BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Metal Construction Skills

Session: 2020-21 (Summer Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: MCS1301 **Time: 1 Hour**

Course Name: CNC BENDING **Max. Marks: 20**

Instruction:

1. Attempt all questions.
2. Use of Calculators is prohibited.
3. Section A contains 05 Questions. Each question carries 1 Marks.
4. Section B contains 03 Questions. Each question carries 2 Marks.
5. Section C contains 03 Questions. Each question carries 3 Marks.

Section – A

05X01 = 05 Marks

Q.1 Which of the following is not the fabrication process?

a) Machining b) Shearing

c) Punching d) All of above

Q.2 In forming process the physical shape is-

a) Partially deformed b) Permanently deformed

c) Un-deformed d) B&C

Q3. One centimeter is equivalent to

a) 10 mm b) 1 mm

c) 0.1 mm d) 100 mm

Q.4. Metal forming is a process in which the metal is deformed plastically to get into the desired shape.

a) True c) cannot say

b) False d) All of the above

Q.5 which type of shape can be produced by using bending process?

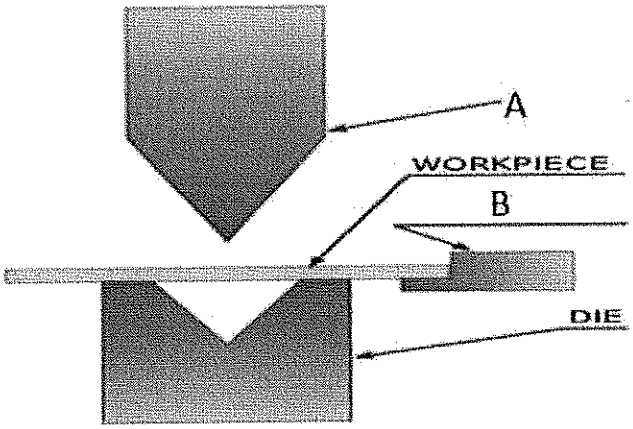
a) V-Shape b)U-Shape

c) channel shape d) All of the above

Section – B

03X02 = 06 Marks

Q.6 Write the name of A and B in the given image.



Q.7 What is the sheet metal?

Q.8 Why bend allowance is used in bending?

Section – C

03X03 = 09 Marks

Q.9 What is the springback? Give the reasons for it's occurring.

Q.10 draw a neat sketch of bent part with nomenclature.

Q.11 Name the punches used in V bending.

Set A
Answer

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Course Code: MCS1301 **Time: 1 Hour**

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Section – A

05X01 = 05 Marks

Q.1 Which of the following is not the fabrication process?

a) Machining b) Shearing

c) Punching d) All of above

Ans. d)

Q.2 In forming process the physical shape is-

a) Partially deformed b) Permanently deformed

c) Un-deformed d) B&C

Ans. b)

Q3. One centimeter is equivalent to

a) 10 mm b) 1 mm

c) 0.1 mm d) 100 mm

Ans. a)

Q4. Metal forming is a process in which the metal is deformed plastically to get into the desired shape.

a) True c) cannot say

b) False d) All of the above

Ans. a)

Q.5 which type of shape can be produced by using bending process?

a) V-Shape b)U-Shape

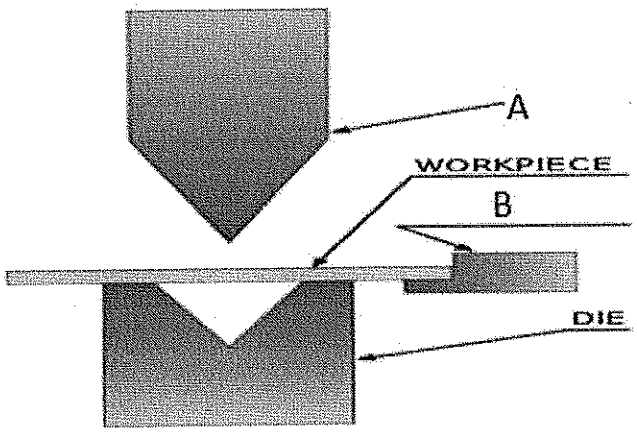
c) channel shape d) All of the above

Ans. d)

Section – B

03X02 = 06 Marks

Q.6 Write the name of A and B in the given image.



Ans. A is the Punch
B is the back gauge

Q7. What is the sheet metal?

Ans. Sheet metal is any metal in the sheet form, which is thicker than 0.4 mm and thinner than 6mm.

Q8. Why bend allowance is used in bending?

Ans. Bend allowance is used in bending to calculate the flat length of the bent sheet.

Section – C

03X03 = 09 Marks

Q.9 What is the springback? Give the reasons for it's occurring.

Ans. Increase in included angle of bent part relative to included angle of forming tool after tool is removed is called springback.

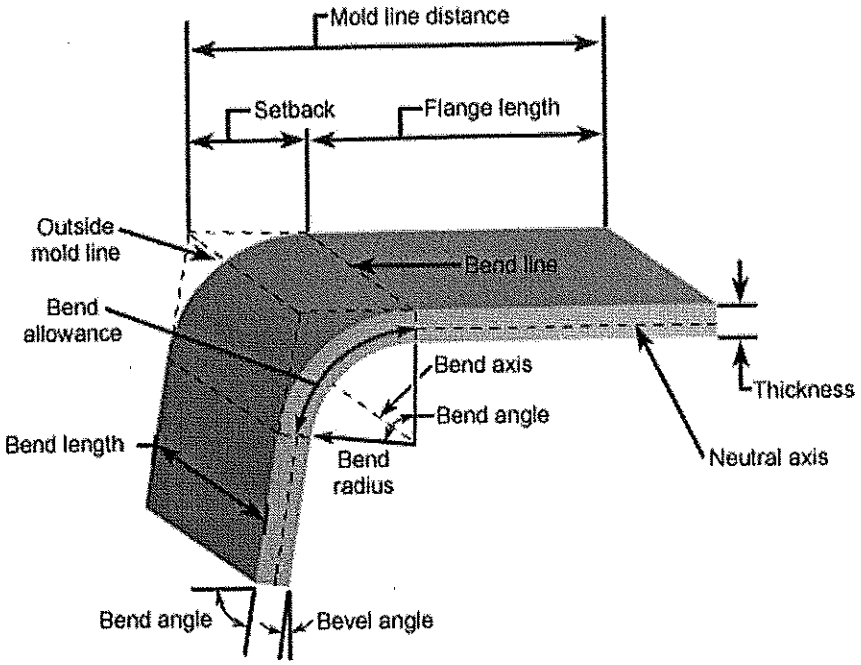
Reasonsof springback:

- When bending pressure is removed, elastic energy remains in bent part, causing it to recover partially toward its original shape

The tensile strength and thickness of the material, type of tooling, and the type of bending all greatly influence springback.

Q.10 draw a neat sketch of bent part with nomenclature.

Ans.



Q11. Name the punches used in V bending.

Ans. Normally there are three types of punches, which are used in v-bending

1. straight punch
2. gooseneck punch
3. radius punch
4. Acute punch

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Metal Construction Skills

Session: 2020-21 (Summer Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: MCS1302 **Time: 1 Hour**

Course Name: CNC PUNCHING **Max. Marks: 20**

Instruction:

1. Attempt all questions.
2. Use of Calculators is prohibited.
3. Section A contains 05 Questions. Each question carries 1 Marks.
4. Section B contains 03 Questions. Each question carries 2 Marks.
5. Section C contains 03 Questions. Each question carries 3 Marks.

Section – A

05X01 = 05 Marks

Q1. As the clearance increases, the punch force required?

a) Decreases

b) Increases

c) Remains same

d) First increases and then decreases

Q2. As the thickness of sheet is increased the clearance needed will also?

a) Increase

b) Decrease

c) No effect

d) First decreases and then increase

Q3. The cutting force in punching and blanking operations mainly depends on

a) yield strength of material

b) shear strength of material

c) fracture point

d) bending strength of material

Q4. Arrange the below operations in operator controlled machine tool in correct order.

(A) Operator

(B) Process planning

(C) Machine tool

(D) Component drawing

(E) Completed component

a.) (A) – (D) – (B) – (C) – (E)

b.) (D) – (B) – (C) – (A) – (E)

c.) (B) – (D) – (C) – (A) – (E)

d.) (D) – (B) – (A) – (C) – (E)

Q5. In CNC machine tool, the part program entered into the computer memory

a.) can be used only once

b.) can be used again and again

c) an be used again but it has to be modified every time

d) cannot say

Section – B

03X02 = 06 Marks

Q6. What is CNC punching?

Q7. What Is nibbling process?

Q8. Write applications of cnc punching?

Section – C

03X03 = 09 Marks

Q9. Define the following terms-

a. Notching
b. Lancing
c. Slitting

Q10. What are advantages and disadvantages of cnc punching?

Q11. Write difference between punching and blanking with diagram?

Set A
Answer

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

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School of Metal Construction Skills

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1st In-Sem. Examination

Course Code: MCS1302 **Time: 1 Hour**

Course Name: CNC PUNCHING **Max. Marks: 20**

Instruction:

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Section – A

05X01 = 05 Marks

Q1. As the clearance increases, the punch force required?

a) Decreases

b) Increases

c) Remains same

d) First increases and then decreases

Answer: a

Q2. As the thickness of sheet is increased the clearance needed will also?

a) Increase

b) Decrease

c) No effect

d) First decreases and then increase

Answer: a

Q3. The cutting force in punching and blanking operations mainly depends on

a) yield strength of material

b) shear strength of material

c) fracture point

d) bending strength of material

Ans: shear strength of material

Q4. Arrange the below operations in operator controlled machine tool in correct order.

(A) Operator

(B) Process planning

(C) Machine tool

(D) Component drawing

(E) Completed component

a. (A) – (D) – (B) – (C) – (E)

b. (D) – (B) – (C) – (A) – (E)

c. (B) – (D) – (C) – (A) – (E)

d. (D) – (B) – (A) – (C) – (E)

ANSWER: (D) – (B) – (A) – (C) – (E)

Q5. In CNC machine tool, the part program entered into the computer memory

a.) can be used only once

b.) can be used again and again

c) an be used again but it has to be modified every time

d) cannot say

ANSWER: can be used again and again

Section – B

03X02 = 06 Marks

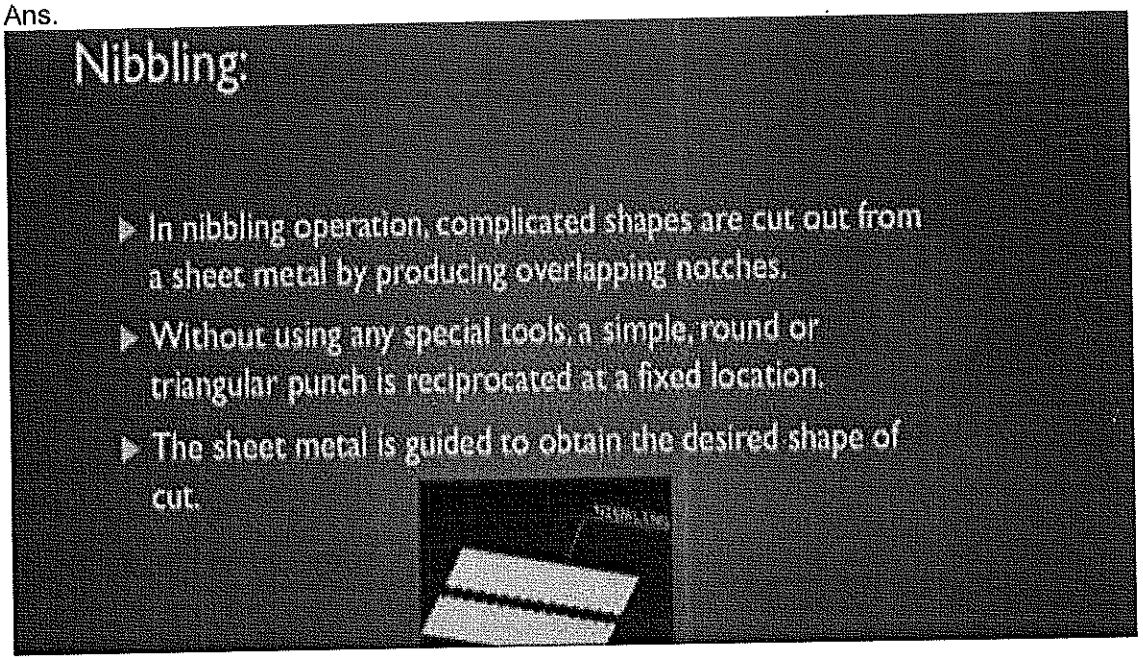
Q6. What is CNC punching

Ans. Computer numerically controlled (CNC) punching is a sheet metal manufacturing process that is carried out by CNC punch presses. These machines can be either a single head and tool rail (Trumpf) design or multi-tool turret design.

The processing range for most CNC punch presses is 0.5mm to 6.0mm thick in a range of materials including steel, zinc, galv, stainless steel and Aluminium. The choice of hole punched can be as simple as a circle or rectangle right through to special shapes to suit a specific cut out design.

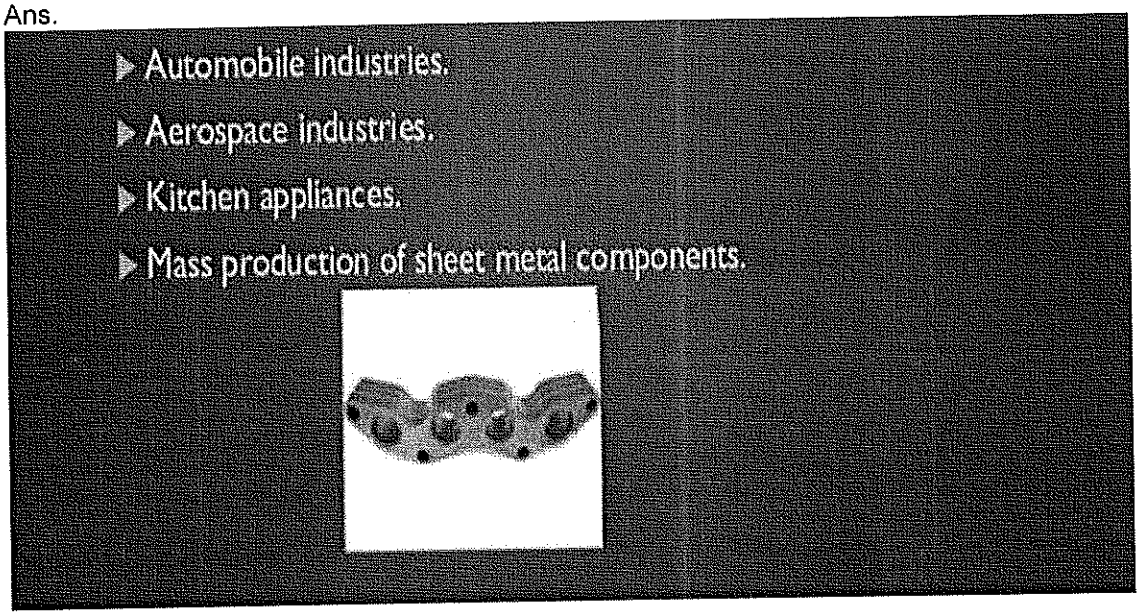
Q7. What Is nibbling process?

Ans.



Q8. Write applications of cnc punching?

Ans.



Section – C

03X03 = 09 Marks

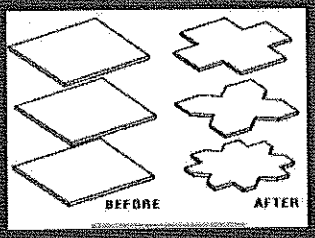
Q9. Define the following terms-

a. Notching
b. Lancing
c. Slitting

Ans.

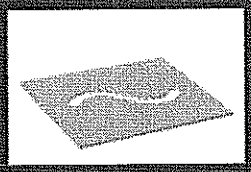
Notching:

- In notching, material is removed from the side of a sheet material.



Lancing:

- Lancing process makes partway through the metal without producing any scrap.



Slitting:

- It is an operation to cut a coiled sheet metal lengthwise to produce narrower strips.

Q10. What are advantages and disadvantages of cnc punching?

Ans.

Advantages:

- Punching and blanking are quick processes.
- The slug produced may be reused or recycled(depending on material).
- It is often the cheapest and most cost effective method for medium to high volume of production.
- It can create multiple shaped holes or same shaped holes very fast.

Disadvantages:

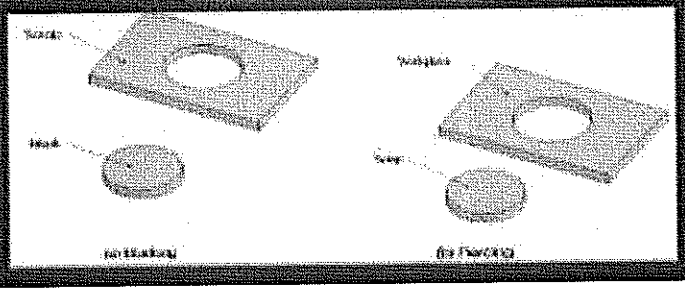
- Equipment and tooling costs are high.
- Often needs secondary finishing operations to smooth out burrs along the bottom edge.
- Fine blanking process is a slow process.

Q11. Write difference between punching and blanking with diagram ?

Ans.

Difference:

- In the punching process the final product is the metal sheet from which metal is removed.
- In blanking process the final product is the removed portion from the sheet.



BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Metal Construction Skills

Session: 2020-21 (Summer Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: MCS1303 **Time: 1 Hour**

Course Name: CNC LASER CUTTING **Max. Marks: 20**

Instruction:

1. Attempt all questions.
2. Use of Calculators is Prohibited.
3. Section A contains 05 Questions. Each question carries 1 Mark.
4. Section B contains 03 Questions. Each question carries 2 Marks.
5. Section C contains 03 Questions. Each question carries 3 Marks.

Section – A

05X01 = 05 Marks

1. What does the acronym MASER stand for?
   a) Microwave Amplification by Stimulated Emission of Radiation
   b) Molecular Absorption by Stimulated Emission of Radiation
   c) The name of Albert Einstein's dog
   d) None of the Above

2. What is one way to describe a Photon?
   a) Solid as a rock
   b) A wave packet
   c) A torpedo
   d) A color

3. What determines the color of light?
   a) its intensity
   b) its wavelength
   c) its source
   d) Its Frequency

4. What type of laser is used in Metal Cutting?
   a) Semiconductor
   b) YAG
   c) Alexandrite
   d) Ruby

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

5. Which color of light has the shortest wave-length?

a) Yellow

b) Blue

c) Red

d) Green

Section – B

6.What is population inversion?

7. What Is pumping system?

8.What are the types of gas laser?

03X02 = 06 Marks

Section – C

03X03 = 09 Marks

9.Define the following terms-

a. Absorption
b. Spontaneous emission
c. Stimulated emission

10.What is Ruby laser? Draw the diagram.

11.What are the applications of Nd: YAG laser?

Set - A
Answer

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Metal Construction Skills

Session: 2020-21 (Summer Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: MCS1303 **Time: 1 Hour**

Course Name: CNC laser Cutting **Max. Marks: 20**

Instruction:

1. Attempt all questions.
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Section – A

05X01 = 05 Marks

1. What does the acronym MASER stand for?

a) Microwave Amplification by Stimulated Emission of Radiation

b) Molecular Absorption by Stimulated Emission of Radiation

c) The name of Albert Einstein's dog

d) None of the Above

Ans. a)

2. What is one way to describe a Photon?

a) Solid as a rock

b) A wave packet

c) A torpedo

d) A color

Ans. b)

3. What determines the color of light?

a) its intensity

b) its wavelength

c) its source

d) Its Frequency

Ans. b)

4. What type of laser is used in Metal Cutting?

a) Semiconductor

b) YAG

c) Alexandrite

d) Ruby

Ans. b)

5. Which color of light has the shortest wave-length?

a) Yellow

b) Blue

c) Red

d) Green

Ans. b)

Section – B

1.What population inversion?

Ans. Practically speaking, the process of stimulated emission will not produce a very efficient or even noticeable amplification of light unless a condition called "population inversion" occurs. If only a few atoms of several million are in an excited state, the chances of stimulated emission occurring are small. The greater the percentage of atoms in an excited state, the greater the probability of stimulated emission. In the normal state of matter, the population of electrons will be such that most of the electrons reside in the ground or lowest levels, leaving the upper levels somewhat depopulated. When electrons are excited and fill these upper levels to the extent that there are more atoms excited than not excited, the population is said to be inverted

2.What Is pumping system?

Ans. The pumping system imparts energy to the atoms or molecules of the lasing medium enabling them to be raised to an excited "metastable state" creating a population inversion. Optical pumping uses photons provided by a source such as a Xenon gas flash lamp or another laser to transfer energy to the lasing material. The optical source must provide photons which correspond to the allowed transition levels of the lasing material.

3.What are the types of gas laser?

Ans. A gas laser is a laser in which an electric current is discharged through a gas inside the laser medium to produce laser light. In gas lasers, the laser medium is in the gaseous state.

03X02 = 06 Marks

Section – C

03X03 = 09 Marks

1.Define the following terms-

a. Absorption
b. Spontaneous emission
c. Stimulated emission

Ans. a. Absorption of radiation is the process by which electrons in the ground state absorbs energy from photons to jump into the higher energy level.

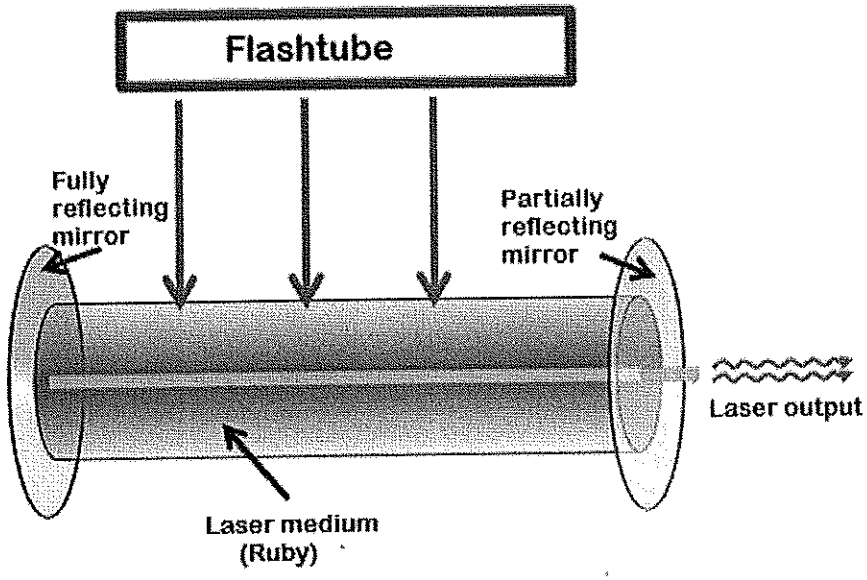
b). Spontaneous emission is the process by which electrons in the excited state return to the ground state by emitting photons. The lifetime of electrons in excited state is 10^{-8} second.

c). Stimulated emission is the process by which incident photon interacts with the excited electron and forces it to return to the ground state. In stimulated emission, two photons are emitted (one additional photon is emitted), one is due to the incident photon and another one is due to the energy release of excited electron. Thus, two photons are emitted.

2.What is Ruby laser? Draw the diagram.

Ans. A ruby laser is a solid-state laser that uses the synthetic ruby crystal as its laser medium. Ruby laser is the first successful laser developed by Maiman in 1960.

Ruby laser is one of the few solid-state lasers that produce visible light. It emits deep red light of wavelength 694.3 nm.



3.What are the applications of Nd:YAG laser?

Ans. Military

Nd:YAG lasers are used in laser designators and laser rangefinders. A laser designator is a laser light source, which is used to target objects for attacking. A laser rangefinder is a rangefinder, which uses a laser light to determine the distance to an object.

Medicine

Nd: YAG lasers are used to correct posterior capsular opacification (a condition that may occur after a cataract surgery).

Nd:YAG lasers are used to remove skin cancers.

Manufacturing

Nd:YAG lasers are used for etching or marking a variety of plastics and metals.

Nd:YAG lasers are used for cutting and welding steel.

Set A

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Metal Construction Skills

Session: 2020-21 (Summer Semester)

B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: GEN1302 **Time: 1 Hour**

Course Name: COMPUTER AIDED DRAWING **Max. Marks: 20**

Instruction:

1. Attempt all questions.
2. Use of Calculators is prohibited.
3. Section A contains 05 Questions. Each question carries 1 Marks.
4. Section B contains 03 Questions. Each question carries 2 Marks.
5. Section C contains 03 Questions. Each question carries 3 Marks.

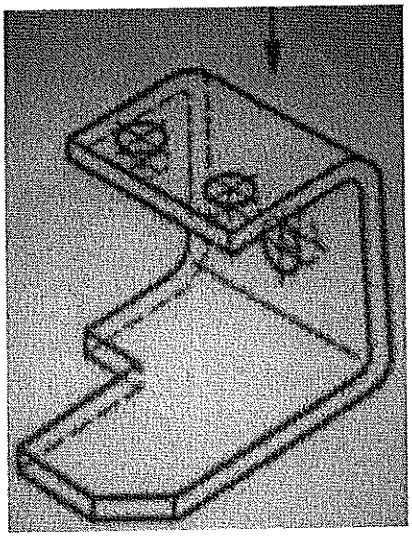
Section – A

05X01 = 05 Marks

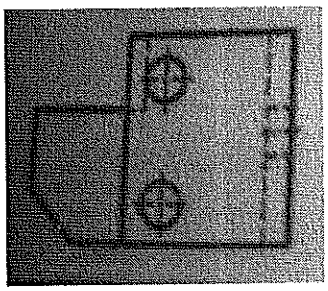
1. Continuous thin wavy line is use for showing _____.
   a) Dimension lines
   b) Extension lines
   c) Short break lines
   d) Long break lines

2. What kind of dimensioning system exist?
   a) Aligned system & Directional system
   b) Unidirectional system & Aligned system
   c) Parallel & Perspective
   d) Perpendicular or horizontal.

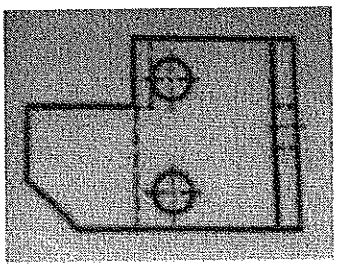
3. Which is the correct top view (arrow side) of the represented body?



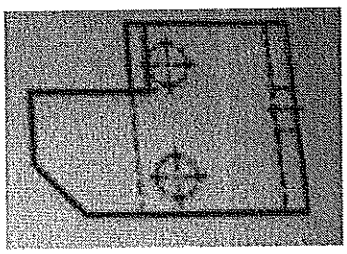
a)



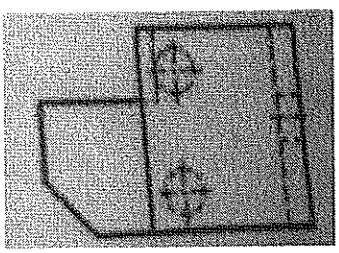
c)



b)



d)



4. Which one is not a type of orthographic drawing?
   a) General drawing
   b) Exploded drawing
   c) Perspective drawing
   d) Component drawing

5.  This is a _____ symbol.
   a) Straightness
   b) Rectangularity
   c) Symmetry
   d) Flatness

Section – B

03X02 = 06 Marks

Q6. What do you mean by engineering drawing?

Q7. What is the difference between First and Third angle projection?

Q8. Why we don't make drawing in second or fourth angle projection?

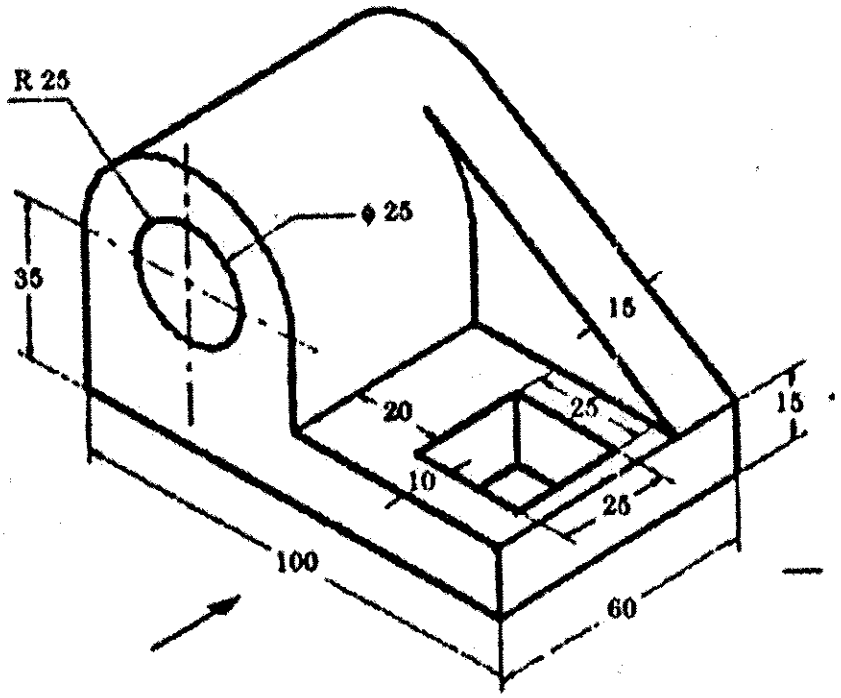
Section – C

03X03 = 09 Marks

Q9. Explain first and third angle projection.

Q10. Explain different types of Lines.

Q11. Draw the all multi-view of this drawing.



2 students
SMCS

Set A

Ans.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

School of Metal Construction Skills

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B. Voc. Program, 3rd Semester,

1st In-Sem. Examination

Course Code: GEN1302 **Time: 1 Hour**

Course Name: COMPUTER AIDED DRAWING **Max. Marks: 20**

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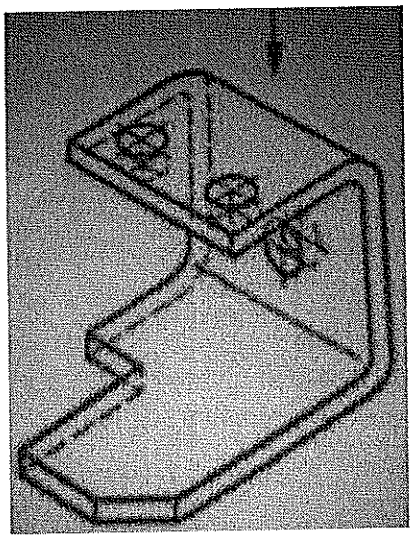
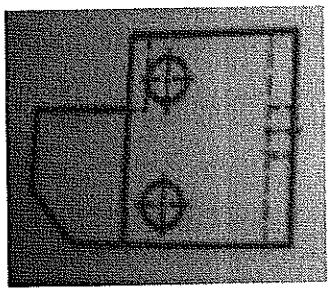
Section – A

05X01 = 05 Marks

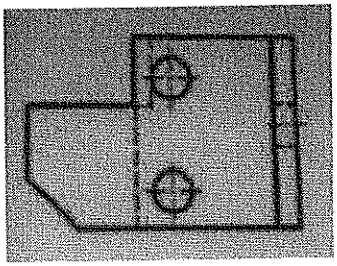
1. Continuous thin wavy line is use for showing _____.
   a) Dimension lines
   c) **Short break lines**
   b) Extension lines
   d) Long break lines
2. What kind of dimensioning system exist?
   a) Aligned system & Directional system
   b) Unidirectional system & Aligned system
   c) Parallel & Perspective
   d) Perpendicular or horizontal.
3. Which is the correct top view (arrow side) of the represented body?



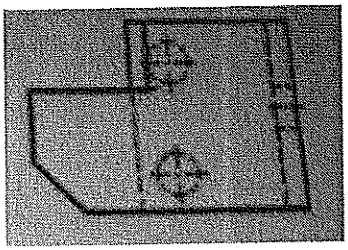
a)



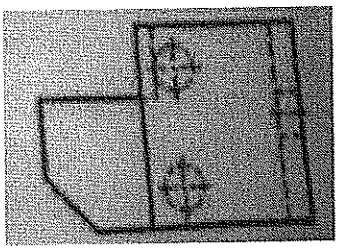
c)



b)



d)



Ans. **A)**

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

4. Which one is not a type of orthographic drawing?
   a) General drawing **c) Perspective drawing**
   b) Exploded drawing d) Component drawing

5.  This is a _____ symbol.
   a) Straightness c) Symmetry
   b) Rectangularity **d) Flatness**

Section – B

03X02 = 06 Marks

Q6. What do you mean by engineering drawing?

Ans. Drawing is a graphical means of expressions of technical details without the barrier of a language. Engineering drawing is the universal language for engineer.

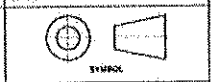
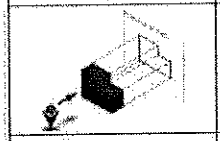
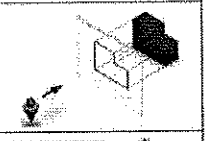
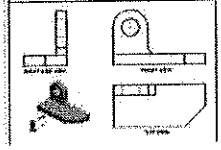
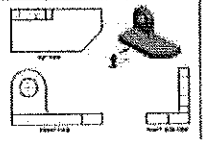
Reasons for technical drawings.

- Information exchange
- Efficient communication
- A picture (a drawing) says more than thousand words
- Clear up misunderstandings
- Technical documentation

Q7. What is the difference between First and Third angle projection?

Ans: -

First angle projection & Third angle projection

First Angle Projection	Third Angle Projection
The object is imagined to be in first quadrant.	The object is imagined to be in third quadrant.
The object is lies between the observer and plane of projection.	The plane of projection lies between the observer and object.
The plane of projection is assumed to be non transparent.	The plane of projection is assumed to be transparent.
When view are drawn in their relative position Top view comes below Front view, Right side view drawn to the left side of elevation.	When view are drawn in their relative position Top view comes above Front view, Right side view drawn to the right side of elevation.
	
	
	

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Q8. Why we don't make drawing in second or fourth angle projection?

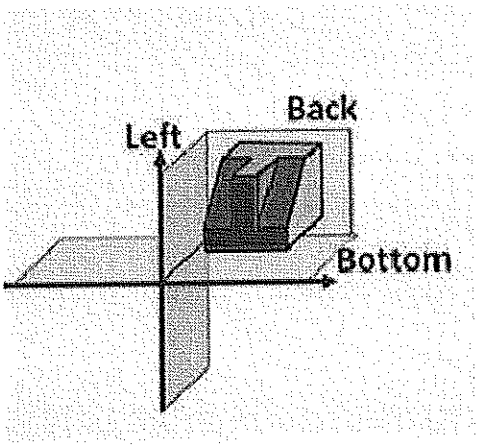
Ans: - Because of overlapping of front and top views 2nd and 4th angle projections are not used. First and third angle projection systems are recommended for orthographic projections. And it's also very complicated

Section – C

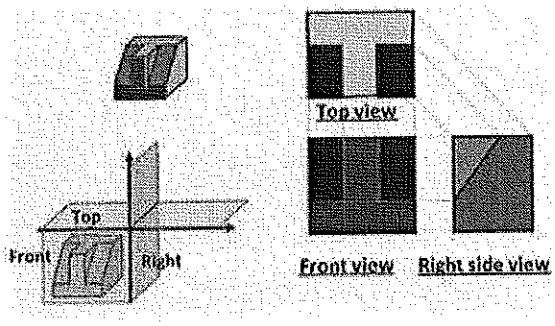
03X03 = 09 Marks

Q9. Explain first and third angle projection.

Ans: - First angle projection: - in this the object assumed to be in first quadrant. The object is assumed to be placed b/w observer or plane of projection.



Third angle projection: - In this the object assumed to be in third quadrant. The plane of projection is placed b/w observer and object.



Q10. Explain different types of Lines.

Ans: -

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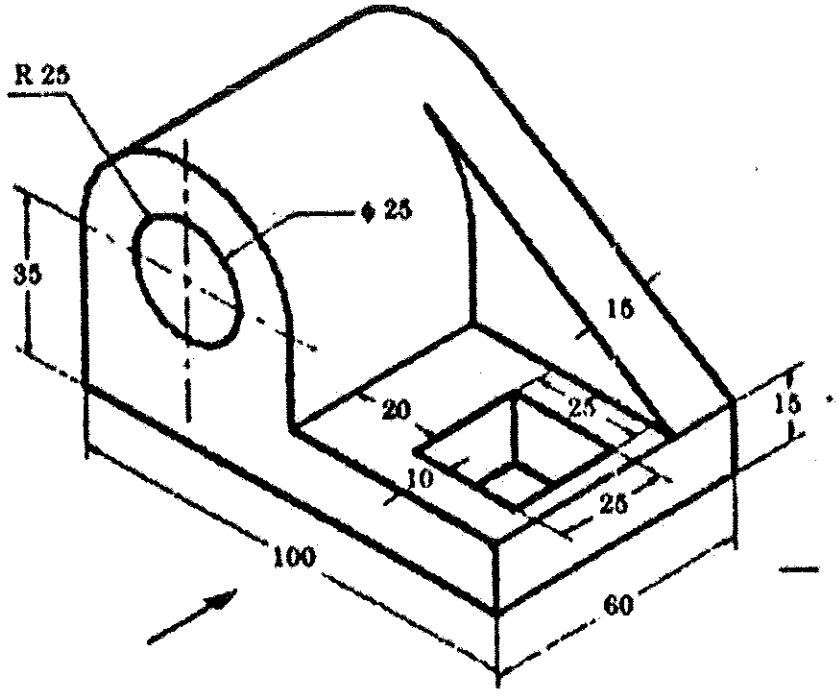
Illustration	Application
Thick	Outlines, visible edges, surface boundaries of objects, margin lines
Continuous thin	Dimension lines, extension lines, section lines leader or pointer lines, construction lines, boarder lines
Continuous thin wavy	Short break lines or irregular boundary lines – drawn freehand
Continuous thin with zig-zag	Long break lines
Short dashes, gap 1, length 3 mm	Invisible or interior surfaces
Short dashes	Center lines, locus lines Alternate long and short dashes in a proportion of 6:1,
Long chain thick at end and thin elsewhere	Cutting plane lines

Q11. Draw the all multi-view of this drawing.



Set - A

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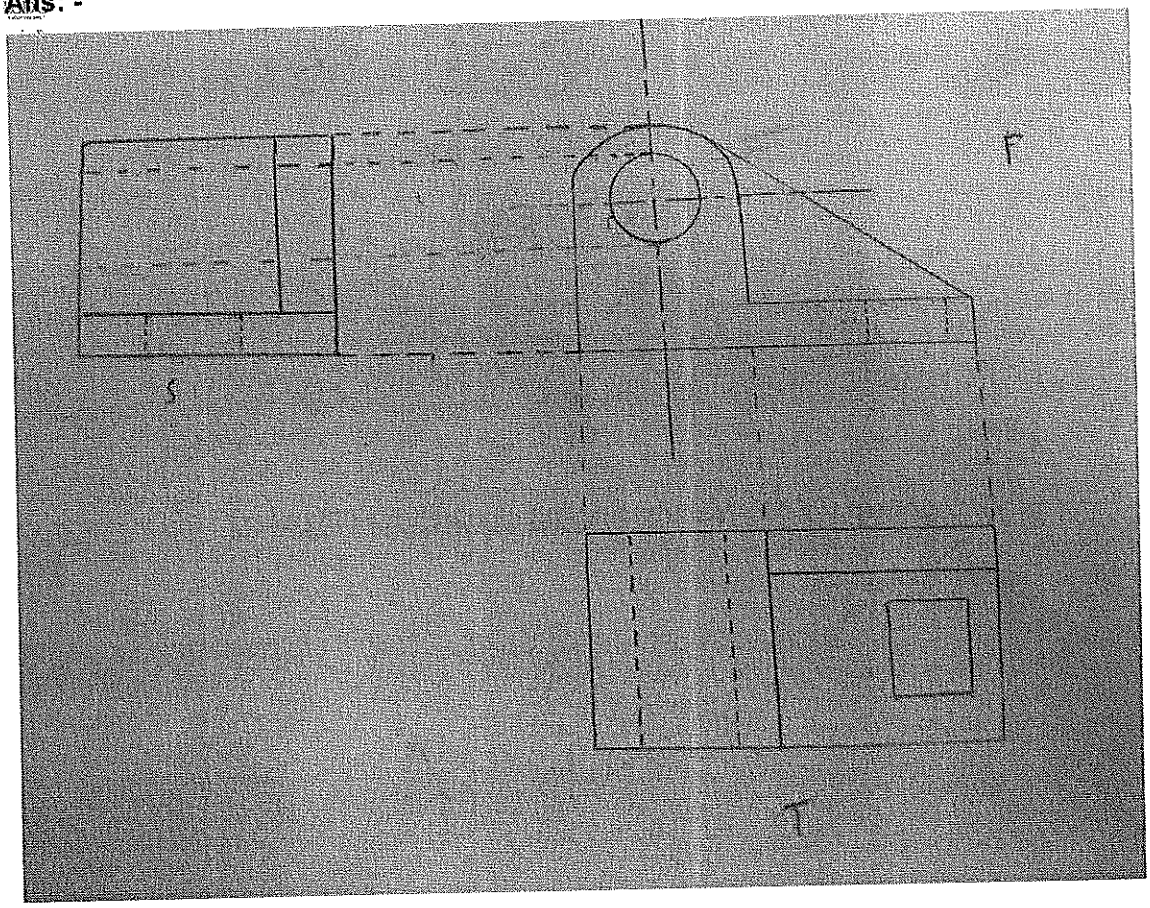
Ans: -



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