(b) Human Machine Internet
(c) Human Machine intellectual
(d) Human Machine Interaction.

Section – B

06X05 = 30 Marks

Q.21 Explain the Working of pressure beam in CNC Beam Saw with Suitable Diagram.

Q.22 What does the CNC stands for?

Q.23 Identify the main components of CNC Beam saw and describes their functions.

Q.24 Explain the working of suction cup in woodworking CNC Router.

Q.25 Explain Different types of Control Modes of CNC Machine.

Q.26 Explain Cartesian coordinate system:

Q.27.Why edge banding is required at the edge of work piece?

Q.28 Explain

(i) Trim cut/waste part

(ii) Part

(iii) Strips

(iv) Offcut

(v) Processed part

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Section – C

05X10 = 50 Marks

Q.29 Describe the edge banding stages.

Q.30 Explain Dimension Types with Suitable Diagram.

(i) Absolute dimension.

(ii) Relative dimension.

Q.31 Explain the different types of machine axes.

Q.32 Write the overview and features of Homag CNC beam saw HPP 130.

Q.33 Why Does we use scoring saw in Beam Saw machine? What would be the position of suction Cup While Through Cutting? Differentiate Between CNC Machine and Standard machine

Dr A Rao
01/11/19

Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

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Section – A

20X01 = 20 Marks

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(a) Work piece Ans.(a)

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Q.2 Which one of the following is the main principle of operation of Beam saw?

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Ans.(c)

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Q.8. Which of the following is the saw blade projection of Homag Beam saw HPP 130?

(a) 50 mm (b) 60 mm (c)70 mm (d) 40 mm Ans.(b)

Q.9. What is the compressed air pressure consumption in the Homag CNC beam saw HPP 130? Ans.(d)

(a) 7-8 bar (b) 5-6 bar (c) 4-5bar (d) 6-7 bar.

Q.10.Which one of the following is the panel with defined dimension? Ans.(b)

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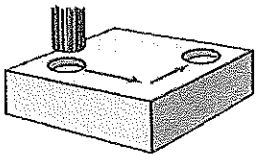
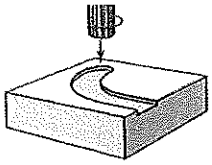
(a) MDF (b) Laminated MDF Ans.(c)
(c) Glass (d) Solid wood panel

Q.18 Which one of the following picture is an example of 2D Path Control?



(a)



(b) Ans.(b)

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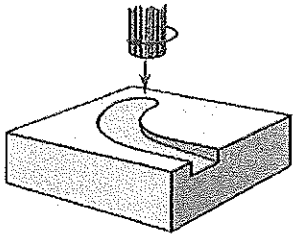
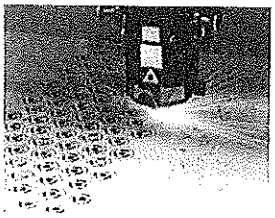
(c)



(d)



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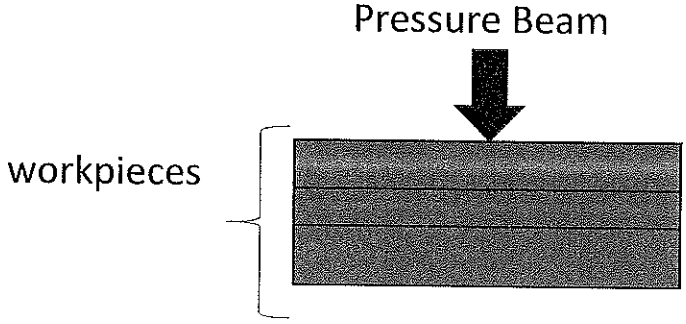
(a) Human Machine Interface
(b) Human Machine Internet Ans.(a)
(c) Human Machine intellectual
(d) Human Machine Interaction.

Section – B

06X05 = 30 Marks

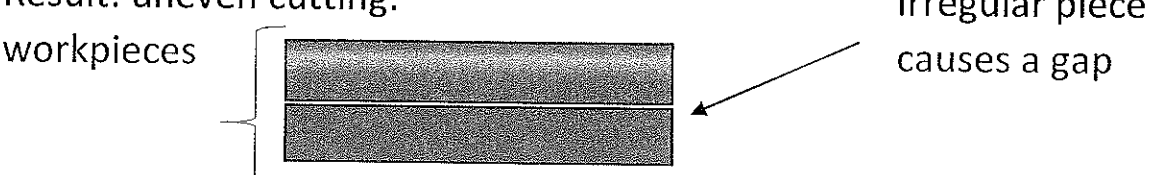
Q.21 Explain the Working of pressure beam in CNC Beam Saw with Suitable Diagram.

Ans. The Pressure Beam holds the work pieces firmly to prevent their movement during cutting.



Without a pressure beam, the work piece may shift their position during cutting.

Result: uneven cutting.



(1) Pressure beam:

(i) Clamps:

To hold single panel or books of panels in position for Cutting.

(ii) Program fence:

To transport and position the workpiece for sawing.

(iii)SPD (side pressure device):

To align panels against the cross cut fence at right angle to the cutting line.

SPD comes in 3 options

SPD ON/Off	Switches SPD On /Off
SPD always	Alignment using SPD for rip and cross cuts
Alignment using SPD	Quick Alignment using SPD only for cross cuts.

Q.22 What does the CNC stands for?

Ans. CNC means **Computer Numerical Control**. This means a computer convert the design produced by Computer Aided Design software into numbers. The numbers can be considered to be the coordinates of a graph and they control the movement of the cutter. In this way the computer controls the cutting and shaping of the material.

Q.23 Identify the main components of CNC Beam saw and describes their functions.

Ans. **(1) Pressure beam:**

(i)Clamps

To hold single panel or books of panels in position for Cutting.

(ii) Program fence:

To transport and position the workpiece for sawing.

(iii) SPD (side pressure device):

To align panels against the cross cut fence at right angle to the cutting line.

SPD comes in 3 options

SPD ON/Off	Switches SPD On /Off
SPD always	Alignment using SPD for rip and cross cuts
Alignment using SPD	Quick Alignment using SPD only for cross cuts.

2. Saw Carriage:

Saw carriage holds the main saw and scoring saw. Main saw is used to cut and scoring saw to avoid chip out at the bottom surface of pre-lam board. Scoring saw is a blade which is smaller than the main blade and it sits in the front of the main blade. The smaller

blade rotates in the opposite direction of the main blade, allowing wood to be cut from the panel under side. The main blade is cutting from the top as the smaller blade is cutting from the bottom. The purpose of the smaller blade is to cut in a score or a groove, which makes things easier from the perspective of the large blade and avoids chip out from the bottom of the wood.

3.Safety curtains:

To safety access to the cutting plane while in operation for safety.

4. Air cushion table:

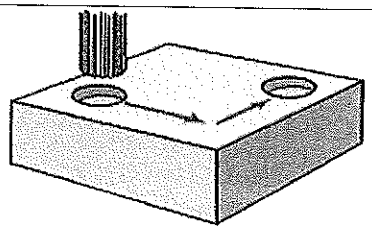
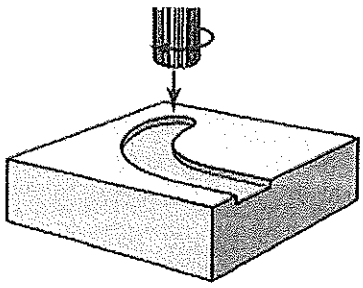
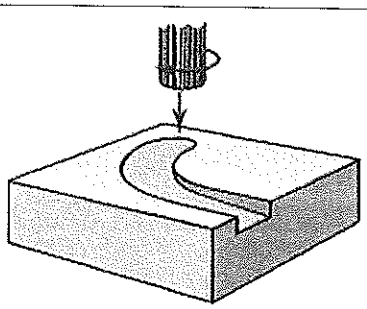
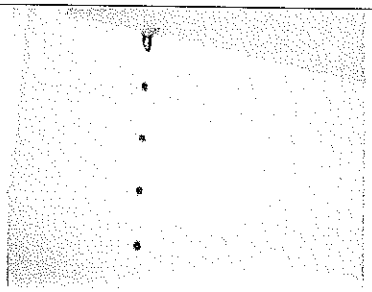
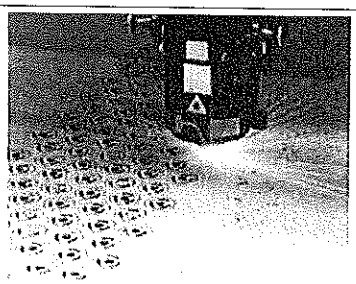
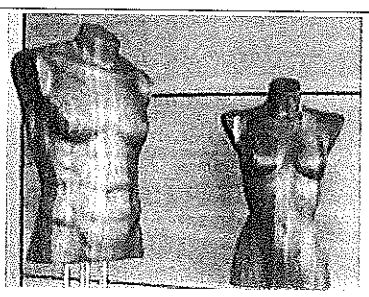
For the movement of panels easily by hand. A fan is connected under the first limb of air table.

Q.24 Explain the working of suction cup in woodworking CNC Router.

Ans. Working of the suction cup is to clamp the work piece tightly. It ensures that the suction cups are placed on the suction holes of the vacuum pump to get proper suction, vacuum pump is connected with the suction holes with pipes to provide 6-7 bar suction pressure. It is compulsory to switch ON the vacuum pump before working on the CNC router for clamping of the work piece. The vacuum of the suction cups for the clamping purpose can only be created on a plan and smooth surface.

Q.25 Explain Different types of Control Modes of CNC Machine.

Ans. The type of control describes the way how the axes of a CNC Machine is controlled and moved and how the tool Material processed.

point control	2D path control	3D path control
		
		
Series hole	**laser cutting**	**Wooden figures**

Tool edited only after the Positioning in one Direction	Two axes will be simultaneously synchronous controlled	Three or more axles be at the Processing in time synchronous controlled

Q.26 Explain Cartesian coordinate system.

Ans. A Cartesian coordinate system is an orthogonal coordinate system which divides the two- and three-dimensional space geometrically. The directional axes are orthogonal to each other, so they intersect at the 90^0 angle. It is assumed that the horizontal axis is

referred to as X, the vertical axis as Z and the depth axis as Y. By means of the coordinate system, each point in the space is thus clearly described.

Q.27.Why edge banding is required at the edge of work piece?

Ans. Edge banding is used to cover the exposed sides of materials such as plywood, particle board or MDF, increasing durability and giving the appearance of the solid or more valuable material. Edge banding can be made of different material including PVC , ABS ,Acrylic, Melamine, Wood or Wood Veneer.
1. Protect its sides and edges from moisture,humidity and water.
2. Give it a better apperence.
3.Protect its edges from broken.

Q.28 Explain.

(i) Trim cut/waste part

(ii) Part

(iii) Strips

(iv) Offcut

(v) Processed part

Ans.

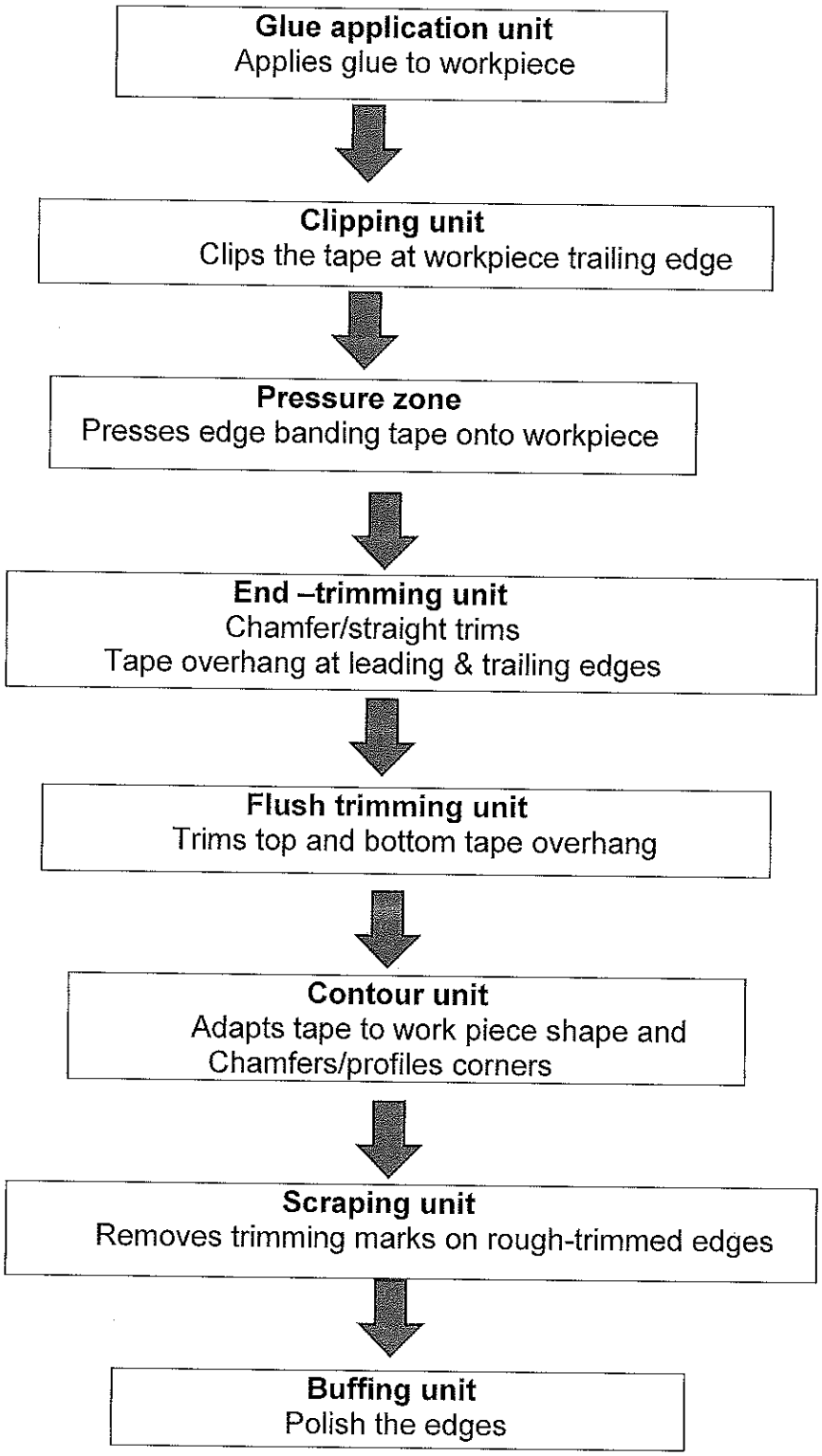
1. Trim cut/waste part:
Waste part in a cutting pattern. A waste part will for example be inserted in a certain position in a cutting pattern if the panel is damaged there. A trim cut produces a clean edge for the part.
2.part:
Part of a panel with defined dimensions.
3.strips:
Product after panel has been cut up lengthwise. Strip then only has to be cut crosswise.
4.offcut:
Section of a panel that can be used later as a raw panel for further cutting patterns.
5.processed part:
Part that has to be cut again after veneering or edging.

Section – C

05X10 = 50 Marks

Q.29 Describe the edge banding stages.

Ans.



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Q.30 Explain Dimension types with Suitable Diagram.

(i) Absolute dimension.

(ii) Relative dimension.

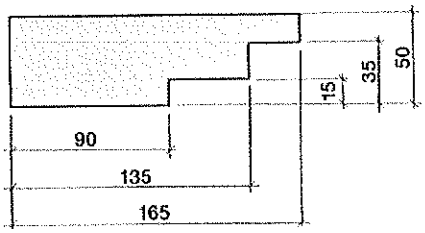
Ans.

Absolute dimension

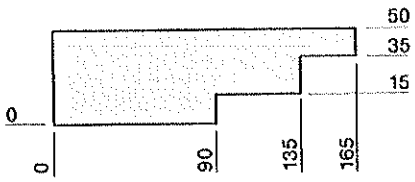
The absolute dimension refers to a zero point and is therefore also called reference.
Absolute dimensioning is the basis for the CNC program creation particularly suitable. It is easy to interpret and can be easily converted into a program. Similarly, edits can easily be compared and controlled with the plan.

There are two display options for these dimension types:

Base Dimension

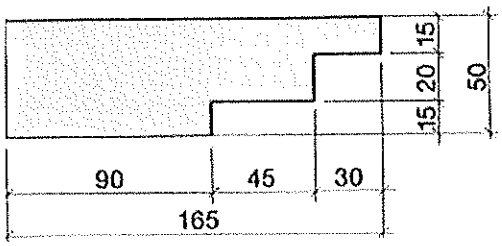


Coordinate



Relative dimensioning:

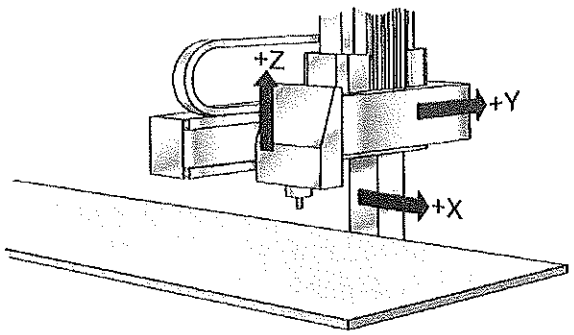
The measures always refer to the previously measured point. If you change the dimensions of the previous point, all other points will be moved automatically. This can lead to errors, but is also very handy for edits that need to be moved together. For example, in a series hole drilling, if the first hole is moved, all the other holes should also be moved. The relative dimensioning is also known as chain or incremental.



The absolute dimensioning type is easier to interpret and to control. The relative dimensioning is used only for operations that relate to each other or that belong together (holes in a series hole).

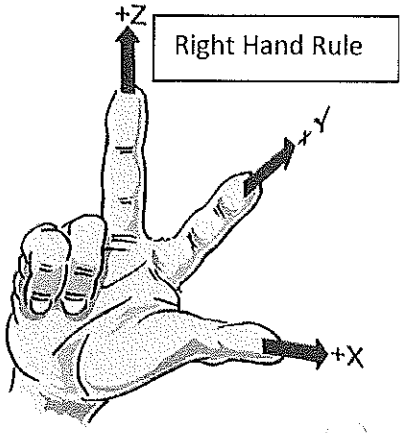
Q.31 Explain the different types of machine axes.

Ans. **Machine Axes:**



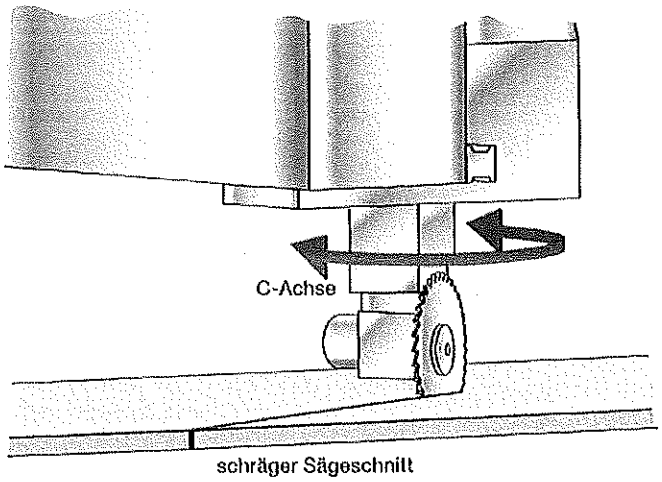
Main axes X, Y, Z

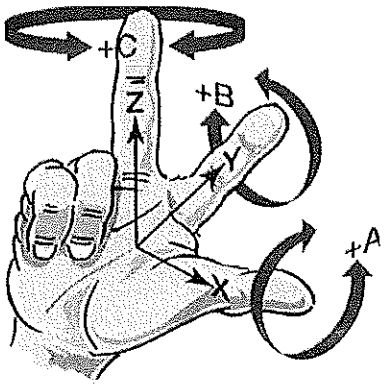
With the three main axes of movement, every point in the room can be approached. However, the tool is always perpendicular to an axis. Thus, for example, no oblique holes or saw cuts in any angle possible.



Rotary axes a, b, c

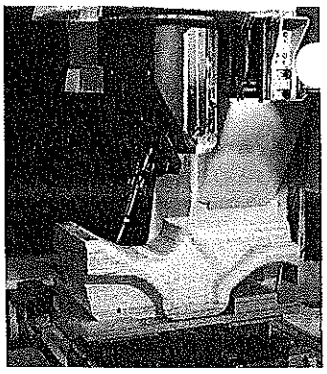
In order to programmatically perform inclined drilling and bevel cuts with saw blade, further controlled axes are used with corresponding angle gears. Widely used is the so-called C-axis, which, for example, can turn a saw blade around the Z-axis so that angle cuts are possible.





5-axis machine:

A 5-axis machine has two axes of rotation in addition to the main axes, which can be controlled simultaneously. With such a machine, the tool is freely position able, and angular gear are no longer necessary.



Q.32 Write the overview and features of Homag CNC beam saw HPP 130.

Ans. **OVERVIEW**

- HPP 130 is called as CNC Beam Saw. CNC control enables smooth cutting with optional varying speed.

- Pressure beam applies pressure to hold the work piece together while cutting in stack.
- Controller software is Cadmatic 4 basic.
- Basic software is cadmatic 4.
- The optional software is Cut Rite for optimization.
- Post forming, Labelling, additional clamping, optimization are optional features.
- HPP 130 is used to cut all types of panel boards like particle board, ply board, Mdf , block board.

FEATURES:

- Maximum Cutting dimensions.

  Length - 3200 mm

  Thickness - 60mm

- Saw carriage unit holds the main saw and scoring saw.
- Scoring saw helps to prevent bottom chip-out.
- Saw carriage speed can be varied by potentiometer.
- Fully CNC Controlled with optional optimization.
- Auto length control for time optimization.
- Different modes of operation.
- Side pressure device for better alignment.

Q.33 Why Does we use scoring saw in Beam Saw machine? What would be the position of suction Cup While Through Cutting? Differentiate Between CNC Machine and Standard machine.

Ans.

Saw carriage holds the main saw and scoring saw. Main saw is used to cut and scoring saw to avoid chip out at the bottom surface of pre-lam board. Scoring saw is a blade which is smaller than the main blade and it sits in the front of the main blade. The smaller blade rotates in the opposite direction of the main blade, allowing wood to be cut from the panel under side. The main blade is cutting from the top as the smaller blade is cutting from the bottom. The purpose of the smaller blade is to cut in a score or a groove, which makes things easier from the perspective of the large blade and avoids chip out from the bottom of the wood.

Positioning of suction cup while throughout cutting

Suction cups should not be set under the throughout cutting, through pocketing or throughout drill otherwise tools damage the suction cups or use the laser method while throughout cutting.

Difference b/w Std machine and CNC machine

Standard machines	CNC machines
Manually working machines.	It is computer numerical control machine.

Manually tool changing.	Automatically tool changer.
Require more man power	Require less man power.
No requirement of software for operation.	It require software for operation.
Low cost	High cost
It require less computer skill.	It require more computer skill.
It occupy less space.	It occupy more space.
It works for single operation	It works multi operation