



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

Course Name: Assembly & Measuring

Time: 1 Hour

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. For a properly lubricated chain, efficiency is from-
 - a) 96% to 98%.
 - b) 95% to 97%
 - c) 96% to 98%
 - d) 95% to 98%
2. Convert: 2.5 mm = ___ μ m
 - a) 25
 - b) 250
 - c) 2500
 - d) 25000
3. Radius gauge is a type of-
 - a) Form gauge.
 - b) Limit gauge.
 - c) Dimensional gauge.
 - d) Both form and limit gauge.
4. Flat belts are used in-
 - a) Bicycles
 - b) Belt conveyor
 - c) Synchronizing cam and crankshaft
 - d) Vacuum cleaner

AB
9.9.19



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5. Which measuring instrument can be used to measure internal diameter of 20.015 mm?
- Digital Vernier caliper
 - Micrometer.
 - Hole test Micrometer
 - Plug gauge

Section – B

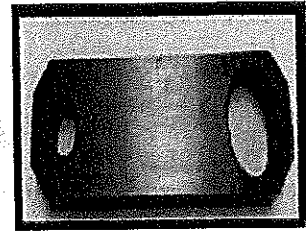
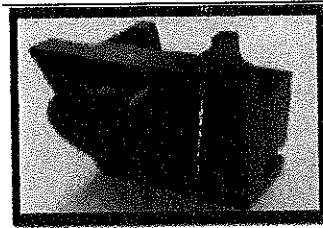
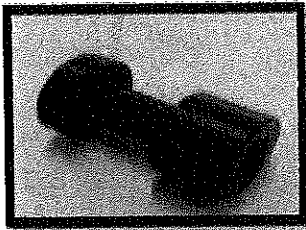
03X02 = 06 Marks

6. What is the difference between measuring instruments and gauges?
7. Explain Micrometer with all its parts.
8. What is the function of a guide way? Write the name of any two types of guide ways.

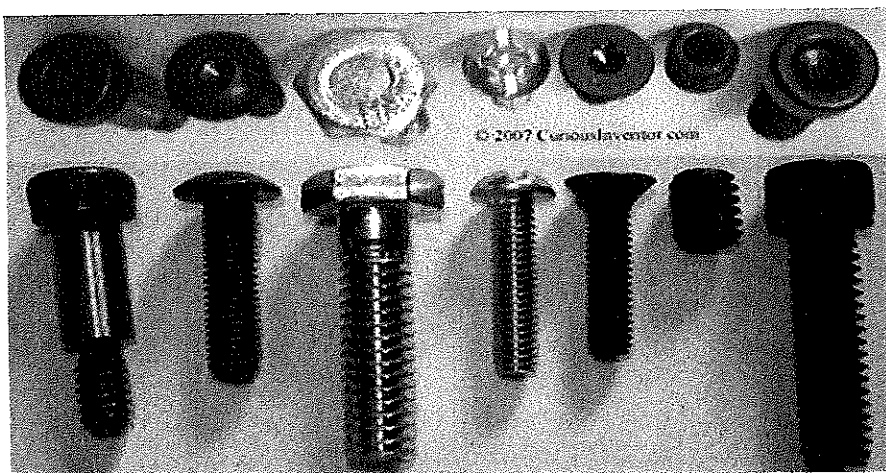
Section – C

03X03 = 09 Marks

9. Explain different types of errors in measurement.
10. Write the name of the following Assembly parts:



11. Write down the names of any five screws from the picture given below:





Answer-Key

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Answer Key

Section – A

05X01 = 05 Marks

1. For a properly lubricated chain; efficiency is from-
 - a) 96% to 98%.
2. Convert: 2.5 mm = ___ μ m
 - c) 2500
3. Radius gauge is a type of-
 - a) Form gauge.
4. Flat belts are used in-
 - b) Belt conveyor
5. Which measuring instrument can be used to measure internal diameter of 20.015 mm?
 - c) Hole test Micrometer



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Section – B

03X02 = 06 Marks

6. What is the difference between measuring instruments and gauges?

S.No.	Gauges	Measuring instruments
1.	Gauge are used to check the work piece	Instruments are used to measure the work piece
2.	This is mainly used for mass production	Instruments are used for bought out inspection
3.	Gauges have fix dimension or fix Value	Instruments have variable dimension or value

7. Explain Micrometer with all its parts.

- It is an external micrometer. The micrometer is the most commonly used as mechanical measurement instrument

PART NAME

- A. Anvil
- B. Spindle
- C. Locking device
- D. Thimble (secondary scale)
- E. Sleeve (mane scale)
- F. Ratchet
- G. Frame
- H. Plastic shield

8. What is the function of a guide way? Write the name of any two types of guide ways.

The main function of a guideway is to make sure that the cutting tool or machine tool operative element moves along predetermined path.

1. Guideways with sliding friction
2. Guideways with rolling friction



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Section – C

03X03 = 09 Marks

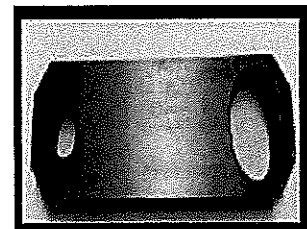
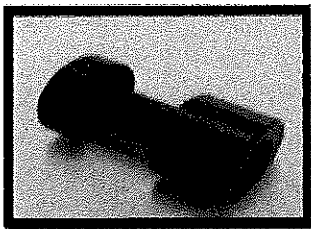
9. Explain different types of errors in measurement.

Error - it is the difference between measured value and true value

Types of Error

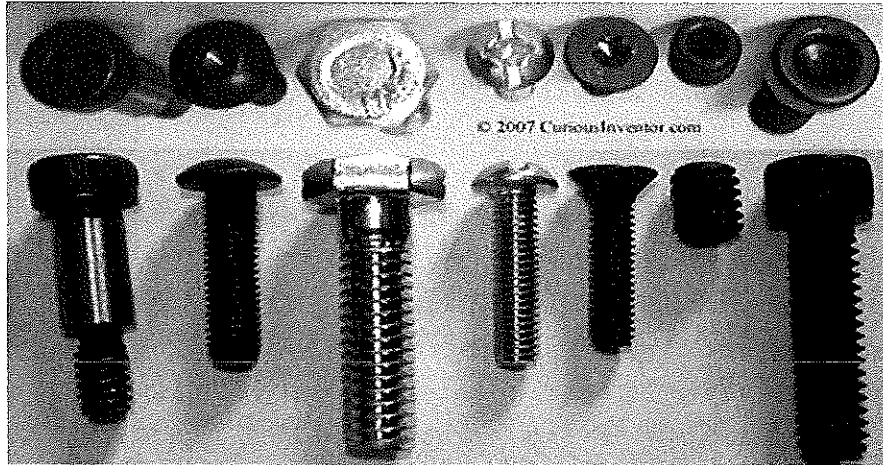
- A. Parallax Error –Parallax error is the shift in apparent position of an object due to different viewing position. When we have to take reading from an instrument or do some measurements then different viewing position will give different readings leading to an error. This could be removed by keeping our eyes in front of the thing to be viewed.
- B. Tilt Error - This error occurs due to having play between slider and beam. When we applied excessive force on slider to clamp the work piece then slider may displace from its original position this lead to error in measuring instruments. To avoid this error, we should apply limited force on jaws.
- C. Cocking Error- when we measure the distance between reference face and measuring face of the work piece or measuring instruments then the reference faces and measuring faces of work piece and measuring instrument should be parallel if it is not then it will show wrong value.
- D. Dirt or Burrs Error –it is caused by dirt and burr on the work piece and measuring instruments

10. Write the name of the following Assembly parts:



- (1) 1. Screw
- (2) 2. Shifting Casing
- (3) 3. Shackle

11. Write down the names of any five screws from the picture given below:



- (1) Set screw
- (2) Button head cap screw
- (3) CSK screw
- (4) Button head cap screw
- (5) Hexagonal head cap screw
- (6) Round head slotted cap screw



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Registration No.:

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Course Code: SMS1102
Course Name: Hand Skills

Time: 1 Hour
Max. Marks: 20

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Section – A

05X01 = 05 Marks

1. Procedure for reaming process is-
 - a) Drill – core drill – reamer
 - b) Spot drill – drill – csk – reamer
 - c) Spot drill – drill – csk – core drill – reamer
 - d) None of the above
2. What would be the 'tap depth' formula for 'Blind Tap' if thickness of work piece is H and tap diameter is d?
 - a) $H+0.5d+3$
 - b) $H+0.7d+3$
 - c) $H+0.7d+0.3d+3$
 - d) $H+0.3d+3$
3. Which one has better chip evacuation 'straight cut' OR 'curved cut' configuration
 - a) Both straight cut and curved cut
 - b) Curved cut
 - c) Straight cut
 - d) None of the above
4. Point angle of a twist drill is-
 - a) 45°
 - b) 115°
 - c) 118°
 - d) 90°
 - e) None of the above



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5. Jaw protectors are made up of-
- Plastic
 - High speed steel
 - ceramics
 - None of the above

Section – B

03X02 = 06 Marks

- Write the differences between the 'cut file' and 'milled file' with figures.
- What do you understand by TPI? Also write the TPI of fine saw.
- What are the effects of decreasing the size of relief angle?

Section – C

03X03 = 09 Marks

- Write the formula of cutting speed with nomenclature and unit.
If cutting speed is 70 m/min and tool diameter is 5.5 mm then calculate the RPM.
- Derive the formula to calculate the chamfer value for Radius R.
- Write the short notes on following:
 - Reaming
 - Sliding T-bevel
 - Reference plane

Ades
9/8/19



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Answer Key

Section – A

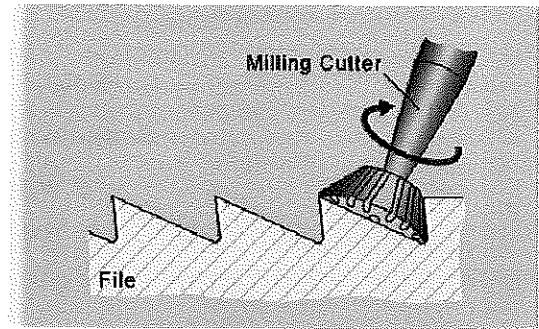
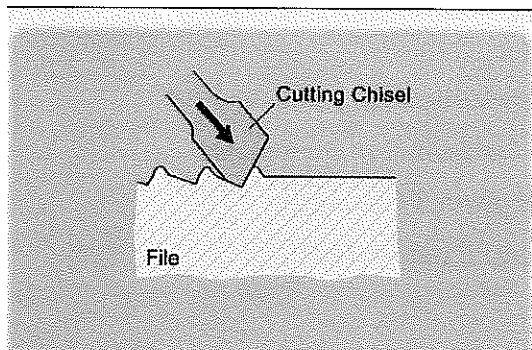
05X01 = 05 Marks

1. Procedure for reaming process is-
 - a) Spot drill – drill – csk – core drill – reamer
2. What would be the 'tap depth' formula for 'Blind Tap' if thickness of work piece is H and tap diameter is d?
 - a) $H+0.5d+3$
3. Which one has better chip evacuation 'straight cut' OR 'curved cut' configuration
 - a) Curved cut
4. Point angle of a twist drill is-
 - a) 118°
5. Jaw protectors are made up of-
 - a) Plastic

Section – B

03X02 = 06 Marks

6. Write the differences between the 'cut file' and 'milled file' with figures.
Cut file – cut files are made by chiseling notches into the file face. This results in a file with a negative rake angle and a scraping effect. Therefore, cut files are preferred for hard materials.
Milled file – milled files are made by milling the cutting edge into the file face. Files with milled teeth have a positive rake angle, and therefore cut better than cut files. Milled files are especially suited for use on soft material.



7. What do you understand by TPI? Also write the TPI of fine saw.
 The number of teeth per inch (TPI) is important in obtaining the finish desired and the proper feed rate.
 Fine saw- 32 TPI used to cut metal tube and pipes (thin Walled)
8. What are the effects of decreasing the size of relief angle?
 If the size of the relief angle is decreased, then the friction between the tool and the work piece will be more and due to this may be tool become damage and surface quality will be poor

Section – C

03X03 = 09 Marks

9. Write the formula of cutting speed with nomenclature and 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 –

$$V_c = \pi DN / 1000,$$

Where, V_c = cutting speed in m/min

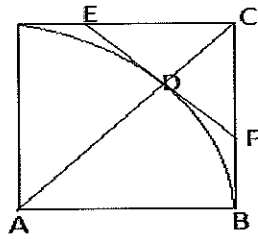
D = diameter of tool/work piece in mm

N = RPM

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

$$N = 4053 \text{ rev/min}$$

10. Derive the formula to calculate the chamfer value for Radius R.



In triangle ABC –

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

$$AC = \sqrt{AB^2 + BC^2} = \sqrt{R^2 + R^2} = \sqrt{2R^2} = R\sqrt{2} = 1.414R$$

$$\text{Since, } AC = AD + DC; DC = AC - AD = 1.414R - R = 0.414R$$

In triangle CDF –

Since DC and DF are equal,

$$\text{Hence, } CF^2 = DC^2 + DF^2 = 0.414R^2 + 0.414R^2$$

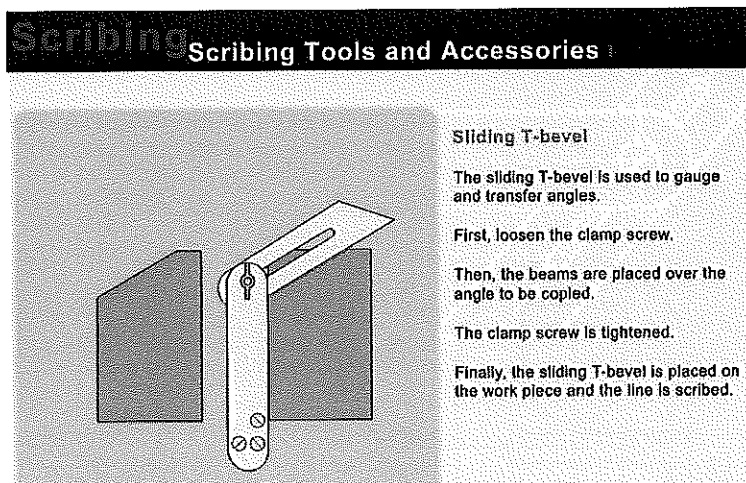
$$CF = \sqrt{0.414R^2 + 0.414R^2} = 0.414R\sqrt{2} = 0.414R \times 1.414$$

$$\mathbf{CF = 0.58R}$$

11. Write the short notes on following:

- a) Reaming
- b) Sliding T-bevel
- c) Reference plane

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



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.

