

Marks

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

~~white s~~ Louis Pasteur - while serving as a Dean ~~at~~ in the faculty of Science at a University in Lille, France, Pasteur investigated a wine-makers' complaint that some of the wine became contaminated during the fermentation process. ~~He~~ Pasteur examined ~~as~~ both a sample of contaminated and non-contaminated sugar beet ferment, and ~~a~~ identified globules of yeast, visible in the contaminated liquid. He proposed that contamination was a direct result of microorganisms' activity, and his theory was proved correct, in Pasteur's famous experiment involving S-bend Flasks, ^{where} both ^{liquids} were boiled (sterilised), ~~and one~~ ^{retained} one was allowed air and the other ~~trapped~~ the S-bend. The one that was allowed air became contaminated, while the ~~o~~ flask with the S-bend did not, because the air-borne pathogens became ~~caught~~ trapped. This led to the development of the "germ theory of disease", destroying the idea of spontaneous generation, proposing that life arose from inorganic matter. Hence Pasteur deduced that microorganisms that caused disease were present in the air.

ROBERT KOCH's experiment involved inoculating ~~50~~ 25 out of 50 sheep with an attenuated strain of ~~Anthrax~~ Bacillus Anthracis bacteria, and leaving the other 25 sheep as a control. He hypothesised that the 25 who had been vaccinated would survive after he inoculated all 50 with a virulent strain of the pathogen - and was proved correct. The 25 that had not been given the ~~but~~ weakened strain ~~de~~ died, while the others survived. He developed a set of rules that ~~o~~ gave the procedure for identifying if a particular pathogen caused a disease (Koch's postulates) and also developed vaccines for chicken cholera & Rabies. ~~and~~ Together, they have helped found our modern day understanding of how ~~diseases~~ infectious diseases can be identified and prevented.