1. When serum calcium (Ca++) is high
   A: activity of renal 1 alpha hydroxyls is inhibited ✓
   B: expression of intestinal Calbindin-D is increased
   C: PTH secretion is increased
   D: 24, 25-dihydroxycholecaciferol production decreases

2. Calcitonin
   A: inhibits bone resorption ✓
   B: inhibits urinary excretion of calcium
   C: is deficient in Zollinger Ellison syndrome
   D: is produced in the parathyroid glands

3. Glucocorticoids
   A: can lead to hypercalcaemia
   B: increase intestinal absorption of calcium and phosphate
   C: inhibit protein synthesis in osteoblasts ✓
   D: suppress PTH secretion

4. Calcium
   A: crosses the brush border of intestinal epithelium via a Na+/Ca++ exchanger
   B: 50 000 mmol /day exchanges between bone and plasma
   C: 85% is stored in bone
   D: is more plasma-protein-bound at higher pH ✓

5. Phosphorus
   A: 85-90% is in the skeleton ✓
   B: 85-90% of daily intake is excreted in urine
   C: homeostasis is independent of vitamin D
   D: intestinal absorption is by diffusion down a concentration gradient

6. Regarding calcium in the kidney:
   A: absorption in the distal tubule is variable ✓
   B: is reabsorbed in the collecting duct
   C: is secreted in the ascending limb of the loop of Henle
   D: 98% is reabsorbed in the proximal tubule

7. PTH (Parathyroid hormone) increases
   A: osteoblast activity in the short term
   B: reabsorption of Ca++ in the distal tubules ✓
   C: reabsorption of urinary phosphate in the distal tubules
   D: serum albumin
8:  Trabecular bone
   A: has a low surface to volume ratio   
   B: is supplied with nutrients via Haversian canals  
   C: makes up 80% of bone in adults  
   D: receives nutrients via diffusion from extracellular fluid ✓

9. Osteoclasts
   A: are relatively inactive in children
   B: attach to bone via integrins ✓
   C: dissolve hydroxyapatite using alkaline secretions
   D: increase activity in response to growth factors that act on fibroblasts

10. Vitamin D3
    A: has limited first pass metabolism
    B: has little absorption from the gastrointestinal tract
    C: is bound to albumin in plasma
    D: is produced by the action of sunlight on 7-dehydrocholesterol ✓