說明: 不必抄題，依序作答

1. 近年來，藥廠促銷手續法越玩越大，如果你是總經理，你會選擇一年內舉辦少於五次的大型促銷活動，還是一年內五次以上小型促銷活動。爲什麼？試從研發成本、促銷成本及利潤觀點分析。 (30%)
2. 目前台灣藥廠競爭激烈，尤其是 2000 年～2007 年專利到期的 30 個專利暢銷藥物將使國產學名藥廠競爭更激烈(例如: 永信、中化裕民、生達...等)，請你就目前台灣藥品市場作競爭分析。另外，請敘述在台灣現存環境下，藥廠經營之重點方向。(30%)
3. 請就產品生命週期觀點分析輝瑞藥廠之暢銷產品－威而鋼；及其與競爭者之優缺點。(20%)
4. 目前台灣有幾家經營成功的大型連鎖藥(妝)局，請舉例說明其成功因素。(20%)

問答題：100%

一、請敘述下列藥物之作用機轉、臨床用途與主要副作用：(45%)

(1) Erythropoietin
(2) Granulocyte colony-stimulating factor
(3) Interleukin-11
(4) Adenosine
(5) Zolpidiem
(6) Ganciclovir
(7) Amantadine
(8) Cyclophosphamide
(9) Methotrexate
(10) Paclitaxel
(11) Tamoxifen
(12) Ketamine
(13) Lithium
(14) Fluvoxamine
(15) Ezetimibe

二、請比較 Heparin、Warfarin、Ximelagatran、Streptokinase、Abciximab 之異同點。(10%)

三、試比較三種 cardiac glycosides：Ouabain、Digoxin 和 Digitoxin 之差異？(8%)

四、試述下列神經傳遞因子之受體分類與訊息傳遞路徑：(12%)

(1) Dopamine
(2) Serotonin
(3) Acetylcholine
(4) Histamine

五、請以大鼠胸主動脈血管 (rat thoracic artery) 為實驗材料，設計一實驗探討血管內皮細胞之重要性，內容包括 goal、procedure、predictable results 及 discussion。並請舉例 endothelium-dependent 和 independent 藥物各一種，說明其作用機轉。(15%)

六、請將下列英文翻譯成中文，並分別畫出機轉流程圖。(10%)

ALPHA RECEPTORS

Alpha$_1$ receptors are coupled to polyphosphoinositide hydrolysis, leading to the formation of inositol 1,4,5-trisphosphate (IP_3) and diacylglycerol (DAG). G proteins in the G_q family couple α_1 receptors to phospholipase C. IP_3 promotes the release of sequestered Ca^{2+} from intracellular stores, which increases the cytoplasmic concentration of free Ca^{2+} and the activation of various calcium-dependent protein kinases. Activation of these receptors may also increase influx of calcium across the cell's plasma membrane. IP_3 is sequentially dephosphorylated, which ultimately leads to the formation of free inositol. DAG activates protein kinase C, which modulates activity of many signaling pathways. In addition, α_1 receptors activate signal transduction pathways that were originally described for peptide growth factor receptors that activate tyrosine kinases. For example, α_1 receptors have been found to activate mitogen-activated kinases (MAP kinases) and polyphosphoinositol-3-kinase (PI-3-kinase). These pathways may have importance for the α_1-receptor-mediated stimulation of cell growth and proliferation through the regulation of gene expression. The physiologic significance of this "cross talk" between major signaling pathways remains to be determined.

Alpha$_2$ receptors inhibit adenylyl cyclase activity and cause intracellular cyclic adenosine monophosphate (cAMP) levels to decrease. In addition to this well-documented effect, α_2 receptors utilize other signaling pathways, including regulation of ion channel activities and the activities of important enzymes involved in signal transduction. α_2-receptor–mediated inhibition of adenylyl cyclase activity is transduced by the inhibitory regulatory protein, G_i. How the activation of G_i leads to the inhibition of adenylyl cyclase is unclear, but it is likely that both α and the β-γ subunits of G_i contribute to this response. In addition, some of the effects of α_2 adrenoceptors are independent of their ability to inhibit adenylyl cyclase; for example, α_2-receptor agonists cause platelet aggregation and a decrease in platelet cAMP levels, but it is not clear whether aggregation is the result of the decrease in cAMP or other mechanisms involving G_i-regulated effectors. (From: Basic and Clinical Pharmacology, 10th Edition)