Ticket No 1:

1. Classification of solids (lecture notes, § 1.2.1, 1.4).
2. Thermodynamic Aspects of Nucleation: capillary theory & film growth modes (§ 7.3)
3. Photolithography (lecture notes);
4. Describe the risks related to handling and usage of liquid nitrogen. (lab manual p. 18).

Ticket No 2:

1. Vacuum, Gas transport and pumping (§ 2.3, 6.4)
2. Thermodynamic Aspects of Nucleation: nucleation dependence on temperature and deposition rate (§ 7.3)
3. E-beam lithography (lecture notes);
4. Describe the risks when using hydrofluoric acid (HF).

Ticket No 3:

1. Vacuum system and pumps (§ 2.4, 2.5)
2. Kinetic Processes in Nucleation and Growth: nucleation rate and atomistic models (§ 7.4);
3. Step coverage during deposition (lecture notes, § 9.5.2)
4. What actions should be taken if skin has been exposed to hydrofluoric acid (HF)

Ticket No 4:

1. Physics and Chemistry of evaporation (§ 3.2)
2. Structure zones of thin films (§ 9.2)
3. Optical thin film characterization methods (§ 10.2)
4. What type of drains are needed in a cleanroom and why do they need to be separated (lab manual p.18).

Ticket No 5:

1. Evaporation hardware (§ 3.4)
2. Film Growth Kinetics. Main steps of thin film growth during deposition (§ 6.5)
3. Physical and Chemical reactions in plasma. Role of plasma in dry etching (§ 4.4, lecture notes)
4. Which types of exhaust systems are normally required for a cleanroom (lab manual p.18).

Ticket No 6:

1. Comparison of sputtering and evaporation techniques (lecture notes)
2. Adhesion and Strategies for Its Improving (§ 12.7)
3. Mechanical thin film characterization methods (§ 10.2)
4. Describe which alarm systems that are needed in a cleanroom (lab manual p. 9).

Ticket No 7:

1. Fundamentals of Plasma (§ 4.3)
2. Lattice Misfit and Defects in Epitaxial Films (§ 8.3)
3. Techniques for Measuring Internal Stress in Films (12.3.4)
4. What protection is needed when working with dangerous chemicals (lab manual p.27)

Ticket No 8:

1. Classification of dry etching techniques (lecture notes)
2. Thermal CVD Processes (§ 6.6)
3. Interdiffusion in thin films. (§ 11.3)
4. Describe some general requirements on the environment in a cleanroom (lab manual p.5)

Ticket No 9:

1. DC and AC sputtering processes (§ 5.2)
2. Oxidation of Si. (§ 11.2.42)
3. Chemical Characterization of Surfaces and Films (§ 10.4)
4. What does "cleanroom class" refer to. Which "cleanroom class" should a modern, well equipped cleanroom belong to (lab manual p.5)

Ticket No 10:

1. Physical-Chemical plasma etching (§ 5.4, lecture notes)
2. Types of Epitaxy (lecture notes)
3. Mechanical Testing and Strength of Thin Films (§ 12.2)
4. What is the purpose of the cleanroom garment (lab manual p. 23).

Ticket No 11:

1. Etching profiles in dry etching. Directionality, anisotropy and selectivity of etching.
2. Qualitative comparison of CVD processes and reactors (§ 6.2):
3. Internal Stresses in Thin Films and Their Causes, Stresses in Epitaxial Multilayers (§ 12.5, 8.3, lecture notes)
4. Describe the risks related to handling and usage of liquid nitrogen. (lab manual p. 18).

Ticket No 12:

1. Sputter deposition (§ 5.3)
2. Doping of semiconductors (lecture notes)
3. Characterization of Epitaxial Film Growth (RHEED, LEED) (§ 8.7.4.1, 8.7.4.2)
4. Describe the risks when using hydrofluoric acid (HF).

Ticket No 13:

1. Thermodynamics of CVD (§ 6.3)
2. Structural Characterization of Films and Surfaces (§ 10.3)
3. Photolithography (lecture notes);
4. What actions should be taken if skin has been exposed to hydrofluoric acid (HF)

Ticket No 14:

1. Plasma- Ion- and Laser- Enhanced CVD (§ 6.7)
2. Classification of solids (lecture notes, § 1.2.1, 1.4).
3. Interdiffusion in thin films. (§ 11.3)
4. What type of drains are needed in a cleanroom and why do they need to be separated (lab manual p.18).

Ticket No 15:

1. Selective CVD deposition (§ 6.8)
2. Vacuum system and pumps (§ 2.4, 2.5);
3. Structure zones of thin films (§ 9.2)
4. Which types of exhaust systems are normally required for a cleanroom (lab manual p.18).

Ticket No 16:

1. High- and Low-Temperature Methods for Depositing Epitaxial Semiconductor Films (§ 8.5, 8.6)
2. Classification of dry etching techniques (lecture notes)
3. Vacuum system and pumps (§ 2.4, 2.5);
4. Describe which alarm systems that are needed in a cleanroom (lab manual p. 9).

Ticket No 17:

1. Evaporation hardware (§ 3.4)
2. Internal Stresses in Thin Films and Their Causes, Stresses in Epitaxial Multilayers (§ 12.5, 8.3, lecture notes)
3. E-beam lithography (lecture notes);
4. What protection is needed when working with dangerous chemicals (lab manual p.27)

Ticket No 18:

1. Vacuum, Gas transport and pumping (§ 2.3, 6.4) ;
2. DC and AC sputtering processes (§ 5.2)
3. Types of Epitaxy (lecture notes)
4. Describe some general requirements on the environment in a cleanroom (lab manual p.5)

Ticket No 19:

1. Comparison of sputtering and evaporation techniques (lecture notes)
2. Film Growth Kinetics. Main steps of thin film growth during deposition (§ 6.5)
3. E-beam lithography (lecture notes);
4. What does "cleanroom class" refer to. Which "cleanroom class" should a modern, well equipped cleanroom belong to (lab manual p.5)

Ticket No 20:

1. Physical-Chemical plasma etching (§ 5.4, lecture notes)
2. Qualitative comparison of CVD processes and reactors (§ 6.2):
3. Photolithography (lecture notes);
4. What is the purpose of the cleanroom garment (lab manual p. 23).