**Machine Tools & Machining**

***Question Bank***

1. Sketch the orthogonal cutting
2. define machinability
3. what is meant by cutting tool signature
4. write Taylor's tool life equation
5. what are the four important characteristics of materials used for cutting tools
6. how do you define tool life
7. What are the desirable properties of a cutting fluid
8. Name any two conditions for continuous chip formation while machining
9. What are conditions that favor the formation of continuous chip with a built up edge
10. What are the important properties of cutting tool
11. State true or false justify your answer Diamond can be used for machining of ferrous alloys
12. Which coolant would you suggest for turning the following materials with high speed Steel tool a). Aluminium b). Copper
13. Define the term tool life
14. Name any two functions of cutting fluids
15. What are the requirements for tool material
16. What are the importance of chip breakers in machining process
17. List the factors which affect the tool life
18. Differentiate between orthogonal and oblique cutting process
19. Define machinability and tool life
20. Draw and explain the geometry of chip formation in orthogonal cutting
21. What are the functions of rake angle and end relief angle in single point cutting tool
22. What is crater wear
23. What is thermal cracking and softning
24. what is flank wear
25. What is tool chipping wear
26. Derive the expression for shear angle in orthogonal cutting process
27. Machining of brass material is done by which type of rake angle
28. A shaft of 25 mm diameter is turned at a cutting speed of 50 m/min. Find the RPM of shaft
29. Productivity is assessed by material removal rate (MRR) in

(a) rolling operations

(b) welding operations

(c) machining operations

(d) casting work

1. Rake angle of the cutting tool is the angle of inclination of the tool rake surface from that tool’s

(a) reference plane

(b) orthogonal plane

(c) normal plane

(d) cutting plane

1. Life of turning tools is maximum affected by increase of

(a) cutting velocity

(b) tool feed rate

(c) depth of cut

(d) width of cut

1. The amount of actual machining time in any turning operation depends upon

(a) cutting velocity

(b) feed

(c) depth of cut

(d) all of the above

1. Chip-breaker is essentially employed in turning rods of

(a) mild steel at low cutting velocity

(b) mild steel at high cutting velocity

(c) cast iron at low cutting velocity

(d) cast iron at high cutting velocity

1. What are the objectives of machine tool? Explain the various elements of machine tool?
2. What are the principle angles of single point cutting tool and explain: i. Back rake angle ii. Clearance angle
3. What are the characteristics of cutting tool materials? List out the different types of cutting tool materials.
4. A high speed steel tool is used for machining a work piece of mild steel. While machining at a cutting speed of 30m/min. The useful life of the tool is found to be 1 hour. What will be the tool life if the same tool is used to cut at a speed of 40m/min, other parameters remaining the same? Assume the value of exponent (n) of standard taylor’s equation = 0.12.
5. Describe the taper turning attachment on a lathe. What are its merits and demerits over other methods of taper turning?
6. What are the attachments used on a center lathe and what purpose do they serve?
7. Explain with a neat sketch the working principle of a lathe?
8. Explain the classification of lathes?
9. Draw a neat sketch and explain the principal parts of a shaper.
10. Explain with the help of a neat sketch the angular cutting operation on a shaper?
11. Find the gear combination and indexing movement necessary for 139 divisions.
12. Draw a neat sketch of a plain milling cutter and explain it in detail?
13. What is drilling? What is the tool used for drilling? Brief out the reason for the modern drilling machine.
14. Illustrate the salient design features of vertical precision boring machine.
15. List out the advantages & disadvantages for vitrified and silicate bond.
16. What is the cutting tool used for performing the grinding operation?
17. On what factors the cutting tool selection is made in the case of grinding?
18. Classify Jigs and Fixtures.
19. Compare grinding, lapping and honing process.
20. Draw a neat sketch and explain any three types of locating devices.