

## Unit 8 - Week 6 - Cutting tool life estimation

### Course outline

How does an NPTEL online course work?

#### Week 0

Week 1 - Basics of Manufacturing Processes

Week 2 - Introduction to casting process

Week 3 - Gating Systems and Rate of solidification

Week 4 - Estimation of solidification time with different conditions and Riser design

Week 5 - Machining Processes

Week 6 - Cutting tool life estimation

Temperature in Cutting and Builtup Edge Formation

Metal Cutting Operation

Tool life and Tool wear

Economics of Machining

Joining Process

Principle of Solid State Welding

Numerical Design In Welding Power Sources in Arc Welding

Modes of metal transfer in arc welding

Quiz : Assignment 6

Assignment 6 solution with solved numerical

Manufacturing Process Technology I and II: Feedback For Week 06

Week 7 - Introduction to Micro-Systems Fabrication Technology

Week 8 - Abrasive water jet machining and Ultrasonic Machining

Week 9 - Introduction to Electrochemical Machining

Week 10 - Electro-discharge Machining Process

Week 11 - Laser Beam and Electron Beam Machining Processes

Week 12 - Metal Forming Processes

Text Transcripts

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## Assignment 6

The due date for submitting this assignment has passed.  
As per our records you have not submitted this assignment.

**Due on 2020-03-11, 23:59 IST.**

Assignment 6

1) The primary deformation zone in metal cutting operation is located around which of the following? **1 point**

- Tool chip interface  
 Around shear plane  
 Tool workpiece interface  
 Tool face

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Around shear plane*

2) Temperature rise in primary and secondary deformation zone is generally due to: **1 point**

- Friction between tool and chip; and Rubbing action of tool piece with workpiece respectively.  
 Plastic deformation of metal in shear zone; and Friction between tool and chip respectively.  
 Rubbing action of tool piece with workpiece; and Plastic deformation of metal in shear zone respectively.  
 None of the above.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Plastic deformation of metal in shear zone; and Friction between tool and chip respectively.*

3) If heat transferred to atmosphere is neglected, then what is the average amount of heat in % carried away by the chips? **1 point**

- 15  
 96  
 20  
 70

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*70*

4) Which of the following condition/conditions produce continuous chips? **1 point**

- Large rake angle  
 Lower uncut chip thickness  
 Cutting with cutting fluid  
 All of the above.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*All of the above.*

5) Built-up edge is produced at: **1 point**

- Larger rake angle  
 Lower uncut chip thickness  
 Low rake angle  
 All of the above.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Low rake angle*

6) If the cutting speed is doubled, then what will be the effect on tool life according to Taylor's tool life ( $n=0.596$ )? **1 point**

- New tool life will be half the original one.  
 New tool life will be 5/16 times the original one.  
 New tool life will be double the original one.  
 New tool life will be 1/20 times the original one.

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*New tool life will be 5/16 times the original one.*

7) Which of the following is not an example of solid-state welding? **1 point**

- Diffusion welding  
 Friction welding  
 Cold welding  
 Thermit welding

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Thermit welding*

8) Induction welding is an example of: **1 point**

- Cold welding  
 Chemical welding  
 Electric welding  
 Hot Forge welding

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Electric welding*

9) Which of the following is not an important factor in solid-phase welding? **1 point**

- Type of bonding  
 Surface deformation  
 Recrystallization  
 Surface films

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
*Type of bonding*

10) A direct current welding machine with a linear power source characteristic provides open-circuit voltage of 80 V and short circuit current of 800 A. During welding the machine, the measured arc current is 500 A corresponding to an arc length of 5.0 mm, and the measured arc current is 460 A corresponding to an arc length of 7.0 mm. the linear voltage (V)-arc length (L) characteristic of the welding arc can be given as (where V is in volt, and L is in mm) **1 point**

- $V = 20+8L$   
  $V = 80+2L$   
  $V = 20+2L$   
  $V = 80+8L$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 *$V = 20+2L$*