

## Test – Medicine & Drugs

SCH 3UE 2004-2005

Name: \_\_\_\_\_

1. The structures of some analgesics are shown in Table 21 of Data Book.

(a) (i) State what is meant by the term analgesics.

1

(ii) Explain the difference in the method of action of mild analgesics and strong analgesics.

2

(iii) The use of aspirin can have beneficial effects for the user, but can also produce some unwanted side effects. State **one** beneficial effect (other than its analgesic action) and **one** unwanted side effect.

2

(b) Morphine is a naturally occurring analgesic that can be converted into codeine. Explain what is meant by developing tolerance towards codeine and state why this is dangerous.

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(c) (i) Methylamphetamine (also known as methamphetamine or “speed”) is a “stimulant”. Explain what is meant by the term “stimulant”. 1

(ii) Methylamphetamine, Ecstasy and 4-MTA are sympathomimetic drugs. Outline what is meant by the term *sympathomimetic drug* and state **one** example of a short-term effect sympathomimetic drugs have on the human body. 2

2. Penicillins are molecules that can kill harmful micro-organisms. Their general structure is shown in Table 21 of the Data Booklet.

(i) State the type of micro-organism killed by penicillins and explain how they do this. 4

(ii) Explain the effect of overprescription of penicillins. 3

3. (a) Many drugs are taken orally. State **three** ways in which drugs may be taken by a patient. Predict, giving a reason, which of the three methods will result in the drug having the most rapid effect. 4

(b) One type of drug taken orally is the antacid. Antacids such as sodium hydrogencarbonate are taken to reduce stomach acidity.

(i) State the names of **two** metals, other than sodium, whose compounds are often used in antacids. 1

(ii) Give an equation for the neutralization of hydrochloric acid in the stomach by sodium hydrogencarbonate. 1

(iii) Hydrochloric acid in the stomach has a concentration of  $1.15 \text{ mol dm}^{-3}$ . Calculate the volume of hydrochloric acid required to neutralise a 300.0 mg tablet of an antacid containing sodium hydrogencarbonate. (Assume that the tablet is 100 % sodium hydrogencarbonate.) 4

(iv) Explain how heartburn is caused. 1

(v) Explain why dimethicone is added to some antacids. 1

4. (a) Outline the difference between a local anesthetic and a general anesthetic. 2

(b) The choice of a general anesthetic in surgery depends on several features, such as potency, flammability and environmental effects. Give the formula, and discuss the advantages and disadvantages, of each of the anesthetics trichloromethane and cyclopropane. 6