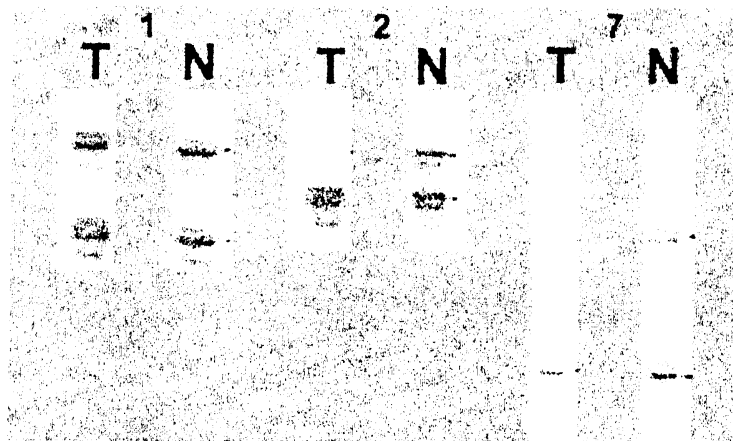


1. Molecule to molecule interaction at the scale of nanometer range is the fundamental base of life. What are the current available technologies for the study of molecular interaction? (10%) Within these technologies, which of those could provide anatomical localization information? (5%) Which of those could provide binding affinity information? (5%)
2. What is microsatellite in a genome structure? (5%) How could they be applied for human disease profiling? (5%) Please interpret the following microsatellite analysis data (1, 2 and 7 are the patient number. T: tumor tissue, N: paired normal tissue of the same patient. PCR amplified products of marker D3s2438 were resolved in a polyacrylamide gel): (10%)



3. When you give someone your blood as in a whole blood transfusion, will your cell reside in the recipient's body? Why and why not? (10%) What will happen if the donor and recipient are identical twins? (5%) How could you prove your hypothesis by experimental design? (10%)
4. Please draw a picture to depict cell membrane and integrated cytoskeleton (include membrane skeleton) structure. (10%) What are the molecular constituents and classification of the cytoskeleton and what are the differences between these classes? Please compare using a table (10%) What is lipid raft? What is its role in signal transduction? (5%)
5. What is epigenetic control? What are the roles of epigenetic control in cellular function and biological system? (10%)