**Task 6 Solutions Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Question 1:**

**Explain how a piece of fatty bacon is digested in the human body. Include in your explanation any structures passed along the journey and any chemical and physical changes which would happen to the piece of meat along the way. (14 marks)**

Bacon- Protein, Lipids (1)

**Mouth/Teeth**

Mechanical digestion-cut bacon into small pieces- Increase SA. (1)

Saliva moisten softens, forms bolus (1)

**Oesophagus** –Peristalsis (1)

**Stomach** produces hydrochloric acid and pepsinogen (1) converts to pepsin / gastric protease (1) chemically digests protein into peptides (1).

Stomach churns food into chyme (1).

**Liver** produces and gall bladder stores bile (1) which emulsifies lipids / fats in duodenum (1).

Pancreas produces Pancreatic protease (1) which digests peptides to dipeptides (1) and lipase (1) which digests lipids / fat into fatty acids and glycerol (1).

Intestinal Protease dipeptides to amino acids (1)

[any 14]

**Describe how the nutrients in this fatty bacon are absorbed into the body. (6 marks)**

In small intestine (1) villi / microvilli increase surface area (1). Amino acids absorbed into capillaries (1) facilitated diffusion (1)

fatty acids and glycerol absorbed into lacteals(1) by diffusion (1) transported in the lymph system to circulatory (1).

[any 6]

Question 2:

The kidneys have two main functions – to remove wastes, and to regulate the composition of body fluids. Describe the processes occurring in the nephron that perform these two functions. (10 marks)

Filtration (1) of urea, water, sodium, glucose, amino acids (need all for 1) from glomerulus into glomerular capsule (1) due to high blood pressure (1).

Reabsorption (1) of glucose, amino acids (1) from proximal convoluted tubule and Loop of Henle into capillaries (1) by active transport (1). Some water and sodium reabsorbed (1) depending on amount required by body (1).

Tubular secretion (1) of potassium and ammonium ions, urea, creatinine, hormones, antibiotics (any two for 1) from capillaries into distal convoluted tubule and collecting ducts (1).

[Need 2 bold points plus any 8]

When kidneys lose their ability to excrete waste and control body fluids, kidney failure results. Explain why kidney failure can be life threatening and what can be done for a person with kidney failure. (10 marks)

Mostly affects glomeruli reducing ability to filter blood (1)

Proteins and red blood cells may be present in urine (1)

Causing fluid accumulation in tissues / swelling of hands, feet, face (1)

Peritoneal dialysis (1) fluid containing glucose (and other substances) at similar concentrations to blood, but no wastes (1) run into peritoneum where wastes diffuse before being drained (1)

Haemodialysis (1) blood is passed through an artificial kidney / machine (1) wastes diffuse across membranes into fluid (1)

Kidney transplant (1)