Do you understand?

1. Difference between robot accuracy and repeatability?
2. Given a set of repeatability test points, could you determine the robot repeatability by statistical averaging? Could you do the same for accuracy measurements?
3. Difference between robot singularity and redundancy?
4. Difference between inverse and forward kinematics? Which is more computationally demanding and why?
5. How low, medium, and high production systems vary?
6. Difference between target motion and taught motion?
7. What screw motion means in robotics?...And how screw motion is used?
8. Difference between TCF and TCP?
9. Why a robot is limited in its path following speed?
10. The limitations that are often not disclosed in a robotics specification document?
11. Why compliance devices might be used in robotics?
12. The advantages and disadvantages of using robots?
13. The difference between open and closed kinematics chains? And which type do most robots fall within?
14. How to interpret A B from both a forward and reverse sense when A and B are two homogeneous transformations multiplied together?
15. Which vectors in robotics need to be transferred, and which need to be resolved when applying homogeneous transformations?
16. The advantage of using D-H coordinates to form joint frames in robotics?

Could you?

1. Convert a target homogeneous transformation into a set of joint values given a simple robot and some information about the location of frames on the robot for a simple two link robot (simple inverse kinematics)?
2. Apply joint interpolation to determine the slow joint for a robot that changes joint configurations, given the proper motion capabilities?
3. Multiply two homogeneous transformations together and interpret the result in terms of physical position and orientation of a frame relative to some other frame?
4. Distinguish plant layouts?
5. Assign a plant layout given product types and process descriptions?

6. Assess plant activity, given number of products, components, and process operations?

7. Provide examples of real robotic applications where path following is required?...When joint configuration moves are used to control the process?...To demonstrate how vision systems are used to control robot motion?

8. Use the joint speed limits to provide a limit as to a robot’s path following speed?

9. Provide examples where motion blending would be useful in robotics? Where it might be dangerous?

10. Provide an example of multi-tasking in robotics?

11. Provide some examples of robot specifications that might not be included in a robot’s specification sheet?

12. Describe the limitations of the Seiko teach pendant you used?

13. Describe the architecture of the CODE software?

14. Give typical repeatability, speed, and load capabilities of robots by their size and type?

15. Transfer your kinematics experiences and linkage types to modern robots?

16. Explain why the work volume diagrams for robots have limitations not shown?

17. Explain why the new parallel structure robots are able to move faster?

18. Explain how painting robots might be programmed, and also explain some design differences from normal robots?