Solidstate physics

1.lattic vibrations:

a-monoatomic

b-diatomic: 1-acoustic branch

2-optical branch

c-coupling of atomic vibrations to light in ionc crystals

d- statistical eqilibrium

1-maxwell-boltzmann

2-bose-einstiein

3-fermi-dirac

2.density of state:

a-one-dimesional

b-3-dimensional

3.thermal properities. [specific heat].

a- classical theory.

b-the english model.

c-the debye model.

- thermal conductivity in metal.
- umklapp processes.
- the free –elrctron model.
- lorenz number.
- the lorenz model.
- quantized free electron model.

4.electron emission

a-thermionic emission.

b-photo emission.

c-field emission.

- sommer feld's model for metallic coduction.
- tight-binding model.
- the kronig-penney model.
- the band-theory of solids.

5.Semiconductons

a-electron and hole

b-effective mass.

c-intrinsic semiconductor.

d-extrinsic

e-hall-effects.

f- p-n junction.
g-einstein relation

6.optical properties

a-refractive index.
b-absorption coeficient.
c-do absorption by free carriers.
d-rasonance absorption. (plasma).
photoconductivity