# Flashcards

## l1

**Q1. What are the three main components of the course evaluation?**

A1. Quizzes and project (25%), Mid-sem (35%), End-sem (40%).

**Q2. What are the three primary manufacturing processes mentioned?**

A2. Casting, Metal forming, Metal removing (machining).

**Q3. What is a key advantage of metal removing (machining)?**

A3. Achieving desired size, shape, and surface finish.

**Q4. What is the role of a cutting tool in machining?**

A4. It removes excess material by direct mechanical contact.

**Q5. What is the role of a machine tool in machining?**

A5. It provides the necessary relative motions between the cutting tool and workpiece.

**Q6. Who invented the horizontal boring machine, and in what year?**

A6. John Wilkinson, 1774.

**Q7. Who invented the engine lathe, and in what year?**

A7. Henry Maudsley, 1794.

**Q8. What are the two main types of relative motion between tool and work?**

A8. Primary (cutting) motion and secondary (feed) motion.

**Q9. What is the initial response of metal in front of the tool rake face during chip formation?**

A9. Elastic and then plastic compression.

**Q10. What are the three main types of chips?**

A10. Continuous chips, discontinuous chips, and continuous chips with built-up edge (BUE).

**Q11. Under what conditions are continuous chips typically formed?**

A11. High cutting speeds (1.0 m/s), machining ductile metals, sharp cutting edge, small uncut chip thickness, large rake angle, and less friction.

**Q12. Under what conditions are discontinuous chips typically formed?**

A12. Machining brittle materials, low cutting speeds (0.02 m/s), high depths of cut, and small rake angles.

**Q13. What is a built-up edge (BUE)?**

A13. A buildup of chip material on the tool rake face near the tool tip due to high friction.

**Q14. What conditions lead to the formation of a built-up edge?**

A14. Medium speed (about 0.3 m/s), high feed rate, and low rake angle.

**Q15. What is the primary text listed for the course?**

A15. G Boothroyd, Fundamentals of Metal Cutting Machine Tools, Tata McGraw Hill, 1975.

**Q16. List one reference text for the course.**

A16. R A Walsh, MGH Machining and Metalworking Handbook, McGraw Hill, New York, 1994.

**Q17. What is a key characteristic of casting processes?**

A17. Geometrical complexity.

**Q18. What is a key characteristic of metal forming processes?**

A18. Ability to form large sizes and difficult-to-form materials.

**Q19. What is the instructor's email address?**

A19. snj@iitg.ac.in

**Q20. What type of machining is described as expensive with substantial work removal and high energy expenditure?**

A20. Metal cutting.