BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Carpenter Skills

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

3rd Semester, End-Sem. Examination

Course Code: SCS1301 **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 any six 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 is set of the depth can be taken while using 5 mm drill in Domino machine?

(A) (28,25,12) mm (B) (12,15,20) mm

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

Q.2.Which one of the following is the diameter of saw blade of MITRE SAW KAPEX KS 88?

(A) 120 mm (B) 240 mm

(C) 250 mm (D) 260 mm (D)

Q.3.Which one of the following is the diameter of saw blade of MITRE SAW SYM 70?

(A) 260 mm (B) 216 mm

(C) 250 mm (C) 215 mm (B)

Q.4.Which one of the following is the diameter of drill used for making 10*20 mm domino dowels?

(A) 4 mm (B) 10 mm

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

Q.5.Which one of the following is the diameter of cutter used in ZETA P2?

(A) 60 mm (B) 70 mm

(C) 100 mm (D) None of these. (C)

Q.6.Which one of the following biscuit is not made by Lamello classic X?

(A) C20 (B) H9

(C) Clamex p-14 (D) All of these. (C)

Q.7.Which one of the following is the maximum cutting depth taken in ZETA P2?

(A) 10 (B) 15

(C) 18 (D) None of these. (D)

Q.8. Which one of the following accessory is used for splinter free cut?

(A) Reliable guidance (B) Splinter guide

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

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Q.9.Which one of the following is the accessory used for reducing the domino dowel center?

(A) Cross stop (B) Additional stop

(C) Handrail fence (D) Trim stop (B)

Q.10.Which one of the following is the height of work piece cut by MITRE SYM 70?

(A) 45 (C) 70

(C) 60 (D) All of these (C)

Q.11.Which one of the following is the maximum width of work piece cut by MITRE SYM 70?

(A) 80 (B) 65

(C) 100 (D) 70 (A)

Q.12. 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.13. Which one of the following is the accessory used by Jig saw PS/PSB 300?

(A) Perfect circle (B) Straight cuts

(C) Guide rails (D) All of these (D)

Q.14.Which one of the following is the angular range of circular hand saw TS 55 REBQ?

(A) 1 to 45 degree (B) -1 to -45 degree

(C) -1 to -47 degree (D) None of these (C)

Q.15.Which one of the following is the accessory used as a rear and front stop position on guide rail?

(A) False joint stop (B) Kickback stop

(C) Parallel side fence (D) splinter guard (B)

Q.16.Which one of the following machine is used for making biscuit joint and grooves?

(A) Jig Saw (B) Domino

(C) Lamello Classic X (D) Both (B) & (C) (C)

Q.17.Which one of the following is the machine used for making dovetail joint?

(A) Circular saw (B) MITRE saw

(C) Jig saw (D) Router (B)

Q.18.Which one of the following is the machine in which tool does not change for all operations?

(A) Router (B) Jig saw

(C) Lamello classic X (D) Circular saw (C)

Q.19.Which one of the following is maximum biscuit size used by Lamello classic X?

(A) 12 mm (B) 15 mm

(C) 20 mm (D) 10 mm (C)

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Q.20.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) None of these (C)

Section – B

06X05 = 30 Marks

Q.21.What are the benefits of using the guide rail for cutting?

ANS: Benefits of using the guide rail for cutting are:

- ZERO PLAY GUIDANCE: - We can adjust the guidance jaws on the circular saw to fit the guide rail without using tools.
- SPLINTER FREE CUTS: - The splinter guards positioned directly on the scribe line prevent the edges from splintering, even on angled cuts.
- PRECISON RESULTS: - The router guide stop was designed for precision grooves.
- QUICK FOR DIAGONAL CUTS: - With guide rail and combination bevel, angles are easy to transfer from work piece or wall.

Q.22.Describe the three different types of holes made by the Domino machine.

ANS: Three types of holes made by Domino machine are described below:

1.The standard width, corresponding exactly to the domino width.

Hole width= 13 mm + cutter diameter

2.The average hole width, giving the domino some clearance (6 mm)

Hole width= 19 mm + cutter diameter

3.The largest hole width, providing a lot of clearance (10 mm)

Hole width= 23 mm + cutter diameter.

Q.23.What are the five steps of changing tool of the Domino machine?

ANS: Steps for tool change of the Domino machine:

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

Q.24.Name and describe five safety gears used while working on Handy machines.

ANS: Safety gears used while working

1.Ear Muffle: It protects from loud sound. We wear this while working on machine.

2.Safety shoes: We always wear this when we go to training center and it protects from injury when heavy objects fall on leg.

3.Safety googles: It protects from dust and pieces while maching. It is not always necessary to wear safety googles while working on machine.

4.Ear plug: Ear muffle and ear plug are used for preventing from loud sound.It is very comfortable to wear ear plug.

5.Dust mask: We wear this while cleaning the workshop and when dust is coming while maching.

Q.25.Describe the six steps for changing the saw blade of Circular hand saw TS 55 REBQ.

ANS: Steps for changing the saw blade of circular hand saw TS 55 REBQ are :

Step 1: Take out the Allen key which is placed at the top of circular saw.

Step 2: Tilt up the fast fix from its position and take the saw blade below from its zero position.

Step 3: Rotate the nut and loosen it.

Step 4: Carefully take out the blade from its position.

Step 5: Put the new saw blade according to the work piece.

Step 6: Tight it with the help of Allen key.

Q.26.Why is it necessary to use Dust collector while working with Handy machine?

ANS: Due to following reason, it is necessary to use Dust collector while working with Handy machine:

1. It saves from dust which goes into eyes while maching.
2. It helps in working safely.
3. It makes the machine dust free.
4. It helps in making the working environment neat and clean
5. It increases the machine life.

Q.27.Describe any five system accessories of Circular Hand Saw TS 55 REBQ and their benefits.

ANS:

1.Parallel side fence: It can be used as table extension. It helps in holding the workpiece while maching.

2.Splinter guard: It can be used with or without guide rail. It helps in splinter free cut.

3. Kick back stop: It can be used as guide stop and used as a rear and front stop position on guide rail.

4. Guide rail: It helps in quick diagonal cut and splinter free cut.

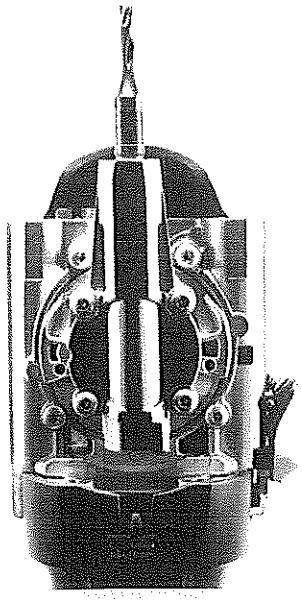
5.Dust bag: It is used in collecting dust while maching.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Q.28.Describe the pendulum router principle of drill of Domino machine with the help of diagram.

ANS:

This principle states that the simultaneous rotating and pendulum movement of the cutter allows smooth working and holes without scratch marks.



Section – C

05X10 = 50 Marks

Q.29. Describe the benefits of making joint with Lamello Classic X and Domino machine and Compare them.

ANS:

Benefits of making joint with Lamello classic X:

1.Adjust groove position to exact center of the work piece.

2.Gives tolerance to joint for shifting of work piece in assembly.

3.Easy joining of laterally off-set work piece.

4.New multifunctional stop square with smooth running, precise guidance.

5.For quick exact setting of the groove position.

Benefits of making joint with Domino machine:

1.One Domino dowel is enough to connect a frame corner securely and ensure it will not twist.

2.Very small dominos can be used even for furniture joints, making it possible to process very small spindles or narrow rails.

3.Joint with domino dowels gives strong strength to furniture.

4.Domino dowels fits exactly and room to move.

5.Minor imprecisions in the remaining domino holes are compensated for by the domino connecting system, allowing fast and efficient progress.

Q.30.Draw a labelled diagram of a Hand Router and mention its parts.

ANS:

Functional description

1 Speed controller

2 Locking button

3 On/Off switch

4 Depth adjustment

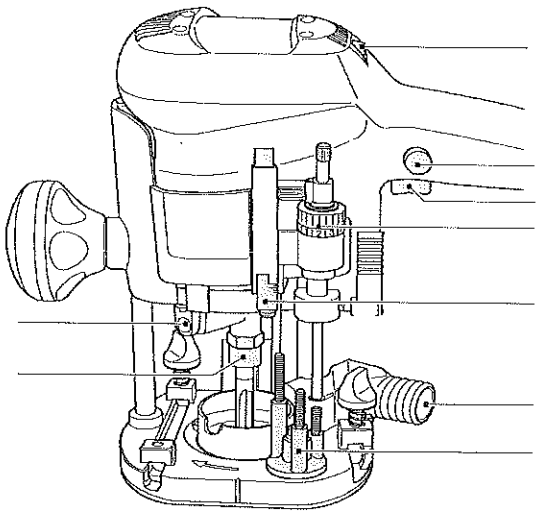
5 Scale

6 Extractor connection piece

7 Pivoted turret stop

8 Collet nut

9 Spindle stop



Q.31.Describe the work steps for making a corner joint between the bottom and side piece of a cabinet by the domino machine.

ANS:

Work steps for making a corner joint between the bottom and side piece of a cabinet by the Domino machine are described below:

Step 1: Cut the bottom and side piece according to the given size.

Step 2: Select the domino size according to the size of work piece.

Step 3: Put the exact size of drill according to domino dowels.

Step 4: Set the height in the Domino machine according to the thickness of the work piece.

Step 5: Connect dust collector with the machine for the electrical power and dust extraction.

Step 6: Clamp the work piece and make the domino joint at corner on bottom and side piece.

Step 7: Glue the bottom and side piece.

Q.32.Describe the work steps of making a 5 mm back wall groove with the Hand router.

ANS:

Work steps of making a 5 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 5 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.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 workpiece.

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 Skills

B. Voc. Program, Summer Semester (2017-18)

III Semester, End-Sem. Examination

Course Code: SCS1302 **Time: 3 Hours**

Course Name: Advanced Standard Machines **Max. Marks: 100**

Instruction:

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

Section – A

20X01 = 20 Marks.

Q.1. Which one of the following is the wheel diameter with cast iron in band saw?

(a) 600 mm (b) 650 mm

(c) 620 mm (d) 750 mm

Q.2. There are _____ no. of teeth in razor cut saw blade.

(a) 96 (b) 48

(c) 28 (d) none of them

Q.3. How many teeth are there in" solid wood along grains saw blade".

(a) 96 (b) 48

(c) 28 (c) 72

Q.4. Which one of the following is the maximum width of work piece that can be machined in thickness planer (nova s 630)?

(a) 550 mm (b) 630 mm

(c) 650 mm (d) 600 mm

Q.5. Which one of the following is the infeed work table length of surface planer?

(a) 1550 mm (b) 1500 mm

(c) 1600 mm (d) none of them

Q.6. Which one of the following is the function of riving knife?

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

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

Q.7. Which of the following machines has a lever for feed speed change?

(a) Panel saw (b) thickness planer

(c) Surface planer (d) all of them

Q.8. Which one of the following is the total work table length of surface planer?

(a) 2550 mm (b) 2700 mm

(c) 2500 mm (d) 2750 mm

Q.9. Which one of the following is the maximum cutting width of band saw minimax s 600 P?

(a) 500 mm (b) 550 mm

(c) 580 mm (d) none of them

Q.10. Which one of the following is the distance between riving knife and main saw in panel saw?

(a) 8 mm (b) 4 mm

(c) 6 mm (d) 5 mm

Q.11. Which one of the following is the minimum length of work piece to be machined in thickness planer?

(a) 300 mm (b) 260 mm

(c) 150 mm (d) none of them

Q.12. What is the maximum cutting height of band saw minimax s 600 P?

(a) 360 mm (b) 300 mm

(c) 260 mm (d) none of them

Q.13. Which one of the following machine is used to make curved work pieces?

(a) Panel saw (b) surface planer

(c) Spindle moulder (d) none of them

Q.14. Which one of the following saw blade is used for cutting laminates?

(a) Razor cut (b) universal saw blade

(c) Solid wood cross cut (d) panel saw blade

Q.15. Which one of the following is the table length of panel saw?

(a) 3500 mm (b) 2905 mm

(c) 3000 mm (d) none of them

Q.16. What should be the time if the temperature in hot press is set to 30^0 C by using PVAC white glue?

(a) 30 min (b) 25 min

(c) 10 min (d) none of them

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Q.17. What should be the temperature, if the time is set to 8 minutes in hot press?

(a) 30^0 C (b) 50^0 C

(c) 120^0 C (d) 80^0 C

Q.18. which one of the following is the function of scoring saw blade?

(a) It is used to perform chip free cuts (b) used to make curves

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

Q.19. Which one of the following is the maximum cutting height of saw blade if the saw blade is set to 90^0?

(a) 60 mm (b) 65 mm

(c) 55 mm (d) 50 mm

Q.20. Which one of the following is the maximum cutting height of saw blade if the saw blade is set to 45^0?

(a) 60 mm (b) 65 mm

(c) 55 mm (d) none of them

Section – B

06X05 = 30 Marks

Q.21. Write down all the steps to change the sanding paper of sanding machine.

Q22. Write down all the steps to make a miter cut of 45^0 using panel saw.

Q.23. Write down all the important steps and points to make a flat work piece using surface planer.

Q.24 What do you understand by safety hood in panel saw, discuss the possible consequences if you do not use it.

Q.25. What are the importance of safety instructions and precautions while working on the standard machines.

Q.26. Write down all the applications of Hot press machine.

Q.27. Write down the importance of riving knife.

Q.28. Write down the difference between main saw blade and scoring saw blade.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Section – C

05X10 = 50 Marks

Q.29. Write down the steps to make a rebate-using spindle moulder machine.

Q.30. Write down all the steps to change the tool on the spindle moulder.

Q.31. Draw a labelled diagram of thickness planer, highlight all the electrical buttons and write down the steps to thickness a work piece to required dimension.

Q.32. write down all the steps to press a laminate on a MDF of 300*300 mm.

Q.33. Describe the work steps to make a rebate and counter rebate dowel connection. Mention the machine used and describe the setting.

Q.17. What should be the temperature, if the time is set to 8 minutes in hot press?

(a) 30^0 C (b) 50^0 C

(c) 120^0 C (d) 80^0 C

Q.18. which one of the following is the function of scoring saw blade?

(a) It is used to perform chip free cuts (b) used to make curves

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

Q.19. Which one of the following is the maximum cutting height of saw blade if the saw blade is set to 90^0?

(a) 60 mm (b) 65 mm

(c) 55 mm (d) 50 mm

Q.20. Which one of the following is the maximum cutting height of saw blade if the saw blade is set to 45^0?

(a) 60 mm (b) 65 mm

(c) 55 mm (d) none of them

Section – B

06X05 = 30 Marks

Q.21. Write down all the steps to change the sanding paper of sanding machine.

Q22. Write down all the steps to make a miter cut of 45^0 using panel saw.

Q.23. Write down all the important steps and points to make a flat work piece using surface planer.

Q.24 What do you understand by safety hood in panel saw, discuss the possible consequences if you do not use it.

Q.25. What are the importance of safety instructions and precautions while working on the standard machines.

Q.26. Write down all the applications of Hot press machine.

Q.27. Write down the importance of riving knife.

Q.28. Write down the difference between main saw blade and scoring saw blade.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Section – C

05X10 = 50 Marks

Q.29. Write down the steps to make a rebate-using spindle moulder machine.

Q.30. Write down all the steps to change the tool on the spindle moulder.

Q.31. Draw a labelled diagram of thickness planer, highlight all the electrical buttons and write down the steps to thickness a work piece to required dimension.

Q.32. write down all the steps to press a laminate on a MDF of 300*300 mm.

Q.33. Describe the work steps to make a rebate and counter rebate dowel connection. Mention the machine used and describe the setting.

Registration No.: .....

School of Carpenter Skills

B. Voc. Program, Summer Semester (2017-18)

III Semester, End-Sem. Examination

Course Code: SCS1302 **Time: 3 Hours**

Course Name: Advanced Standard Machines **Max. Marks: 100**

Instruction:

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

Section – A

20X01 = 20 Marks

Q.1. which one of the following is the cast iron saw wheel diameter of band saw?

(a) 600 mm (b) 650 mm

(c) 620 mm (d) 750 mm (a)

Q.2. There are _____ no. of teeth in razor cut saw blade.

(a) 96 (b) 48

(c) 28 (d) none of them (d)

Q.3. There are _____ no. of teeth in solid wood along grains saw blade.

(a) 96 (b) 48

(c) 28 (c) 72 (c)

Q.4. which one of the following is the maximum width of work piece that can be machined in thickness planer?

(a) 550 mm (b) 630 mm

(c) 650 mm (d) 600 mm (b)

Q.5. which one of the following is the infeed work table length of surface planer?

(a) 1550 mm (b) 1500 mm

(c) 1600 mm (d) none of them (a)

Q.6. which one of the following is the function of riving knife?

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

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

Q.7. which of the following machines has a lever for feed speed change?

(a) Panel saw (b) thickness planer

(c) Surface planer (d) all of them (b)

Q.8. which of the following machine is the total work table length of surface planer?

(a) 2550 mm (b) 2700 mm

(c) 2500 mm (d) 2750 mm (d)

Q.9. which one of the following is the maximum cutting width of band saw minimax s 600 P?

(a) 500 mm (b) 550 mm

(c) 580 mm (d) none of them (c)

Q.10. which one of the following is the distance between riving knife and main saw in panel saw?

(a) 8 mm (b) 4 mm

(c) 6 mm (d) 5 mm (d)

Q.11. which one of the following is the minimum length of work piece to be machined in thickness planer?

(a) 300 mm (b) 260 mm

(c) 150 mm (d) none of them (b)

Q.12. which one of the following is the maximum cutting height of band saw minimax s 600 P?

(a) 360 mm (b) 300 mm

(c) 260 mm (d) none of them (a)

Q.13. which one of the following machines is used to make curved work pieces?

(a) Panel saw (b) surface planer

(c) Spindle moulder (d) none of them (c)

Q.14. which one of the following saw blades is used for cutting laminates?

(a) Razor cut (b) universal saw blade

(c) Solid wood cross cut (d) panel saw blade (a)

Q.15. which one of the following is the table length of panel saw?

(a) 3500 mm (b) 2905 mm

(c) 3000 mm (d) none of them (c)

Q.16. which one of the following should be the time if the temperature in hot press is set to 30^0 C by using PVAC white glue?

(a) 30 min (b) 25 min

(c) 10 min (d) none of them (b)

Q.17. which one of the following should be the temperature if the time is set to 8 minutes in hot press?

(a) 30^0 C (b) 50^0 C

(c) 120^0 C (d) 80^0 C (d)

Q.18. which one of the following is the functions of scoring saw blade?

(a) It is used to perform chip free cuts (b) used to make curves

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

Q.19. which one of the following is the maximum cutting height of saw blade if the saw blade is set to 90^0?

(a) 60 mm (b) 65 mm

(c) 55 mm (d) 50 mm (b)

Q.20. which one of the following is the maximum cutting height of saw blade if the saw blade is set to 45^0?

(a) 60 mm (b) 65 mm

(c) 55 mm (d) none of them (d)

Section – B

06X05 = 30 Marks

Q.21. write down the steps to change the sanding paper of sanding costa machine.

- We can perform this operation both by keeping the machine on and by keeping the machine off.
- We would prefer to do it by keeping the machine off.
- First, we will open the door of the machine.
- We will pull down the pneumatic lever press. This will lower the belt and make the wheel loose.
- Then we remove the bottom attachment to bring the sanding paper out.
- Then we will hold the sanding paper at middle and finally bring the sanding paper out.
- now we have to put the sanding paper inside the machine.

Note-

- Pneumatic lever press should be down.
- Belt should be in contact with limit switch.

Q22. Write down all the steps to make a miter cut of 45^0 using panel saw.

Working process:-

- Make sure that the dust collector is on.
- Remove emergency switch.
- Safety should be ensured.
- Adjust the cutting blade height according to work piece.
- Set the mitre fence to the machine.
- Now set the mitre fence to $45.^0$
- Push the start button.
- Set the safety hood.
- Start your cutting or trimming.

Q.23. Write down all the important steps and points to make a flat work piece using surface planer.

- Dust collector should be on
- Make sure that the fence is set to 90^0
- Turn on the main electrical switch
- Press the start button
- Set the height of the cutter block according to work piece.
- Take the depth of cut.
- Start the trimming or grinding.
- Trim the work piece in one side and plane it.
- Now take the plane side as a reference with the fence.
- One side will become flat with reference to the fence.

Q.24. what do you understand by extraction hood in panel saw, discuss the possible consequences if you do not use it.

Extraction hood is placed at the top of machine which covers the saw blade and ensures safety to the user. The riving knife mounted protection and extraction hood allows a maximum saw blade diameter of 315 mm with a maximum cutting height of 82 mm.

If you do not use the safety hood-

- Your safety will be compromised.
- Working environment will be insecure.
- Fingers can be chopped off.
- Hand can be injured.

Q.25. why is it important to follow all the safety instructions and precautions while working on the standard machines.

It is important because:-

- It will keep you and others safe.
- Chances of accidents will be minimized.
- There will be no work place hazards.
- Working environment will be safe and secure.
- Machines will last long and be safe.
- Machine parts and tool will be safe.

Q.26. write down all the applications of hot press machine.

- It is used to press laminate with mdf.
- It is used to press laminate with particleboard.
- It is used to press veneer with ply board.
- It is used to press veneer together.
- It is used for doors.
- It is used for pressing solid wood.

Q.27. Write down the importance of riving knife.

Importance of riving knife:-

- It avoids the kick back as a result of jamming in the cutting line.
- It decreases the tension in the wood while cutting.
- It prevents contact with the rising gear rim.

Q.28. Write down the difference between main saw blade and scoring saw blade.

Main saw blade:-

- It is used for completing the whole cutting process.
- It rotates clock wise.
- It has greater diameter than scoring saw.

Scoring saw blade:-

- It is used to perform chip free cuts.
- It reduces chip out by providing 0.2 mm fine cut.
- It rotates clock wise.

Section – C

05X10 = 50 Marks

Q.29. Write down the steps to make a rebate-using spindle moulder machine.

Step- 1

- switch on the power supply of machine.
- Turn on safety button.

Step- 2

- Change the tool if required.
- Change the spindle rpm according to the tool.

Step- 3

- Adjust the height according to operation.

Step-4

- Select the piece on which we are going to make the rebate.
- Adjust all the safety guard according to operation.

Step-5

- turn off the safety button
- Switch on the machine.

Step- 6

- Start the operation and check the width and depth of rebate.
- Complete the rebate and check the dimension.

Note:-

- Wear all the safety equipment during the whole process.
- Check all locks before turning on the machine.
- Use all the safety gears.
- Check that nobody is standing behind the machine.

Q.30. Write down all the steps to change the tool on the spindle moulder.

Step-1

- we should bring all the accessories near the machine that are going to be used like Allen key set, tool set, measuring gauge or watch

Step-2.

- Switch on the machine power supply and wait for some time
- Switch on the safety button.
- Set the safety guard and the safety glass.

- Set the spindle to the maximum height.

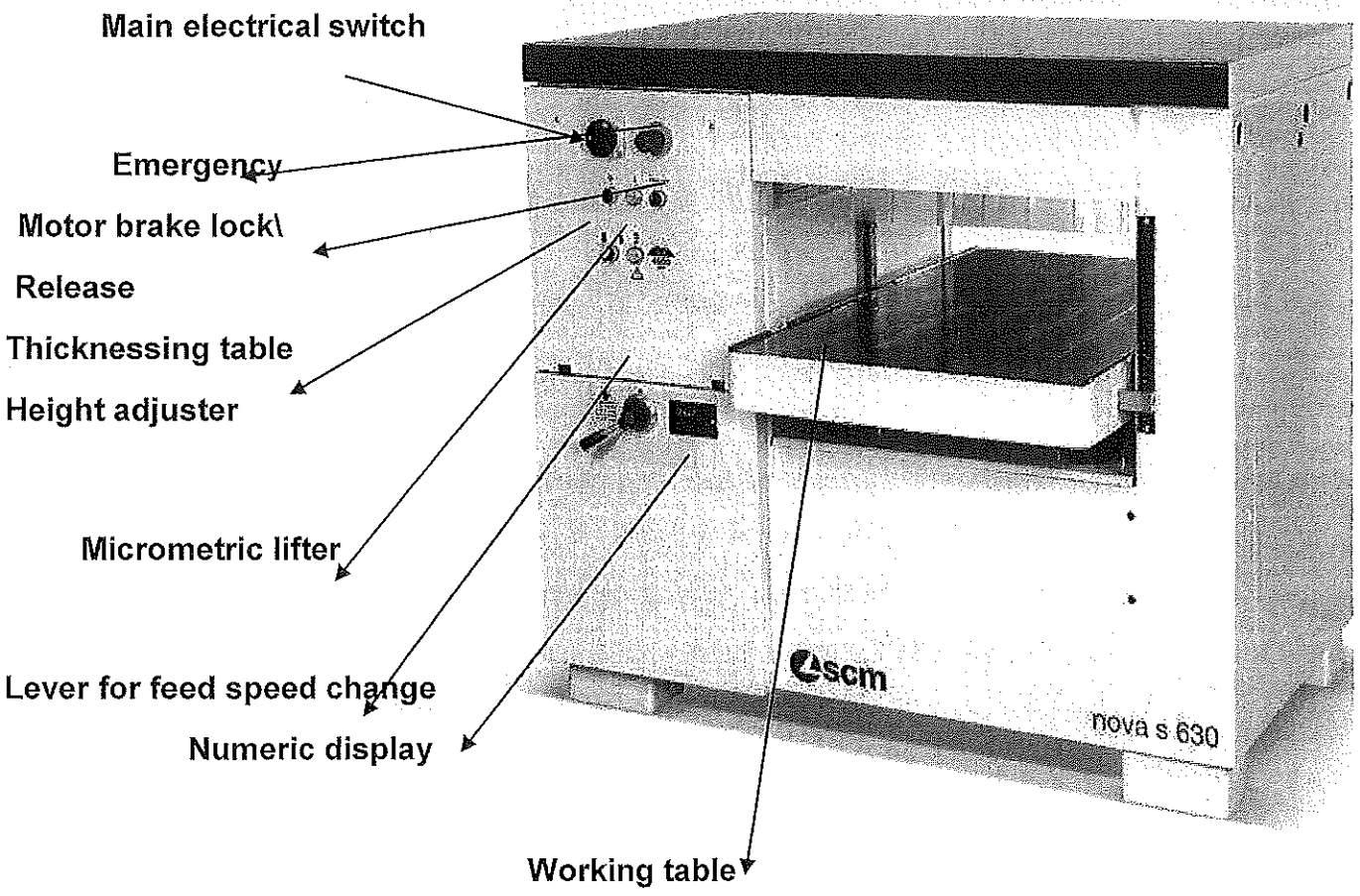
Step-3

- Press the break button placed at the bottom of the machine and lock the spindle to a fix position.
- Remove the top bridge by using Allen key of the required size.
- Take another Allen key unlock the screw of spindle and then remove all the Rings one by one.
- Remove the tool carefully and put it to its place.
- Then put a small ring on the spindle.

Step-4

- Take the tool and put on the spindle carefully.
- Replace all the rings and tight the screw on the top of spindle.
- Place all the safety gears to their position.
- Set all the measurement with the help of measurement watch.

Q.31. Draw a labelled diagram of thickness planer, highlight all the electrical buttons and write down the steps to thickness a work piece to required dimension.



- Make sure that top cover is closed.

- Make sure that the emergency button is released; otherwise turn them in the arrow direction.
- Make sure that the dust collector is on.
- Turn main switch on.
- Turn starter to star position, after some second turn it to delta position.
- To lift or to lower the thicknessing table operate on selector, the table moves at high speed to the direction indicated by the selector.
- Reach the right position with micrometric shiftments of the thicknessing table by pressing button, which will carry shiftments at low speed only upwards.
- Place the work piece to the working table.
- Machine the work piece until the required dimension is achieved.

Q.32. write down all the steps to press a laminate on a MDF of 300*300 mm.

Step 1

- arrange all the materials at one place that are required for the entire operation
- Calculate the total area of the mdf and decide the temperature and pressure according to the pressure chart.
- Apply glue to the surface of mdf both horizontally and vertically, apply glue carefully to the edges of mdf.
- Spread the laminates to the glued surface and balance their edges.

Step- 2

- Switch on the main power supply.
- Remove the emergency
- Wait until the screen reloads.
- Press all the required buttons to set the screen for work.
- Set the temperature on the screen.
- Set the pressure on the screen.
- Set the time on the screen.

Step-3

- Lower the working table of the hot press.
- Place the work piece in the working table that is to be pressed.
- Place some extra pieces on the empty space of working table so that the pressure is equally distributed.
- Press the button and move the working table upwards.
- Wait until the work piece gets pressed.

Q.33. Describe the work steps to make a rebate and counter rebate dowel connection. Mention the machine used and describe the setting.

Step-1

- Take two pieces and mark the depth and width of rebate.
- Make the triangle sign.

Step-2

- Go to the multi boring machine.
- Set the depth of drill bit
- Set the position according to the position and depth of dowel.
- Check the position of the work piece without turning on the rpm.
- Complete the drilling task.

Step-3

- Go to the spindle moulder machine.
- Set the tool, depth of cut and height according to the rebate.
- Make rebate according to the dimension.

Step-4

- Go the panel saw machine.
- Set the blade height according to the depth of rebate.
- Complete the task.

Note:-

- Follow the safety rules.
- Counter is made on panel saw because spindle moulder is dangerous for this operation.
- The safety guard and safety glass should be properly arranged while operating the spindle moulder.

- Take two pieces and mark the depth and width of rebate.
- Make the triangle sign.

Step-2

- Go to the multi boring machine.
- Set the depth of drill bit
- Set the position according to the position and depth of dowel.
- Check the position of the work piece without turning on the rpm.
- Complete the drilling task.

Step-3

- Go to the spindle moulder machine.
- Set the tool, depth of cut and height according to the rebate.
- Make rebate according to the dimension.

Step-4

- Go the panel saw machine.
- Set the blade height according to the depth of rebate.
- Complete the task.

Note:-

- Follow the safety rules.
- Counter is made on panel saw because spindle moulder is dangerous for this operation.
- The safety guard and safety glass should be properly arranged while operating the spindle moulder.

Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Carpenter Skills

B. Voc. Program, Summer Semester (2017-18)

III - Semester, End-Sem. Examination

Course Code: SCS1303 **Time: 3 Hours**

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

Instruction:

- Answer all questions from Section A, each question carries one mark.
- Answer any Six questions from Section B, each question carries five marks.
- Answer all questions from Section C, each question carries ten marks.

Section – A

20X01 = 20 Marks

Q 1. Which one of the following is the use of magnet catchers?

(A) For keeping door open (B) For keeping door close

(B) For soft closing (C) None of these

Q 2. Which one of the following fastener is used to hang shelf in the cabinet?

(A) Screw (B) Shelf support

(B) Hinges (C) None of these

Q 3. Which one of the following mechanism is used in self-closing Runner?

(A) Pneumatic dampeners (B) Hydraulic dampeners

(B) Both of these (C) None of these

Q 4. Which one of the following hinges is also known as Flus hinge?

(A) Half overlay hinge (B) Butterfly hinge

(B) Non mortise hinge (C) Full overlay hinge

Q 5. Which one of the following hinges we can use when two doors need to be installed on one partition?

(a) Full overlay hinge (b) Half Overlay Hinge

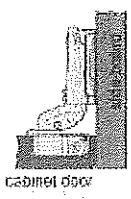
(c) Both of these (d) None of these

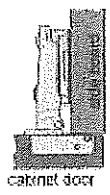
Q 6. Which one of the following value is standard distance between two holes in adjustable shelf of a cabinet?

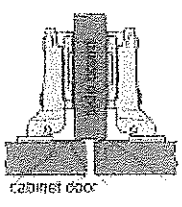
(a) 30 mm (b) 32 mm

(c) 37mm (d) 33 mm

Q 7. Which one of the following is full overlay hinge?

(A) 

(B) 

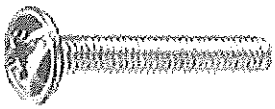
(C) 

(D) None of these

Q 8. Which one of the following screws is example of Spacer screw?

(A) 

(B) 

(C) 

(D) 

Q 9. Which one of the following joints is called Dovetail joint?

(A) The mortise hole and the tenon tongue

(B) The pins and tails have a trapezoidal shape.

(C) joint in which the members overlap

(D) None of these

Q 10. Which one of the following fittings is known as detachable connecting fittings?

(A) Dowel (B) Lamello

(C) Clamax (D) Domino

Q 11. Which one of the following hinges is mortised in to edge of the door?

(A) Half Overlay Hinge (B) Butterfly Hinge

(C) Full Overlay Hinge (D) Flush Hinge

Q 12. Which one of the following hinges is also called continious hinge?

(A) Butterfly Hinge (B) Flush Hinge

(C) Half Overlay Hinge (D) Piano Hinge

Q 13. Which one of the following components is providing relatively easy rolling movement to an object?

(A) Caster (B) Runner

(C) Hinges (D) Handles

Q 14. Which one of the following is the diameter of main hole of hinge which is going to install on the door of cabinet?

(A) 32 (B) 35

(C) 37 (D) 38

Q 15.

Q 15 Which one of the following fittings is used for 10 mm MDF sheet?

(A) P10 (B) P11

(C) P12 (D) P14

Q 16. Which one of the following handles can be install in sliding door?

(A) Concieled Handle (B) Lever Handle

(C) Both of these (D) None of these

Q 17. Which one of the following diameter is standard diameter of 32 system holes in cabinet?

(A) 5 mm (B) 4 mm

(C) 6 mm (D) 7 mm

Q 18 Which one of the following parts does not belong to Knock down fitting?

(A) Cam (B) Screw

(C) Connecting dowel (D) Socket

Q 19. Which one of the following screws is used for tear free connections without pre drilling?

(A) Chipboard Screw (B) Universal screw

(C) Self drilling screw (D) Quick mounting screw

Q 20. Which one of the following screws is used for direct mounting stone and concrete without using plastic sockets.

(A) Chipboard Screw (B) Universal screw

(C) Self drilling screw (D) Quick mounting screw

Section – B

06X05 = 30 Marks

Q 21. Describe the procedure of making 32 system hole at the sides of cabinet by using Router and Guide Rail.

Q 22. Explain work steps how to make 45^0 joint while using clamax.

Q 23. Explain Tongue & Groove joint with a neat sketch.

Q 24. What is RTA Fittings? Explain with a neat sketch.

Q 25. What are Hinges? Explain Concealed hinges with a neat sketch.

Q 26. Explain Bridle joint with a neat sketch.

Q 27. Describe Clamex fitting used in Assembly of carpentry.

Q 28. Explain Tenon & Mortise joint with a neat sketch.

Section – C

05X10 = 50 Marks

Q 29. Describe the work steps how to install Butterfly Hinges.

Q 30. Explain any five screwed connections with a aneat sketch.

Q 31. What do you mean by drawer runner? Explain any 3 types of drawer runners.

Q 32. Explain any five joining connections with a neat sketch.

Q 33. Describe the work steps how to install drawer runner.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Carpenter Skills

B. Voc. Program, Summer Semester (2017-18)

III - Semester, End-Sem. Examination

Course Code: SCS1303 **Time: 3 Hours**

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

Instruction:

- Answer all questions from Section A, each question carries one mark.
- Answer any Six questions from Section B, each question carries five marks.
- Answer all questions from Section C, each question carries ten marks.

Section – A

20X01 = 20 Marks

Q 1. Which one of the following is the use of magnet catchers?

(A) For keeping door open (B) For keeping door close

(B) For soft closing (C) None of these (B)

Q 2. Which one of the following fastener is used to hang shelf in the cabinet?

(A) Screw (B) Shelf support

(B) Hinges (C) None of these (B)

Q 3. Which one of the following mechanism is used in self-closing Runner?

(A) Pneumatic dampeners (B) Hydraulic dampeners

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

Q 4. Which one of the following hinge is also known as Flus hinge?

(A) Half overlay hinge (B) Butterfly hinge

(B) Non mortise hinge (C) Full overlay hinge (B)

Q 5. Which one of the following hinges we can use when two doors need to be installed on one partition?

(A) Full overlay hinge (B) Half Overlay Hinge

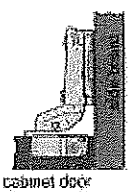
(C) Both of these (D) None of these (B)

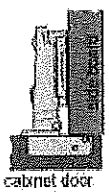
Q 6. Which one of the following value is standard distance between two holes in adjustable shelf of a cabinet?

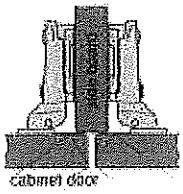
(A) 30 mm (B) 32 mm

(C) 37mm (D) 33 mm (B)

Q 7. Which one of the following is full overlay hinge?

(A) 

(B) 

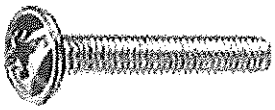
(C) 

(D) None of these (B)

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Q 8. Which one of the following screw is example of Spacer screw?

(A)  (B) 

(C)  (D)  (B)

Q 9. Which one of the following joint is called Dovetail joint?

(A) The mortise hole and the tenon tongue

(B) The pins and tails have a trapezoidal shape.

(C) joint in which the members overlap

(D) None of these (B)

Q 10. Which one of the following fitting is known as detachable connecting fittings?

(A) Dowel (B) Lamello

(C) Clamax (D) Domino (C)

Q 11. Which one of the following hinge is mortised in to edge of the door?

(A) Half Overlay Hinge (B) Butterfly Hinge

(C) Full Overlay Hinge (D) Flush Hinge (B)

Q 12. Which one of the following hinge is also called continious hinge?

(A) Butterfly Hinge (B) Flush Hinge

(C) Half Overlay Hinge (D) Piano Hinge (D)

Q 13. Which one of the following component is providing relatively easy rolling movement to an object?

(A) Caster (B) Runner

(C) Hinges (D) Handles (A)

Q 14. Which one of the following is diameter of main hole of hinge which is going to install on the door of cabinet?

(A) 32 (B) 35

(C) 37 (D) 38 (B)

Q 15.

Q 15 Which one of the following fitting is used for 10 mm MDF sheet?

(A) P10 (B) P11

(C) P12 (D) P14 (A)

Q 16. Which one of the following handle can be install in sliding door?

(A) Concieled Handle (B) Lever Handle

(C) Both of these (D) None of these (C)

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Q 17. Which one of the following diameter is standard diameter of 32 system holes in cabinet?

(A) 5 mm (B) 4 mm

(C) 6 mm (D) 7 mm (A)

Q 18 Which one of the following part does not belong to Knock down fitting?

(A) Cam (B) Screw

(C) Connecting dowel (D) Socket (B)

Q 19. Which one of the following screw is used for tear free connections without pre drilling?

(A) Chipboard Screw (B) Universal screw

(C) Self drilling screw (D) Quick mounting screw (C)

Q 20. Which one of the following screw is used for direct mounting stone and concrete without using plastic sockets.

(A) Chipboard Screw (B) Universal screw

(C) Self drilling screw (D) Quick mounting screw (D)

Section – B

06X05 = 30 Marks

Q 21. Describe the procedure of making 32 system hole at the sides of cabinet by using Router and Guide Rail.

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

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

Q 22. Explain work steps how to make 45^0 joint while using clamax.

Ans. – Making climax at 45^0 by using zeta P2 following steps used:

1. To make groove at 45^0 we need to use spacer in machine.
2. Set the reference plane were machine supposed to work.
3. In bellow gauge set depth Max. and in upper gauge set depth on P15.
4. Switch on machine and put along reference plan and set it on line.
5. Push machine toward the piece carefully it should not move while making groove

Q 23. Explain Tongue & Groove joint with a neat sketch.

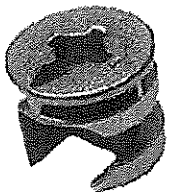
Ans. Tongue(Comb) and groove joints –

- Tongue and groove joints allow two flat pieces to be joined strongly together to make a single flat surface.
- Tongue and groove boards were also used for sheathing buildings and to construct wall formwork.
- Groove must be deeper then tongue to place the adhesive.
- Advantage – Large adhesive surface area
- Disadvantage – Complex production

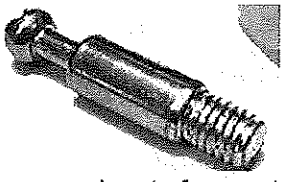
Q 24. What is RTA Fittings? Explain with a neat sketch.

Ans. Ready To Assembly fitting (RTA) - It is ready to assemble fitting which is also known as knock down fitting, it become with the assembly of three parts,

- **Cam** - The disk fits into a recess in the first side of the cabinet. It rotates by inserting a screwdriver into the slot in its side. The shaft is screwed into the second side of the cabinet. The collar of the shaft is passed through the hole in the second slot in the disk. When the disk rotates the shaft is locked in position. This keeps both sides of the cabinet locked together.



- **Connecting Screw** – Connecting screw is a cylindrical screw which one end inserts in the socket and another and inserts in the cam. It is used to connect joint and to give strength to it.



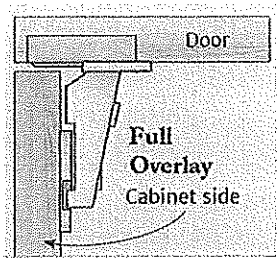
- **Socket** – Socket is assembling in second part of assembly. It is used to provide grip to the connecting screw.

Q 25. What are Hinges? Explain Concealed hinges with a neat sketch.

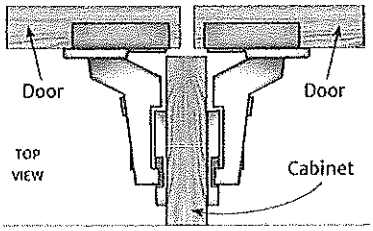
Ans. Hinges - A hinge is a mechanical bearing that connects two solid objects, typically allowing only a limited angle of rotation between them. Two objects connected by an ideal hinge rotate relative to each other about a fixed axis of rotation: all other translations or rotations being prevented, and thus a hinge has one degree of freedom. Hinges may be made of flexible material or of moving components. In biology, many joints function as hinges like the elbow joint.

- **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

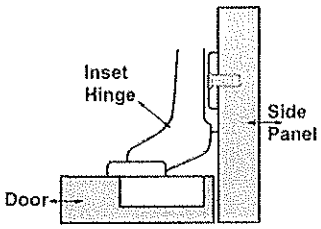
BHARTIYA SKILL DEVELOPMENT UNIVERSITY



- **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.



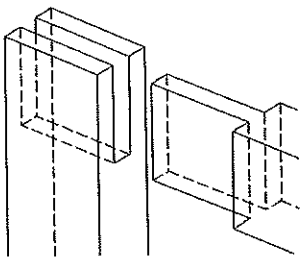
- **Inset hinge** - This hinge is the type of Concealed hinge, inset doors fit entirely within the cabinet opening and sit flush with the cabinet sides or face frames when in the closed position

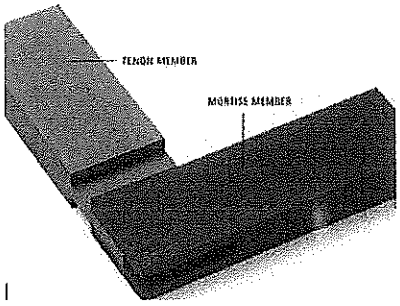


Q 26. Explain Bridle joint with a neat sketch.

Ans. A bridle joint is a woodworking joint, similar to a mortise and Tenon, in that a Tenon is cut on the end of one member and a mortise is cut into the other to accept it.

- The difference feature is that the Tenon and the mortise are cut to the full width of the Tenon member.
- The corner bridle joint joins two members at their respective ends, forming a corner.
- The bridle joint is very popular in workbench construction.
- This joint is very decorative and very stable for window frames
- Advantage – Very good strength in compression
  - Simpler alternative to the mortise and Tenon joint cause of no need mortise machine in narrow frame.
- Disadvantage – Outer visibility of joints
- If any gap remains in construction, then mechanical fastener or pin is often required



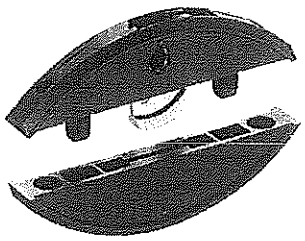


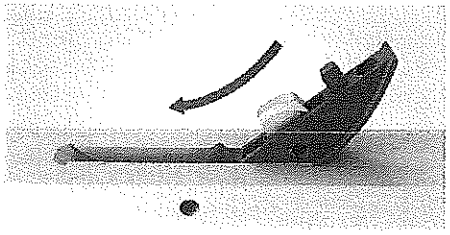
BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Q 27. Describe Clamex fitting used in Assembly of carpentry.

Ans. Clamax – These are the detachable connecting fittings.

- Clamex P is a detachable furniture fitting on the basis of the P-System is connected with a lever.
- Clamex P is not required glue
- Practically wear-free knock down fitting
- General sizes of Biscuits are –
  i. Clamex P 10 – 52 x 19 x 9.7 mm
  ii. Lamello 10 – 66 x 27 x 9.7 mm

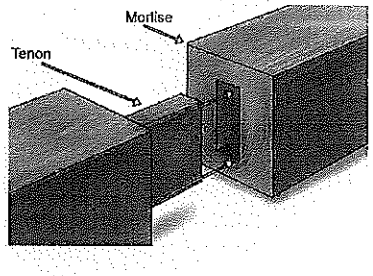




Q 28. Explain Tenon & Mortise joint with a neat sketch.

Ans. Tenon and mortise joints –

- A mortise and tenon joint is a type of joint that connects two pieces of wood at an angle of 90
- Mortise and tenon are two components: the mortise hole and the tenon tongue.
- The tenon is cut to fit the mortise hole exactly and usually has shoulders that seat when the joint fully enters the mortise hole. The joint may be glued, pinned, or wedged to lock it in place.
- Advantage – Very good strength for heavy doors and gates
  - It is both simple and strong
- Disadvantage – Complex production while mortise hole



Section – C

05X10 = 50 Marks

Q 29. Describe the work steps how to install Butterfly Hinges.

Ans.

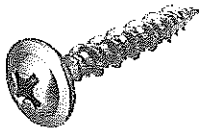
1. First we have to select the mating parts by hinges and accordingly no of hinges we have to decide.
2. Mark the dimension on work piece according to the hinge plate thickness, width and length on door as well as frame.
3. Measure the knuckle & hinge plate thickness and make routing according to that 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.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Q 30. Explain any five screwed connections with a neat sketch.

Ans.

1. **Universal Screw** – For the tighten of chipboards and solid wood materials.
   - Required Pre drilling for screw mounting.

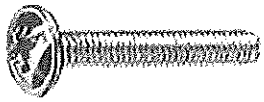


2. **Chipboard Screws** – For screw connections of chipboard, they had special sharp thread.
   - Required Pre drilling for screw mounting.
   - They had hard bonding by wood by sharp threads

3. **Self-Drilling/Self-Tapping Screws** – For tear free connections without pre drilling and countersinking.
   - They had taper shape in head as well as tip.
   - By head they had pleasure equal surface and by tip they are able to digging in wood.

4. **Corner joint screw**– For the corner joint of carcasses or cabinets.

5. Cabinet Handle Screw– For the fastening of furniture handles.
   - For over a parallel metal screw thread (M)



Q 31. What do you mean by drawer runner? Explain any 3 types of drawer runners.

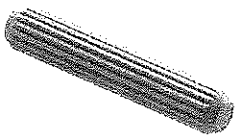
1. **Ans.** Drawer runners are small devices that are used to facilitate fluid motion during opening and closing.
   - The simplest drawer runners had a small set of wheels that are attached to the external sides of the drawer.
   - Within the base cabinet frame where the drawer is set, a small guiding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

Q 32. Explain any five joining connections with a neat sketch.

Ans.

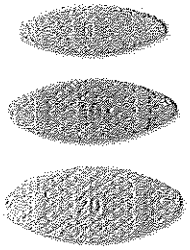
1. **Nails** - In woodworking and construction, a nail is a pin-shaped object of metal or wood, which is used as a fastener, as a peg to hang something, or sometimes as a decoration.
   - Generally, nails have a sharp point on one end and a flattened head on the other, but headless nails are available.

2. **Wooden Dowels** - A dowel is a cylindrical rod, usually made by wood. In its original manufactured form, a dowel is called a dowel rod, are often cut into short lengths called dowel pins.

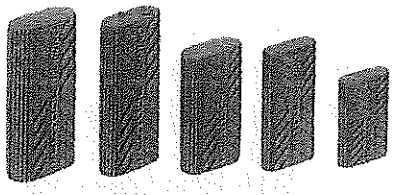


- Dowels are commonly used as structural reinforcements in cabinet making and in numerous other applications, as furniture shelf supports etc.
- General sizes of Pre-cut dowels are usually either 6mm x 30mm, 8mm or 10mm x 40mm.

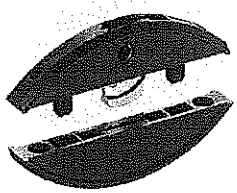
3. **Lamello biscuits** - A biscuit joiner is a wood working tool used to join two pieces of wood together. A biscuit joiner uses a small circular saw blade to cut a crescent-shaped hole (called the mouth) in the opposite edges of two pieces of wood or wood composite panels.
   - They have size accuracy, optimum glue distribution and form stability & generally made of beech wood provides quick and simple application, stable and high-quality connections.
   - An oval-shaped, highly dried and compressed wooden biscuit is covered with glue, or glue is applied in the slot. The biscuit is immediately placed in the slot, and the two boards are clamped together.
   - The wet glue expands the biscuit, further improving the bond.
   - General sizes of Biscuits are –
     i. Lamello 0 – 47 x 15 x 4 mm
     ii. Lamello 10 – 53 x 19 x 4 mm
     iii. Lamello 20 – 56 x 23 x 4 mm



4. **Domino Dowels** – It is working as loose tenon joinery system. Stronger than a biscuit joiner.
   - General sizes of Biscuits are –
     i. Domino 4 x 20 mm
     ii. Domino 5 x 30 mm
     iii. Domino 6 x 40 mm
     iv. Domino 8 x 40 mm
     v. Domino 8 x 50 mm
     vi. Domino 10 x 50 mm



5. **Clamax** – These are the detachable connecting fittings.
   - Clamex P is a detachable furniture fitting on the basis of the P-System is connected with a lever.
   - Clamex P is not required glue
   - Practically wear-free knock down fitting
   - General sizes of Biscuits are –
     i. Clamex P 10 – 52 x 19 x 9.7 mm
     ii. Lamello 10 – 66 x 27 x 9.7 mm



Q 33. Describe the work steps how to install drawer runner.

Ans.

1. First collect all tools that are required like screw driver, Cordless drill, screw according to the cabinet wall and measuring instruments.
2. Take the measurement of the cabinet and drawer.
3. According to the measurement of the drawer and cabinet select drawer runner. Runner length must be shorter than the length of drawer.
4. Bearing runner are generally attached to the bottom of drawer because it gives more load capacity.

5. Marking on cabinet walls and attach the half part of runner with screw on wall.

6. Now start marking other half part of the runner, while marking maintain the distance of runner from front part.

7. Attach the other half part on bottom of drawer runner with screw.

8. After that insert runner inside with force, after complete assembly we can adjust the height of rawer with the help of screws.

Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Carpenter Skills

B. Voc. Program, Summer Semester (2017-18)

III - Semester, End-Sem. Examination

Course Code: SCS1304 **Time: 3 Hours**

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

Instruction:

- Answer all questions from Section A, each question carries one mark.
- Answer any Six questions from Section B, each question carries five marks.
- Answer all questions from Section C, each question carries ten marks.

Section – A

Q 1. 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 2. Which one of the following is the value of tan 45?

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

Q 3. 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 4. How many inches are there in 1.5 meter?

(A)60.80 inch (B)58.9 inch (C) 59.05 inch (D)61 inch

Q 5. Which thickness is not available in case of MDF board.

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

Q 6. Which one of the following is the Conversion Scientific notation conversion of 0.00001?

(A)10^5 (B)10^{-5} (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 7% of 50?

(A) 3.5 (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 one of the following is the value of $20/20^5$?

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

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 $10^2/10^4$?

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

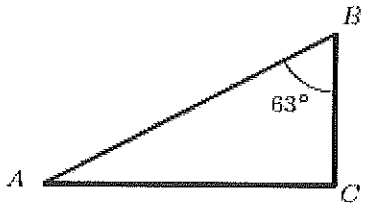
Q.16. What is the measure in degrees of the angle A = 7π/6?

(a) 150° (b) 210° (c) 100° (d) 120°

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

(a) 17° (b) 27°

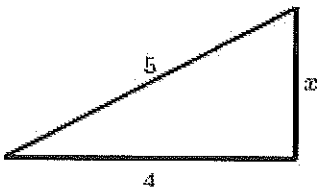
(c) 17° (d) 90°



Q.18. What is the value of x in the figure given 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/3?

(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 400 gm.

Q.22. Calculate $\tan(270°+a)$.

Q.23. Find out the value of $\sin^2(33°) + \cos^2(33°)$

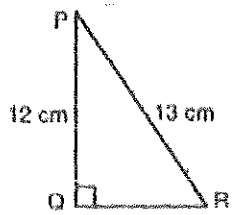
BHARTIYA SKILL DEVELOPMENT UNIVERSITY

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 8 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 16 mm with increment of 10% in thickness as of original thickness?

Section – C

Q.29. A cabinet having total height of 2000mm having 4 shelfs inside with equal space. Calculate distance between shelfs when whole cabinet is made by 16 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) $\cot^2\theta$

Q31 Calculate $sin945^\circ$

Q 32. Ram purchased a table in 4600 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

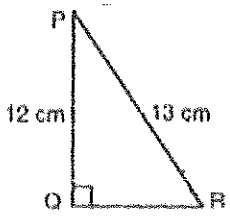
BHARTIYA SKILL DEVELOPMENT UNIVERSITY

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 8 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 16 mm with increment of 10% in thickness as of original thickness?

Section – C

Q.29. A cabinet having total height of 2000mm having 4 shelfs inside with equal space. Calculate distance between shelfs when whole cabinet is made by 16 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) $\cot^2\theta$

Q31 Calculate $sin945^\circ$

Q 32. Ram purchased a table in 4600 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

Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Carpenter Skills

B. Voc. Program, Summer (2017-18)

III Semester, End-Sem. Examination

Course Code: SCS1304 **Time: 3 Hours**

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

Instruction:

1. Answer all question from section A, each question carries one marks.
2. Answer any six question 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 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 2. Which one of the following is the value of tan 45?

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

Q 3. 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 4. How many inches are there in 1.5 meter?

(A)60.80 inch (B)58.9 inch (C) 59.05 inch (D)61 inch **(C)**

Q 5. Which thickness is not available in case of MDF board.

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

Q 6. Which one of the following is the Conversion Scientific notation conversion of 0.00001?

(A)10^5 (B)10^{-5} (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 7% of 50?

(A) 3.5 (B) 7.5 (C) 3 (D) 7 **(A)**

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

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 one of the following is the value of $20/20^5$?

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

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 $10^2/10^4$?

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

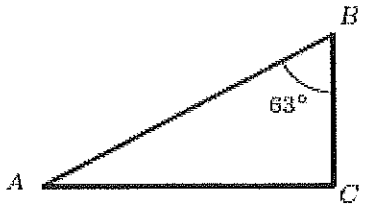
Q.16. What is the measure in degrees of the angle A = 7π/6?

(a) 150° (b) 210° (c) 100° (d) 120°

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

(a) 17° (b) 27°

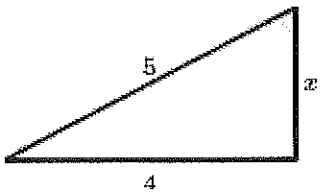
(c) 17° (d) 90°
(b)



Q.18. What is the value of x in the figure given 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/3?

(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 400 gm.

Ans. 2 gm/mm^3

Q.22. Calculate tan(270°+α).

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

Q.23. Find out the value of $\sin^2(33°) + \cos^2(33°)$

Ans. 1

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

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

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

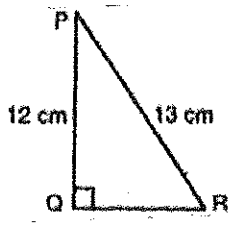
$\sin75°\sin15°=\sin(90°-15°)=\cos15°\sin15°=12sin30_\circ=14$

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 13

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 16 mm with increment of 10% in thickness as of original thickness?

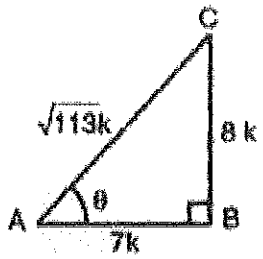
Ans. 0.1

Q.29. A cabinet having total height of 2000mm having 4 shelfs inside with equal space. Calculate distance between shelfs when whole cabinet is made by 16 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:

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

$sin(225_\circ+2*360_\circ)\sin(225_\circ+2*360_\circ) = sin225_\circ\sin225_\circ =$

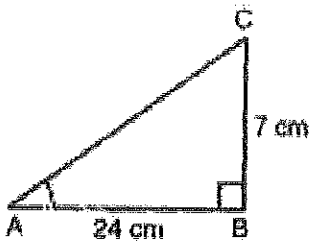
$sin(225_\circ-360_\circ)\sin(225_\circ-360_\circ) = sin(-135_\circ)\sin(-135_\circ) = -sin135_\circ-\sin135_\circ = -$

Q 32. Ram purchased a table in 4600 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. **Q 30 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 school

B. Voc. Program, Summer/Winter Semester (2017-18)

3rd Semester, End-Sem. Examination

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

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

Instruction:

- Answer all questions from Section A, each question carries one mark.
- Answer any Six questions from Section B, each question carries five marks.
- 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 What is the main principle of operation of Homag beam saw HPP 130?

(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 statement is not true of applications of machine control system EC10+ in Edge bander?

(a) Units can be pre-selected.

(b) Units can be switched ON.

(c) Program cannot be stored & retrieved.

(d) Operating parameters can be set (e.g.) glue unit temperature.

Q.4.What is the purpose of SPD in Homag beam saw?

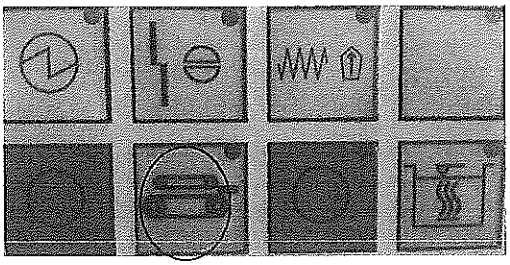
(a) For sawing purpose.

(b) For transporting the work piece.

(c) For aligning the work piece.

(d) For positioning the work piece.

Q.5.With reference to the operating block, if the light of the circled key is lit, what does it indicate?



(a) Feed not ON

(b) Line entry / no work piece.

(c) Work piece transport roller malfunction.

(d) Invalid temperature setting

Q.6.What setting can you make with this counter in Homag Edge banding machine?

(a) Edge banding material thickness

(b) Edge banding material length

(c) Work piece thickness

(d) Work piece length.

Q.7 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.8.Assume if one of the post-pressure rollers 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.9. 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.10. Which of the following is the saw blade projection of beam saw HPP 130?

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

Q.11. 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.12.Which one of the following is the part of a panel with defined dimension in Homag beam saw HPP130?

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

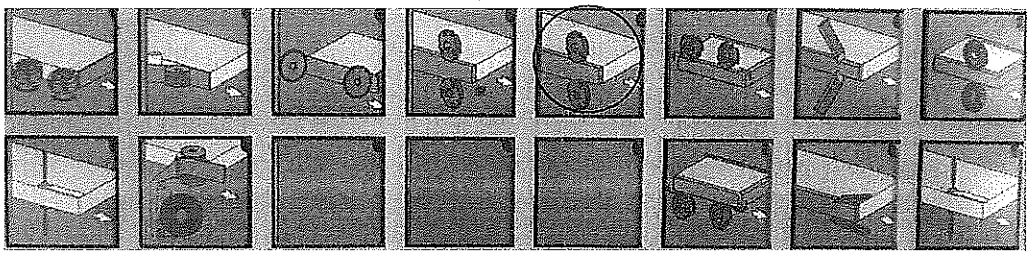
Q.13.Which one of the following is the maximum working dimensions of a work piece in Homag Beam saw HPP 130?

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

Q.14 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.15 With reference to the pre-selection block, if the circled key is pressed, what does it indicate?



(a) Flat trimming unit selection (b) Flush trimming unit selection

(c) End trimming unit selection (d) Edge rounding

Q.16 Which one of the following is the function of buffing unit in Homag Edge banding NKR 782?

(a) Clean the edges (b) Polish the edges

(c) Removes extra material (d) Makes a profile

Q.17 Which one of the following surfaces is possible to operate with the CNC router?

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

Q.18 Which one of the following glue types is used in the Edge banding machine?

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

Q.19 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.20 Which one of the following materials can't be cut on the beam saw?

(a) MDF (b) Laminated MDF

(c) Glass (d) Solid wood panel

Section – B

06X05 = 30 Marks

Q.21 Describe the main principle of operation of HPP 130 and the software used.

Q.22 What does the CNC stands for?

Q.23 Identify the main components of homag CNC Beam saw HPP 130 and describes their functions.

Q.24 Explain the working of suction cup in Homag CNC PTP 160.

Q.25 Identify the buttons and switches on the control panel and state their purpose in CNC Beam saw.

Q.26 List the maximum edge banding dimensions of a work piece.

Q.27.Why edge banding is required?

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Q.28 Explain the following terms:

(i) Trim cut/waste part

(ii) Part

(iii) Strips

(iv) Offcut

(v) Processed part

Section – C

05X10 = 50 Marks

Q.29 Describe the edge banding stages.

Q.30 State the purpose of machine control EC10+ unit. Identify the keys on the control panel and state their functions in Edge banding machine.

Q.31 Explain all the component of Homag CNC router PTP 160.

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

Q.33 How does the pressure beam and program fence in homag beam saw HPP 130 work?

Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Carpenter school

B. Voc. Program, Summer/Winter Semester (2017-18)

3rd Semester, End-Sem. Examination

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

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

Section – A

20X01 = 20 Marks

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

(a)Work piece Ans.(a)

(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 What is the main principle of operation of Homag beam saw HPP 130?

(a)Saw carriage can travel partial/full distance Ans.(d)

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

(c)CNC controlled operation.

(d)All the above.

Q.3 Which statement is not true of applications of machine control system EC10+ in Edge bander?

(a) Units can be pre-selected. Ans.(c)

(b)Units can be switched ON.

(c)Program cannot be stored & retrieved.

(d)Operating parameters can be set (e.g.) glue unit temperature.

Q.4.What is the purpose of SPD in homage beam saw?

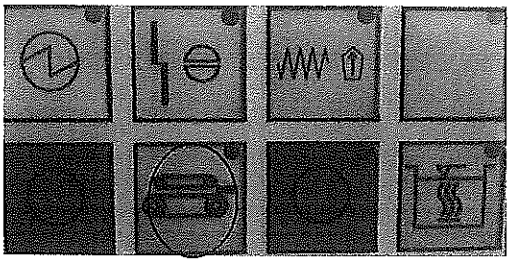
(a)For sawing purpose. Ans.(c)

(b)For transporting the work piece.

(c)For aligning the work piece.

(d)For positioning the work piece.

Q.5.With reference to the operating block, if the light of the circled key is lit, what does it indicate? Ans.(b)



(a) Feed not ON (b) line entry / no work piece.

(c) Work piece transport roller malfunction. (d) Invalid temperature setting

Q.6.What setting can you make with this counter in Edge banding machine? Ans.(c)

(a) Edge banding material thickness (b)Edge banding material length

(c)Work piece thickness (d)work piece length.

Q.7 What function does the clipping unit perform and when in Edge banding machine? Ans.()

(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.8.Assume that the one of the post-pressure roller does not function. What can happen in Edge banding machine? Ans.(d)

(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.9. Which one of the following is the size of main saw blade of Homag beam saw HPP 130? Ans.(a)

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

Q.10. Which of the following is the saw blade projection of beam saw HPP 130?

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

Q.11. What is the compressed air pressure consumption in the homag CNC beam saw HPP 130? Ans.(b)

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

Q.12.Which one of the following is the part of a panel with defined dimension in Homag beam saw HPP130? Ans.(b)

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

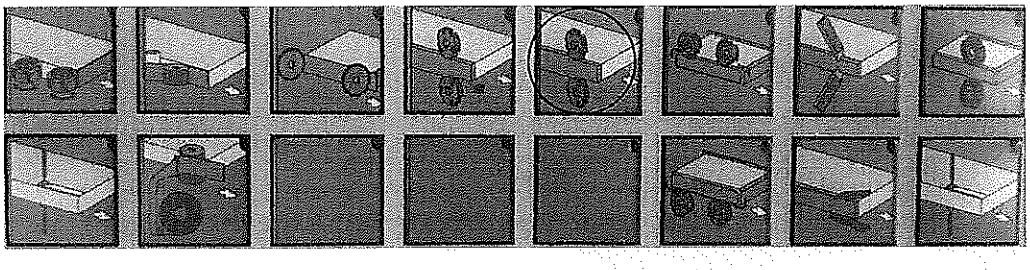
Q.13.Which one of the following is the maximum working dimensions of a work piece in Homag Beam saw HPP 130? Ans.(c)

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

Q.14 Which one of the following is the diameter of the grooving saw in Homag CNC router PTP 160? Ans.(b)

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

Q.15 With reference to the pre-selection block, if the circled key is pressed, what does it indicate? Ans.(a)



(a) Flat trimming unit selection (b) Flush trimming unit selection

(c) End trimming unit selection (d) Edge rounding

Q.16 Which one of the following is the function of buffing unit in Homag Edge banding NKR 782? Ans.(b)

(a) Clean the edges (b)Polish the edges

(c) Removes extra material (d)Makes a profile

Q.17 Which one of the following surfaces is possible to operate with the CNC router? Ans.(d)

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

Q.18 Which one of the following glue types is used in the Edge banding machine?

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

Q.19 Which one of the following is a property of the pre-milling Unit/aggregate in Edge banding machine? Ans.(a)

(a) Trim the edge (b) Cut the length

(c) Clean extra material (d) Rounding the edges

Q.20 Which one of the following material can't be cut on the beam saw? Ans.(c)

(a) MDF (b) Laminated MDF

(c) Glass (d) Solid wood panel

Section – B

06X05 = 30 Marks

Q.21 Describe the main principle of operation of HPP 130 and the software used.

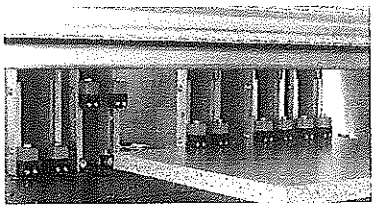
Ans. The main principle of operation of HPP 130 is cut a panel in length and width wise. There are various types of mode of operation to cut a panel. The controller software used is basic cadmatic 4 and the basic software is cadmatic 4. Post forming, Labelling, additional clamping, optimization are optional features.HPP 130 is used to cut all types of panel boards like particle board, ply board, Mdf , block board.

Q.22 What does the CNC stands for?

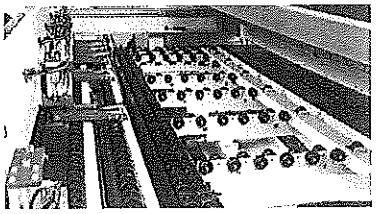
Ans. CNC means **Computer Numerical Control**. This means a computer convert the design produced by Computer Aided Design software into numbers. The numbers can be considered to be the coordinates of a graph and they control the movement of the cutter. In this way the computer controls the cutting and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

Q.23 Identify the main components of homag CNC Beam saw HPP 130 and describes their functions.

Ans. (1)Pressure beam:

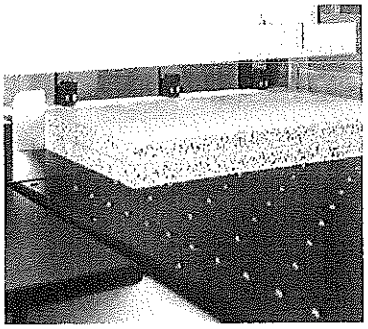


(i)Clamps:
To hold single panel or books of panels in position for Cutting.

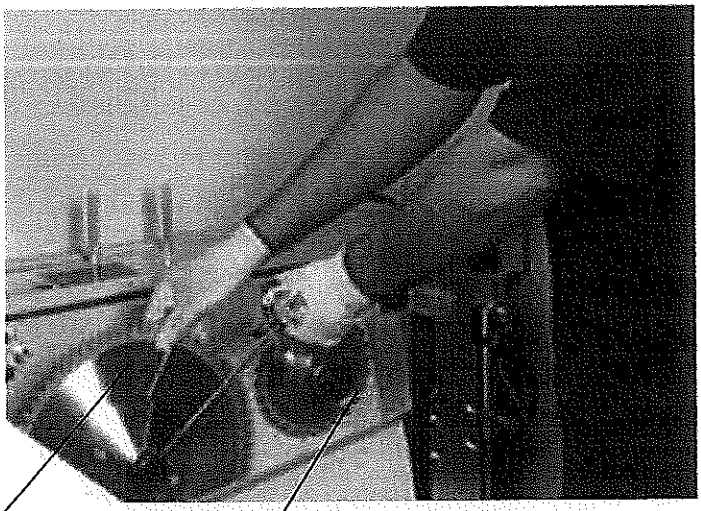


(ii) Program fence:
To transport and position the workpiece for sawing.

(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.

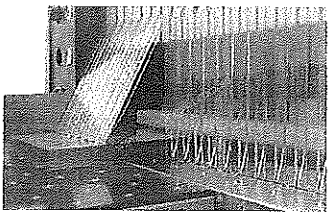


2. Saw Carriage:
Saw carriage holds the main saw and scoring saw. Main saw is used to cut and scoring saw to avoid chip out at the bottom surface of pre-lam boards.



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.



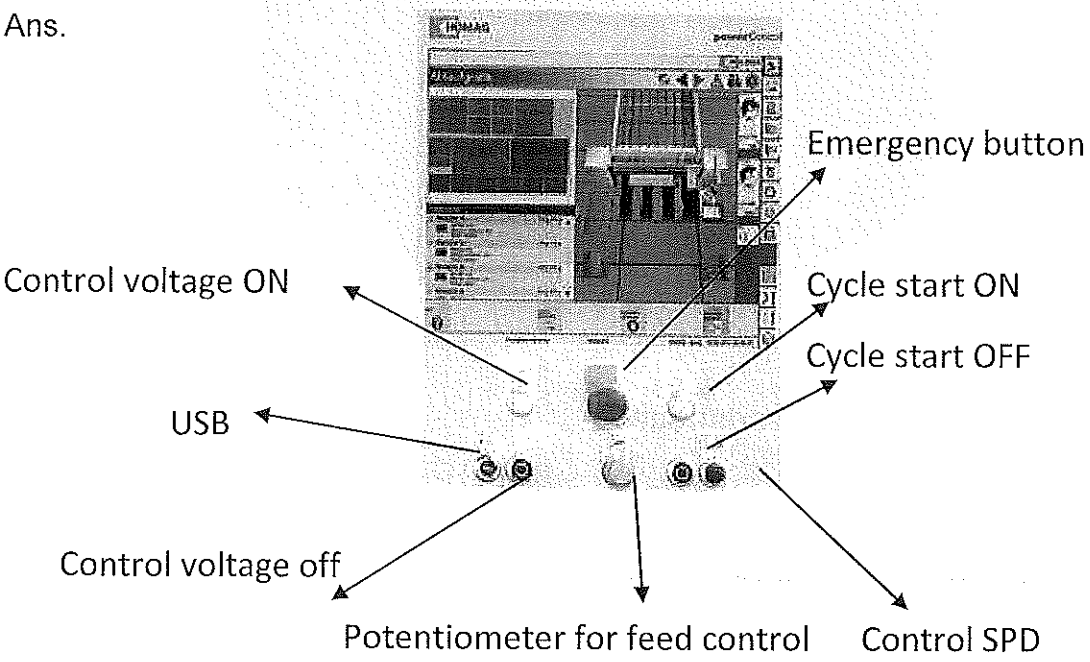
4. Air cushion table:
For the movement of panels easily by hand. A fan is connected under the first limb of air table.

Q.24 Explain the working of suction cup in Homag CNC PTP 160.

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 Identify the buttons and switches on the control panel and state their purpose in CNC Beam saw.

Ans.



Control voltage ON: To switch on the machine.

Emergency off: To stop for emergency purpose.

Control voltage Off: Except cadmatic window, all machine functions stops.

Start program: when cutting against a fixed position this runs program fence to appointed position and starts production. Start program button for producing cutting patterns if buttons is held PRF will move backwards until button is released.

Cycle start ON: Saw starts cuttings process when cutting against a fixed position or respectively simulates cutting process for cutting pattern simulation.

USB: USB slot for USB memory stick.

Q.26 List the maximum edge banding dimensions of a work piece.

Ans. The length of the edge band material (PVC Tape or wood lipping) should be plus (+) by 40mm than the length of the workpiece.The width of the edge band material should be plus (+) by 4mm than the thickness of the workpiece.

Q.27.Why edge banding is required?

Ans. 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 the following terms:

(i)Trim cut/waste part

Ans. 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.

(ii)Part

Ans. Part of a panel with defined dimensions.

(iii)Strips

Ans. Product after panel has been cut up lengthwise. Strip then only has to be cut crosswise.

(iv)Offcut

Ans. Section of a panel that can be used later as a raw panel for further cutting patterns.

(v)Processed part

Ans. Part that has to be cut again after veneering or edging.

Section – C

05X10 = 50 Marks

Q.29 Describe the edge banding stages.

Ans.

Glue application unit
Applies glue to workpiece

↓

Clipping unit
Clips the tape at workpiece trailing edge

↓

Pressure zone
Presses edge banding tape onto workpiece

↓

End –trimming unit
Chamfer/straight trims
Tape overhang at leading
& trailing edges

↓

Flush trimming unit
Trims top and bottom tape overhang

↓

Contour unit
Adapts tape to work piece
shape and Chamfers/profiles corners

↓

Scraping unit
Removes trimming marks on rough-trimmed edges

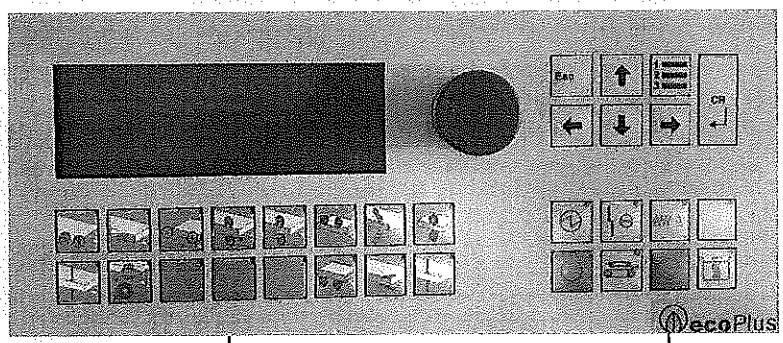
Buffing unit
Polish the edges

Q.30 State the purpose of machine control EC10+ unit.

Identify the keys on the

control panel and state their functions in Edge banding machine.

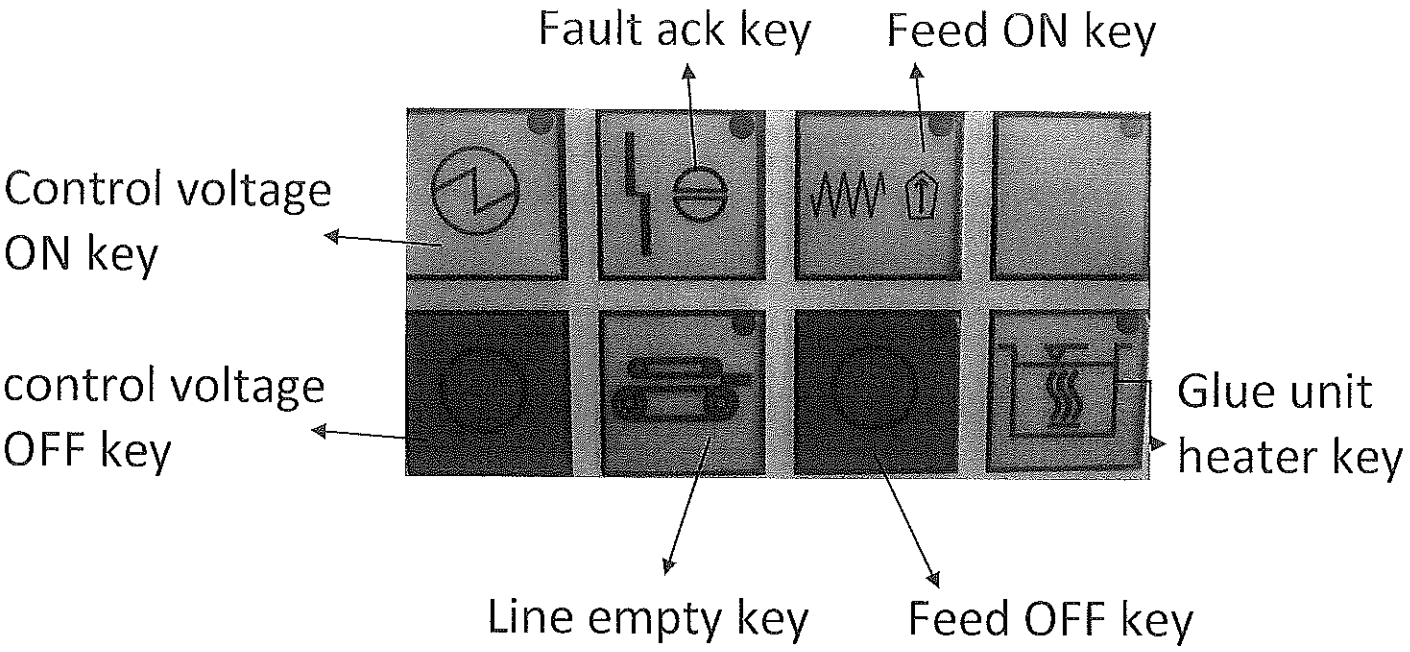
Ans.



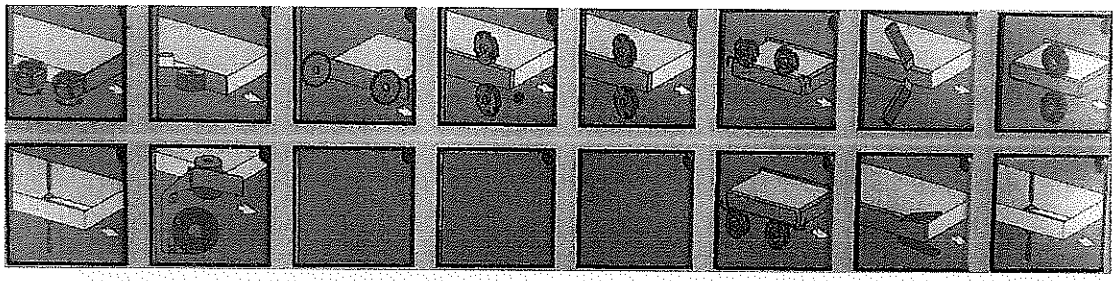
Unit pre-selection block

Operating block

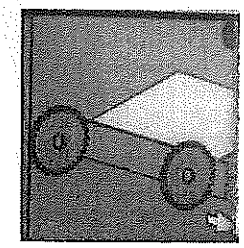
1. **Operating block (close up view)**



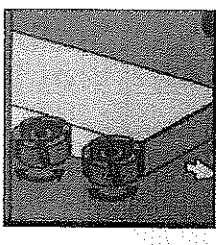
2. Unit Pre -selection Block (Close up view)



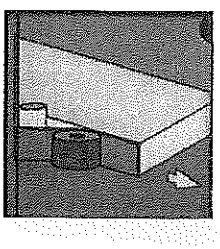
(i) Trimming unit key



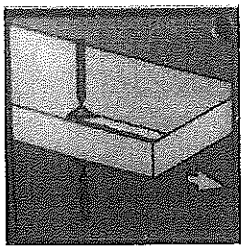
(ii) Transport roller ON/OFF key



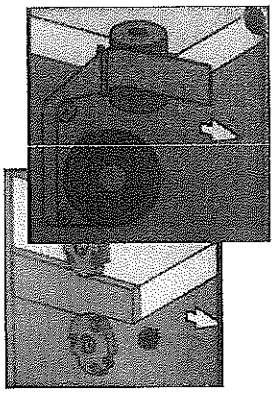
(iii)End trimming unit selection



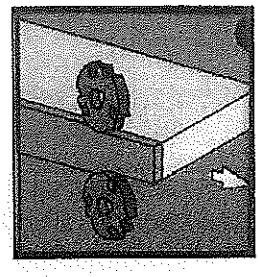
(iv)Flush trimming unit selection



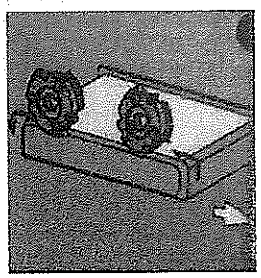
(v) Flat trimming unit selection



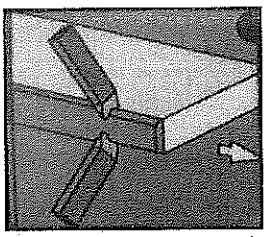
(vi)Edge rounding(upside)



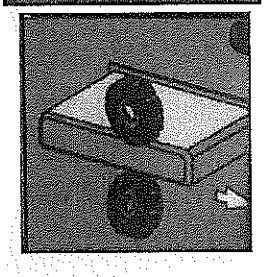
(vii)Scrapping unit



(viii)Buffing unit



(ix)Cleaning agent



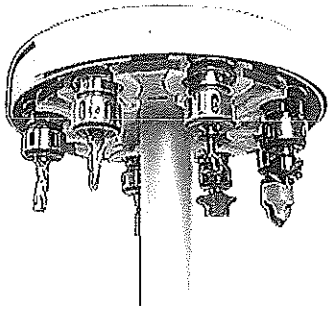
(x)Clipping unit selection key

Q.31 Explain all the component of Homag CNC router PTP 160.

Ans.

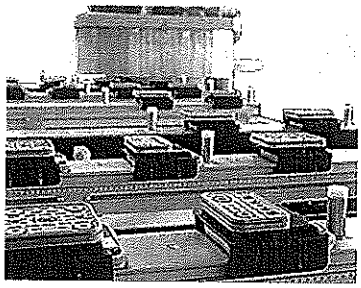
Multi Tool Changer

8-fold tool changer moving in X-direction



2 Field & 4 Field Operation

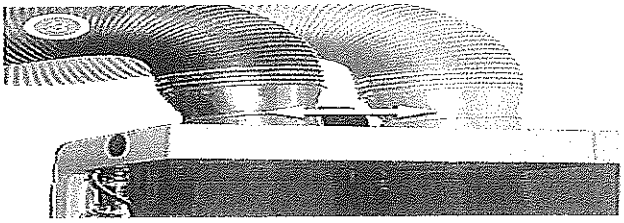
Second row of stops and 20 vacuum cups standard are the basis for 4-field processing



Controlled Dust Extraction Channel

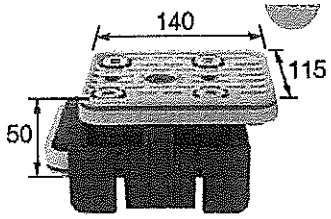
The moveable channel realizes a very efficient dust extraction – active where it is needed

BHARTIYA SKILL DEVELOPMENT UNIVERSITY



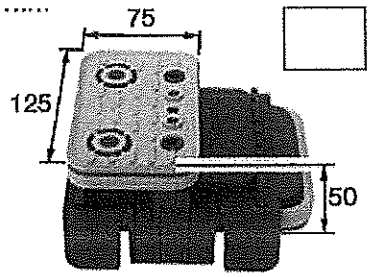
16 Vacuum Cups

Suction pads for wood handling are particularly suited for handling of work-pieces in wood processing, such as furniture parts, floorboards or even particle board.



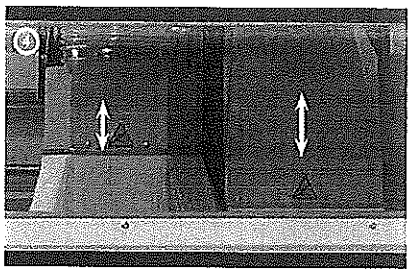
4 Narrow Vacuum Cups

The vacuum blocks are pre-fixed with the aid of the consoles in order to prevent them from moving during handling of the work-piece.



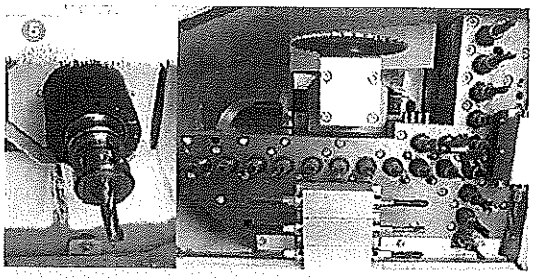
2 CNC Controlled Z-axes Configuration

Weight distribution of the mass (processing aggregates) to the two Z-axes more stability, higher processing quality



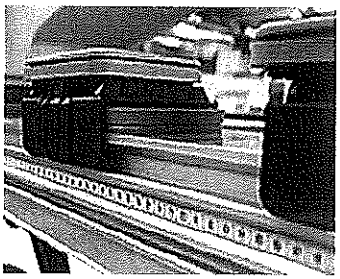
Configuration

- Weight distribution of the mass (processing aggregates) to the two Z-axes more stability.
- 21 vertical drilling spindles
- 8 horizontal drilling spindles
- 1 grooving saw Ø 125 mm (0° / 90°)



K Table

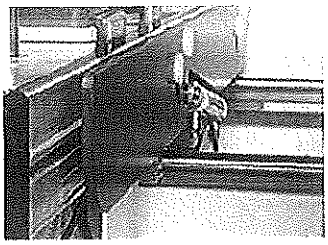
Tubeless vacuum clamping system



Workpiece Feeding Rail

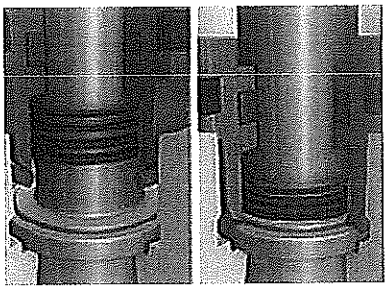
4 solid feeding rails to ease»sheeting« of heavy workpieces

BHARTIYA SKILL DEVELOPMENT UNIVERSITY



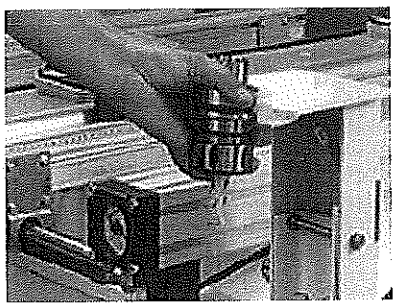
Automatic Spindle Clamping System

Patented system for exact drilling depth at any time with different materials



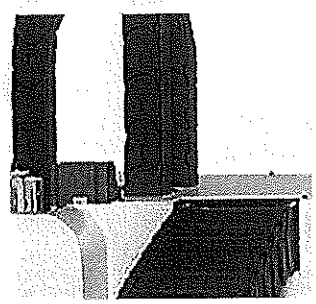
Tool Pick-up Station

Secure and quick fitting of the tool guide changer



Sealed Energy Cable

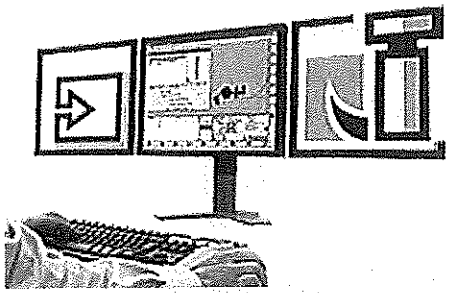
Secure and protected cable (X-Y-Z)



WoodWOP DXF basic

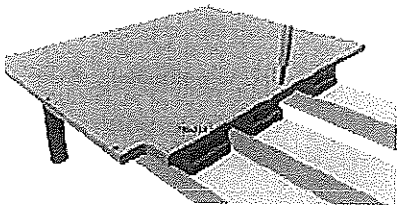
Interface for CAD-Data Import.

Basis to generate wood WOP programs



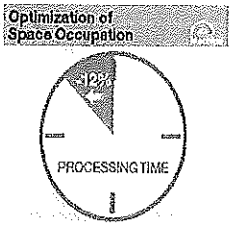
3D CNC Simulator

Simulates the processing in the order it is stored in the NC program
Allows time calculation. Collision check of the vacuum cups



Space Optimization

The integrated software tool optimizes the workflow depending on 2- or 4-field operation to save time up to 12% each processing



Barcode Software (Optional)

Software to read a barcode via the serial interface. The software allows individual adaption of barcode information.

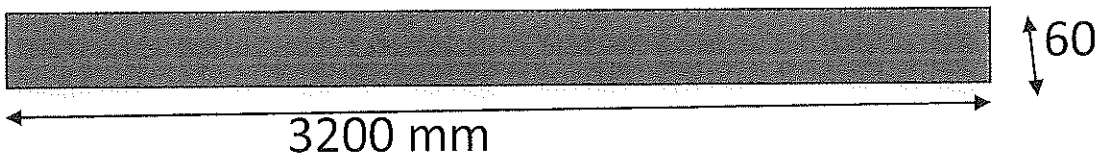
Q.32 Write the overview and features of Homag CNC beam saw HPP 130.

Ans Overview of Homag beam saw

- HPP 130 is called as CNC Beam Saw. CNC control enables smooth cutting with optional varying speed.
- Pressure beam applies pressure to hold the workpiece 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.

HPP 130 FEATURES:

- Maximum Cutting dimensions.

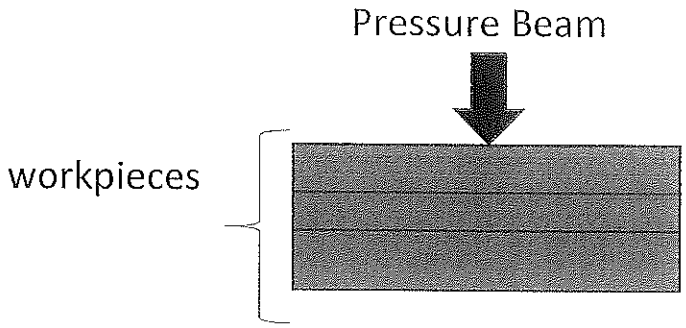


- Saw carriage unit holds the main saw and scoring saw.
- Scoring saw helps to prevent bottom chip-out.
- Saw carriage speed can be varied by potentiometer.
- Fully CNC Controlled with optional optimization.
- Auto length control for time optimization.
- Different modes of operation.
- Side pressure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

Q.33 How does the pressure beam and program fence in homag beam saw HPP 130 work?

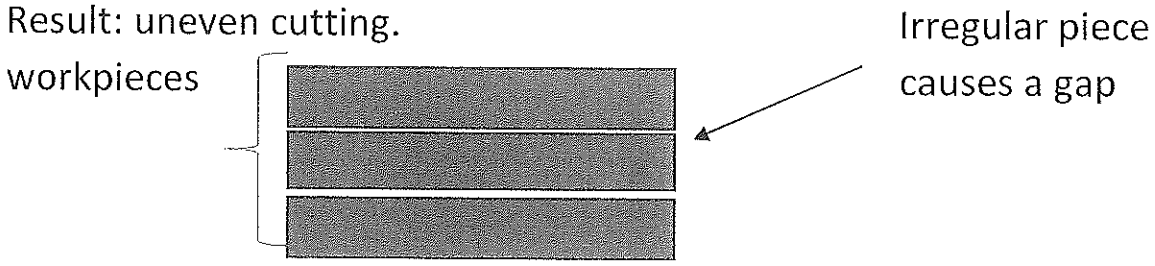
Ans. The Pressure Beam holds the work pieces firmly to prevent their movement during cutting.To clamp the book of panels in the exact position for the cutting cycle

BHARTIYA SKILL DEVELOPMENT UNIVERSITY



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

Result: uneven cutting.



Working of program fence is to transport and position of the work piece for sawing.