# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

**School of Woodworking Skills**

**Session: 2021-22 (Winter Semester)**

**B. Voc. Program, 3rd Semester,**

**2nd In-Sem. Examination**

**Course Code: SCS1302** **Time: 1 Hour**

**Course Name: Advanced Stationary Machines** **Max. Marks: 20**

**Instruction:** Attempt all the questions

## Section – A

05X01 = 05 Marks

Q.1. Which one of the following running direction of scoring saw?

(a) Down of the main saw (c) Opposite to the main saw

(b) Same direction of the main saw (d) All of them

Q.2. Which one of the following is the function of protective hood?

(a) It keeps the work piece in motion (c) It makes the cut smooth

(b) It avoids kick back (d) All of them

Q.3. Which one of the following saw blades is used in panel saw?

(a) Main saw & scoring saw (c) Scoring saw

(b) Main saw (d) none of them

Q.4. Which one of the following is the minimum length of work piece to be machined in Thickness planer?

(a) 300 mm (c) 260 mm

(b) 150 mm (d) none of them

Q.5. Which one of the following is the cutter block speed of surface planer?

(a) 5000 rpm (c) 4500 rpm

(b) 3500 rpm (d) 2500 rpm

## Section – B

03X02 = 06 Marks

Q.6. Describe the function of scoring saw with figure.

Q.7. Write down the function of riving knife.

Q.8. Write down the safe and efficient hand position while working on panel saw machine.

## Section – C

03X03 = 09 Marks

Q.9. Explain the difference between a high and law saw position of the Panel saw.

Q.10. What are the general safety rules that you should follow in the workshop?

Q.11. Write down the steps to change the blade of panel saw.

# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Answer key

**School of Woodworking Skills**

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(a) It keeps the work piece in motion (c) It makes the cut smooth

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Q.3. Which one of the following saw blades is used in panel saw?

(a) Main saw & scoring saw (c) Scoring saw

(b) Main saw (d) none of them (a)

Q.4. Which one of the following is the minimum length of work piece to be machined in Thickness planer?

(a) 300 mm (c) 260 mm

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

Q.5. Which one of the following is the cutter block speed of surface planer?

(a) 6000 rpm (c) 4500 rpm

(b) 3500 rpm (d) 2500 rpm (c)

## Section – B

03X02 = 06 Marks

Q.6. Describe the function of scoring saw with figure.

Ans. Cutting with scoring saw – Panel saw have a scoring unit, it is depending on the model. The smaller scoring blade cuts the material approx. 1 to 2 mm from below the panel. The main saw blade in the opposite direction separates the material. For perfect saw cut, both saw blades must be precisely and Adjusted.

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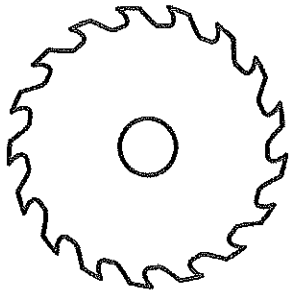

Q.7. Write down the function of riving knife.

Ans.

- The riving knife is fastened behind the saw blade.
- Its keeps the kerf open in separating cuts.
- If the riving knife is missing, the joint can be closed by the compression in the wood.
- Riving knife allows the ascending part of the sprocket to grasp the work piece.
- Riving knife must be thinner than the cutting width (tooth thickness) of the cutting blade.

Q.8. Write down the safe and efficient hand position while working on panel saw machine.

Ans. Safe and efficient work procedure –

- Close hand position.
- Press the work piece against the fences with the heel of hand.
- Lower the protective hood covers on to the work piece.

**Section – C**

03X03 = 09 Marks

Q.9. Explain the difference between a high and law saw position of the Panel saw.

Ans.

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

Q.10. What are the general safety rules that you should follow in the workshop?

Ans. General information about safety rules -

- Always listen carefully to the trainer and follow instructions.
- Do not run in the workshop, you could 'bump' into another and cause an accident.
- Know where the emergency stop buttons are positioned in the machines. If you see an accident, happening you can use the emergency stop button to stop the machine.
- Always wear safety shoes in the workshop.

- When learning how to use a machine, listen very carefully to all the instructions given by the trainer. Ask questions, especially if you do not fully understand.
- Do not use a machine if you have not been shown how to operate it safely by the trainer.
- Always carry ear plug to the training center.
- Always use ear plug when working on a machine.

Q.11. Write down the steps to change the blade of panel saw.

Ans. Changing the saw blade –

- Press main switch off.
- Switch on the emergency stop switch.
- Set the saw to the upper limit setting and cutting angle should be $0^0$.
- Remove the safety hood.
- Place the sliding table at upper limit.
- Open the safety Gard, block the circular saw shaft.
- Unscrew the nut with ring spanner in the clockwise (sawing-) direction.
- Release nut in running direction.
- Remove the saw blade.
- Never put the saw blade and machine tools directly on the machine table, otherwise cutting teeth could be damaged.
- Clean the blade holder flange.
- Select the suitable blade and place in shaft.
- Fit the flange and nut.
- Tight the nut against running direction.
- Release the locking device.

# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration no.

**School of Woodworking Skills**

**Session: 2021-22 (Winter Semester)**

**B. Voc. Program, 3rd Semester,**

**2nd In-Sem. Examination**

**Course Code: SCS1303** **Time: 1 Hour**

**Course Name: Advance Assembly & Fittings** **Max. Marks: 20**

## Section – A

05X01 = 05 Marks

Q.1. Which one of the following is a function of the runner?

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

(B) it is produce friction

(C) it provides hard opening

(D) none of them

Q.2. Which one is a standard size of lamelo biscuit?

(A) ten (B) six

(C) twelve (D) eight

Q.3. Which one of the following sign is helpful in assembly?

(A) snake line (B) circle mark

(C) Cross sign (D) None of these

Q.4. Which one of the following Concealed hinge is used for single door cabinets?

(A) half overlay hinge (B) full overlay hinge

(C) inset hinge (D) b and c

Q.5. Which one of the following is measure diameter of cam in knock down fitting?

(A) 5mm (B) 10mm

(C) 20mm (D) 15mm

## Section – B

03X02 = 06 Marks

Q.6. Explain butt joint with its advantage and disadvantage.

Q.7. Explain any three type of screws.

Q.8. What is but hinge?

## Section – C

03X03 = 09 Marks

Q.9. What is concealed hinge? Briefly explain the full overlay hinge, half overlay hinge and inset hinge with figure.

Q.10. Briefly explain the sequential steps how to install but hinge.

Q.11. Describe the work steps how to install drawer runner.

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# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

**Answer key**

**School of Woodworking Skills**

**Session: 2021-22 (Winter Semester)**

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**Course Code: SCS1303** **Time: 1 Hour**

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## Section – A

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Q.1. Which one of the following is a function of the runner? (A)

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

(B) it is produce friction

(C) it provides hard opening

(D) none of them

Q.2. Which one is a standard size of lamelo biscuit? (A)

(A) ten (B) six

(C) twelve (D) eight

Q.3. Which one of the following sign is helpful in assembly? (D)

(A) snake line (B) circle mark

(C) Cross sign (D) None of these

Q.4. Which one of the following Concealed hinge is used for single door cabinets? (B)

(A) half overlay hinge (B) full overlay hinge

(C) inset hinge (D) b and c

Q.5. Which one of the following is measure diameter of cam in knock down fitting? (D)

(A) 5mm (B) 10mm

(C) 20mm (D) 15mm

## Section – B

03X02 = 06 Marks

Q.6. Explain butt joint with its advantage and disadvantage.

**Ans.** Butt Joint –

- A butt joint is a technique in which two pieces of material are joined by simply placing their ends together without any special shaping.
- The butt joint is the simplest joint to cutting the wood to the appropriate length and butting them together by glue with holding together.
- The parts must be precisely equal in order to achieve good joint. Generally used to make board wider.
- It can be stronger if we are using some fasteners screws, nails, dowels etc.
- Advantage – Fast and easy joining
- Disadvantage – Limited strength
  The work parts slip easily when pressing parts.

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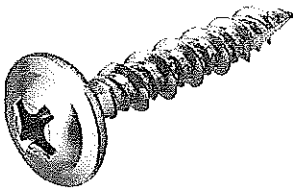
Q.7. Explain any three type of screws.

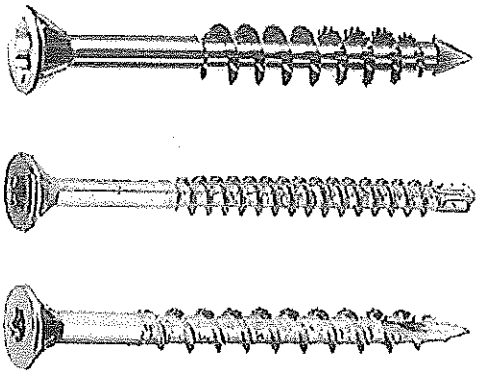
**Ans.**

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.



Q.8. What is but hinge?

**Ans.**

Butt Hinge -

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

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

**Section – C**

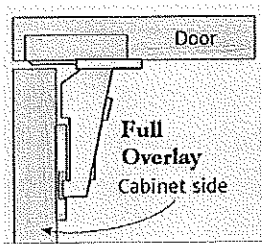
03X03 = 09 Marks

Q.9. What is concealed hinge? Briefly explain the full overlay hinge, half overlay hinge and inset hinge with figure.

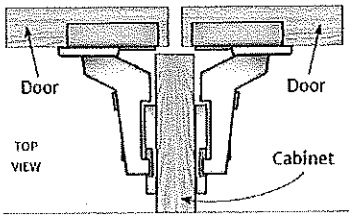
**Ans.**

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

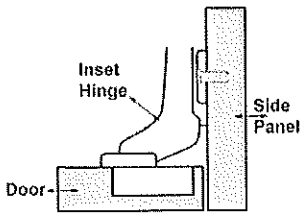
Full overlay hinge –
This hinge is the type of Concealed hinge, overlay doors do exactly what the name implies: They cover the cabinet opening completely, overlapping the cabinet case or face frame on all sides




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




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.10. Briefly explain the sequential steps how to install but hinge.

**Ans.**

Process to Install -.

1.First we have to select the mating parts by hinges and accordingly no of hinges we have to decide.

2.Mark the dimension on work piece according to the hinge plate thickness, width and length on door as well as frame.

3.Measure the knuckle & hinge plate thickness and make routing according to that for material removing in both parts.

4.Check the slot depth and insert hinge in both groove and mark screw position and drilling as screw dimensions.

5.After that we have to assemble mating parts with hinges with screws. Check the required functioning requirement.

Q.11. 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.

# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.----------

## School of Woodworking Skills

**Session: 2021-22 (Winter Semester)**

**B. Voc. Program, 3rd Semester,**

**2nd In-Sem. Examination**

**Code: SCS1304** **Time: 1 Hour**
**Course Name: Carpenter Mathematics** **Max. Marks: 20**
**Instruction:**

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

### Section A

**05X01 = 05 Marks**

Q. 1 Share is bought on which value
(a) Market Value (b) Registered Value
(c) Face Value (d) None of these

Q. 2 Dividend is calculated on which
(a) Face Value (b) Market Value
(c) Both a & b (d) II, IV quadrants

Q. 3 What will be the total surface area of a cube of side 4m in $m^2$
(a) 36 (b) 216
(c) 64 (d) 96

Q. 4 The lateral surface area of a cylinder having radius 7 cm and height 10cm would be in $cm^2$
(a) 748 (b) 308
(c) 440 (d) None of them

Q. 5 Dividend of one share of Rs 100 at 5% per annum is available at a premium of Rs 20
(a) 10 (b) 5
(c) 6 (d) 20

### Section B

**03X02 = 06 Marks**

Q. 6 Calculate the money required to buy: (i) 350, Rs 20 shares at a premium of Rs 7. (ii) 275, Rs 60 shares at a discount of Rs 10.

Q. 7 A company declares semiannual dividend of 6%. A man has 500 shares of NV Rs 25 each. Find his annual income.

Q. 8 The area of a rhombus is 240 cm2 and one of the diagonals is 16 cm. Find the other diagonal.

20.05.22

# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

**Section C**

**03X03 = 09 Marks**

Q. 9 In a building there are 24 cylindrical pillars. The radius of each pillar is 28 cm and height is 4 m. Find the total cost of painting the curved surface area of all pillars at the rate of 8 per $m^2$

Q. 10 An aquarium is in the form of a cuboid whose external measures are 80 cm × 30 cm × 40 cm. The base, side faces and back face are to be covered with a colored paper. Find the area of the paper needed?

Q. 11 Mukul invests Rs 9000 in a company paying a dividend of 6% per annum when a shareof NV Rs 100 stands at Rs 150. What is his annual income? If he sells 50% of his shares when the price rises to Rs 200, what is his gain in this transaction?

# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

**School of Woodworking Skills**

**Session: 2021-22 (Winter Semester)**

**B. Voc. Program, 3rd Semester,**

**2nd In-Sem. Examination**

**Course Code: SCS1305** **Time: 1 Hour**

**Course Name: Woodworking CNC Machines** **Max. Marks: 20**

**Instruction:** (if any)

## Section – A

05X01 = 05 Marks

Q.1 What is the full form of CNC Machines?

(A) Computer Numerical Control (B) Computer Natural Control

(C) Computerized Numerical Control (D) Both (A) & (C)

Q.2 Which one of the not a Part of CNC Machines?

(A) Console Beam (B) Suction Cup

(C) Safety Guard (D) Safety Pad

Q.3 On the which face of Work piece we are not able to work on CNC Machine?

(A) 1 (B) 3

(C) 4 (D) 2

Q.4 How many axes are there on Felder CNC Machines?

(A) 2 axes (B) 5 axes

(C) 4 axes (D) 3 axes

Q.5 How many faces are on a Work pieces?

(A) 4 (B) 3

(C) 6 (D) 5

## Section – B

03X02 = 06 Marks

Q.6 What is CNC Machine?

Q.7 Give a short introduction about WOP?

Q.8 What are the advantage of CNC Machines?

## Section – C

03X03 = 09 Marks

Q.9 What are the uses of Suction cup?

Q.10 Briefly describe the Absolute dimension and Relative dimensioning.

Q.11 Explain the vacuum clamping in CNC Router?

2.05.22

# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Answer Key

## School of Woodworking Skills

**Session: 2021-22 (Winter Semester)**

**B. Voc. Program, 3rd Semester,**

**2nd In-Sem. Examination**

**Code: SCS1304** **Time: 1 Hour**
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### Section A

**05X01 = 05 Marks**

Q. 1 Share is bought on which value
(a) Market Value (b) Registered Value
(c) Face Value (d) None of these Ans. (a)

Q. 2 Dividend is calculated on which
(a) Face Value (b) Market Value
(c) Both a & b (d) II, IV quadrants Ans. (a)

Q. 3 What will be the total surface area of a cube of side 4m in $m^2$
(a) 36 (b) 216
(c) 64 (d) 96 Ans. (d)

Q. 4 The lateral surface area of a cylinder having radius 7 cm and height 10cm would be in $cm^2$
(a) 748 (b) 308
(c) 440 (d) None of them Ans. (c)

Q. 5 Dividend of one share of Rs 100 at 5% per annum is available at a premium of Rs 20
(a) 10 (b) 5
(c) 6 (d) 20 Ans. (b)

### Section B

**03X02 = 06 Marks**

Q. 6 Calculate the money required to buy: (i) 350, Rs 20 shares at a premium of Rs 7. (ii) 275, Rs 60 shares at a discount of Rs 10.

20.05.22

Solution

(i) No. of shares = 350 NV = Rs 20 MV = Rs (20+7) = Rs 27

Therefore, money required to buy 350 shares = Rs (350 \times 27)= Rs 9450

(ii) No. of shares = 275 NV= Rs 60 MV= Rs (60-10) = Rs 50

Therefore, money required to buy 275 shares = Rs (275 × 50) =Rs 13750

Q. 7 A company declares semiannual dividend of 6%. A man has 500 shares of NV Rs 25 each. Find his annual income.

Solution

Total NV of shares= $(25 \times 500) = Rs.\ 12500/-$

Semiannual dividend = 6% of Rs 12500 $(\frac{6}{100} \times 12500) = Rs\ 750/-$

Therefore, his annual income= $(Rs\ 750 \times 2) = Rs\ 1500/-$

Q. 8 The area of a rhombus is 240 cm2 and one of the diagonals is 16 cm. Find the other diagonal.

Solution

Let length of one diagonal $d1$ = 16 cm
and length of the other diagonal = $d2$
Area of the rhombus = ½ ($d_1 x d_2$)=240
Therefore, $d2$ = 240/8 = 30 cm
Hence the length of the second diagonal is 30 cm.

**Section C**

**03X03 = 09 Marks**

Q. 9 In a building there are 24 cylindrical pillars. The radius of each pillar is 28 cm and height is 4 m. Find the total cost of painting the curved surface area of all pillars at the rate of 8 per $m^2$

Solution

Radius of cylindrical pillar, $r$ = 28 cm = 0.28 m
height, $h$ = 4 m
curved surface area of a cylinder = $2\pi rh$
curved surface area of a pillar =2 x 3.14 x 0.28 x 0.28 = 7.04

curved surface area of 24 such pillar = 7.04 × 24 = 168.96 m2
cost of painting an area of 1 m2 = ` 8
Therefore, cost of painting 1689.6 m2 = 168.96 × 8 = ` 1351.68

Q. 10 An aquarium is in the form of a cuboid whose external measures are 80 cm × 30 cm × 40 cm. The base, side faces and back face are to be covered with a colored paper. Find the area of the paper needed?

Solution

The length of the aquarium = $l$ = 80 cm

Width of the aquarium = $b$ = 30 cm

Height of the aquarium = $h$ = 40 cm

Area of the base = $l \times b$ = 80 × 30 = 2400 cm2

Area of the side face = $b \times h$ = 30 × 40 = 1200 cm2

Area of the back face = $l \times h$ = 80 × 40 = 3200 cm2

Required area = Area of the base + area of the back face+ (2 × area of a side face)

= 2400 + 3200 + (2 × 1200) = 8000 cm2

Hence the area of the coloured paper required is 8000 cm2.

Q. 11 Mukul invests Rs 9000 in a company paying a dividend of 6% per annum when a shareof NV Rs 100 stands at Rs 150. What is his annual income? If he sells 50% of his shares when the price rises to Rs 200, what is his gain in this transaction?

Solution

No. of shares bought by Mukul $\left(\frac{Investment}{MV}\right) = \frac{9000}{150} = 60$

His annual income on 1 share=6% of NV=6% of Rs 100=

Rs 6His total annual income= (60 × Rs 6) = Rs 360

Since, 50% of shares= 50% of 60 =30

Money received on selling these shares =(30 ×Rs 200)=Rs

6000Also, cost of these shares=(30 ×Rs 150)=Rs 4500

Therefore, Mukul's gain= Rs (6000-4500) = Rs 1500

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Answer Key.....

**School of Woodworking Skills**

**Session: 2021-22 (Winter Semester)**

**B. Voc. Program, 3rd Semester,**

**2nd In-Sem. Examination**

**Course Code: SCS1305** **Time: 1 Hour**

**Course Name: Woodworking CNC Machines** **Max. Marks: 20**

**Instruction:** (if any)

## Section – A

05X01 = 05 Marks

Q.1 What is the full form of CNC Machines?

(A) Computer Numerical Control (B) Computer Natural Control

(C) Computerized Numerical Control (D) Both (A) & (C) (D)

Q.2 Which one of the not a Part of CNC Machines?

(A) Console Beam (B) Suction Cup

(C) Safety Guard (D) Safety Pad (C)

Q.3 On the which face of Work piece we are not able to work on CNC Machine?

(A) 1 (B) 3

(C) 4 (D) 2 (D)

Q.4 How many axes are there on Felder CNC Machines?

(A) 2 axes (B) 5 axes

(C) 4 axes (D) 3 axes (D)

Q.5 How many faces are on a Work pieces?

(A) 4 (B) 3

(C) 6 (D) 5 (C)

## Section – B

03X02 = 06 Marks

Q.6 What is CNC Machine?

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

Q.7 Give a short introduction about WOP?

Ans: - WOP (Workshop-oriented programming): - Most machine suppliers sell their machines with a WOP.These CAD-like programs simplify programming for the operator and represent the work piece with the machining graphically.

Q.8 What are the advantage of CNC Machine?



23.05.2022

Ans: -

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

**Section – C**

03X03 = 09 Marks

Q.9 What are the uses of Suction cup?

Ans: - Tables with brackets, on which vacuum cups are placed arbitrarily, are used to clamp work pieces. Due to the adjustability of the brackets in the X-axis and the adjustability of the suction cups in the Y-axis different sized work pieces can be tensioned. Falling chips fall between the consoles and so hinder the operation a little. There are also plain tables with the corresponding vacuum blocks, grid tables and clamping templates.

Q.10 Briefly describe the Absolute dimension and Relative dimensioning?

Ans: - **Absolute dimension**

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

**Relative dimensioning:**

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

Q.11 Explain the vacuum clamping in CNC Router?

Ans: - Tables with brackets, on which vacuum cups are placed arbitrarily, are used to clamp work pieces. Due to the adjustability of the brackets in the X-axis and the adjustability of the suction cups in the Y-axis different sized work pieces can be tensioned. Falling chips fall between the consoles and so hinder the operation a little. There are also plain tables with the corresponding vacuum blocks, grid tables and clamping templates.

# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.----------

## School of Woodworking Skills

**Session: 2021-22 (Winter Semester)**

**B. Voc. Program, 3rd Semester,**

**2nd In-Sem. Examination**

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

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

**Instruction:**

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

### Section A

**05X01 = 05 Marks**

Q. 1 Which one sand paper will give a better surface finish?

(A) P220 (B) P180

(C) P100 (D) P150

Q. 2 Which one is the natural abrasive

(A) Silicon carbide (B) Aluminum oxide

(C) Diamond (D) None of these

Q. 3 Which stress group adhesive is suitable for bathroom doors

(A) D1 (B) D2

(C) D3 (D) D4

Q. 4 The internal strength to adhesive layer is provided by

(A) Gravitational force (B) Adhesive force

(C) Cohesive force (D) none of these

Q. 5 Which instrument is best for gluing narrow area

(A) Roller (B) Brush

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

### Section B

**03X02 = 06 Marks**

Q. 6 Write short notes on

(a) Pot Life

(b) Flash off time

Q. 7 What do you understand by abrasive? Write down its applications

Q. 8 Discuss briefly method of sanding

20.05.22

# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

## Section C

**03X03 = 09 Marks**

Q. 9 What are the selection criteria for abrasive? Discuss in detail.

Q. 10 What are various stress groups for adhesives? Discuss in detail.

Q. 11 Discuss the method of applying adhesive

# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Answer Key

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### Section A

**05X01 = 05 Marks**

Q. 1 Which one sand paper will give a better surface finish?

(A) P220 (B) P180

(C) P100 (D) P150 Ans. A

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### Section B

**03X02 = 06 Marks**

Q. 6 Write short notes on

(a) Pot Life

(b) Flash off time

20.05.22

Ans. The pot life is only available with 2-component adhesives. It gives the max. possible processing period after the 2 components have been mixed together. It starts after mixing and ends when the parts have been pressed.

The flash-off time describes the waiting time after applying the adhesive on both parts before they can be put together. With contact adhesive, the solvent must evaporate before the parts are put together.

Q. 7 What do you understand by abrasive? Write down its applications

Ans. An abrasive is a material, often a mineral, that is used to shape or finish a workpiece through rubbing which leads to part of the workpiece being worn away by friction. While finishing a material often means polishing it to gain a smooth, reflective surface, the process can also involve roughening as in satin, matte or beaded finishes. In short, the ceramics which are used to cut, grind and polish other softer materials are known as abrasives. Some common uses for abrasives include grinding, polishing, buffing, honing, cutting, drilling, sharpening, lapping, and sanding.

Q. 8 Discuss briefly method of sanding

Ans. When fine sanding, always sand exactly in the longitudinal direction of the wood and not across the longitudinal direction
When working with the sanding block, make sure that the sandpaper is tight against the sanding block

Start sanding with coarse sandpaper (deep grit number) and end with fine sandpaper (high grit number)

**Section C**

**03X03 = 09 Marks**

Q. 9 What are the selection criteria for abrasive? Discuss in detail.

Ans.

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

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

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

Q. 10 What are various stress groups for adhesives? Discuss in detail.

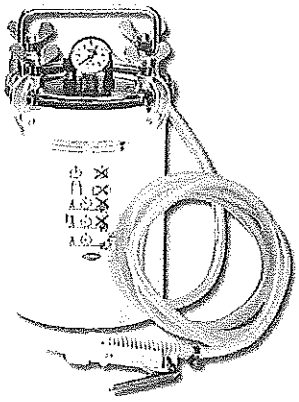
**Ans.** The adhesives are divided into water resistance classes according to EN (European standard): classes D1 to D4 for plastomers and C1 to C4 for elastomers and duromers.

| Stress group | Examples of climatic conditions and areas of application |
|---|---|
| D1 (C1) | - is suitable for indoor areas without stress due to increased moisture<br>- Furniture, interior fittings, room doors, dry rooms |
| D2 (C2) | - for bonding with short-term high air moisture exposure<br>- Furniture, interior fittings, doors in kitchens / bathrooms |
| D3 (C3) | - for bonding with short-term water<br>- Installation in wet rooms, exterior doors, windows |
| D4 (C4) | - for bonds with increased, longer lasting exposure to moisture and moisture |

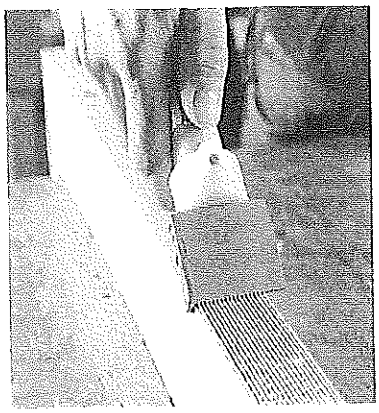
Q. 11 Discuss the method of applying adhesive

Ans. ***Adhesive application***

The adhesive is applied thinly and evenly over the entire surface by selecting the application device according to the work-piece to be bonded. Large areas can be glued with a roller or spatula. For narrow surfaces, the adhesive can be applied with a brush or glue applicator. For hardwoods, a double-sided adhesive application is advantageous because they have a higher absorbency. This is due to the many cross-cut, open storage cells, which absorb more of the adhesive.

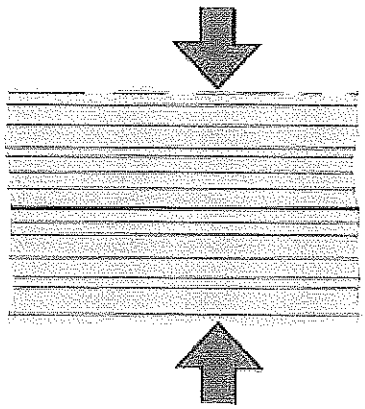


Adhesive application device for dispersion adhesive

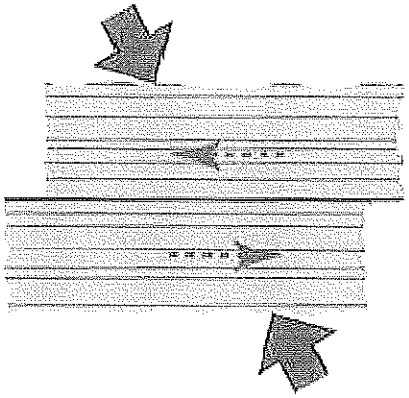


***Press pressure***

The pressing pressure must be perpendicular to the joint so that the parts are not moved during the setting process, which could lead to the adhesive bridges breaking. On the one hand, a correctly selected pressure ensures a thin adhesive joint by pushing the adhesive out of the joint; on the other hand, it ensures that not too much adhesive is pressed out of the joint and that too little adhesive remains in the joint. The pressure is given in N / mm2.



Right



Wrong