

Question 27 (8 marks)

Evaluate the contributions made by both Louis Pasteur and Robert Koch to our present understanding of the causes and possible prevention of infectious diseases.

8

Infectious diseases present a major problem for societies around the world, killing millions each year, especially in 3rd World countries. Understanding the causes would assist in the prevention of such diseases as the causes could be eliminated thus the disease prevented.

Robert Koch came up with 4 postulates that would, if satisfied, identify a microorganism as the cause of a disease. These 4 postulates are

1. the microorganism must be present in every case
2. the microorganism must be observed i.e. cultured outside of ~~the~~ a host
3. when injected with the culture, a new host must present the same symptoms of disease as the first host did
4. an identical culture must be obtained from the microorganism in the second host.

His postulates have led to the identification of many microorganisms as the causes of disease. #

Louis Pasteur was also involved in present understanding.

His experiments with broth and flasks showed the causes of disease, and ways to prevent them. # Broth exposed to open air was contaminated with microbial growth. ~~Broth~~ Broth protected by a swan-neck (S-shaped) flask opening, which

trapped microorganisms, remained free of microbial growth. He proved that microorganisms existed in the air, and all around us, and showed that hygiene is important in prevention. Their contributions were fundamental to modern understanding of causes, such as pathogens, and -23- prevention, such as food coverings, masks, ~~sterilisation~~ sterilisation of surgical instruments etc, and with this understanding, infectious diseases may be controlled effectively.