SET-A

BHARTIYA SKILL DEVELOPMENT UNIVERSITY

Registration No.: .....

School of Manufacturing Skills

Session: 2020-21 (Summer Semester)

B. Voc. Program, I Semester,

1st In-Sem. Examination

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

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

Instruction:

1. Attempt all questions.
2. Section A contains 05 Questions. Each question carries 1 Mark.
3. Section B contains 03 Questions. Each question carries 2 Marks.
4. Section C contains 03 Questions. Each question carries 3 Marks.

Section – A

05X01 = 05 Marks

1. 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.
2. Sensory inspection is a type of:
   a) Subjective measurement
   b) Objective measurement
   c) A & B Both
   d) None of the above
3. Radius gauge is type of:
   a) Form gauge.
   b) Limit gauge.
   c) Dimensional gauge
   d) Both form and limit gauge.
4. Which one of the following is not a part of a micrometer?
   a) Thimble
   b) Spindle
   c) Probe
   d) Anvil
5. Which measuring instrument can be used to measure internal diameter of 20.015 mm?
   a) Digital Vernier calipers
   b) Micrometer.
   c) Hole test Micrometer
   d) Plug gauge

Section – B

03X02 = 06 Marks

6. Write the difference between measuring instruments and gauges.
7. Explain the Bevel protractor with its parts name.
8. Write at least two applications of dial indicator

Section – C

03X03 = 09 Marks

9. Explain different types of errors in measurement.
10. Calculate the least count of Vernier caliper which has 50 divisions on secondary scale and also write its formula.
11. Write any 4 Safety precautions while using slip gauge.

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Answer Key

Section – A

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Section – B

03X02 = 06 Marks

6. Write 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 used for mass production mainly	Instruments are used for bought out inspection
3.	Gauges have fix dimension or fix Value	Instruments have variable dimension or value

7. Explain the Bevel protractor with its parts name.

Ans. It is used to measure the angle of mechanical parts

PARTS

1. Main scale
2. Solid beam
3. Adjustable measurement beam
4. Clamp screw
5. Secondary scale

Lest count

Value of one division on mane scale /total number of division on secondary scale

1/12=60'/12=5'

8. Write at least two applications of dial indicator.

Ans. Check the run out of shaft.
Check the Flatness of surface.

Section – C

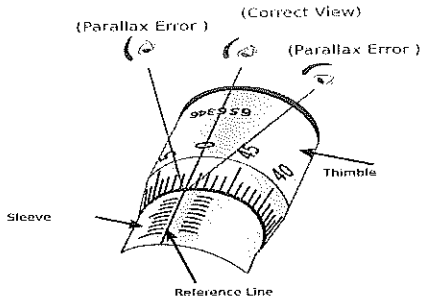
03X03 = 09 Marks

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 workpiece then slider may displace from it's 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. Calculate the least count of Vernier caliper which has 50 divisions on secondary scale and also write its formula.

Ans:- **Formula:**

L.C = One values of smallest division on main scale / Total division on secondary scale

OR

L.C = Main scale division – Vernier scale division

Calculate least count:

L.C = 1 / 50 = 0.02mm

Or

L.C = 1 – 0.98 = 0.02mm

11. Write any 4 Safety precautions while using slip gauge.

Ans.

1. It should not be fallen down, even not on the soft floor.
2. Clean the measuring surface before measuring.
3. After use apply Vaseline on measuring surface.
4. Take out only blocks which is to be used.

SET-1

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School of Manufacturing Skills

Session: 2020-21 (Summer Semester)

B. Voc. Program, I Semester,

1st In-Sem. Examination

Course Code: SMS1104 **Time: 1 Hour**

Course Name: Conventional Turning **Max. Marks: 20**

Instructions:

1. Attempt all questions.
2. Section A contains 05 Questions. Each question carries 1 Mark.
3. Section B contains 03 Questions. Each question carries 2 Marks.
4. Section C contains 03 Questions. Each question carries 3 Marks.

Section – A

05X01 = 05 Marks

1. What is the use of rake angle in a tool?
   a) Chips removal
   b) Provide space between work piece and tool
   c) To give relief
   d) None of these
2. What is the full form of DRO?
   a) Digital run out
   b) Direct reading out
   c) Digital read out
   d) Distance read out
3. What is the formula for minimum depth of cut?
   a) 3/2rd of Nose radius
   b) 4/3rd of Nose radius
   c) 1/3rd of Nose radius
   d) 2/3rd of Nose radius
4. Why we make undercut for making thread?
   a) Thread tool relaxation & Self-looking.
   b) To clean the face
   c) To reduce the diameter
   d) None of the above
5. Which of the following is the correct formula for cutting speed?
   a) Vc = $\frac{\pi dn}{1000}$ cm/min
   b) Vc = $\frac{\pi dn}{1000}$ mm/min
   c) Vc = $\frac{\pi dn}{1000}$ m/min
   d) Vc = $\frac{\pi dn}{1000}$ $m/sec.$

Section – B

03X02 = 06 Marks

6. Name different types of chips formed while cutting.
7. Under which condition tear chips can be formed?
8. Why do we use coolant?

Section – C

03X03 = 09 Marks

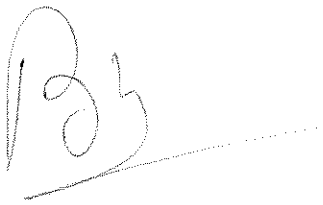
9. For thread M16X2, calculate: -

a) Thread depth

b) Required chamfer

c) Minor diameter

10. Explain at least 6 major components of lathe machine.
11. Why do we do centering of cutting tools on lathe before machining?



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Answer Key

Section – A

05X01 = 05 Marks

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   - **a) Chips removal**
   - b) Provide space between work piece and tool
   - c) To give relief
   - d) None of these
2. What is the full form of DRO?
   - a) Digital run out
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   - b) Vc = $\frac{\pi dn}{1000}$ mm/min
   - **c) Vc = $\frac{\pi dn}{1000}$ m/min**
   - d) Vc = $\frac{\pi dn}{1000}$ $m/sec.$

Section – B

03X02 = 06 Marks

6. Name different types of chips formed while cutting.

   Ans. 1. Tear Chips
   2. Continuous chips
   3. Shear chips.

7. Under which condition tear chips can be formed?

   Ans. Tear chips mainly results from rough working, when using a large depth of cut, low cutting speed and a large rate of feed.

8. Why do we use coolant?

   Ans. Cooling lubricant are used:

   1) to increase tool life
   2) to improve the surface finish of the work piece
   3) To reduce the surface temperature of the work piece.

Section – C

03X03 = 09 Marks

9. For thread M16X2, calculate: -

a) Thread depth

b) Required chamfer

c) Minor diameter

Ans.(a). Thread depth = 0.614 ×pitch
= 0.614 ×2
= 1.228 mm (radially)
Thread depth (diametrically) = 2 ×1.228
= 2.456 mm

(b). Required Chamfer = $\frac{major\ dia.-minor\ dia.}{2}$ + 0.5
= $\frac{15.8-13.3}{2}$ +0.5
= 2 mm (approx.)

(c). Minor diameter = major dia. – thread depth
= 15.8 – 2.5
= 13.3 mm

10. Explain at least 6 major components of lathe machine.

Ans.1.) **Lathe bed–** The lathe bed is fixed to the lathe frame and made of grey cast iron which is extremely rigid and vibration free.

2.) Head stock – The headstock is used to transmit working energy to the work piece.

3.) Tailstock – The tailstock serves as a steady for long work piece and is also used for holding tools.

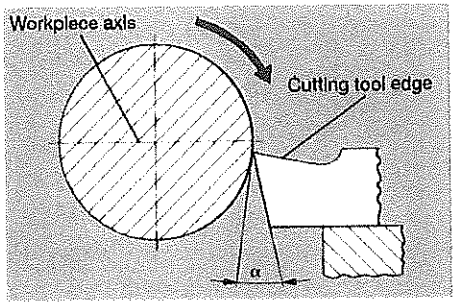
4.) Saddle- The longitudinal slide runs on the guide ways of the lathe bed. It can move by hand or through lead screw or feed shaft.

5.) Cross Slide- The cross slide is driven by threaded spindle. For transverse movement cross slide is required.

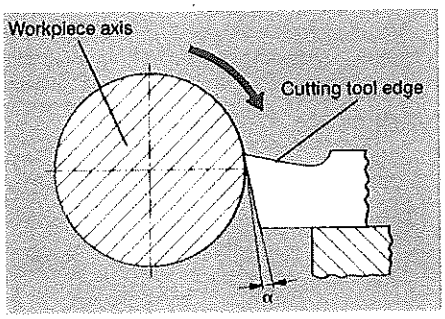
6.) Compound Slide- The adjustable top slide carries the tool post or tool rest. For precise movement we can use compound slide.

11. Why do we do centering of cutting tools on lathe before machining?

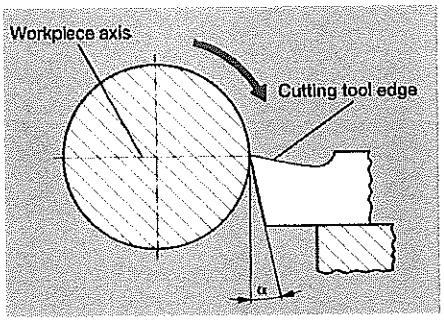
Ans.



Positioning the tool below the midpoint of the workpiece increases the clearance angle and reducesthe rake angle,the tool will catch and cause an uneven surface to be produced.



Positioning the tool above the midpoint of the work piece reduces the clearnace angle and increases the rake angle, the lathe tool will dig in.



Optimum machining is only possible when the lathe tool is accurately aligned to the midpoint of the work piece, as the clearance and Rake angles are then in the correct relationship to the work piece.