

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

Part I : 50%

一、選擇題 (30 分；每題 3 分)

1. A five-year-old boy and his mother come to see doctor because the boy's teacher has observed episodes of staring and inability to communicate. These episodes last 3 to 5 seconds and generally occur 10 to 20 times during the school day. An EEG shows synchronized 3 Hz spike-wave discharges generalized over the entire cerebral cortex. Which antiepileptic medication would the doctor prefer to try first in this young boy? (a) phenytoin (b) carbamazepine (c) clonazepam (d) ethosuximide (e) Phenobarbital。
2. A 30-year-old woman with new-onset seizures is started on an antiepileptic drug (AED). Her initially does is well, but she has 2 seizures about 4 weeks after the start of treatment. She has taken the same number of pills each day, but his plasma concentration of the drug has decreased. Which AED is she taking? (a) ethosuximide (b) vigabatrin (c) carbamazepine (d) gabapentin (e) valproic acid。
3. All of the following statements concerning levodopa are accurate **EXCEPT**: (a) Levodopa is a precursor of dopamine。 (b) Carbidopa attenuates the peripheral breakdown of levodopa。 (c) The on-off phenomenon is commonly observed in levodopa administration patients。 (d) Deprenyl facilitates the metabolism of levodopa。 (e) Postural hypotention and tachycardia are commonly observed in patients with levodopa administration。
4. A person who has been taking one drug chronically and experiences a withdrawal syndrome upon discontinuing it finds relief from these symptoms by taking a second drug. This is an example of: (a) craving (b) psychological dependence (addiction) (c) tolerance (d) relapse (e) cross-dependence。

Items 5-6: A college student is brought to the emergency room by friends. The physician is informed that he had taken "a drug" and that he "went crazy". The patient is agitated and delirious. Several persons are required to hold him down. His skin is warm and sweaty, and his pupils are dilated. Bowel sounds are normal. Signs and symptoms include tachycardia, marked hypertension, hyperthermia, increased muscle tone and nystagmus.

5. The most likely cause of these signs and symptoms is intoxication due to: (a) heroin (b) phenycyclidine (c) phenobarbital (d) flunitrazepam (e) alprazolam。

6. The management of this patient is likely to include all of the following **EXCEPT**: (a) control of hyperthermia with cooling measures (b) nasogastric suction (c) alkalization of the urine to increase drug elimination (d) administration of benzodiazepines (e) administration of haloperidol if the patient develops psychotic symptoms ◦
7. Which of the following strategies is not used to treat arrhythmia? (a) decreases phase 4 depolarization (b) increases action potential threshold (c) decreases maximal diastolic potential (d) increases action potential duration (e) decreases the rate of spontaneous discharges ◦
8. All of the following statements concerning agents used in cardiac arrhythmias are accurate **EXCEPT**: (a) Quinidine prolongs repolarization and effective refractory period ◦ (b) Lidocaine prolongs action potential duration (APD) ◦ (c) Amiodarone prolongs phase 3 repolarization ◦ (d) Propranolol suppresses phase 4 depolarization ◦ (e) Verapamil shortens action potential duration (APD) ◦
9. All of the following pairs correctly match a drug with its action **EXCEPT**: (a) quinidine : blocks Na^+ channels (b) bretylium : blocks K^+ channels (c) verapamil : blocks Ca^{2+} channels (d) propranolol : blocks β -adrenergic receptors (e) lidocaine : blocks K^+ channels ◦
10. Which of the following statement is **TRUE**: (a) Augmentation of GABA promotes seizure initiation ◦ (b) GABA is an excitatory neurotransmitter in the CNS ◦ (c) During seizures extracellular calcium falls ◦ (d) Spike-wave discharges recorded on the EEG are associated with tonic-clonic seizures ◦ (e) During seizures extracellular potassium falls ◦

二、簡答題: (20 分；每題 10 分)

1. 何謂藥物成癮(addiction)?其包含的藥物種類有哪些?可能的成因或作用分子機制為何?近年來，衛生單位利用提供毒癮者第二級毒品美沙冬作為海洛因之抵癮藥物，其理由為何?請從專業的角度討論之。
2. 何謂蛋白質藥物(protein drugs)?其與傳統的化學合成小分子藥物有何不同?其臨床上使用的優缺點為何?請舉兩種實例說明?

Part II : 50%

一、選擇題 (3% each)

1. The mechanism of antibacterial action of chloramphenicol involves:
 - A) Antagonism of bacterial translocase activity;
 - B) Selective inhibition of ribosomal peptidyl transferase;
 - C) Interference with bonding of aminoacyl-t-RNA to bacterial ribosome;
 - D) Binding to a component of the 50S ribosomal subunit;
 - E) Inhibition of DNA-dependent RNA polymerase.
2. A study was carried out in isolated perfused animal heart. In the absence of other drugs, pindolol, a β -adrenoreceptor ligand, caused an increase in the heart rate. In the presence of highly effective β stimulants, however, pindolol caused a dose-dependent, reversible decrease in heart rate. Which of the following expressions best describes pindolol?
 - A) A chemical antagonist;
 - B) An irreversible antagonist;
 - C) A physiological antagonist;
 - D) A partial agonist;
 - E) A spare receptor agonist.
3. The mechanism of antibacterial action of doxycycline involves
 - A) Antagonism of bacterial translocase activity;
 - B) Interference with binding of aminoacyl-tRNA to bacterial ribosomes;
 - C) Inhibition of DNA-dependent RNA polymerase;
 - D) Binding to a component of the 50S ribosomal subunit;
 - E) Selective inhibition of ribosomal peptidyl transferases.
4. Which statement about antitubercular drugs is accurate?
 - A) Antimycobacterial actions of streptomycin involve inhibition of arabinosyl transferase;
 - B) Cross-resistance of M tuberculosis to isoniazid and pyrazinamide is common;
 - C) Ocular toxicity of ethambutol is prevented by thiamine;
 - D) Pyrazinamide treatment should be discontinued immediately if hyperuricemia occurs;
 - E) Rifampin can be used as the sole drug in treatment of latent tuberculosis in INH-intolerant patients.

5. A cancer cell that is resistance to the effects of both vincristine and methotrexate probably has developed the resistance as a result of which of the following mechanisms?

- A) Changes in the properties of a target enzyme;
- B) Decreased activity of an activating enzyme;
- C) Increased production of drug-trapping molecules;
- D) Increased expression of a P-glycoprotein transporter;
- E) Increase in proteins that are involved in DNA repair.

6. Which of the following is a cell cycle-specific anticancer drug that acts mainly in the M phase of the cell cycle?

- A) Bleomycin;
- B) Cisplatin;
- C) Paclitaxel;
- D) Methotrexate;
- E) Etoposide.

二、簡答題

1. 請描述身體內維持 cholesterol 恆定的機制(6%)，並簡單描述四種目前治療高血質(hyperlipidemia)的用藥及機轉(6%)。

2. 請說明下列名詞：(5% each)

- a) physiological antagonist 以及 partial agonist
- b) spare receptor
- c) therapeutic index
- d) molecular targeted therapy 並舉例說明。