Immunology 2 solutions

C.

1) destroy infected body cells	**Killer T cells**
2) specifically bind soluble antigen	**B cells**
3) present peptides on class II MHC	**B cells and Macrophages**
4) present peptides on class I MHC	**All nucleated body cells**
5) stimulate B cells	**Helper T cells**
6) undergo somatic recombination	**B cells, Helper T cells, and Killer T cells**

D.

i) Once a body cell is infected, peptides specific to VZV are presented on class I MHC molecules on the surface of the infected cell. Some killer T cells will recognize the MHC I/ VZV peptide complex as non-self, become activated and destroy the VZV-infected cells.

ii) Once infected with VZV, the individual mounts a full immune response and eventually clears the virus. Part of the immune response is the generation of memory B and T cells. Upon re-exposure to VZV, the immune system is primed with cells proven effective against VZV. The secondary immune response is faster and more effective and eliminates the virus before symptoms of VZV occur.

iii) An argument for vaccination is to reduce pain and discomfort in young children, and ensure that no one enters adulthood susceptible to the disease.

iv) An argument against vaccination is driven by the concern that the vaccine may not provide lifetime immunity against VZV. It is not clear that whether the lifetime immunity of individuals is due to contracting the disease, or whether subsequent exposure to the VZV virus (from siblings, classmates, etc.) acts as an immune system booster. If all children receive the vaccine, then after several years there will be no secondary exposures and thus no boost to the immune system. The fear is then that these children reach adulthood they may be exposed to VZV (not every country will vaccinate all their children) and no longer have immunity. The consequences of contracting VZV as an adult are unpleasant at best and life threatening in some cases.

E. Below is a diagram of a "Chromium Release Assay". Epithelial cells were grown in radioactive chromium and are subjected to infection with invasive bacteria or viruses as stated below. These cells or controls are placed accross in all 12 wells of as assay dish. They are then incubated with or without Killer T cells (added as shown in all 8 wells of the columns shown). Detergent is added as a positive control to one column to lyse all epithelial cells. Radioactivity is measured in the supernatent. Indicate where you would expect high radioactivity in the supernatent.