Tutorial 1

What are the stages of manufacturing for the Electronic Industry?

How would you describe Wafer Fabrication?

ASIC is the acronym for _____.

What would be the additional technological knowledge required for a wafer fabrication engineer besides the processes?

Tutorial 2

How would you differentiate IC Design from Wafer Fabrication?

The components of the IC are fabricated _____ the surface wafer.

How well do you understand about MEMS or the connectivity of the devices in an IC?

Photonic IC contains _____.

Tutorial 3

The wafer fabrication engineer achieves the final cross sectional structure of the pn junction diode by completing _____ in sequence.

What are the differences between a p^+n & n^+p junction diode?

What are the processes and their sequence for the diffusion mask step to achieve a diffused region in the pn junction diode?

What are the processes and their sequence for the contact opening and metallization mask steps?

Tutorial 4

The purpose of photolithography is to _____.

What are the sequential steps to perform photolithography?

How well do you understand about photoresist application, mask alignment, UV exposure?

How well do you understand about soft bake, hard bake and developing?

Tutorial 5

The purpose of etching is to _____.

Describe how wet and dry etching are carried out and their advantages and disadvantages.

What is RIE?

How are photoresist removed after etching?

Tutorial 6

What are the characteristics and purposes of silicon dioxide?

Describe how wet and dry oxidation are carried out and their advantages and disadvantages.

What factors determine the oxidation growth rate?

State the orientation of wafer used by MOS and BJT technology ICs.

Tutorial 7

What do you know about a vacuum space?

What is the pressure range for rough, high and ultra-high vacuum?

What are the characteristics of rough and high vacuum and how do you create them?

Describe the pumping and valves sequencing of a vacuum system.

Tutorial 8

How well do you understand thin film deposition?

Describe Evaporation and Sputtering.

What is an Electron Beam Gun and why is it superior to tungsten heating?

Explain Magnetron.

Tutorial 9

Describe Chemical Vapour Deposition (CVD).

How can we produce Silicon dioxide by CVD and what its purpose is?

How can we produce Polysilicon by CVD and what its purpose is?

How well do you know about Plasma Enhanced CVD?

Tutorial 10

Differentiate between Diffusion and Ion Implantation.

Describe the advantages and disadvantages of Diffusion and Ion Implantation.

What factors determine the junction depth of the diffused region?

What factors determine the junction depth of the ion implanted region?

Tutorial 11

Where do micro contamination come from?

How well do you understand about Yield and Micro Contamination?

What have airborne particles, spittle marks and fingerprints in common?

How well do you understand about Cleanroom, Clean Room practices, HEPA filters, ULPA filters and Raised Floor Balancing?

Tutorial 12

What are the technologies involved in Ultra-Pure Water system and what does each of them do?

What is ESD?

_____ produce Electrostatic charges.

What movements must be restricted to reduce high electrostatic voltages?

What are the strategies, actions and measures of a good ESD control and preventive program?