UNIT 3 Digestion

	Learning Outcomes	Suggested Teaching Activities	Online Resources	Other resources
	4 (a) State the increase in surface area to volume ratio after chewing food	Students should be told that physical digestion helps to increase surface for chemical action. They can carry out an experiment with potato and catalase on hydrogen peroxide	http://www.factsonfile.com/newfacts/Pdfs/35695/3-2.pdf Practical comparing the reaction of whole, sliced and grated potato with hydrogen peroxide.	
	4 (b) Identify from a drawing a section though a molar tooth and state the functions of the parts 4 (c) State the cause of dental decay and describe the care of teeth Demonstrate the presence of bacteria on teeth	Students should be provided with a diagram of a molar in cross section to label and annotate Students should be given health leaflets on tooth decay and produce their own Students should use disclosing tablets to show up plaque.	http://www.m-w.com/mw/art/tooth.htm http://my.webmd.com/hw/health_guide_atoz/hw212228.asp Use of disclosing tablets	P.Gadd pg 50 fig 7.2 and summary table of function pg 51 D. Mackean pg 124 fig 17.1 P.Gadd pg 52 fig 7.4 and summary table pg 52 D. Mackean pg 126-128 P.Gadd pg 53 practical
	4 (f) Identify from a drawing the main structures of the alimentary canal: mouth, oesophagus, stomach, duodenum, ileum, colon, rectum, anus, gall bladder, pancreas and liver in relation to the duodenum 4 (g) Describe peristalsis as a muscular movement, mixing and propelling food along the intestine 7(k) Explain the role of circular muscles in peristalsis 4 (h) Outline the functions of the pancreas and the liver	Students should be given a diagram of the human digestive system to annotate form text OHT or inter-net Students should be given a diagram explaining peristalsis and it should be pointed out to them that the muscles are circular An animation from the inter-net would be useful Students should be introduced into the various functions of the liver and make notes on them. Similarly with the pancreas	http://www.bbc.co.uk/science/humanbody/body/index_interactivebody.shtml BBC organs game, parts of this are useful here http://www.emc.maricopa.edu/faculty/farabee/BIOBK/BioBookDIGEST.html Much on all aspects of digestion here http://www.westga.edu/~lkral/peristalsis/ Simple animation http://www.bbc.co.uk/science/humanbody/body/factfiles/skeletalsmoothandcardiac/stomach_peristalsis.shtml	P.Gadd pg 56 fig 7.10 and 7.11 summary table pg 57 D. Mackean pg 61 fig 10.1 D. Mackean pg 63 fig 10.4 P.Gadd pg 57 fig 7.12and D. Mackean pg 60 P.Gadd pg 62 summary table

		Students should use the BBC interactive body resource to find out about all these organs & enzymes, and their functions.	Useful animation of peristalsis in stomach, rather than the usual oesophagus http://www.bbc.co.uk/science/humanbody/body/index_interactivebody.shtml	
	4 (d) Define enzymes as proteins that act as biological catalysts involved in all biochemical processes including digestion, respiration and protein synthesis 4 (e) State the effects of changes in temperature and pH on the rate of enzyme activity Investigate the effects of changes in temperature and of pH on the rate of digestion of starch suspension by amylase.	Students should make notes on enzymes using text book and/or inter-net, stating their structure and their function. They should carry out investigations using amylase on starch at different temperatures and pH	http://web.ukonline.co.uk/webwise/spinneret/nutrition/enzfac.htm Protocols for starch/amylase experiments http://www.newbyte.com/us/ Free 14 day trial download of Enzyme Lab. Which allows simulation of many enzyme experiments.	P.Gadd pg 54 summary table pg 55 D. Mackean pg 26-27 P.Gadd pg 53-55 practicals
	4 (i) State the functions of amylase, protease and lipase in the production of reducing sugars, amino acids, fatty acids and glycerol 4 (j) State the main sites of the digestion of protein to polypeptides and of polypeptides to amino acids, name the enzymes involved in the stomach and duodenum and state the significance (of pH in enzyme activity) 4 (k) State the main sites of the digestion of starch to maltose and maltose to glucose and name the enzymes involved	Students should use the BBC interactive body resource top find out about all these organs & enzymes, and their functions. And a summary table should be produced		P. Gadd pg 58-59 Figs 7.14 to 7.16 Plus summary tables D. Mackean pg 66 summary table
	4 (l) State the need for emulsification of fats and explain how this takes place	Students should discuss the “non-mixing” property of fat and water from shared experiences. Notes should be written on the role of bile in this instance.	http://www.colorado.edu/epob/academics/web_resources/cartoons/bile.html Explanation of role of bile	D. Mackean pg 64
	4 (m) Describe and explain the adaptation of the small intestine for the absorption of	Students should use the BBC interactive body resource top find out about all these	http://faculty.uca.edu/~jmurray/BIOL2407/lec/villi.mov	P. Gadd pg 59-61 Fig 7.17 and 7.19

	the products of digestion: folds and villi providing an increased surface area; functions of capillaries and lacteals	organs & enzymes, and their functions. Students should draw or be given a diagram of a Villus to annotate	Villus and absorption movie	Plus summary table D. Mackean pg 64-66 figs 10.8 to 10.11
	4 (n) Describe the colon as the main region for the absorption of water 4 (o) State the need for assimilation of products of digestion by cells 4 (p) Distinguish between egestion and excretion 4 (q) Define defecation, constipation and diarrhoea.	The students should be given a sheet with these key words defined and explained.	http://www.nurse-prescriber.co.uk/education/anatomy/anatomy6.htm Nice colon picture	P. Gadd pg 63 Plus summary tables D. Mackean pg 66-67