# BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

## School of Manufacturing Skills

## Session: 2019-20 (Summer Semester)

## B. Voc. Program, I Semester,

## 1st In-Sem. Examination

**Course Code: SMS1101** **Time: 1 Hour**

**Course Name: Assembly & Measuring** **Max. Marks: 20**

**Instructions:**

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. Which one is the correct measuring tool to measure the diameter of a shaft?
   a) Micrometer
   b) Vernier Calipers
   c) Snap Gauge.
   d) Plug Gauge
2. 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
3. Which of the following is the correct measuring tool to check the dimension (dia.) of hole?
   a) Vernier caliper
   b) Ring gauge
   c) Plug gauge
   d) Snap gauge
4. Least size available in slip gauge block is-
   a) 1.005 cm
   b) 1.005 Micron
   c) 1.005 mm
   d) 1.0005 mm

5. The shape of V belt is-
   a) V shape
   b) Triangular shape
   c) Trapezoidal Shape
   d) Rectangular

## Section – B

03X02 = 06 Marks

6. What is the importance of tooth backlash in gear meshing?
7. Calculate the least count of Bevel Protractor.
8. Write down the different types of locking device.

## Section – C

03X03 = 09 Marks

9. What is the difference between hexagonal socket head cap screw and hexagonal socket set screw? What do you understand by fasteners grade 8.8?
10. Name the any Six hand tools that you used in assembly. Explain any two of them in detail.
11. Explain the following
    1) Wringing process
    2) Calibration
    3) Dial Test Indicator

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## Answer Key

### Section – A

05X01 = 05 Marks

1. Which one is the correct measuring tool to measure the diameter of a shaft?
   a) Micrometer.
2. What is the use of Ratchet?
   c) Both fine movement and to limit the measuring force.
3. Which of the following is the correct measuring tool to check the dimension (dia.) of hole?
   c) Plug gauge
4. Least size available in slip gauge block is-
   c) 1.005 mm
5. The shape of V belt is-
   c) Trapezoidal Shape

### Section – B

03X02 = 06 Marks

6. What is the importance of tooth backlash in gear meshing?
   Backlash prevents overheating and tooth damage.
   Higher backlash in gears can create noise and vibration.
   And lesser backlash creates more friction due to which higher losses can be there in system.

7. Calculate the least count of Bevel Protractor.

   Least Count: = Value of one division on main scale/ Total No of division on Secondary scale.

   = (1/12) *60

   (1 degree= 60 minute)

   = 5 minute

8. Write down the different types of locking device.

   Split Pin
   Castle nut
   Nylon Nut
   Two nut for locking
   Safety wiring
   Hex nut lock nut.

## Section – C

03X03 = 09 Marks

9. What is the difference between hexagonal socket head cap screw and hexagonal socket set screw? What do you understand by fasteners grade 8.8?

| Hexagonal Socket head cap screw | Hexagonal socket set screw |
|---|---|
| This one is having round head with hex socket | This one is does not having head. |
| This screw normally used for fastening the things | This screw is used to stop relative motion between two parts |

Grade 8.8

First letter shows Tensile strength

Second letter shows Ultimate tensile strength (Cumulative percentage of tensile Strength)

So here

Tensile Strength: 800 MPa

Ultimate tensile Strength 640 MPa (8.8 so 80% of Tensile Strength)

10. Name the any Six hand tools that you used in assembly. Explain any two of them in detail.

    Open Spanner

    Ring Spanner

    Allen Keyset

    Socket set

    Punch set

    Hook Spanner

    Allen Key Set: - In this set there are one complete set of Allen keys of different size.

    Allen key used for hexagonal Socket head screws

    Basically Allen head screws used for counter bore holes.

11. Explain the following
    1) Wringing process
    2) Calibration
    3) Dial Test Indicator

I. Wringing process: - To join two slip gauge over each other wringing process is used. Make plus sign of two slip gauge with a little pressure, due to electrostatic force its make a joint.

II. Calibration: Checking of the measuring instruments and gauges, with a standard is known as calibration.
For Micrometer calibration, one calibrated block of standard size 25 is available with micrometer.
"00" grade Slip gauge is blocks is used for calibration of measuring instruments.

III. Dial Test indicator: dial Test Indicator is a measuring instruments.
With having 0.01 mm accuracy.
Two types of dial test indicator
Plunger Type
Puppet type
Dial Test indicator is used for checking the roundness of shafts, Flatness of work piece, also various geometrical dimension.

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**Session: 2019-20 (Summer Semester)**

**B. Voc. Program, I Semester,**

**1st In-Sem. Examination**

**Course Code: SMS1102** **Time: 1 Hour**

**Course Name: Hand Skills** **Max. Marks: 20**

**Instructions:**

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 happens if the size of clearance angle / relief angle becomes very less?
   a) The friction will be more and the surface quality will be bad
   b) Chips will break very easily
   c) Tool will penetrate deeper
   d) None of the above
2. What is the application of the anvil plate?
   a) To support the work piece for scribing
   b) To use as a base plate
   c) To measure the angle
   d) None of the above
3. Which one is not a part of file?
   a) Face length
   b) Tang
   c) Bow
   d) Handle
4. Point angle of a twist drill is (degree)-
   a) 45
   b) 115
   c) 118
   d) 90
   e) None of the above

5. Jaw protectors can be made of-
    a) Plastic
    b) High speed steel
    c) ceramics
    d) None of the above

## Section – B

03X02 = 06 Marks

6. Write the types of saw cut with figures.
7. Write down the process for the reaming and tapping operation.
8. Which working rules must be observed when sawing?

## Section – C

03X03 = 09 Marks

1. Write the formula of cutting speed. Also define its nomenclature with its unit. If cutting speed is 70 m/min and tool diameter is 5.5 mm then calculate the RPM.
2. Describe free cutting in sawing. Also explain various types of saw blades on the basis of free cutting with the help of diagrams.
3. Write the short notes on following:
    a) Reaming  b) Scribing  c) Reference plane  d) Circular saw

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**Answer Key**

### Section – A

05X01 = 05 Marks

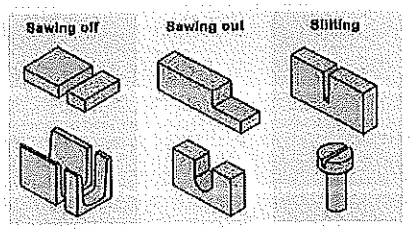
1. What happens if the size of clearance angle / relief angle becomes very less?
   a) The friction will be more and the surface quality will be bad
2. What is the application of the anvil plate?
   b) To use as a base plate
3. Which one is not a part of file?
   b) Tang
4. Point angle of a twist drill is (degree)-
   c) 118
5. Jaw protectors can be made of-
   a) Plastic

### Section – B

03X02 = 06 Marks

6. Write the types of saw cut with figures.

   There are three types of saw cuts –



7. Write down the process for reaming and tapping operation.

**Reaming-**

- Spot drilling
- Drilling
- Countersinking
- Core drill
- Reaming

**Tapping**

- Spot Drilling
- Drilling
- Counter Sinking
- Tapping

8. Which working rules must be observed when sawing?

Ans. Choose suitable TPI saw blade according to work piece material.

Saw blade must be properly tight.

Scribing lines should be visible.

Before start the sawing, a notch must be made to guide the saw blade.

Use light pressure. Start slow at the back edge of the work piece (in so doing, the saw is inclined slightly (about 10 degree).

Don't twist the blade. Keep it perpendicular to your work.

## Section – C

03X03 = 09 Marks

9. Write the formula of cutting speed. Also define its nomenclature with its unit. If cutting speed is 70 m/min and tool diameter is 5.5 mm then calculate the RPM.

The formula of cutting speed is –

$Vc = \pi DN / 1000$,

Where, Vc = cutting speed in m/min

D = diameter of tool/work piece in mm

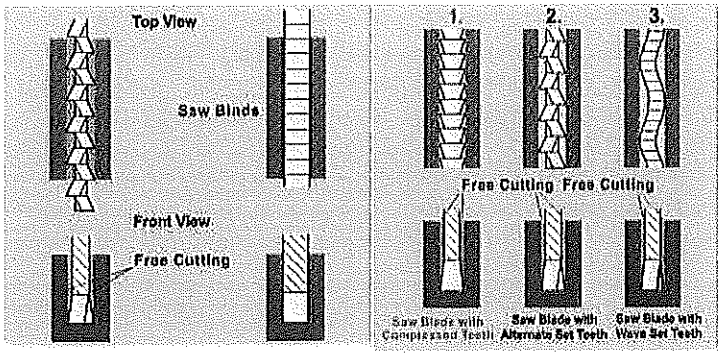
N = RPM

With this formula, $70 = 3.14 \times 5.5 \times N / 1000$

N = 4053 rev/min

10. Describe free cutting in sawing. Also explain various types of saw blades on the basis of free cutting with the help of diagrams.

    To prevent the saw blade from binding, the kerf must be wider than the thickness of the saw blade. If this is not the case, the saw blade will bind. Therefore, the saw blades are designed so that they cut themselves free.




11. Write the short notes on following:

    a) Reaming  b) Scribing  c) Reference plane  d) Circular saw

Reaming- It is a process of enlarging a hole with high surface quality and within tolerance of 10 – 20 microns.

Scribing- Scribing refers to the transferring the contours and dimensions onto the wok piece to be processed.

Reference Plane-Reference plane is the plane on the behalf of it, all the drawing dimensions are measured. The point at which two reference plane intersect, is called reference point.

Circular saw- The circular saw blade cuts with an uninterrupted circular motion.

Due to their high cutting performance, circular saw are used especially in high volume production.