



The Royal College of Pathologists

**Part 1 examination**

**Toxicology: Second Paper  
(Biochemical Toxicology Subspecialty)**

**Tuesday 18 March 2008**

Candidates must attempt to answer FOUR questions ONLY

**Time allowed – three hours**

1. Describe the expected toxicological/pharmacological effects of a prospective new mixed PPAR $\alpha$ /PPAR $\gamma$  agonist in terms of its molecular, cellular, tissue and whole body effects both preclinically and in man?
2. Kidney pathology is associated with chronic overdose with certain non-steroidal anti-inflammatory drugs (NSAIDS). Explain the relationship between NSAIDS and kidney damage, the proposed pharmacological/biochemical mechanisms behind the effect, and the likely urinary, and plasma, biomarkers that could be monitored to detect the effect?
3. Describe the importance of genetic polymorphisms in drug metabolism, giving specific examples of drugs affected by this phenomenon?

**Please turn over for Questions 4 & 5**

4. Describe the biological purpose of phase 2 xenobiotic metabolism, the differing enzymic reactions that can take place and giving specific chemical examples of each type and the enzymes, and cofactors, involved where possible?
  
5. Describe the differing routes, the characteristics that determine whether a chemical will be excreted via a defined route, and the physiological processes in the organs involved, by which a chemical toxin may be excreted from the body? Provide an example of a chemical excreted by each route?