

Final exam questions

“mechanical engineering”

FINAL EXAM QUESTIONS (ALL SPECIALISMS)

1. Discuss the main types of hardness testing methods.
2. What is the tensile test procedure? What properties are measured via a tensile test?
3. Define steel, cast steel and cast iron.
4. Discuss thermochemical treatment processes for steel.
5. What materials are used for high-speed cutting tools?
6. D'Alembert's principle for kinetostatic analysis.
7. Discuss deformation and displacement.
8. Discuss the Tresca yield criterion.
9. Discuss the composition of and the conditions for the equilibrium of concurrent coplanar forces.
10. Static versus kinetic sliding friction. Define a friction force.
11. Classification of conventional machining operations.
12. Name and describe the metal cutting methods (conventional and unconventional machining).
13. Types and functions of couplings.
14. What is the SI system? Name the SI base units.
15. Define a measurement error. Name types of measurement errors.

COMPUTER-AIDED MANUFACTURING

1. Name and discuss the cutting parameters in milling.
2. Name and discuss the cutting parameters in turning.
3. Types and applications of finishing operations.
4. Roughing and finishing cuts in hole making.
5. Classification of machining tools.
6. Types and applications of workshop measuring tools.
7. CAD/CAM software to control CNC machine tools.
8. Principles of die forging design.
9. Discuss the casting process procedure.
10. Classification of metal forming machines.
11. Discuss the CNC control program.
12. Principles of deep drawing design.
13. Name and describe cutting tool materials.
14. Select a cutting tool. Discuss the tool geometry.
15. Cooling methods in machining processes.
16. Discuss the processes of deep drawing and redrawing to form cylindrical parts.
17. Discuss the sheet metal forming methods.
18. Define, draw and interpret a histogram.
19. Down milling versus up milling.
20. Discuss the principle of tool radius compensation in milling.
21. Types of cutting tool wear.
22. Methods of CNC tool measurement.
23. Name and describe thread making methods.
24. Discuss the role of coatings on cutting tools.
25. Discuss tool coating methods.