By Adam Hollingworth

GIT

GI01 [cd] [Jul98] Oesophagus at rest is:

A. Open at the top
B. Open at the bottom
C. Open at the top and the bottom
D. Closed at the top and the bottom CRICOPHARNGEAS (STRIATED) AND SMOOTH MM
E. Contracted throughout its length

GI02 [Mar97] [Jul00] Na^+ absorption in small bowel

A. Occurs by active transport
B. Occurs with H^+
C. Decreases with glucose (OR: Is facilitated by glucose). co transport
D: Is by active transport at the brush border membrane
E: ? passive across basolateral membrane (??diffusion)
F. Occurs with Cl- through tight junctions

GI03 [d] [Jul98] [Jul99] [Jul02] After a fatty meal, most of the fat would be:

A. Absorbed in the portal circulation & transported to the liver
B. Absorbed in the portal vein & transported in the hepatic artery
C. Absorbed into chylomicrons in the lymphatics
D. Absorbed as triglycerides into the portal vein & bypass the liver
After entering the epithelial cell with the help of bile micelles performed as "ferry" fatty acids and monoglycerides are taken up into ER and used to form new triglycerides that are subsequently transported mainly in "Lymph chylomicrons", flowing upward through the thoracic lymph duct to empty into the circulatory blood. Only small quantities of short- and medium-chain fatty acids are absorbed directly into the portal blood.

GI03b [Mar99] Fat digestion:

A. Bile salts are the most efficient emulsifiers
B. Gastric lipase is the most important
C. Pancreatic lipase in the duodenum is the most important
D. Digestion takes place in micelles
E. Micelles attach to enterocyte receptor

GI04 [Jul98] [Jul01] [Feb04] Vitamin B12 deficiency:

A. Due to decreased ingestion
B. Due to decreased absorption by ileum
C. Causes a deficiency in haemoglobin
D. Causes a decrease in decrease in red cell production
E. causes ataxia

GI05 [Jul98] [Jul99] [Mar03] [Jul03] [Feb04] [Jul04] Iron absorption:

A. Passive
B. Binds to apoferritin in small intestine lumen
C. Decreased with increased pH
D. Requires acidic gastric pH - not required as if in Fe2+ state already can be absorbed
E. Binds to 4 prophyrin rings in the gut - in Hb
F. Vitamin C is a cofactor for haem oxygenase
G. Haem iron is readily absorbed in the small intestine
(Comment: Option C not on Jul 03 paper)

Iron is absorbed mainly in the duodenum and jejenum, via a divalent metal transporter. It cross the apical membrane via facilitated diffusion (passive). It is absorbed in the ferrous (Fe2+) form, and the gastric pH and Vit C help convert ferric to ferrous form. The ferrous form is soluble at higher pH as well, meaning it is readily absorbed from small intestine.

Iron is absorbed by pinocytosis which is in itself an active process, so A is not correct, I feel it is B or C depending on the exact wording on the day.

GI06 [Jul98] [Jul00] [Feb04] Findings in iron deficiency:

A. Increased apoferritin synthesis As iron levels INCREASE iron binds to the mRNA for apoferritin and increases translation, and therefore production, of apoferritin.
B. Decreased transferrin saturation
C. Transferrin synthesis is reduced In iron deficiency, the plasma transferrin concentration increases, though the saturation is low. Therefore synthesis can not be decreased.
D. Increased amounts of ferritin Ferritin is the storage form of iron, so in deficiency the levels will be DECREASED
E. Haemosiderin is produced Hemosiderin is aggregated ferritin, which is deposited in tissues in iron overload states. Obviously in iron deficiency there will be LESS production of haemosiderin.

GI07 [Mar99] [Feb00] [Feb04] The major route of iron excretion is:

A. Excretion of transferrin in the gut
B. Shedding of intestinal mucosal cells
C. Increased renal excretion
D. ?

GI08 [Mar99] [Apr01] Gastric acid secretion is decreased by:

A. Vagal inhibition ACH which acts on M3 on parietal cells – direct mechanism
- GRP – Gastric Release Peptide – indirect mechanism – this is released directly from nerve terminals.

B. Luminal peptides & amino acids (OR: "Ingestion of protein")
C. Noradrenaline
D. M1 cholinergic antagonist same efficacy at reducing gastric acid secretion
E. Distension of bowel wall
(Also remembered as "Intestinal secretion is inhibited by:)

GI09 [Jul99] [Feb00] [Apr01] Release of which ONE of the following increases the pH of duodenal contents?

A. Secretin - S cells ↑HCO3 from pancreas
B. Gastrin
C. Intrinsic factor
D. Cholecystokinin released by cells in the duodenum and acts on both the pancreas and gallbladder; it simulates the release of trypsinogen, chymotrypsinogen, amylase and lipase from the pancreas; it stimulates the production of bile, the contraction of the gallbladder and the relaxation of the Sphincter of Oddi. It also mediates satiety in the CNS. CCK may potentiate the effect of secretin on increasing the duodenal pH.
E. Gastrin releasing peptide
F. Pepsin

GI10 [Jul99] [Jul01] Speed of delivery of nutrients from stomach to small intestine:

A. CHO>fat>protein
B. CHO>protein>fat
C. Protein>CHO>fat
D. ?
E. Fat>protein>CHO

GI11 [Jul00] [Mar03] [Jul03] Gastric emptying is slowest (OR: most prolonged) after consuming:

A. High protein meal
B. High fat meal
C. Alcohol
D. Calcium
E. Carbohydrates

GI12 [Apr01] Chyme in duodenum is alkaline due to

A. Secretin
B. ?
C. ?

GI13 [Jul01] In the small intestine, glucose is absorbed

A. Passively
B. In combination with sodium
C. By facillitated diffusion
D. By cotransport with chloride
E. Actively by insulin dependent uptake
(was Q49 Jul 01)

GI14 [Jul01] After ingestion of a meal:

A. Digestion of fat and carbohydrate begins in the mouth while protein digestion begins in the stomach
B. Carbohydrate in the mouth and protein in the stomach.
C. Protein in mouth and fats and carbohydrate in stomach
D. Most fluid and electrolytes are absorbed in the large bowel
E. Composition of the food has no effect on transit time through the bowel
F. Drugs have no effect on gastric motility

GI15 [Jul01] Calcium uptake in the intestine:

A. Is passive
B. Requires a carrier protein on the mucosal side???
C. Is by facilitated diffusion

D. Is less than 10% than dietary intake

E. Is facilitated by phosphate

GI16 [Mar03] [Jul03] [Feb12] Bacteria in the intestines:

A. Reduced by the continuous movement of contents through GIT
B. Small intestine is sterile
C. Bacteria in small intestine and large intestine – same in number but different species
D. Required for the absorption?/ breakdown of?
E. Reduced in small intestine due to gastric acid & fast motility
Alt version: GI16 Comparing the small and large intenstine

A. bacteria load reduced in small because of gastric acidity and fast transit
B. Main function of bacteria is to break down urea
C. Immune defense is via cell mediated immunity and secretion of IgA
D. ?

GI17 [Mar03] [Jul03] Functions of the liver include ALL EXCEPT:

A. ?
B. ?
C. ?

GI18 [Feb04] [Jul04] Gastrin secretion is decreased by:

A. Vagus
B. Amino acids
C. Food in the stomach
D. H+ ions in the antrum
E. Hyperglycaemia

GI19 [Feb04] [Jul04] Gastric acid secretion

A. Misoprostolol decreases gastric acid secretion and causes constipation
B. Acetylcholine and gastrin cause acid secretion by direct and indirect mechanisms
C. Omeprazole causes reversible inhibition of the proton pump on the parietal cell membrane
D. Pirenzepine is more effective than omeprazole at reducing gastric acid

GI20 [Jul04] When the liver's glycogen stores are saturated it converts glucose to

A. ?
B. Ketone bodies
C. Amino acids
D. Triglycerides

GI21 [Jul04] Which of the following is not produced in the liver?

A. Conjugated bilirubin
B. Immunoglobulins
C. Cholesterol
D. Cholecalciferol?? partially made

GI22 [Jul06] Which of the following is absorbed via micelles? (OR: Micelles aid the absorption of:)

A. vitamin D - adek fat soluble vits
B. Glycerol
C. Bile acids - helps form them!
D. Other options more readily identifiable as wrong.
E. ?

GI23 [Feb12] Blood supply to the liver:

A. Half from portal vein and half from hepatic
B. Oxygen is supplied by both portal vein and hepatic artery.
C. Pressure in portal vein is 5mmHg - norm 10
D. Pressure in hepatic artery is 10mmHg
E. 35% of cardiac output - 25%