

※ 注意：全部題目均請作答於試卷內之「非選擇題作答區」，請標明題號依序作答。

一. 單選題 (每題 2 分，共 20 分)

- () 1. Which of the following descriptions about ion channels is incorrect?
- (A) Sodium channel can let sodium ion pass.
 - (B) Ion channel uses ATP to pump ions from one side to the other side of the channel.
 - (C) Membrane potential can be a mechanism to control the open or close state of an ion channel.
 - (D) Ligand-gated ion channel needs a receptor binding site to control its open or close state.
- () 2. Which of the following descriptions about benzodiazepine is incorrect?
- (A) It is commonly used as hypnotics (安眠藥).
 - (B) It acts on GABA receptor.
 - (C) It enhances the GABA receptor function.
 - (D) It binds to the GABA binding site.
- () 3. Which of the following descriptions about sodium channel blockers is incorrect?
- (A) Lidocaine, a local anesthetics, can block sodium channel.
 - (B) Tetrodotoxin (河豚毒素) is a pore blocker of sodium channel.
 - (C) Phenytoin, an anti-epileptic drug, is a pore blocker of sodium channel.
 - (D) Carbamazepine, an anti-epileptic drug, is a use-dependent blocker of sodium channel.
- () 4. Which of the following descriptions about receptor binding drugs is incorrect?
- (A) α -Bungarotoxin, a kind of snake poison, is an antagonist of GABA receptor.
 - (B) Caffeine is an antagonist of adenosine receptor.
 - (C) Ketamine is a NMDA neurotransmitter blocker.
 - (D) Ondansetron, an antiemetics (止吐藥), is a serotonin receptor agonist.
- () 5. Which of the following descriptions about neuronal action potential is incorrect?
- (A) It requires sodium channel and potassium channel to work together.
 - (B) When sodium channel opens, it depolarizes the neuronal membrane and promotes potassium channel opening.
 - (C) Sodium channel opens faster than potassium channel.
 - (D) Sodium channel requires potassium channel to close.
- () 6. Which of the following descriptions about tricyclic antidepressant (TCA) is incorrect?
- (A) It inhibits the reuptake of serotonin at the presynaptic site.
 - (B) It inhibits the reuptake of norepinephrine at the presynaptic site.
 - (C) A common side effect of TCA is dry mouth.
 - (D) It suppresses the degradation of monoamine at the presynaptic site.

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- () 7. Which of the following descriptions about thyroid related drugs is incorrect?
- (A) In patients with hypothyroidism, thyroxine (T4) supplement is a therapeutic option.
 - (B) Radioactive iodine (^{131}I) can destroy thyroid gland because it accumulates in the thyroid stromal cell itself.
 - (C) Propylthiouracil (PTU) is a drug for hyperthyroidism that inhibits thyroid hormone synthesis by inhibiting thyroid peroxidase.
 - (D) Thiocyanate is a drug for hyperthyroidism that inhibits sodium-iodine symporter.
- () 8. 下列有關抗瘧疾藥的敘述，何者正確?
- (A) Chloroquine 無法殺死紅血球中的瘧原蟲。
 - (B) Quinine 無法殺死紅血球中的瘧原蟲。
 - (C) Primaquine 無法殺死紅血球中的瘧原蟲。
 - (D) 以上皆是。
- () 9. 下列有關寄生蟲藥物的敘述，何者正確?
- (A) Abendazole 可以殺死所有的寄生蟲。
 - (B) Abendazole 的作用機轉是結合 beta-tubulin，抑制微小管(microtubule)之聚合作用。
 - (C) Abendazole 必須要和 Praziquantel 併用。
 - (D) Praziquantel 的作用機轉是抑制 calcium 進入寄生蟲的細胞，造成蟲體癱軟而被排出。
- () 10. 下列有關 selective serotonin reuptake inhibitor (SSRI)的說明，何者錯誤?
- (A) SSRI 常被作為抗憂鬱藥使用。
 - (B) SSRI 一般在幾個小時內，就能發揮藥效。
 - (C) SSRI 的其中一個副作用，是體內有太多 serotonin，產生 serotonin storm。
 - (D) SSRI 不能和 monoamine oxidase inhibitor (MAOI)併用，可能會出現 malignant hypertension.

二. 是非題 (每題 1 分，共 20 分)

- () 1. Aspirin could be used to stop heparin-induced intestinal bleeding.
- () 2. Ketorolac could be used to treat chronic renal failure.
- () 3. Acetaminophen suppresses both cyclooxygenase (COX)-1 and COX-2.
- () 4. Isoniazid may cause peripheral neuritis.
- () 5. Rifampin, if properly taken, always causes orange-color urine.
- () 6. The activation of Pyrazinamide requires the presence of protons.
- () 7. The activation of Pantoprazole requires the presence of protons.

- () 8. Cimetidine might cause galactorrhea in male patients.
- () 9. Magnesium-containing antacids might cause diarrhea.
- () 10. Metoclopramide stops diarrhea by blocking the serotonin 5-HT₄ receptor.
- () 11. Octreotide could be used to treat recalcitrant constipation.
- () 12. Allopurinol suppresses muscarinic cholinergic receptors to induce hyperuricemia.
- () 13. Rapid absorption of Mesalamine in the intestine is mandatory for its effectiveness in the treatment of Crohn's disease.
- () 14. Long-term use of Prednisolone is not suggested for the treatment of ulcerative colitis.
- () 15. Tenofovir could be used to treat the infection of hepatitis B virus (HBV) and human immunodeficiency virus (HIV).
- () 16. Diazepam could be used to stop status epilepticus.
- () 17. Zolpidem blocks the activity of GABA_A receptors, so it could be used to relieve the intoxication of benzodiazepines (BZDs).
- () 18. Suvorexant suppresses melatonin receptors to induce sleep.
- () 19. It takes three hours for Venlafaxine to effectively relieve anxiety.
- () 20. Granisetron may cause carsick by activating the dopamine D1 receptor.

三. 選擇題 (每題 2 分, 共 20 分)

- () 1. Which antiplatelet drug can induce coronary steal phenomenon and cannot be used in unstable angina patients?
 - (A) Dipyridamole
 - (B) Aspirin
 - (C) Abciximab
 - (D) Clopidogrel
- () 2. Entresto is used for heart failure treatment. Which is not the action mechanism of entresto?
 - (A) Inhibit neprelysin by sacubitril
 - (B) Inhibit AT1 receptor by valsartan
 - (C) Inhibit neprelysin by LBQ657
 - (D) Activate AT2 receptor by irbesartan
- () 3. Anticoagulants may prolong the bleeding time. Once the anticoagulant induces bleeding problem, which is the correct match of the anticoagulant and its antidote?
 - (A) Andexxa is the antidote for dabigatran

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- (B) Idarucizumab is the antidote for dabigatran
(C) Agartroban is the antidote for heparin
(D) Vitamin K3 is the antidote for warfarin
- () 4. Which antihypertensive drug does not have the side effect of hyperkalemia?
(A) Spironolactone
(B) Aliskiren
(C) Prazosin
(D) Triamterene
- () 5. Paroxysmal supraventricular tachycardia (PSVT) may be caused by abnormal AV nodal conduction. Which drug and its action mechanism can be used for PSVT treatment?
(A) Ranolazine, slow activating calcium channel blocker
(B) Adenosine, A1 receptor activator
(C) Pindolol, β adrenoceptor blocker
(D) Quinidine, M receptor activator
- () 6. Which is the action mechanism and side effect of Ivabradine?
(A) I_{Ca} inhibitor, constipation
(B) I_{Na} inhibitor, thrombocytopenia
(C) I_f inhibitor, luminous phenomena
(D) I_{Ks} inhibitor, long QT
- () 7. Which is the action mechanism of central acting antihypertensive drugs?
(A) Activate presynaptic α_1 adrenoceptor
(B) Activate presynaptic α_2 adrenoceptor
(C) Inhibit postsynaptic β adrenoceptor
(D) Inhibit postsynaptic M1 receptor
- () 8. Which antiarrhythmic drug can increase the effective refractory period of cardiac action potential but does not prolong action potential duration?
(A) Quinidine
(B) Procainamide
(C) Mexiletine
(D) Sotalol

- () 9. Which is **NOT** the hemodynamic benefit of AT1 blocker or angiotensin-converting enzyme inhibitor (ACEI) for long term use in post myocardial infarction patients?
- (A) Reduce water retention
 - (B) Reduce afterload
 - (C) Reduce cardiac remodeling
 - (D) Reduce ventricular ejection time
- () 10. Which drug can reduce cardiac oxygen consumption through decreasing ventricular ejection time to improve angina symptoms?
- (A) Nitroglycerin
 - (B) Pindolol
 - (C) Hydralazine
 - (D) Bisoprolol

四. 單選題 (每題 2 分, 共 20 分)

- () 1. 下列有關 Fluoxetine 的敘述何者**錯誤**?
- (A) 可以用於治療 bipolar depression 及暴食症
 - (B) 對 codeine 的止痛效果有增加效果
 - (C) 會有焦慮及失眠的副作用
 - (D) 對 CYP2D6 有強效的抑制作用
- () 2. 下列藥物何者常使用於腸道假阻塞 (colonic pseudo-obstruction) 的住院病人?
- (A) Alvimopan
 - (B) Lubiprostone
 - (C) Magnesium hydroxide
 - (D) Neostigmine
- () 3. 下列藥物何者可用於便秘型的大腸激躁症 (constipation-predominant irritable bowel syndrome)?
- (A) Alosetron
 - (B) Linaclotide
 - (C) Metoclopramide
 - (D) Infliximab

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- () 4. 下列是治療 psoriasis 的藥物，其有關的作用敘述何者錯誤？
- (A) Secukinumab 是 IL-17A 的抗體，感染是其主要的副作用
 - (B) Acitretin 會與酒精反應產生 etretinate 而加速排泄
 - (C) Calcipotriene 與 betamethasone 合用可以增加療效
 - (D) Apremilast 是 PDE4 抑制劑，會增加憂鬱症的機率
- () 5. 下列有關 Ciprofloxacin 的敘述何者正確？
- (A) 主要作用機制是抑制細菌的 dihydrofolic acid reductase
 - (B) 與 Azithromycin 合用是治療淋球菌 (gonococcus) 的首選藥物
 - (C) 與其他 quinolone 類藥物不同，無法抑制 CYP3A4
 - (D) 治療葡萄球菌 (staphylococci) 感染時可以與 Rifampin 合用
- () 6. 下列有關制酸劑的敘述何者錯誤？
- (A) 使用 NaHCO_3 於腎臟功能不佳的病人，容易導致 metabolic alkalosis
 - (B) 使用高量 NaHCO_3 且食用高鈣食物時，容易導致高鈣血症 (hypercalcemia)
 - (C) $\text{Al}(\text{OH})_3$ 較 CaCO_3 容易產生便秘
 - (D) 一般同時服用 $\text{Mg}(\text{OH})_2$ 及 $\text{Al}(\text{OH})_3$ 的目的主要是避免打嗝
- () 7. 下列有關 Allopurinol 的敘述何者正確？
- (A) 會促進 Azathioprine 的毒性
 - (B) 最初開始使用 Allopurinol 時，必須停用 Colchicine
 - (C) Allopurinol 會促進口服抗凝劑的代謝
 - (D) Allopurinol 對特發性高鈣尿症 (idiopathic hypercalciuria) 無治療效果
- () 8. 下列降血糖藥物何者是經由抑制 DPP-4？
- (A) Canaglifozin
 - (B) Linagliptin
 - (C) Liraglutide
 - (D) Tolbutamide

() 9. 下列藥物何者無法用於 Osteoporosis 治療?

- (A) Calcitonin
- (B) Cinacalcet
- (C) Denosumab
- (D) Teriparatide

() 10. 下列藥物何者無法用於 idiopathic thrombocytopenic purpura 治療?

- (A) Adalimumab
- (B) Cyclophosphamide
- (C) Gamma globulin
- (D) Vincristine

五. 問答題 (共 20 分)

1. 報載金正男是被用神經毒氣 VX 毒殺，試以藥理作用闡述為何 VX 毒性這麼強，可以在口鼻接觸後幾分鐘內斃命，如果來得及可以有解藥嗎? (5%)
2. 試述全身麻醉藥引起惡性高熱的可能原因及處理之道。(4%)
3. 試以藥理學的觀點解釋大麻、古柯鹼、和海洛英成癮的原因和需要列管的理由。(6%)
4. 報載有一車禍意外的肇事男子(70 kg)酒測值高達 0.56，請推估當時他的血中乙醇濃度為何?若他酒後再等多少小時才開車上路，悲劇可能就能避免? (alcohol metabolic rate: 100 mg/kg/hr) (5%)

試題隨卷繳回