

THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY

SECOND SEMESTER EXAMINATION

CH321 – MEDICINAL CHEMISTRY AND NATURAL PRODUCTS

MONDAY 1ST NOVEMBER 2021 12:50 PM

TIME ALLOWED: 2 HOURS

INFORMATION FOR CANDIDATES:

1. You will have 10 minutes to read the question paper. You **MUST NOT** begin writing in the answer book during this time.
2. **ANSWER ALL QUESTIONS.**
3. All answers **MUST** be written on the answer book provided
4. Calculators are permitted in the examination room. Lecture notes, notebooks plain papers and textbooks are **NOT** allowed.
5. Mobile phones are not allowed. **SWITCH OFF THE MOBILE PHONES.**
6. Show all workings and calculations in the answer book.
7. **DRAW the STRUCTURES** clear and visible.
8. **DO NOT** over write.
9. Write your name and number clearly on the front page. **DO IT NOW.**

MARKING SCHEME: Total 50 marks

1. (a) Suggest any TWO preparative methods of glucose, with suitable chemical equations.
- (b) What are local anaesthetics? Explain its mechanism of action.
- (10 marks)
2. (a) Draw the structure of methyl paraben. Give any ONE use of this compound.
- (b) Suggest any TWO structural differences between an amylopectin and a glycogen.
- (c) Polar drugs cannot enter blood brain barrier easily. Why?
- (d) Suggest any TWO advantages of cyclopropane over other inhalation anaesthetics.
- (e) Give ONE use each for Naftifine and Halazone.
- (10 marks)
3. (a) Name any FOUR functions of carbohydrates.
- (b) Starting from γ -picoline, explain how Isoniazid can be synthesized?
- (c) It is well-known that the alkaloid arecoline, present in betel nut stimulates parasympathetic nervous system. Explain what happens when you take high doses of arecoline?
- (d) What are basal anaesthetics? Give two examples.
- (e) Ortho-hydroxybenzoic acid has more antibacterial activity than its para isomer. Explain the reasons with molecular structures.
- (20 marks)
4. (a) Give TWO examples for each of the following local anaesthetics (**examples only**):
- (i) Natural nitrogenous agents
 - (ii) Synthetic nitrogenous agents
 - (iii) Synthetic non-nitrogenous agents

[6 marks]

(b) Describe the following natural products citing any ONE biological activity.
{*No structures required*}

(i) Tannins

(ii) Saponins

[4 marks]

(Total: 10 marks)