BHARTIYA SKILL DEVELOPMENT UNIVERSITY
SCHOOL OF MANUFACTURING SKILLS
1ST SEMESTER, FIRST IN-SEM. EXAMINATION
WINTER SEMESTER, B.VOC. PROGRAM
SESSION 2017-2018

Course Code: SMS1001
Time (Minutes): 60

Course Name: Handskills
Maximum Marks: 20

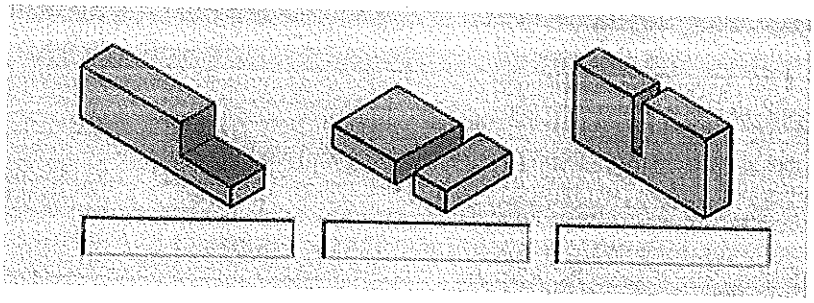
Instructions:

1. Attempt all questions.
2. Use of Calculators is prohibited.
3. Section A contains 10 Questions. Each question carries 0.5 Mark.
4. Section B contains 06 Questions. Each question carries 1 Mark.
5. Section C contains 03 Questions. Each question carries 3 Marks.

Section- A

1. A wedge angle β should be always chosen that is –
   a) As large as possible
   b) As small as possible, but as large as necessary
   c) As large as possible, but as small as necessary
   d) As small as possible

2. Please fill the saw cut types shown with the correct designation.



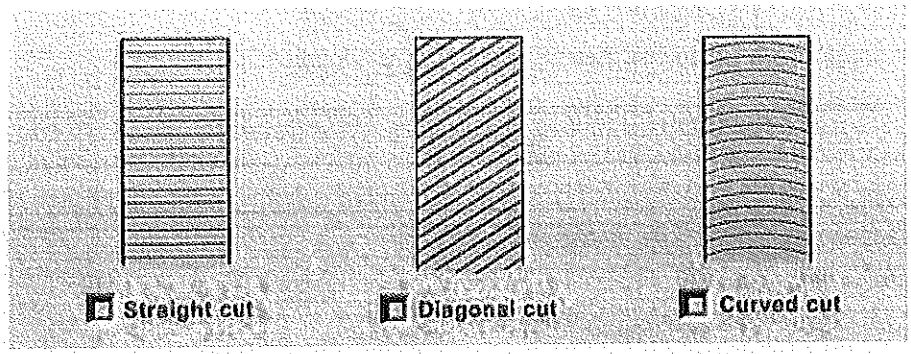
3. After scribing, base plate is to be used as a base for hammering or layout punching.
   a) True
   b) False

4. Which chisel is used in making cavities and slots?
   a) Flat chisel
   b) Cape chisel
   c) Web chisel
   d) Round nose chisel

1st Sem 1st Sm Winter Sem

5. In which process we can't define the cutting edge geometry?
   a) Chiseling
   b) Drilling
   c) Sawing
   d) Grinding

6. Which of the file cut configurations has the bad chip evacuation?



7. Which one is the correct order of reaming process?
   a) Drill > CSK > Reamer
   b) Spot Drill > Drill > Core Drill > Reamer
   c) Spot Drill > Drill > CSK > Core Drill > Reamer
   d) Spot Drill > Drill > Reamer

8. When will the tool wedge penetrate deeper into the work piece?
   a) When the work piece material is harder than the tool material
   b) When a tool is used of large wedge angle
   c) When the work piece material is softer than the tool material
   d) When less force is applied on the tool

9. What is the correct formula for Blind Tap if thickness of work piece is H and diameter of tap is D?
   a) H + 0.3D + 3
   b) H + 0.3D + 0.7D + 3
   c) H + 0.5D + 5
   d) H + 0.5D + 3

Sc. of Manufacturing skill
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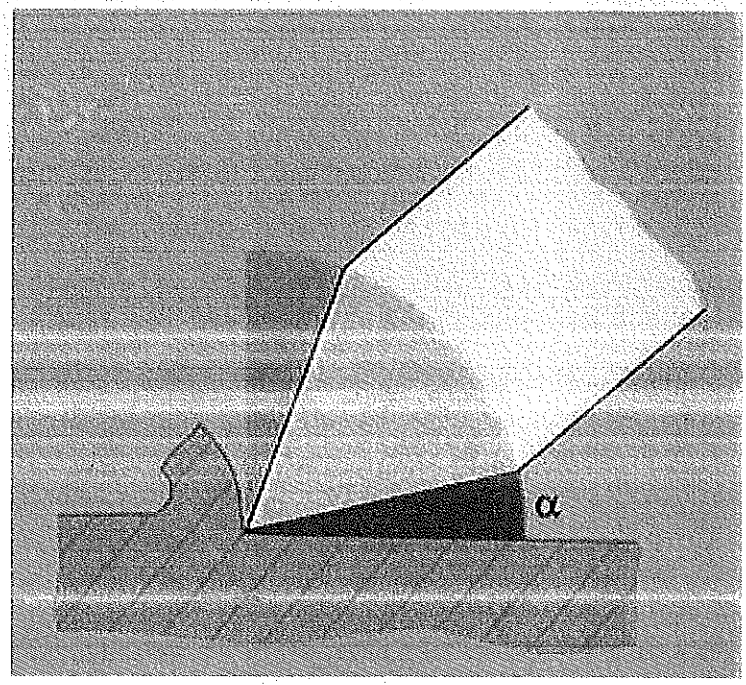
SMS1001

10. To check evenness of a surface which measuring instrument is used:
    a) Vernier caliper
    b) Screw gauge
    c) Knife edge ruler
    d) Radius gauge

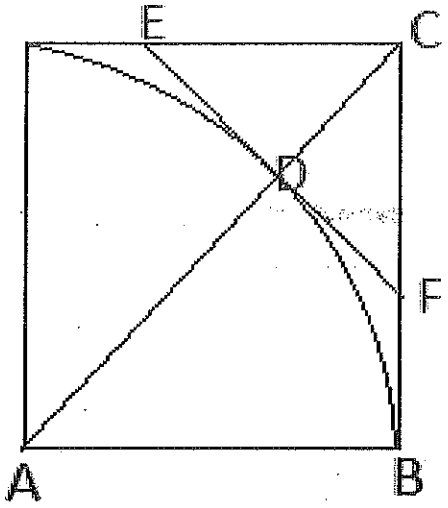
Section- B

11. Write the applications of filing.
12. Why sheet metal is not scribed by hard material?
13. Define the following in one line –
    (1) Drilling (2) Reaming (3) Tapping (4) Deburring
14. Write the difference between counter sinking and counter bore with figure?
15. Write a short note on occupational safety during sawing.
16. What will happen if the size of clearance angle is very less?



Section C

17. Derive the formulae of chamfer CF = CE for radius 'R', where AB = BC = AD = R.



18. Describe 'free cutting' in 'sawing' with figures? Types of saw blade can be made to cut free.

19. Explain the chip formation process.

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Course Code: SMS1001 **Course Name:** Handskills
Time (Minutes): 60 **Maximum Marks:** 20

Section- A **(0.5x10=5 Marks)**

1. A wedge angle β should be always chosen that is – 0.5 Mark
   Ans. As small as possible, but as large as necessary
2. Please fill the saw cut types shown with the correct designation. (0.16x3=0.5 Mark)
   Ans.
   1. Sawing out
   2. Sawing off
   3. slitting
3. After scribing, base plate is to be used as a base for hammering or layout punching. 0.5 Mark
   Ans. False
4. Which chisel is used in making cavities and slots? 0.5 Mark
   Ans. Web Chisel
5. In which process we can't define the cutting edge geometry? 0.5 Mark
   Ans. Grinding
6. Which of the file cut configurations has the bad chip evacuation? 0.5 Mark
   Ans. Straight Cut
7. Which one is the correct order of reaming process? 0.5 Mark
   Ans. Spot Drill > Drill > CSK > Core Drill > Reamer
8. When the tool wedge will penetrate deeper into the work piece? 0.5 Mark
   Ans. When the work piece material is softer than the tool material
9. What is the correct formulae of tap depth for Blind Tap if thickness of work piece is H and dia. of tap is D?
   Ans. H + 0.5D + 3 0.5 Mark
10. To check evenness of a surface which measuring instrument is used: 0.5 Mark
    Ans. Knife edge ruler

Answer Key

Section- B (1x6=6 Marks)

11. Write five the applications of filing? (0.2x5=1 Mark)

Ans. Filing is specially well suited for the production of –

(1) Flat surfaces

(2) Square and parallel surfaces

(3) Radii

(4) Fits

(5) Complex contours

12. Why sheet metal is not scribed by hard material?

Ans. When a sheet metal is scribed by a hard material then a v-notch of very small size is formed, and when it is bent then the scribed sheet metal would break along the scribed line.

13. Define the following in one line – (0.33x3=1 Mark)

Ans.

(1) Drilling – Drilling is the operation of producing circular hole in the work piece by using a rotating cutter called Drill.

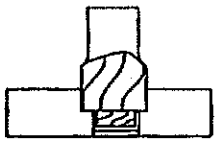
(2) Reaming – Reaming is accurate way of sizing and finishing the pre-existing hole, Accuracy of 5 microns can be achieved.

(3) Tapping – Tapping is the process by which internal threads are formed, it is performed by hand or machines.

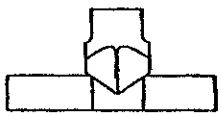
14. Write the difference between counter sinking and counter bore with figure? (0.2x5=1 Mark)

Ans. Counter Sink – Special angle cone shaped enlargement at the end of the hole to accommodate the screws. Cone angles of 60° , 90° , 120° etc.

Counter Bore – This operation uses a pilot to guide the cutting action to accommodate the heads of bolts.



Counter Boring



Countersinking

15. Write a short note on occupational safety during sawing. (0.2x5=1 Mark)

Ans.

1. Clamp the work piece firmly in the vise.
2. Prevent the saw from slipping off the work piece by filing a notch.
3. Shortly before separation of the work piece, reduce the cutting pressure.
4. Don't remove saw chips with your fingers.
5. Deburr the work piece after sawing.

16. What happened if the size of clearance angle is very less? (1x1=1 Mark)

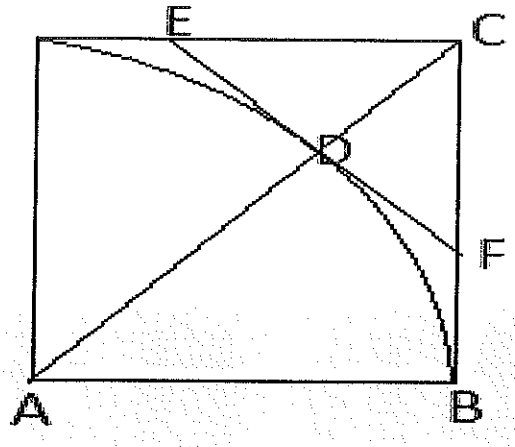
Ans. If the clearance angle is very less, then the tool face will rub with the work piece surface. Due to this, friction will generate and because of friction tool temperature will increase which can affect the tool life. Surface finish will also be affected.

Section C

(3x3=9 Marks)

17. Derive the formulae of chamfer CF = CE for radius 'R', where AB = BC = AD = R. (3 Marks)

Ans. The chamfer value for the radius R is CF (=CE)



As given in question: AB = BC = AD = R

So, in triangle ABC, angle C and A is of 45°

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

$AC = R\sqrt{2} = R \times 1.414 = 1.414R$

$AC = AD + CD \rightarrow CD = AC - AD \rightarrow CD = 1.414R - R = 0.414R$

In triangle FDC –

Angle D is of 90°, C is of 45°, so angle F is also of 45°

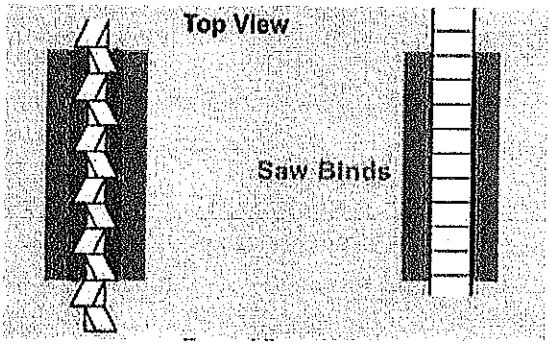
Then, $CF^2 = FD^2 + CD^2 \rightarrow (0.414R)^2 + (0.414R)^2$

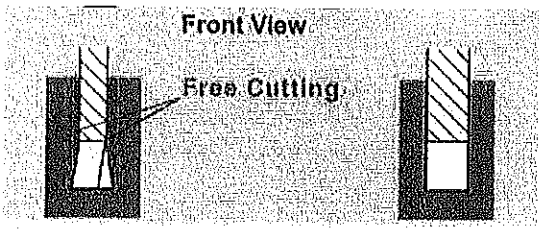
$CF = 0.414R\sqrt{2} = 0.414R \times 1.414 = 0.5853R$

$CF \approx 0.6R$

18. Describe 'free cutting' in 'sawing' with figures? Types of saw blade can be made to cut free. (3 Marks)

Ans. During sawing, if the saw blade cuts the work piece material without binding then the cutting is called free cutting. For free cutting the 'kerf' must be wider than the thickness of the blade, if this is not the case the saw blade will bind.



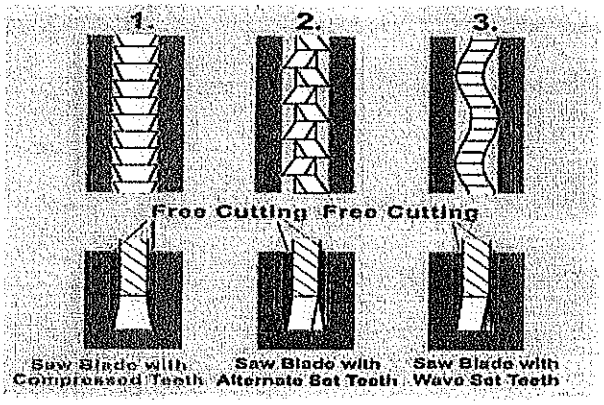


Three types of saw blade can be made to free cut –

(1) Compression of the teeth

(2) Alternation of the teeth

(3) Wave setting of the teeth



Blade can be made to cut free.

19. Explain the chip formation process. (What and its phases) (1x3=3 Marks)

Ans. In a metal removal process, excess metal is removed in the form of 'chips'. Chip formation can be divided into three phases –

(1) Compression – When a tool comes in contact with the work piece, the work piece material compressed at a certain limit.

(2) Shearing –This compressed material wants to be free so a relative motion will come there between the compressed material and rest of work piece material. Due to this, two parallel forces in opposite direction get started working. These two forces are shear force and the process is shearing.

(3) Sliding – Moving out of the chips from the work piece after cut.

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SCHOOL OF MANUFACTURING SKILLS

1st SEMESTER, FIRST IN-SEMESTER EXAMINATION

WINTER SEMESTER, B.VOC. PROGRAM

SESSION 2017-2018

Course Code: SMS1003 **Course Name**: Assembly

Time (Minutes): 60 **Maximum Marks**: 20

Instructions:

1. Attempt all questions.
2. Use of Calculators is Prohibited.
3. Section A contains 10 Questions. Each question carries 0.5 Marks.
4. Section B contains 06 Questions. Each question carries 1 Marks.
5. Section C contains 03 Questions. Each question carries 3 Marks.

Section-

1. Oil that solidify and becomes fat at low temperature is-
   a) Vegetable oil
   b) Crude oil
   c) Mineral oil
   d) Kerosene oil
2. When there is heavy thrust load, we use-
   a) Ball Bearing
   b) Roller Bearing
   c) Self-Aligning Bearing
   d) Roller Thrust Bearing
3. Thin annular shaped metal disk is called-
   a) Nut
   b) Washer
   c) Stud
   d) Bolt
4. When there is some misalignment between axis of shaft and housing, we use-
   a) Ball bearing
   b) Roller bearing
   c) Self-aligning bearing
   d) Deep groove ball bearing

5. When there is no place to accommodate nuts, we use-
    a) Bolt
    b) Stud
    c) Cap screws
    d) Washer
6. Castle nut is also known as-
    a) Locknut
    b) Jam nut
    c) Nut
    d) Slotted nut
7. For a properly lubricated chain, efficiency is from-
    a) 70-80%
    b) 90-92%
    c) 80-90%
    d) 96-98%
8. Flat belts are used in-
    a) Bicycles
    b) Belt conveyor
    c) Synchronizing cam and crankshaft
    d) Vacuum cleaner
9. When correctly tensioned, these belts have no slippage-
    a) Round belt
    b) Flat belt
    c) Timing belt
    d) V-belt
10. Teeth are at an angle to axis of shaft in-
    a) Helical gear
    b) Spur gear
    c) Bevel gear
    d) Herringbone gear

Section- B

11. The base by which the setscrew lock the thread of screw is made of soft material like _____ or _____.
12. Define Bolt
13. Non-metallic gaskets are made up of _____, _____, _____ or _____.

14. Define washer.
15. _____ can be used instead of key to prevent relative motion between the hub and shaft in small power transmissions.
16. Flat belts have a _____ cross section.

Section- C

17. Explain any three advantages of tapered roller bearing.
18. Discuss temporary joints and permanent joints with example.
19. Explain any three conditions for using studs.

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SESSION 2017-2018

Course Code: SMS1003
Time (Minutes): 60

Course Name: Assembly
Maximum Marks: 20

Section- A

(0.5x10=5 Marks)

1. Oil that solidify and becomes fat at low temperature is
   Ans. (A) Vegetable oil — 0.5 Mark
2. When there is heavy thrust load, we use-
   Ans. (D) Roller Thrust Bearing — 0.5 Mark
3. Thin annular shaped metal disk is called-
   Ans. (B) Washer — 0.5 Mark
4. When there is some misalignment between axis of shaft and housing, we use-
   Ans. (C) Self- Aligning Bearing — 0.5 Mark
5. When there is no place to accommodate nuts, we use-
   Ans. (C) Cap Screws — 0.5 Mark
6. Castle nut is also known as-
   Ans. (D) Slotted nut — 0.5 Mark
7. For a properly lubricated chain, efficiency is from-
   Ans. (D) 96-98% — 0.5 Mark
8. Flat belts are used in-
   Ans. (B) Belt Conveyor — 0.5 Mark
9. When correctly tensioned, these belts have no slippage-
   Ans. (C) Timing Belt — 0.5 Mark
10. Teeth are at an angle to axis of shaft in-
    Ans. (A) Helical gear — 0.5 Mark

Section- B

(1x6=6 Marks)

11. The base by which the setscrew lock the thread of screw is made of soft material like _____ or _____.
    Ans. Copper or Lead — 0.5x2= 1 Mark

Answer Key

12. Define Bolt 1 Mark

Ans. A *bolt* is fastener with a head & straight threaded shank & intended to be used with a nut to clamp two or more parts.

13. Non-metallic gaskets are made up of _____, _____, _____ or _____. 0.25x4= 1 Mark

Ans. Non-metallic gaskets are made up of asbestos, cork, rubber or plastic.

14. Define Washer 1 Mark

Ans. *Washers* are thin annular shaped metallic disk. the main function of a washer is in distributing load over a large area on the surface of clamped parts.

15. _____ can be used instead of key to prevent relative motion between the hub and shaft in small power transmissions. 1 Mark

Ans. Set screw can be used instead of key to prevent relative motion between the hub and shaft in small power transmissions.

16. Flat belts have a _____ cross section. 1 Mark

Ans. Flat belts have a rectangular cross section.

Section- C (3x3=9 Marks)

17. Explain any three advantages of tapered roller bearing. 1x3=3 Marks

Ans. Advantages

a) Tapered roller bearing can take heavy radial and thrust load.
b) Tapered roller bearings are more rigid.
c) These can be easily assemble and disassembled due to separable parts.

18. Discuss temporary joints and permanent joints with example. 1x3=3 Marks

Ans. Temporary Joints

a) The joints which can be assembled and dismantled whenever required.
b) The joints that can be removed or dismantled without damaging the joining components.
c) Examples are like joining with fasteners like bolt, screw, nut, studs, etc.

Permanent joints

a) The joints which can be assembled and cannot easily dismantled whenever required.
b) The joints that cannot be removed or dismantled without damaging the joining components.
c) Examples are like joining with welding, soldering, riveting, etc.

19. Explain any three conditions of using studs. 1x3=3 Marks

Ans. Conditions of using studs:

a) One of the parts is thick enough to accommodate a threaded hole.

b) The material of the part with threaded hole has sufficient strength to ensure durable threads.

c) The material of other part, without tapped hole, cannot ensure sufficient durability of the threads, e.g. light alloy or cast iron.

d) The parts that are connected require frequent dismantling and reassembly.

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Course Code: SMS1004
Time (Minutes): 60

Course Name: Measurement
Maximum Marks: 20

Instructions:

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3. Section A contains 10 Questions. Each question carries 0.5 Mark.
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5. Section C contains 03 Questions. Each question carries 3 Marks.

Section- A

1. Which one is the correct measuring tools is used to measure the diameter of a shaft ...?
   a) Vernier Callipers
   b) Micrometer
   c) Snap Gauge
   d) Plug Gauge

2. Sensory inspection is a type of:
   a) Subjective measurement
   b) Objective measurement

3. Accuracy of standard to calibrate a measuring instrument should be...
   a) 1/10th of least count of measuring instrument.
   b) Less than 1/10th of least count of measuring instrument.
   c) More than 1/10th of least count of measuring instrument.
   d) Maximum 1/10th of least count of measuring instrument.

4. Convert
   a) 1 mm = ___ µm
   b) 20cm = ___mm

5. What is the use of Ratchet?
    a) Fine movement
    b) To limit the measuring force
    c) Both fine movement and to limit the measuring force
    d) None of these

6. Visual and tactile inspection is a type of:
    a) Subjective measurement
    b) Sensory measurement
    c) Both subjective and sensory
    d) None of the above

7. In which one of the processes we get the numerical value...
    a) Measuring
    b) Gauging
    c) Subjective

8. Radius gauge is a type of....
    a) Form gauge
    b) Limit gauge
    c) Dimensional gauge
    d) Both form and limit gauge

9. Which one of the following is the correct measuring tools to check the dimension (dia) of a hole?
    a) Vernier caliper
    b) Ring gauge
    c) Plug gauge
    d) Snap gauge

10. Material of a measuring tool should be...
    a) Softer than the work piece.
    b) Harder than the work piece
    c) Same hardness as of work piece
    d) None of the above.

Section- B

11. Define Accuracy.
12. Write down the two applications of Vernier Calipers.
13. Define Least Count.
14. The process to find out the error in a measuring instrument is called _____.
15. Which are the various types of cross-sectional views?
16. When measured value are close to each other, is called_____

Section- C

17. Explain different type of errors occur while measuring the work-piece.
18. Calculate the least count of Vernier Caliper which has 50 divisions on secondary scale and least count of the main scale is 1 mm.
19. Write down the different parts of a micrometer with their applications.

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Section- A

1. Which one is the correct measuring tools is used to measure the diameter of a shaft ...?
   - Micrometer

2. Sensory inspection is a type of:
   - Subjective measurement

3. Accuracy of standard to calibrate a measuring instrument should be...
   - Less than 1/10th of least count of measuring instrument

4. Convert
   a) 1 mm = 1000 µm
   b) 20cm = 200mm

5. What is the use of Ratchet?
   - Both fine movement and to limit the measuring force

6. Visual and tactile inspection is a type of:
   - Both subjective and sensory

Answer Key

7. In which one of the processes we get the numerical value...
   - Measuring

8. Radius gauge is a type of....
   - Form gauge

9. Which of the following is the correct measuring tools to check the dimension (dia) of a hole?
   - Plug gauge

10. Material of a measuring tool should be...
    - Harder than the work piece

Section- B

11. Define Accuracy.
    - Accuracy is how close a measured value is to the true value

12. Write down the two applications of Vernier Calipers.
    I. External Measurement
    II. Internal Measurement

13. Define Least Count.
    - Minimum value that can be measured by measuring tool

14. The process to find out the error in a measuring instrument is called
    - Calibration

15. Which are the various types of cross-sectional views?
    I. Half cross-section view
    II. Full cross-section view

16. When measured value are close to each other, is called.
    - Precision

Answer Key

Section- C

17. Explain different type of error occur while measuring the workpiece.

Answer.

- **Zero Errors** – Zero value of both scales (Main and Vernier scale) do not match with each other when both jaws are clamped together.
- **Cocking Errors** – Reference face and measuring face are not parallel and work piece is not properly hold between jaws.
- **Dirt and Burr errors** – This error occur due to following reason.
    i. Any dust particle comes in between of measuring faces and reference face of the measuring tool and the work piece
    ii. If work piece is not deburred after machining.
- **Tilt Errors** – When an extra force is exerted on measuring Face or slider then it causes the tilt in movable jaw.
- **Parallax error** – When the reading is not taken from the correct position.

18. Calculate the least count of Vernier Caliper which has 50 divisions on secondary scale with using a formula.

Formula:

L.C = The value of smallest division on main scale / Total number of division on secondary scale

OR

L.C = Main scale division – Vernier scale division

Calculate least count:

L.C = 1mm / 50 = 0.02mm

Or

L.C = 1mm – 0.98mm = 0.02mm

19. Write down the different parts of a micrometer with their applications.

Answer.

- **Ratchet-** used to apply constant and limited measuring force and also used for fine movement.
- **Thermal insulation pad-** do not allow to transfer the body heat to micrometer.
- **Anvil and spindle-** Anvil used to support the workpiece and create reference face and spindle create measuring face, it consists linear and rotational motion.
- **Measuring scale-** works on the pitch principle or can be defined as one rotation of circular scale gives one division linear movement on main scale.
- **Frame** – it is required to support all components of micrometer.

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Time (Minutes): 60

Course Name: Measurement
Maximum Marks: 20

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Section- A

1. Which one is the correct measuring tools is used to measure the diameter of a shaft ...?
   a) Vernier Callipers
   b) Micrometer
   c) Snap Gauge
   d) Plug Gauge

2. Sensory inspection is a type of:
   a) Subjective measurement
   b) Objective measurement

3. Accuracy of standard to calibrate a measuring instrument should be...
   a) 1/10th of least count of measuring instrument.
   b) Less than 1/10th of least count of measuring instrument.
   c) More than 1/10th of least count of measuring instrument.
   d) Maximum 1/10th of least count of measuring instrument.

4. Convert
   a) 1 mm = ___ µm
   b) 20cm = ___mm

5. What is the use of Ratchet?
    a) Fine movement
    b) To limit the measuring force
    c) Both fine movement and to limit the measuring force
    d) None of these

6. Visual and tactile inspection is a type of:
    a) Subjective measurement
    b) Sensory measurement
    c) Both subjective and sensory
    d) None of the above

7. In which one of the processes we get the numerical value...
    a) Measuring
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8. Radius gauge is a type of....
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    c) Dimensional gauge
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9. Which one of the following is the correct measuring tools to check the dimension (dia) of a hole?
    a) Vernier caliper
    b) Ring gauge
    c) Plug gauge
    d) Snap gauge

10. Material of a measuring tool should be...
    a) Softer than the work piece.
    b) Harder than the work piece
    c) Same hardness as of work piece
    d) None of the above.

Section- B

11. Define Accuracy.
12. Write down the two applications of Vernier Calipers.
13. Define Least Count.
14. The process to find out the error in a measuring instrument is called _____.
15. Which are the various types of cross-sectional views?
16. When measured value are close to each other, is called_____

Section- C

17. Explain different type of errors occur while measuring the work-piece.
18. Calculate the least count of Vernier Caliper which has 50 divisions on secondary scale and least count of the main scale is 1 mm.
19. Write down the different parts of a micrometer with their applications.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY
SCHOOL OF MANUFACTURING SKILLS
1st SEMESTER, FIRST IN- SEM. EXAMINATION
WINTER SEMESTER, B.VOC. PROGRAM
SESSION 2017-2018

Course Code: SMS1004
Time (Minutes): 60

Course Name: Measurement
Maximum Marks: 20

Instructions:

1. Attempt all questions.
2. Use of Calculators is prohibited.
3. Section A contains 10 Questions. Each question carries 0.5 Mark.
4. Section B contains 06 Questions. Each question carries 1 Mark.
5. Section C contains 03 Questions. Each question carries 3 Marks.

Section- A

1. Which one is the correct measuring tools is used to measure the diameter of a shaft ...?
   - Micrometer

2. Sensory inspection is a type of:
   - Subjective measurement

3. Accuracy of standard to calibrate a measuring instrument should be...
   - Less than 1/10th of least count of measuring instrument

4. Convert
   a) 1 mm = 1000 µm
   b) 20cm = 200mm

5. What is the use of Ratchet?
   - Both fine movement and to limit the measuring force

6. Visual and tactile inspection is a type of:
   - Both subjective and sensory

Answer Key

7. In which one of the processes we get the numerical value...
   - Measuring

8. Radius gauge is a type of....
   - Form gauge

9. Which of the following is the correct measuring tools to check the dimension (dia) of a hole?
   - Plug gauge

10. Material of a measuring tool should be...
    - Harder than the work piece

Section- B

11. Define Accuracy.
    - Accuracy is how close a measured value is to the true value

12. Write down the two applications of Vernier Calipers.
    I. External Measurement
    II. Internal Measurement

13. Define Least Count.
    - Minimum value that can be measured by measuring tool

14. The process to find out the error in a measuring instrument is called
    - Calibration

15. Which are the various types of cross-sectional views?
    I. Half cross-section view
    II. Full cross-section view

16. When measured value are close to each other, is called.
    - Precision

Answer Key

Section- C

17. Explain different type of error occur while measuring the workpiece.

Answer.

- **Zero Errors** – Zero value of both scales (Main and Vernier scale) do not match with each other when both jaws are clamped together.
- **Cocking Errors** – Reference face and measuring face are not parallel and work piece is not properly hold between jaws.
- **Dirt and Burr errors** – This error occur due to following reason.
    i. Any dust particle comes in between of measuring faces and reference face of the measuring tool and the work piece
    ii. If work piece is not deburred after machining.
- **Tilt Errors** – When an extra force is exerted on measuring Face or slider then it causes the tilt in movable jaw.
- **Parallax error** – When the reading is not taken from the correct position.

18. Calculate the least count of Vernier Caliper which has 50 divisions on secondary scale with using a formula.

Formula:

L.C = The value of smallest division on main scale / Total number of division on secondary scale

OR

L.C = Main scale division – Vernier scale division

Calculate least count:

L.C = 1mm / 50 = 0.02mm

Or

L.C = 1mm – 0.98mm = 0.02mm

19. Write down the different parts of a micrometer with their applications.

Answer.

- **Ratchet-** used to apply constant and limited measuring force and also used for fine movement.
- **Thermal insulation pad-** do not allow to transfer the body heat to micrometer.
- **Anvil and spindle-** Anvil used to support the workpiece and create reference face and spindle create measuring face, it consists linear and rotational motion.
- **Measuring scale**- works on the pitch principle or can be defined as one rotation of circular scale gives one division linear movement on main scale.
- **Frame** – it is required to support all components of micrometer.

BSDU

BHARTIYA SKILL DEVELOPMENT UNIVERSITY
SCHOOL OF MANUFACTURING SKILLS
3rd SEMESTER, FIRST IN- SEM. EXAMINATION
WINTER SEMESTER, B.VOC. PROGRAM
SESSION 2017-2018

Course Code: SMS3001

Course Name: Advanced Conventional Manufacturing

Time (Minutes): 60

Maximum Marks: 20

Instructions:

1. Attempt all questions.
2. Use of Calculators is prohibited.
3. Section A contains 10 Questions. Each question carries 0.5 Mark.
4. Section B contains 06 Questions. Each question carries 1 Mark.
5. Section C contains 03 Questions. Each question carries 3 Marks.

Section- A

Fill in the blanks

1) The different force direction means that the mill is pulled into the work piece during _____.
   - Up milling
   - Down milling
2) Shoulder mill is used for _____.
   - Finish milling
   - Rough milling
3) Gears are produced by _____ using either DISC CUTTER or END MILL.
   - Injection moulding
   - Form milling
4) _____ is harder abrasive particle than silicon carbide.
   - Aluminium oxide
   - Boron nitride
5) The size of an abrasive grain is identified to the number of squares per _____ of screen length.
   - Millimeter
   - Inch
6) Larger pore structure designation number means _____ pores.
   - Large
   - Small

7) For interrupted turning we take _____ angle of inclination.
   - Positive
   - Negative
8) For medium rake angle and lower cutting speed, _____ chips are formed.
   - Rupture chips
   - Shearing chips
9) Chip breakers should produce _____ chip forms.
   - Favorable
   - Unfavorable
10) For high cutting speed & large rake angle _____ chips are formed.
   - Continuous
   - Rupture

Section-B

1) Define gear.
2) Define grinding.
3) Name four types of gear.
4) Differentiate between cycloidal teeth and involute teeth (two points).
5) Why are small corner radii primarily used during finishing
6) What advantage does a negative angle of inclination for the tool holder have?

Section-C

1) Calculate number of teeth to be cut out if gear blank diameter is 78 mm & module of disc cutter is 1.5 mm and also calculate pitch diameter and total depth.
2) Select correct identifying terms for every block with the options given below:

Grinding Wheel DIN 69120 1 A 450 x 100 x 127 A60K 8V 40

   - Type
   - Material of grinding wheel
   - Abrasive particles
   - Grain size
   - Grade
   - Form
   - Nominal dimension
3) Calculate the theoretical surface roughness during turning if corner radius is 0.6 mm and feed rate is 0.4 mm and also define R_a & R_z.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

SCHOOL OF POLYMECHANIC SKILLS

3RD SEMESTER, END-SEMESTER EXAMINATION

SUMMER SEMESTER, B.VOC. PROGRAM

SESSION 2017-2018

Course Code: SMS3001 **Course Name**: Advanced Conventional Manufacturing

Time (Minutes): 60 **Maximum Marks**: 20

Section- A **(0.5x10=5 Marks)**

1. The different force direction means that the mill is pulled into the work piece during _____.
   Ans. Up milling 0.5 Mark
2. Shoulder mill is used for _____.
   Ans. Roughing 0.5 Mark
3. Gears are produced by _____ using either DISC CUTTER or END MILL
   Ans. Form milling 0.5 Mark
4. _____ is harder abrasive particle than silicon carbide.
   Ans. Boron nitride 0.5 Mark
5. The size of an abrasive grain is identified to the number of squares per _____ of screen length.
   Ans. Inch 0.5 Mark
6. Larger pore structure designation number means _____ pores
   Ans. Large
7) For interrupted turning we take _____ angle of inclination.
   Ans. Negative 0.5 Mark
8) For medium rake angle and lower cutting speed, _____ chips are formed.
   Ans. Shearing chips 0.5 Mark
9) Chip breakers should produce _____ chip forms
   Ans. Favorable 0.5 Mark
10) For high cutting speed & large rake angle _____ chips are formed.
   Ans. Continuous 0.5 Mark

Answer Key

BSDU

Section- B (1x6=6 Marks)

11) Define gear. 1 Marks

Ans. A gear is a rotating machine part having cut *teeth*, which mesh with another toothed part to transmit torque.

12) Define grinding. 1 Marks

Ans. Grinding is a metal removal process that produces that produces work piece surfaces with close tolerances and high surface quality.

13) Name four types of gear. 1 Marks

Ans. Spur gear

Bevel gear

Rack and pinion

Helical gear

14) Differentiate between cycloidal teeth and involute teeth (two points). 0.25 X 4 Marks

Ans.

Cycloidal teeth	Involute teeth
Flexibly used for limited change in center distance.	Cannot be used for flexible center distance.
Pressure angle is constant.	Pressure angle is not constant

15) Why are small corner radii primarily used during finishing? 1 Marks

Ans. When using smaller corner radii, the thrust force for the tool and the work piece become higher due to the smaller passive force, this can decrease vibration and increase the surface quality.

16) What advantage does a negative angle of inclination for the tool holder have? 1 Marks

Ans. Negative angle of inclination displaces the initial contact between work piece and tool away from the cutting edge, this reduces the risk of cutting edge chipping.

Section- C

(3x3=9 Marks)

17) Calculate number of teeth to be cut out if gear blank diameter is 78 mm & module of disc cutter is 1.5 mm and also calculate pitch diameter and total depth.

1X3=3 Marks

Ans. Given,
Blank Diameter or Outer Diameter, D_o = 78 mm,
Module, m = 1.5 mm
No. of Teeth, Z =?
We know, Outer Diameter, D_o = (Z + 2) m

So, Z = (D_o / m) – 2
= (78 / 1.5) – 2
= 52 – 2
= 50 teeth are to be cut.

Pitch diameter D = mZ
=1.5*50
= 75 mm

Total depth = 2.16*m
= 3.24 mm

18) Select correct identifying terms for every block with the options given below:

0.75X4=3 Marks

Grinding Wheel DIN 69120 1 A 450 x 100 x 127 A60K 8V 40

Ans. 1 block – Type
2 block – Form
3 block – Nominal dimension
4 block – Material of the grinding wheel

19) Calculate the theoretical surface roughness during turning if corner radius is 0.6 mm and feed rate is 0.4 mm and also define R_a & R_z.

1X3=3 Marks

Ans. $R_{th} = f^2/8*r_e$

$= 0.4^2/8*0.6$ mm
= 0.033 mm

R_a – this is the arithmetic mean of the amounts of all ordinate values z of the R profile within a single measuring section.
R_z – this is the maximum height of the R profile within a single measuring section.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

SCHOOL OF MANUFACTURING SKILLS

3rd SEMESTER, 1ST IN-SEMESTER EXAMINATION

WINTER SEMESTER, B.VOC. PROGRAM

SESSION 2017-2018

Course Code: GEN 3002 **Course Name:** Engineering Drawing

Time (Minutes): 60 **Maximum Marks:** 20

Instructions:

1. Attempt all questions.
2. Use of Calculators is Prohibited.
3. Section A contains 10 Questions. Each question carries 0.5 Marks.
4. Section B contains 06 Questions. Each question carries 1 Mark.
5. Section C contains 03 Questions. Each question carries 3 Marks.

Section-A

1. What is the size of A-4 paper format?
   a) 210 X 300
   b) 310 X 297
   c) 210 X 297
   d) 400 X 300
2. Which one of the following pencils can be used to draw outline for a drawing?
   a) H
   b) 2H
   c) 3H
   d) HB
3. What is the ratio of the title block with respect to drawing size?
   a) 3:2
   b) 4:3
   c) 1:2
   d) 2:1
4. Which instrument is used to measure circular parts?
   a) Vernier caliper
   b) Micrometer
   c) Ruler
   d) Divider

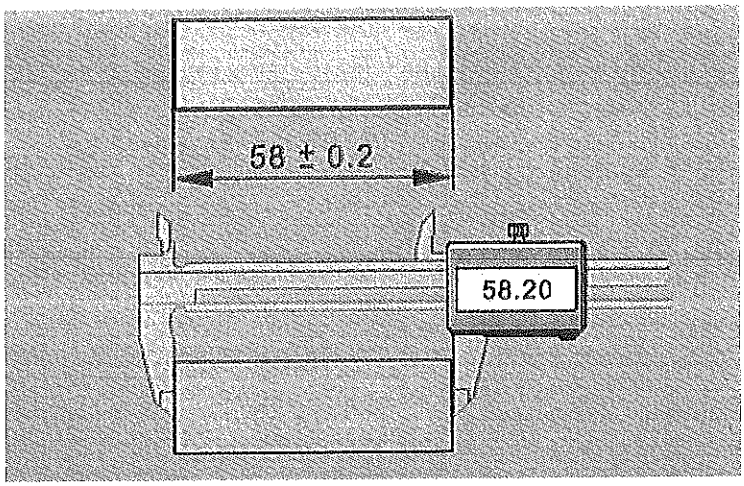
5. What is the minimum border size in a drawing format?
   a) 20 mm
   b) 10 mm
   c) 25 mm
   d) 5 mm
6. 2:1 is an Example of
   a) Reducing scale
   b) Enlarging scale
   c) Equal scale
   d) None of these
7. Short dashes line alternate long and short dashes in a proportion of
   a) 1:6
   b) 6:1
   c) 1:1
   d) 1:2
8. The act of obtaining the image of an object is termed as
   a) Projection
   b) Projectors
   c) View
   d) Line of sight
9. Locus lines are represented by
   a) Short dash line
   b) Continuous thin lines
   c) Continuous thick lines
   d) Continuous thin wavy
10. In _____ Projection method distance from the observer to the object is infinite 0.5 mark
    a) Perspective
    b) Parallel
    c) Orthographic
    d) First angle

Section- B

11. What is the use of reference grid in the drawing sheet?
12. Draw the symbol for the first angle of projection?
13. What is interference fit?
14. What is French Curve?
15. Give two uses of continuous thick lines?.
16. What is Nominal size?

Section- C

17. Write down the differences between first and third angle of projection?.
18. Calculate
    a) Upper deviation
    b) Minimum size
    c) Nominal size
    d) Actual size
    e) Upper limit
    f) Lower deviation



19. Draw the layout for engineering drawing format and indicate its main components?.

BHARTIYA SKILL DEVELOPMENT UNIVERSITY
SCHOOL OF MANUFACTURING SKILLS
1st SEMESTER, 1st IN-SEMESTER EXAMINATION
WINTER SEMESTER, B.VOC. PROGRAM
SESSION 2018-2019

Course Code: A-GEN 3002
Time (Minutes): 60

Course Name: Engineering Drawing
Maximum Marks: 20

Section- A

(0.5x10=5 Marks)

1. What is the size of A-4 paper format? 0.5 Mark
   Ans. (C) 210 X 297
2. Which one of the following pencils can be used to draw outline for a drawing? 0.5 Mark
   Ans. (D) HB
3. What is the ratio of the title block with respect to drawing size? 0.5 Mark
   Ans. (A) 3:2
4. Which instrument is used to measure circular parts? 0.5 Mark
   Ans. (B) Micrometer
5. What is the minimum border size in a drawing format? 0.5 Mark
   Ans. (A) 20 mm
6. 2:1 is an Example of 0.5 Mark
   Ans. (B) Enlarging scale
7. Short dashes line alternate long and short dashes in a proportion of- 0.5 Mark
   Ans. (B) 6:1
8. The act of obtaining the image of an object is termed as- 0.5 Mark
   Ans. (A) Projection
9. Locus lines are represented by - 0.5 Mark
   Ans. (A) Short dash lines
10. In _____ Projection method distance from the observer to the object is infinite. 0.5 Mark
    Ans. (B) Parallel

Section- B

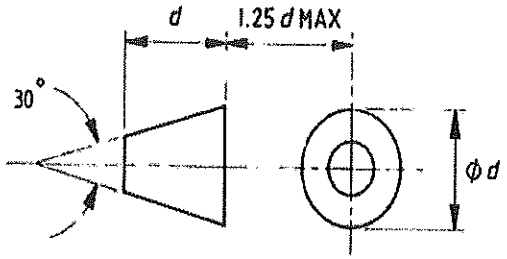
(1x6=6 Marks)

11. What is the use of reference grid in the drawing sheet? 1 Mark
    Ans. to locate specific area in a drawing sheet.

Answer Key

12. Draw the symbol for the first angle of projection? 1 Mark

Ans.



Recommended proportions

13. What is interference fit? 1 Mark

Ans. A fit between two parts in which the external dimensions of one part slightly exceeds the internal dimension of the part into which it has to fit

14. What is French Curve? 1 Mark

Ans. French curve is free form template make of acrylic and is used to draw a smooth curve passing through a number of points.

15. Give two uses of continuous thick lines? 1 Mark

Ans. 1. Used to represent outlines

2. Used to represent Visible edges

16. What is Nominal size? 1 Mark

Ans. The size of a part by which part is called or donated is known as nominal size.

Section- C

(3x3=9 Marks)

17. Write down the differences between first and third angle of projection? 0.5x6=3 Marks

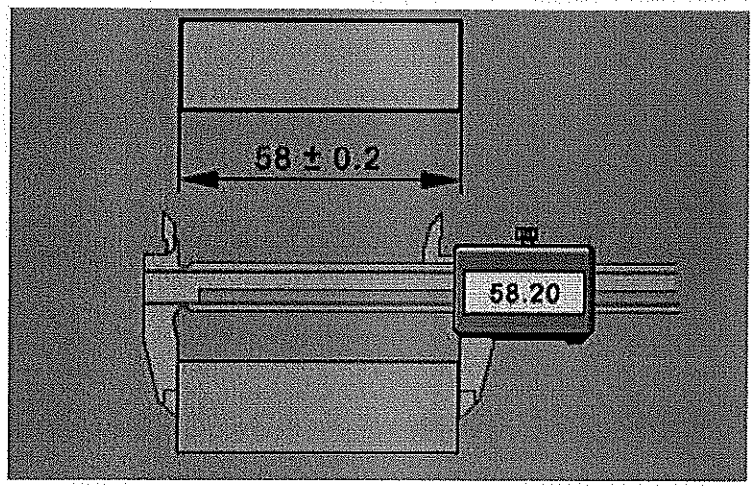
Ans.

First angle projection	Third-angle projection
Object is kept in the first quadrant.	Object is assumed to be kept in the third quadrant.
Object lies between observer and the plane of projection.	Plane of projection lies between the observer and the object.
The plane of projection is assumed to be non-transparent.	The plane of projection is assumed to be transparent.
Front (elevation) view is drawn above the XY line	Front (elevation) view is drawn below the XY line
Top (plan) view is drawn below the XY line	Top (plan) view is drawn above the XY line
Left view is projected on the right plane and vice versa	Left view is projected on the left plane itself.

18. Calculate

0.5x6=3 Marks

a) Upper deviation
b) Minimum size
c) Nominal size
d) Actual size
e) Upper limit
f) Lower deviation



Ans. Upper deviation = +0.2

Minimum size = 57.8

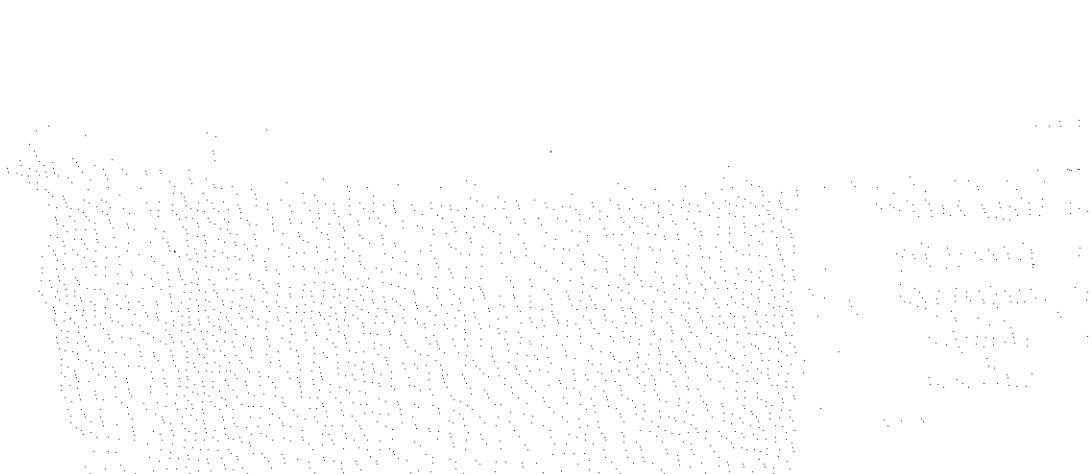
Nominal size = 58

Actual size = 58.20

Upper limit = 58.20

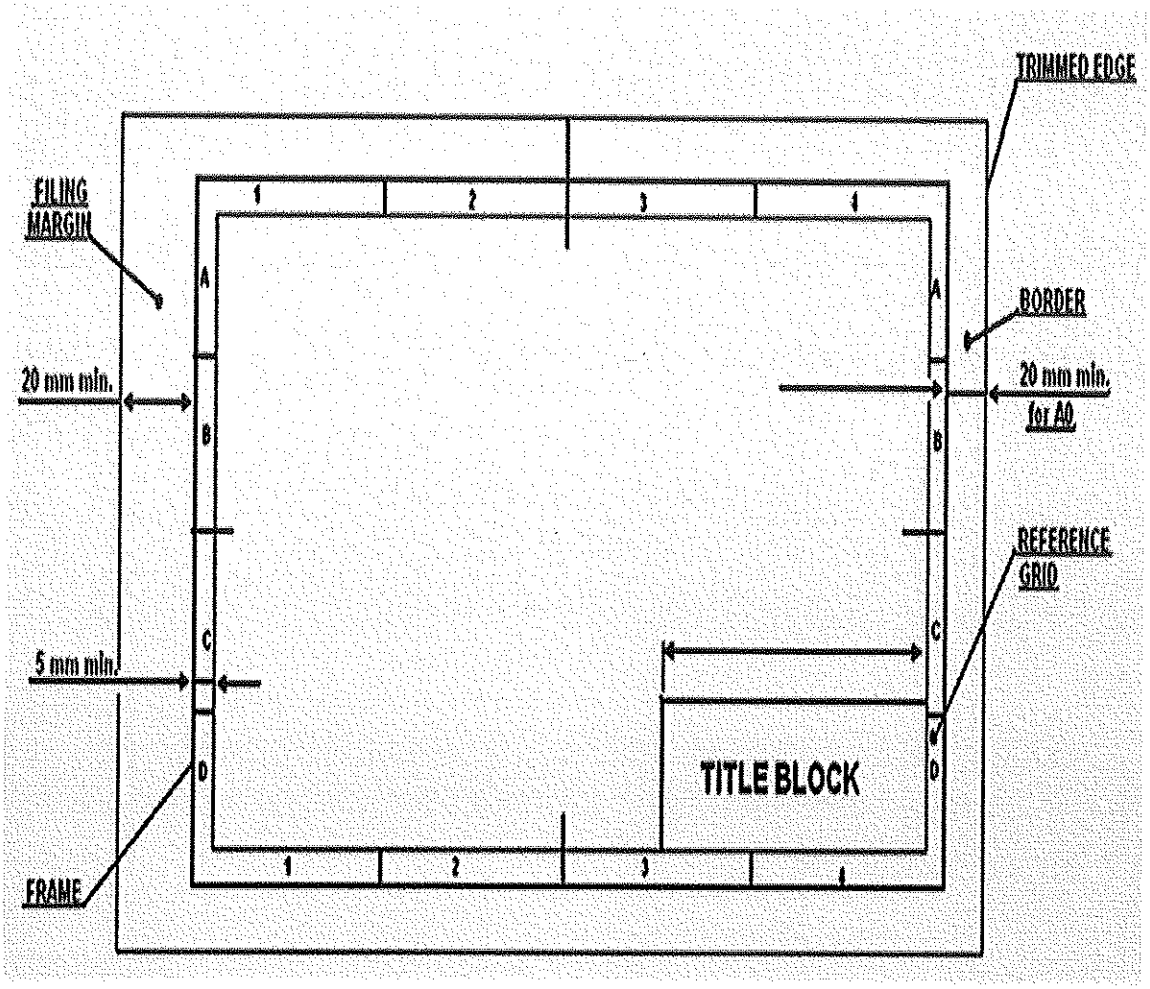
Lower deviation= -0.2

Answer Key



19. Draw the layout for engineering drawing format and indicate its main components? 1.5x2=3 Marks

Ans.



Answer Key