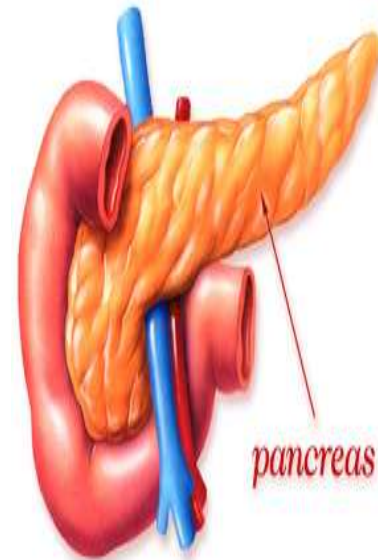
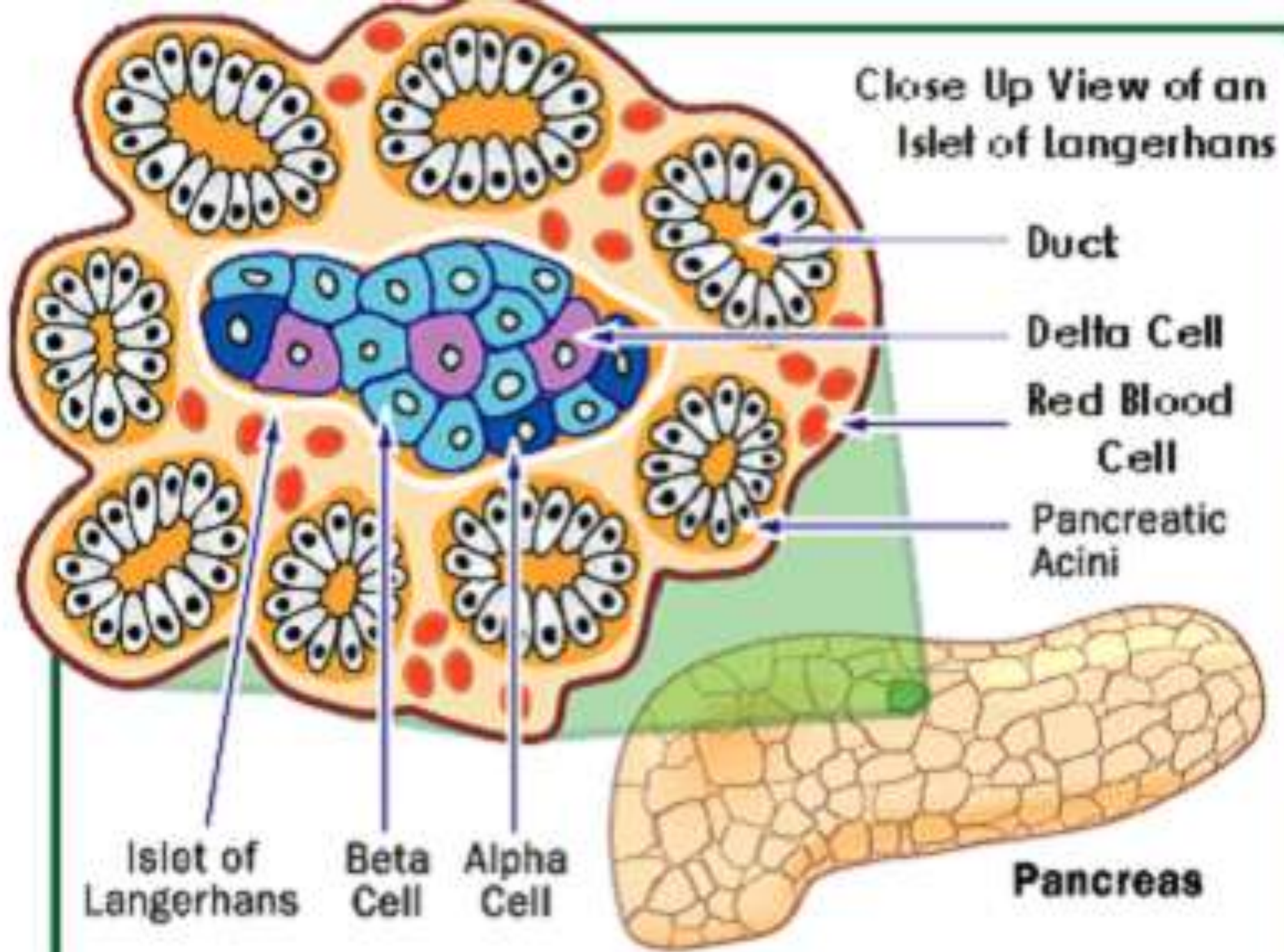


PANCREAS and BLOOD SUGARS

- Pancreas contains the **Islets of Langerhans**.
- alpha cells release **glucagon** if the sugar levels are too low – this converts glycogen into glucose.
- Beta cells release **insulin** if the blood sugar levels are too high – it converts glucose to glycogen, and lets cells absorb glucose from the blood.
- If your pancreas cannot release insulin at all, you have Type 1 Diabetes mellitus – you need to inject insulin into your body.
- Type 2 Diabetes mellitus occurs if only some insulin is released – you need to take regular medication, and have an awareness of what you eat.



Close Up View of an Islet of Langerhans



Duct

Delta Cell

Red Blood Cell

Pancreatic Acini

Islet of Langerhans

Beta Cell

Alpha Cell

Pancreas

NUTRITIONAL PROBLEMS



- We have already seen what is needed in a balanced diet. **MalNutrition** is **Bad Nutrition**, in that this *balance* is disrupted. Examples are as follows:

- ***Anorexia nervosa*** = not eating at all.
- ***Bulimia*** = eating gluttonously, then vomiting.
- ***Kwashiorkor*** = only carbohydrates, no proteins.
- ***Nutritional marasmus*** = not enough proteins, carbohydrates, or fats.
- ***Obesity*** = eating too many carbohydrates, fats.







DIGESTION and DIETS

HORMONES – ***Gastrin***: Gastric juices in stomach.

- ***Secretin***: duodenum, to liver (bile) and pancreas.

DIETS – ***Vegan*** = eat no animal products at all.

- ***Vegetarian*** = eat no meat, no fish, no eggs.

- ***Kosher*** = diet that meets Jewish demands.

- ***Halaal*** = meat killed using Muslim principles.



SUPPLEMENTS are used to boost a diet, not instead of it.

TEETH – Brush and floss the food from between your teeth. Boost your Calcium intake (specially when you are pregnant).

DRUGS and HEALTH



Whatever you take into your body must be dealt with by your body. **Take care not to destroy yourself.** Long-term damage results from:

- **Excessive alcohol:** Liver. Brain. Speech. Friends. Abilities. Shortage of vitamins. No immunity. Blood deficiencies. Many different cancers.
- **Dagga:** Brain. Lungs. Respiratory system. Your future.
- **Cocaine:** Brain. Impotence. Heart. Lungs. Health.
- **Heroin:** Constant nausea. Depression. Lungs. Heart. Death. (*Need we say more?*)
- **Nicotine:** Dealt with (in detail!) in our next section relating to lungs.

YOU HAVE BEEN WARNED. PLEASE TAKE NOTE.

BEFORE & AFTER



Cocaine



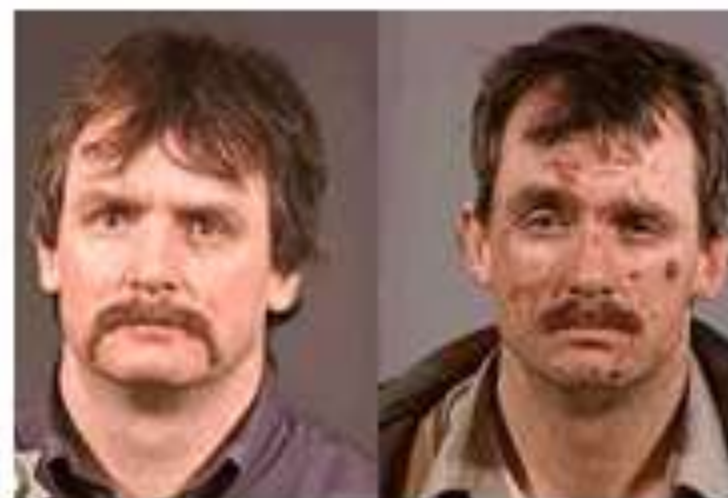
Heroin



Alcohol



Suicide



QUESTIONS Page 40

Question 1

10 X [1] = [10]

1. Peristalsis 2. Roughage 3. *Anorexia nervosa* 4. Mastication
5. Villi 6. Emulsification 7. DeAmination 8. Large
intestine (Colon) 9. Oesophagus 10. Pyloric sphincter



Question 2

5 X [2] = [10]

1. D 2. B 3. B 4. B 5. C

Question 3

1. A=Oesophagus B=Stomach C=Gall Bladder
D=Duodenum E=Liver F=Pancreas G=Hepato-
Pancreatic Duct [7]

2. Insulin reduces glucose (sugar) levels in blood. Glucagon
increases glucose levels in blood. [6]

3. Produces bile. Converts extra glucose into glycogen. Breaks down extra amino acids into urea (DeAmination). Breaks down poisons (DeToxification). Stores iron, copper, vitamins A, B12, D, E, K. [5]
4. 4. Pancreatic juice. [1]
5. Bile – breaks down fats (emulsification), CarboHydrates, Proteins. [3]
6. F [1]



Question 4

1. Kwashiorkor – high CarboHydrate, low Protein. [3]
2. Swollen abdomen. Stick-like arms and legs. Retarded growth. Sores on skin. Swollen face. [3]
3. Contains enough quantities of food from all 5 major food groups. [2]
4. Type-2 Diabetes – heart attacks and strokes. [2]

Question 5



1. Capillaries
Lacteal
Arteriole
Lymph vessel

Goblet cell
Brünner's gland
Venule [7]

2. One layer of epithelium cells for quick and easy diffusion of food. Lacteal can take in fats. Lots of capillaries available for food transport. Lots of mitochondria for energy to actively absorb. Mucus from goblet cells for protection. Brünner's gland neutralises acid. [4]
3. (a) \rightarrow amino acid \rightarrow urea (b) (mono-saccharide) glycogen or energy (c) glycerol & fatty acid - reserve energy [3]
4. Stimulates good peristalsis in colon. Allows faeces to keep some water, to prevent constipation. [2]

Question 6

1. Oesophagus [1]
2. Peristalsis
3. (a) Saliva [1]
(b) Gastric juice and HydroChloric Acid [2]
(c) Intestinal juice and Bile [2]
4. R [1]
5. Small intestine [1]
6. It increases the surface area, allowing even more food to be absorbed. [1]
7. **DeFaecation** is the removal of food ingredients that the body does not need. **Excretion** is the removal of substances that would become poisonous if they collected. [4]
8. Breaks down undigested CarboHydrates.
Absorbs water into the blood. [2]

