

Questions

1. What is meant by "the swing of a lathe"? (2 marks)
2. Trace the distribution of power from the motor to the work and to the tool for threading. (4 marks)
3. What is the carriage? What are the components which make up the carriage? (6 marks)
4. What is the quick change box? What is its function? (2 marks)
5. Describe a universal chuck and an independent chuck. How are they used? How do they differ? (4 marks)
6. Describe the procedure for testing a lathe to ensure that it will turn a true cylinder. (4 marks)
7. What is the effect on the rake and relief angles of setting a turning tool too high above the center line of the work? Too low? (4 marks)
8. Given a work diameter of $2\frac{1}{4}$ in. and a positive back rake angle of 18° and a front relief angle of 10° ; what is the effect on these angles if the tool is set 0.040 in. above center? (4 marks)
9. What is steady rest? A follower rest? How are they used? (4 marks)
10. A tapered reamer blank is to be turned. It has an overall length of 10 in. and a tapered section 6.5 in. long. The tapered section has a small diameter of 0.785 in. and a large diameter of 0.980 in. Find: (a) the taper per in.; (b) the taper per ft; (c) the set over. (6 marks)
11. Define: major and minor diameter, pitch diameter, pitch, lead, and helix angle. (5 marks)
12. Derive the depth equation for an American National thread. (4 marks)
13. Given a $\frac{1}{2}$ -13NC thread, find: (a) the pitch; (b) the width of the flat; (c) the depth of the thread; (d) the minor diameter of the screw; (e) the tap drill size; (f) the pitch diameter; (g) the helix angle. (6 marks)

Sup

14. Given a $\frac{3}{4}$ -10NC thread, find: (a) the best wire size and (b) the measurement over wires. (5 marks)
15. Find the gears needed to cut a 1.75 –mm metric thread. The lathe constant is 8, the gear progression is 5, and the gears available are 25, 30, 35.....,100. (5 marks)
16. What is the knee on a milling machine? What is its purpose? (4 marks)
17. What are the distinguishing characteristics of a universal and of a plain milling machine? (4 marks)
18. What is a rotary table? How are the indexed? (4 marks)
19. How does a plain milling cutter differ from a side milling cutter? (4 marks)
20. What is a stagger-tooth cutter? Why is it preferred to a plain milling cutter? (4 marks)
21. What is the purpose of an interlocking cutter? (4 marks)
22. A cutting speed of 100 ft/min has been selected in turning a work piece 8 in. long and 2-in diameter, a depth is 0.125 in. and a feed of 0.012 in. per revolution is used, find the rpm value and the time to take one cut. (5 marks)
23. A 4-in. diameter side milling, cutter is to be used to cut a slot into a cast-iron block with a feed of 0.008 in./rev. If the cutting speed is to be 100 ft/min. the depth of the slot to be cut is 0.5 in. and the length of the work is 6 in. find;(a) the rpm ; (b) the approach ; (c) the time to take one cut. (6 marks)

.....

Pichit Pitsuwan
December,2004

