Registration No.: .....

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Carpenter Skills

III Semester, II In-Sem. Examination

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

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

Course Name: Fitting **Max. Marks: 20**

Instructions:

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

Section – A

05X01 = 05 Marks

Q.1.Which one of the following is measure diameter of cam in knock down fitting?

(a) 5 mm (b) 10

(c) 20 mm (d) 15 mm

Q.2. 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.3 Which one of the following process is used to install butterfly hinge?

(a) Routing by hand router (b) Chiseling by chisel

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

Q.4. 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) 31mm (d) 33 mm

Q.5. Which one of the following fitting is permanent fitting?

(a) Clamex P – 14 (b) Clamex P - 15

(c) Lamello (d) Knock down fitting

Section – B

03X02 = 06 Marks

Q.6. Explain Half overlay hinge with a suitable sketch.

Q.7. Explain Full overlay hinge with a suitable with sketch.

Q.8. Explain Inset hinge with a suitable sketch

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Section – C

03X03 = 09 Marks

Q.9. List three types of different hinges and explain each of them?

Q.10. List three types of fittings used in cabinet making.

Q.11. Describe the work steps to install Butterfly hinges.

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School of Carpenter Skills

III Semester, II In-Sem. Examination

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

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

Course Name: Fitting **Max. Marks: 20**

Instructions:

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

Section – A

05X01 = 05 Marks

Q.1.Which one of the following is diameter of cam in knock down fitting?

(a) 5 (b) 10

(c) 20 (d) 15 (d)

Q 2. Which one of the following hinge we will 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.3 Which one of the following is used to install butterfly hinge?

(a) Hand Router (b) Chisel

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

Q.4. Which one of the following is standard distance between two holes in adjustable shelf of a cabinet?

(a) 30 (b) 32

(c) 31 (d) 33 (b)

Q.5. Which one of the following is permanent fitting?

(a) Clamex P – 14 (b) Clamex P - 15

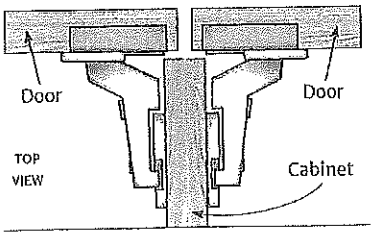
(c) Lamello (d) Knock down fitting (c)

Section – B

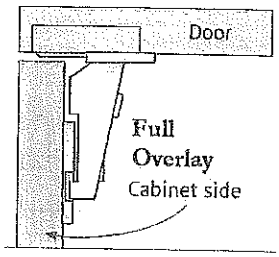
03X02 = 06 Marks

Q.6. Explain Half overlay hinge with suitable sketch.

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

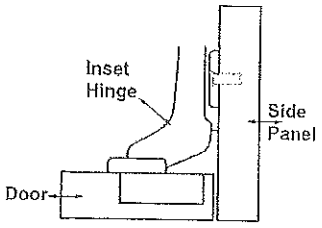


Q.7. Explain Full overlay hinge with suitable with sketch.



Ans.- 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

Q.8. Explain inset hinge with suitable sketch



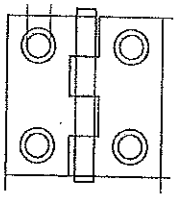
Ans. This hinge is the type of Concealed hinge, inset doors fit entirely within the cabinet opening and sit flush with the cabinet sides or face frames when in the closed position

Section – C

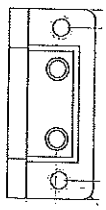
03X03 = 09 Marks

Q.9. List 3 types of different hinges and explain them?

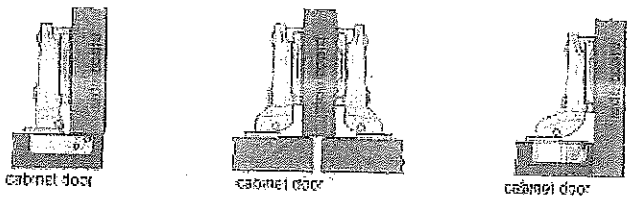
1. **Ans. - <u>Butt Hinge</u>:** - The hinge is mortised into the edge of the door and the cabinet, Only the knuckle of the hinge is visible when the door is shut. This hinge is Mainly used on inset doors



2. **<u>Flush hinges or non mortis hinge</u>:** - Flush hinges are Used similar to butt hinges, except they are not mortised into the door or cabinet. Easier to fit than the butt hinge but the load capacity of this hinge is less than butt hinge.



3. **<u>Concealed hinges</u>:** - 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. There are many types to suit most applications, both for frameless cabinets and face-frame cabinets
   1. Full overlay hinge
   2. Half overlay hinge
   3. Inset hinge



Q.10. List 3 types of fittings used in cabinet making.

1. **Ans.- 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

2. **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
3. **Clamex** – 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.11. Describe the work steps to install butterfly hinges?

Ans.- Butterfly hinges named on their shape as same butterfly.

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.

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BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Carpenter Skills

3rd Semester, II In-Sem. Examination

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

Course Code: SCS1304 **Time: 1 Hour**

Course Name: Carpenter Mathematics **Max. Marks: 20**

Instructions:

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

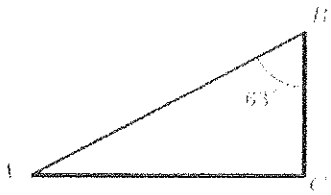
Section – A

05X01 = 05 Marks

Q.1. What is the measure in degrees of the angle A = 7π/6?

(a) 150° (b) 210° (c) 100° (d) 120°

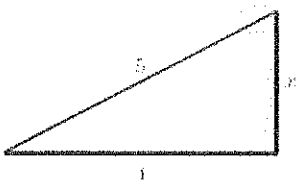
Q.2. What is the measure of angle A in the right triangle below?



(a) 17° (b) 27°

(c) 17° (d) 90°

Q.3. What is the value of x in the figure below?



(a) 1 (b) 9

(c) 20 (d) 3

Q.4. 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.5. In which quadrant is the terminal of an angle in standard position whose measure is 2π/3?

(a) Quadrant I (b) Quadrant II

(c) Quadrant III (d) Quadrant IV

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Section – B

03X02 = 06 Marks

Q.6. Find out the value of $\cot(\pi+x)$ and $\sin^2(43°) + \cos^2(43°)$

Q.7. Calculate the exact value of sin (-585°).

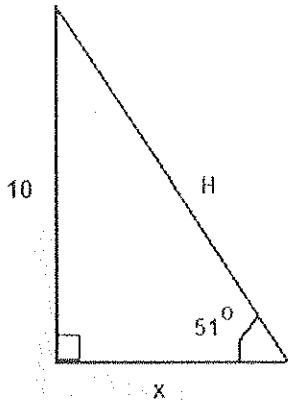
Q.8. Find out the exact value of cos 15°.

Section – C

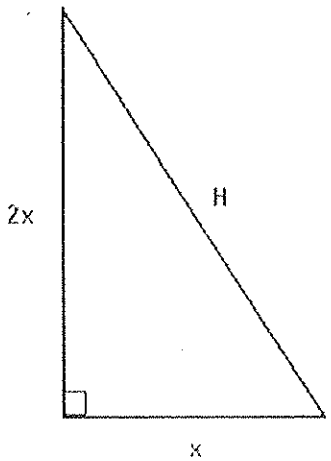
03X03 = 09 Marks

Q 9. The length of sides AB and side BC of a scalene triangle ABC are 12 cm and 8 cm respectively. The size of angle C is 59°. Find the length of side AC.

Q 10. Find the values of x and H in the right triangle given below:



Q 11. Find the length of all the sides of the right triangle given below if its area is 400.



School of Carpenter Skills

3rd Semester, II In-Sem. Examination

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

Course Code: SCS1304 **Time: 1 Hour**

Course Name: Carpenter Mathematics **Max. Marks: 20**

Instructions:

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

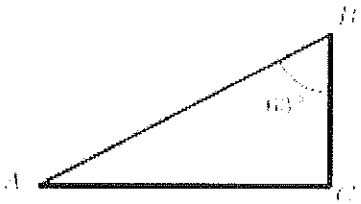
Section – A

05X01 = 05 Marks

Q.1. What is the measure in degrees of the angle A = 7π/6?

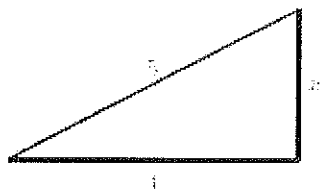
150°
b) 210°
c) 100°
d) 120° b

Q.2. What is the measure of angle A in the right triangle below?



a) 17°
b) 27°
c) 17°
d) 90° b

Q.3. What is the value of x in the figure below?



a) 1
b) 9

c) 20
d) 3 d

Q.4. 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) $1 - \sec^2 a = \tan^2 a$ d

Q.5. In which quadrant is the terminal of an angle in standard position whose measure is $2\pi/3$?

a) Quadrant I
b) Quadrant II
c) Quadrant III
d) Quadrant IV b

Section – B

03X02 = 06 Marks

Q.6. Find out the value of $\sin^2(43°) + \cos^2(43°)$

Ans. 1 $[\sin^2(a) + \cos^2(a) =1]$

Q.7. Calculate the exact value of sin (-585°).

Ans. $\sin(-585°) = \sin(-585° + 720°) = \sin 135° = \sin 45° = \sqrt{2}/2$

Q.8. Find out the exact value of cos 15°.

Ans.

$$\cos(15^\circ) = \cos\left(\frac{30^\circ}{2}\right) = \sqrt{\frac{1+\cos(30^\circ)}{2}}$$

Plug in $\cos(30^\circ) = \frac{\sqrt{3}}{2}$ to get $\sqrt{\frac{1+\frac{\sqrt{3}}{2}}{2}}$

Simplify $1 + \frac{\sqrt{3}}{2}$ to get $\sqrt{\frac{\frac{2+\sqrt{3}}{2}}{2}}$

Simplify $\frac{\frac{2+\sqrt{3}}{2}}{2}$ to get $\sqrt{\frac{2+\sqrt{3}}{4}}$

Take the square root of the numerator and denominator to get $\frac{\sqrt{2+\sqrt{3}}}{2}$

Section – C

03X03 = 09 Marks

Q 9.The lengths of side AB and side BC of a scalene triangle ABC are 12 cm and 8 cm respectively. The size of angle C is 59°. Find the length of side AC.

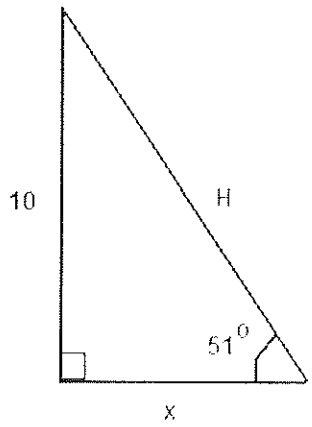
Ans. Let x be the length of side AC. Use the cosine law

$12^2 = 8^2 + x^2 - 2 \cdot 8 \cdot x \cdot \cos(59°)$

Solve the quadratic equation for x: x = 14.0 and x = - 5.7

x cannot be negative and therefore the solution is x = 14.0 (rounded to one decimal place).

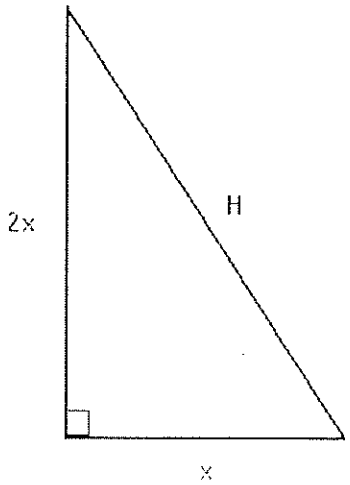
Q 10 Find the values of x and H in the right triangle below in fig.



Ans. $x = 10 / \tan(51°) = 8.1$ (2 significant digits)

$H = 10 / \sin(51°) = 13$ (2 significant digits)

Q 11.Find the lengths of all sides of the right triangle below in fig 2 if its area is 400.



Ans. Area = (1/2)(2x)(x) = 400

Solve for x: $x = 20$, $2x = 40$

Pythagoras's theorem: $(2x)^2 + (x)^2 = H^2$

$H = x\sqrt{(5)} = 20\sqrt{(5)}$

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BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Carpenter Skills

III Semester, 2nd In-Sem. Examination

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

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

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

Instruction:

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

2. Answers all questions from section B, each question carries two marks.

3. Answers all questions from section B, each question carries three marks.

Section – A

05X01 = 05 Marks

Q.1. Which one of the following is compressed air consumption in the HOMAG CNC Beam Saw HPP 130?

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

Q.2. Which one of the following is used to regulate saw carriage speed in Beam Saw HPP 130?

(a) Potentiometer (b) Hydrometer (c) Ammeter (d) None of these.

Q.3. How many axis are there in HOMAG CNC router PTP 160?

(a) 2 (b) 3 (c) 4 (d) 5.

Q.4. How many work stations are there in HOMAG CNC router PTP160?

(a) 3 (b) 2 (c) 5 (d) 4.

Q5 Q.4. How many Heads we have in HOMAG CNC router PTP 160?

(a) 5 (b) 4 (c) 2 (d) 3.

Section – B

03X02 = 06 Marks

Q.5.What does the term CNC stands for?

Q.6.What are the functions of scoring saw blade in the saw carriage unit?

Q.7.Explain the working of program fence and pressure beam in HOMAG CNC router.

Section – C

03X03 = 09 Marks

Q.8. How does the Suction cup work in HOMAG CNC router machine?

Q.9. Discuss the positioning of suction cup while throughout cutting in HOMAG CNC router.

Q.10. Explain differences Between Standard machine and CNC machine.

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School of Carpenter Skills

III Semester, 2nd In-Sem. Examination

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

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

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

Section – A

05X01 = 05 Marks

Q.1. 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 (b)

Q.2. Which one of the following is used to regulate saw carriage speed?

(a) Potentiometer (b) Hydrometer (c) Ammeter (d) None of these. (a)

Q.3. How many axis in Homag CNC router PTP 160 ?

(a) 2 (b) 3 (c) 4 (d) 5. (b)

Q.4. How many work stations in Homag CNC router PTP 160 ?

(a) 3 (b) 2 (c) 5 (d) 4. (d)

Q.4. How many Heads in Homag CNC router PTP 160 ?

(a) 5 (b) 4 (c) 2 (d) 2 (c)

Section – B

03X02 = 06 Marks

Q.1.What does the term CNC stands for ?

Ans CNC means **Computer Numerical Control**. This means a computer convert the design produced by Computer Aided Design software (CAD), 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.2.Why does the beam saw have scoring saw in saw carriage unit?

Ans. 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 underside.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 larger blade and avoids chip out from the bottom of the wood.

Q.3.Explain how program fence and pressure bean works?

Ans. Work of the program fence is to transport and position of the work piece and Work of the pressure beam is to clamp the book of the panel in the exact position for the cutting cycle.

Section – C

03X03 = 09 Marks

Q.1. How does Suction cup works in Homag CNC router machine?

Ans. It ensures that the suction cups are on the pressure holes of the vacuum pump to get proper suction , vacuum pump is connected with the pressure 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 perfect clamping of the workpiece.

Q.2. How to set suction cup while throughout cutting in Homag CNC router?

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

Q.3. Explain difference Between Standard machine and CNC machine

Ans.

Standard machines	CNC machines
Manually working machines	It works automatically.
Manually tool changing.	Automatically tool changer.
Time consuming	Time saving
Require more man power	Require less man power.
No requirement of software for operation.	It require software for operation.

Low cost	High cost
Require less skill.	Require more skill.
It consumes less space.	It consumes more space.