

1. Complement proteins are abundant serum proteins. Please describe how complements contribute to the immune responses against pathogenic microorganisms. (20%)
2. A strict cellular selection process occurs in the thymus. Please describe this process and explain why this cellular selection is important for T cell function. (20%)
3. What cytokines are noted for their activity to increase anti-viral activity in infected cells? Please explain the anti-viral molecular mechanisms induced by these cytokines. (20%)
4. Please read the following story from a local newspaper.
 “Dr. Yang was sued by a 65-year-old woman who recently was diagnosed to have skin cancer. The woman claimed that when she visited doctor Yang’s clinic due to sore throat 3 months ago, she noticed that the patient before her had a lesion of skin cancer on the face. She believes that Dr. Young spread the cancer cells from that patient to her through contact of medical instruments.”
 From an immunological point of view, comment on the possibility of spreading cancers between different individuals. (20%)
5. Matching (4% for each answer)

()	I. Pathogen associated molecular pattern receptor	a.	ICAM-1
()	II. Counter receptor for LFA-1	b.	Fas
()	III. Death receptor leading to leukocyte apoptosis	c.	CD40
()	IV. Anergy-preventing co-receptor for T cell antigen receptor	d.	Toll like receptor (TLR)
()	V. B cell surface molecule essential for isotype switching	e.	CD28