JULY 2008
QUESTION 18

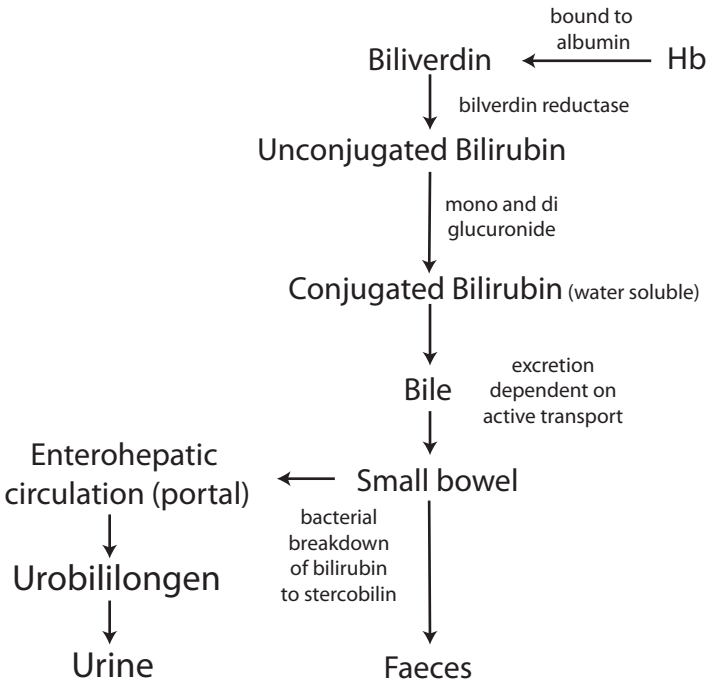
Describe the physiology of bilirubin production, metabolism and clearance (70% of marks). Outline the changes in blood and urine of the products of bilirubin metabolism with intra and post hepatobiliary disease (30% of marks).

Bilirubin

catabolic product of heme metabolism

hemoglobin, myoglobin, cytochromes, catalase, peroxidase, and tryptophan pyrrolase (Eighty 80% from Hb (250 to 400 mg daily)

20% other heme proteins and a rapidly turning-over small pool of free heme



Measurement

Plasma bilirubin levels are a balance of production and clearance

in well patients plasma levels bilirubin are mostly unconjugated

conjugated bilirubin is normally minimal

Urine bilirubin levels

conjugated levels will rise is disease

urobilinogen is the main compenent in well patients (via the bowel/portal system

unconjugated is protien bound and not filtered at the glomerulus

Disease

Intrahepatic disease

Plasma levels

total bilirubin, unconjugated and conjugated all elevated

Urine levels

increased urobilinogen, increased conjugated

Post hepatic disease

Plasma levels

total bilirubin, conjugated bilirubin elevated, unconjugated unchanged

Urine levels

increased conjugated bilirubin, decreased urobilinogen