** A level Year 2** Eduqas Component 3

**Option - Immunology and Disease**

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| 1 | **Disease** |  |  |  |
| 1.1 | the meaning of the following terms:   * pathogenic * infectious * carrier * disease * reservoir * endemic * epidemic * pandemic * vaccine * antibiotic * antigen * antibody * resistance * vector * toxin * antigenic types |  |  |  |
| 1.2 | the human body acting as a host to other living organisms |  |  |  |
| 1.3 | the following diseases in terms of:  the types of organisms;  source of infection;  tissue affected;  mode of transmission;  prevention;  control methods and treatment, including vaccines:   * Bacterial infections: cholera; tuberculosis * Viral infections: smallpox; influenza * Protoctistan infections: malaria |  |  |  |
| 1.4 | the relationship between the pathogenicity of viruses and their mode of  reproduction |  |  |  |
| 2 | **Antibiotics** |  |  |  |
| 2.1 | the control of bacterial infections by antibiotics which can be bacteriostatic or bactericidal in their mode of action and that antibiotics can be broad or narrow spectrum |  |  |  |
| 2.2 | the modes of action of penicillin and tetracycline and how the structure of the bacterial cell wall in Gram negative bacteria affords protection against many antibiotics and immune defences |  |  |  |
| 2.3 | how the overuse of antibiotics has resulted in the spread of antibiotic  resistance amongst pathogenic bacteria |  |  |  |
| 3 | **Immune response** |  |  |  |
| 3.1 | the natural barriers in the body which reduce the risk of infection, including natural skin flora, connective tissue, localised inflammation, phagocytosis, clotting, tears, mucus and ciliated epithelium |  |  |  |
| 3.2 | how specific immune responses are developed as a result of exposure to foreign antigens |  |  |  |
| 3.3 | humoral immune responses, involving the production and secretion of  antigen-specific antibodies |  |  |  |
| 3.4 | cell -mediated immunity, by direct cell contact involving the destruction of pathogens, infected cells and cancerous cells |  |  |  |
| 3.5 | the role of T lymphocytes and B lymphocytes in cell-mediated and humoral lmmune responses |  |  |  |
| 3.6 | specific immune responses induced naturally or artificially to produce an  active, long-lived response or acquired passively resulting in short-term  protection |  |  |  |
| 3.7 | the principles of the active immune response can be used medically to  immunise against disease, e.g. rubella, without infection by the pathogen |  |  |  |
| 3.8 | the use of injection of antibodies to provide passive, emergency treatment against an infection, e.g. the treatment of rabies |  |  |  |
| 3.9 | the different levels of effectiveness of immunisation programmes against  different diseases |  |  |  |
| 3.10 | the ethics which must be taken into consideration when designing vaccination programmes |  |  |  |