**Q 2015 11**

|  |  |
| --- | --- |
| 1. (i)   (ii) | Humans are *heterotrophic* and *omnivorous*. Explain **each** of these terms.  What is meant by a balanced diet? |
| ( b) (i) | Draw a large diagram of the human alimentary canal and its associated glands. On your diagram label all of the following: |

* 1. **Two** associated glands. Name each gland labelled and put the letter ***G*** in brackets after each name to indicate it is a gland.
  2. **Two** parts of the small intestine. Name each part labelled and put the letter ***S*** in brackets after each name to indicate it is part of the small intestine.
  3. **Two** parts of the large intestine. Name each part labelled and put the letter ***L*** in brackets after each name to indicate it is part of the large intestine.

1. Answer the following questions in relation to lipase.
   1. What is lipase?
   2. Give **one** part of the alimentary canal that secretes lipase.
   3. What is the approximate pH at the site of lipase action? **(27)**
2. (i) 1. Write the dental formula for an adult human with a full set of teeth.



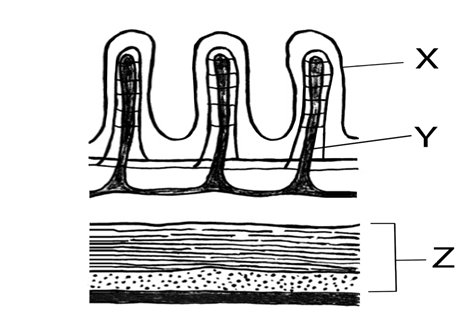
1. Give **one** difference between the dental formula referred to above and the tooth arrangement of the mammal in the photograph below.
2. What type of food do you think is mainly consumed by the mammal in the photograph? Explain your answer.

**MS 2015 11**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. (i) *Heterotrophic*: must consume food **or** eats other organisms   **or** cannot make their food  *Omnivorous*: eats both animal and plant (material)  (ii) Correct amounts of each food type (for health)   1. (i) *Diagram*: continuous tube + stomach + intestines + a gland | | | | **3**  **3**  **3**  **6, 3, 0** |
|  |  | 1. | Liver / salivary glands / pancreas | **2(2, 1, 0)** |
|  |  | 2. | Duodenum / ileum | **2(2, 1, 0)** |
|  |  | 3. | Colon / caecum (or appendix) / rectum | **2(2, 1, 0)** |
| (b) | (ii) | 1. | Enzyme that digests lipids (or fats or oils) | **3** |
|  |  | 2. | Stomach **or** duodenum | **3** |
|  |  |  | [*accept* small intestine or ileum or salivary glands or pancreas] |  |
|  |  | 3. | *Stomach:* (pH) < 7 |  |
|  |  |  | *Duodenum* or *small intestine* or *ileum:* (pH) 7 – 9 | **3** |
| 2 1 2 3   1. (i) 1. I C PM M   2 1 2 3   * 1. (Humans have) fewer incisors (or fewer canines)   **or** Animal shown has more incisors (or more canines)   * 1. *Type of food*: meat **or** flesh **or** other animals   *Explanation*: long (or sharp or pointed or large or extra) canines (or incisors)   1. Absorption of water / peristalsis / egestion / absorb vitamins 2. Production of vitamins / compete with other micro-organisms / digestion / benefit immune system | | | | **3**  **3**  **3**  **3**  **2(3)**  **2(3)** |

**Q 2012 15 a**

* 1. The diagram shows part of a transverse section through the small intestine.



* + 1. Name structures X and Y.
    2. What process results from the contraction of the two parts of tissue Z?
    3. **In your answer book**, indicate which of the following most accurately represents the pH of the contents of the small intestine.

Acidic. Neutral. Alkaline.

* + 1. Name **two** glands that pass their secretions into the small intestine.
    2. 1. What are *symbiotic* bacteria?

2. Give **two** functions of symbiotic bacteria in the human alimentary canal.

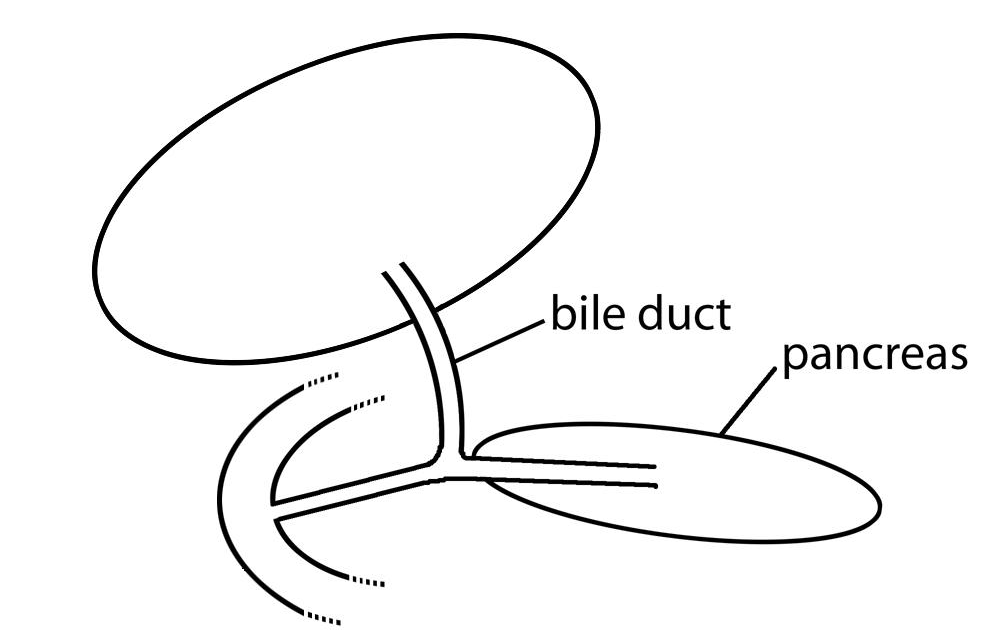
* + 1. Where in the human alimentary canal is most water absorbed?

**MS 2012 15 a**

|  |  |  |  |
| --- | --- | --- | --- |
| **15.** (a) | (i) | (X =) \*Villus | **3** |
|  |  | (Y =) \*Lacteal | **3** |
|  | (ii) | \*Peristalsis | **3** |
|  | (iii) | \*Alkaline | **3** |
|  | (iv) | \*Pancreas | **3** |
|  |  | \*Liver | **3** |
|  | (v) | 1. (Bacteria) living on or in another organism involving benefit 2. Vitamin production / compete with pathogens / reference to digestion / inhibits cancer cells | **3** |
| **2(3)** |
|  | (vi) | \*Colon **or \***large intestine | **3** |

**Q 2011 5**

1. (i) What is meant by the term *digestion*?
2. Why is digestion necessary?
3. Distinguish between mechanical and chemical digestion by writing a sentence about each.
4. The diagram shows part of the human alimentary canal and associated structures.



X

W

* 1. What part of the alimentary canal is labelled W?
  2. The bile duct is connected to X. Name X.
  3. From which part of the alimentary canal does food arrive into W?
  4. State **one** digestive function of the pancreas.

**MS 2011 5**

|  |  |  |  |
| --- | --- | --- | --- |
|  | (a) | (i) | The breakdown of food |
|  |  | (ii) | For solubility **or** for absorption **or** for transport |
|  |  | (iii) | *Mechanical*: physical or grinding or cutting or churning or chewing or emulsifying  *Chemical*: (action of) enzyme **or** named enzyme **or** (action of) acid **or** named acid |
|  | (b) | (i) | Duodenum **or** small intestine |
|  |  | (ii) | Gall bladder **or** liver |
|  |  | (iii) | Stomach |
|  |  | (iv) | (Produces) enzymes **or** named enzyme **or** neutralises (chyme) |

**Q 2010 15 b**

* 1. Draw a labelled diagram to show the relationship between the liver, the small intestine and the hepatic portal vein.

1. Name a substance transported to the liver by the blood in the hepatic portal vein.
2. Name the blood vessel that brings oxygenated blood to the liver.
3. Where in the human body is the liver located in relation to the stomach?
4. Where is bile stored after it has been made in the liver?
5. Give **one** role that the bile salts play in the digestive process.
6. Give **two** further functions of the liver, other than the manufacture of bile.

**MS 2010 15 b**

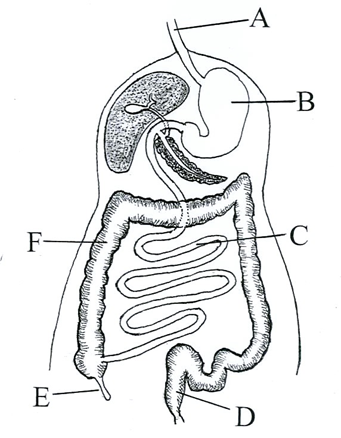
|  |  |  |  |
| --- | --- | --- | --- |
| (b) | (i) | Diagram (liver, connection, gut)  Labels (*liver, intestine and portal vein*) | **3, 0**  **3(2)** |
|  | (ii) | Named food **or** CO2 | **3** |
|  | (iii) | \*Hepatic artery | **3** |
|  | (iv) | Above **or** to the right **or** behind | **3** |
|  | (v) | \*Gall bladder | **3** |
|  | (vi) | Emulsify fats (or explained) **or** neutralise (or comment on pH) | **3** |
|  | (vii) | Storage of (fat-soluble) vitamins (or glycogen or named mineral) / deamination / heat generation / detoxification / plasma protein production / cholesterol production  ***Any two*** | **2(3)** |

**Q 2008 12**

1. (a) (i) Distinguish between mechanical and chemical digestion.

(ii) Name a structure in the human digestive system, other than teeth, which is involved in mechanical digestion. **(9)**

1. The diagram shows the human digestive system.



* 1. Name the parts A, B, C, D, E and F.
  2. Describe **two** functions of bile in relation to digestion.
  3. Answer the following in relation to a lipase:
     1. Where is it secreted?
     2. Where does it act?
     3. What is the approximate pH at its site of action? **(27)**

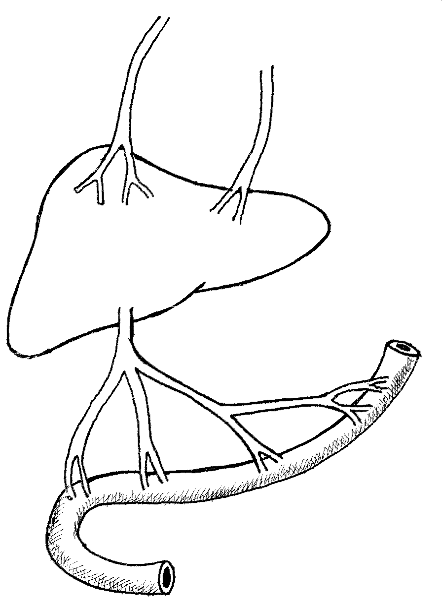
1. (i) What are symbiotic bacteria?
2. Give **two** activities of symbiotic bacteria in the human digestive system.
3. Name the part(s) of the digestive system in which the following are absorbed into the blood.
   1. the products of digestion,
   2. water.
4. Name a process involved in the passage of the products of digestion into the blood.
5. Explain how the structure that you have named in (iii) 1. is adapted for the absorption of the products of digestion. **(24)**

**MS 2008 12**

|  |  |  |  |
| --- | --- | --- | --- |
| (a) | (i) | mechanical: | **3** |
|  |  | physical **or** grinding **or** cutting **or** churning **or** chewing **or** emulsifying |  |
|  |  | chemical: |  |
|  |  | enzyme **or** acidic action **or** molecular breakdown | **3** |
|  | (ii) | tongue **or** oesophagus **or** stomach **or** small intestine **or** named part of small intestine | **3** |
|  |  |  |  |
| (b) | (i) | A = oesophagus B = stomach C = small intestine **or** ileum D = rectum E = appendix F = large intestine **or** colon | **6(2)** |
|  | (ii) | emulsification **or** explained | **3** |
|  | neutralisation **or** raises pH **or** makes alkaline | **3** |
|  | (iii) | 1. pancreas [*allow* duodenum] | **3** |
|  | 2. duodenum **or** small intestine **or** ileum | **3** |
|  | 3. 7 – 9 inclusive | **3** |
|  |  |  |  |
| (c) | (i) | (bacteria that) live in (or on) another organism involving benefit | **6** |
|  | (ii) | digestion / production of vitamins / benefit immune system / compete with other micro-organisms [*allow* one reference to harmful activity] | **2(3)** |
|  | (iii) | 1. ileum **or** villi [*allow* duodenum **or** small intestine] | **3** |
|  | 2. Colon [*allow a*ny named part from stomach onwards] | **3** |
|  | (iv) | diffusion **or** passive transport | **3** |
|  | (v) | large surface area (folding) **or** good blood supply **or** lymph supply **or**  (lining) one cell thick **or** long **or** villi **or** microvilli | **3** |

**Q 2006 5**

Study the diagram and then answer the following questions.



**Hepatic Vein**

**Hepatic Artery**

**Organ X**

**Y**

**Intestine**

* 1. Name X and Y
  2. Place arrows on Y, the hepatic artery and the hepatic vein to indicate the direction of blood flow.
  3. State the precise location of organ X in the human body

1. State a role that organ X plays in the digestive process

**MS 2006 5**

5. 6(3) + 2

(a) X: liver

Y: (hepatic) portal vein or portal system

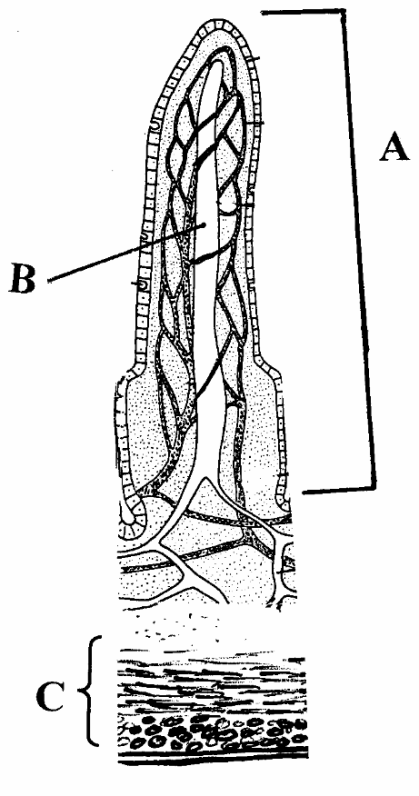
(b) Arrow 1 – Arrow 2 – Arrow 3 -

(c) upper abdomen or under diaphragm or correctly related to stomach

(d) (produces) bile or emulsification or (produces) NaHCO3 or neutralizes acid

**Q 2005 6**

The diagram shows part of a section of the human small intestine.



* 1. Name A, B, C.
  2. State **two** ways in which A is adapted for the absorption of soluble foods.
  3. Name a process by which soluble foods are absorbed into the blood from the small intestine.
  4. What type of food is mainly absorbed into B?

**MS 2005 6**

|  |  |  |
| --- | --- | --- |
| **6.** | **5(2) + 2(5)** |  |
| (a) | **A** = villus **B** = lacteal or lymph vessel **C** = muscle or wall |
| (b) | Large surface area / rich blood supply / microvilli / thin-walled / lacteal | any two |
| (c) | Diffusion (passive transport) |  |
| (d) | Fats / fatty acids /glycerol / lipids | any one |

**Q 2004 6**

1. Answer the following questions in relation to the human alimentary canal.

What is peristalsis?

State **one** reason why a low pH is important in the stomach

Why is fibre important?

Name an enzyme that is involved in the digestion of fat What are the products of fat digestion? What is the role of bile in fat digestion?

State a role of beneficial bacteria in the alimentary canal

**MS 2004 6**

**2(5) + 5(2)**

Muscular activity **or** description e.g. contractions to move food [*allow ‘movement of food’]* Kills germs **or** optimal pH for enzymes **or** hydrolysis of starch **or** other correct reason Peristalsis **or** explained (e.g. bulk for movement) [*accept reference to constipation or bowel cancer*]

Lipase

Fatty acids **or** glycerol

Emulsification (must imply smaller globules produced) **or** pH effect **or** explained Production of vitamins **or** inhibition of pathogens **or (**aids) digestion **or** example