

Course: PYL725 (Surface Physics and Analysis), IInd Sem., 2017-2018

Major: Tuesday, 1.00 – 3.00 PM, Date: 08/05/2018, Total marks = 50

(Note: Attempt all the questions, marks are given in parentheses.)

-
- ✓ Q.1(a): What is the crucial difference in the final state of Auger & x-ray emission? (2)
- ✓ Q.1(b): Can Auger processes occur for all elements? Give example & explain why?(2)
- ✓ Q.2(a) Explain low energy electron diffraction technique in detail with figures. (4)
- ✓ Q.2(b) Find the value of energies (in eV) for electrons and x-rays to get the wavelength of 2.5 angstrom for diffraction experiments. (4)
- ✓ Q.3: In RHEED, what makes the perpendicular component of e^- momentum small? (3)
- ✓ Q.4: Explain GI-XRD and XRR techniques in detail with figures, equations including what we learn and how? (5+5)
- ✓ Q.5: Explain SIMS in detail with figures, equations. (5)
- ✓ Q.6: Discuss scanning tunneling microscopy in detail with figures. (4)
- ✓ Q.7: Explain SEM technique in detail with figures and discuss what we learn and how? (5)
- Q.8: Explain photoelectron diffraction (PED) in detail with figures. Also, discuss what are the advantages of PED over LEED. (5+2)
- ✓ Q.9: Discuss the process of plasmon excitation. (4)
-