

## **State Exam questions of Computer Aided Process Planning**

- 1) Describe the block diagram of the conventional mechanical engineering, list of the advantages and disadvantages of this designing method. What is the trial and error method, describe its implementation in the design process?
- 2) What kind of design circumstances changes have led to the introduction of computer methods in the design process? Where and how can computer be connected to the conventional design block diagram?
- 3) Describe the logical steps of VEM in modeling of forming processes! Which material models are used in this area and what are the most important material parameters?
- 4) Describe the significance of the flow curve in the modeling of metalforming. Touch upon the methods for determining the flow curve (tensile test, Watts-Ford method) and explain them in detail.
- 5) How do you characterize the forming limit state in the area of sheet metal modeling? Outline a forming limit diagram (FLD) and name its specific areas. Describe the forming limit curve definition using the Nakazima method.
- 6) Describe the steps of a modeling process set-up in the AutoForm program, touch upon the purpose of each step and the decisions made there.
- 7) Describe the logical structure and set-up steps of AutoForm SPI. Describe the operation of the Traffic Light Concept that helps evaluation!
- 8) Describe the set-up of the connected thermo-mechanical model of the DEFORM program system! Touch upon the phenomena that connect each component. Describe the operation of the DEFORM Guided Templates modules.  
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- 9) Describe the concept of the minimum bend radius and NF (neutral factor) in connection with the NF SMF module, the aspects of its choice and its procession. List and group the most common shape specialties from the NX SMF toolbar.
- 10) Present the workflow of the Intermediate Stage module, the purpose and function of each step. Find out what the fundamental difference is in the workflow if the blank is known instead of workpiece!
- 11) Describe the logical steps of the NX Progressive Die Wizard and the workflow from the Initial Project to the Force Calculation step. Touch upon the operation of the assembly environment assigned to the Wizard!
- 12) Describe the orders of the Die Base and Die Design Settings in connection with the NX PWD die base design! Use sketches to describe the meaning and the choice of parameters of a general die base!
- 13) Describe the design aspects of NX PDW active tool elements, including the possibilities of designing piercing, bending and forming tool elements!
- 14) Use sketches to describe the strip lifting solutions and touch upon the planning steps of the correct strip lifting concept.
- 15) Describe how to use standard commercial items in the NX PWD environment! Touch upon the methods of position! Present True-False-Entire Part options and their operations through an example of a socket cap screw.

## **iCAD Systems I., Computer Aided NC programming**

1. Describe how to integrate the computer tools for mechanical design (advantages and disadvantages of CAD systems)
2. Describe the theoretical basis of parametric modelling, application and special features
3. Summarize the concept and properties of the feature based modelling
4. Describe the main steps of component modelling and geometric modelling and its properties
5. Describe the principles of rapid prototyping, purposes, application areas, equipment and methods
6. Describe a possible grouping / partitioning of the most well-known design models, and a brief description of each model
7. Describe the concepts of collaborative product development
8. Summarize the solution finding methods used in methodical design
9. Summarize the process of computer aided NC programming! What are the main steps in the process?
10. Compare the conventional and computer aided NC programming! What are the benefits of using CAM programs? Give examples for current CAM software.
11. What kind of engineering knowledge is needed for making NC programs? From these which can be integrated into a CAM software, and which needed the interaction of an engineer?
12. What is the main idea of the tool path generation based on 3D models? By what activities can be the automated tool path generation done?
13. Summarize the geometric information system of CNC milling machine
14. Summarize the steps of tool selection! How can we define a tool in a CAM software, give an example