

1933

Organic Chemistry (Honours): Technical School Examinations 1933

Department of Education: Technical Instruction Branch

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COURSES IN APPLIED CHEMISTRY.

(47)

AN ROINN OIDEACHAIS.

(Department of Education.)

BRAINSE AN CHEÁRD-OIDEACHAIS.

(Technical Instruction Branch.)

TECHNICAL SCHOOL EXAMINATIONS.

1933.

ORGANIC CHEMISTRY.

(Honours.)

Wednesday, May 31st—7 p.m. to 10 p.m.

Examiner—A. G. G. LEONARD, ESQ., PH.D., F.R.C.S.C.I., F.I.C.

Co-Examiner—SEOSAMH Ó CIARDHUBHÁIN, M.S.C.

GENERAL INSTRUCTIONS.

You are carefully to enter on the Answer Book and Envelope supplied your Examination Number and the subject of examination, but you are not to write your name on either. No credit will be given for any Answer Book upon which your name is written, or upon which your Examination Number is not written.

You must not have with you any book, notes, or scribbling paper.

You are not allowed to write or make any marks upon your paper of questions.

You must not, under any circumstances whatever, speak to or communicate with another candidate; and no explanation of the subject of the examination may be asked for or given.

You must remain seated until your answer-book has been taken up, and then leave the examination-room quietly. You will not be permitted to leave before the expiration of half an hour from the beginning of the examination, and will not be re-admitted after having once left the room.

If you break any of these rules, or use any unfair means, you are liable to be dismissed from the examination, and your examination may be cancelled by the Department.

Three hours are allowed for this paper. Answer-books, unless previously given up, will be collected at 10 p.m.

INSTRUCTIONS.

Read the General Instructions on Page 1.

- (a) SIX questions only may be attempted.
- (b) Equal values are attached to the questions.
- (c) Answers must be written in INK.
- (d) Write the number of the question distinctly, in the margin of the paper, before the answer.
- (e) Wherever possible, chemical changes should be indicated by equations, and laboratory or factory operations should be illustrated by sketches.

1. What do you understand by a carbohydrate? Give two examples each of carbohydrates, (a) soluble and (b) insoluble in water.

Explain how one member in each class can be prepared from vegetable sources.

2. How may phenol be prepared from coal tar?
How is salicylic acid manufactured from phenol?

3. Describe the preparation of acetoacetic ester. Explain its importance in synthetic chemistry and discuss its constitution.

4. Give a diagram illustrating the essential parts of a polarimeter.

What is meant by the specific rotation of a substance?

Describe how you would use a polarimeter to determine the percentage of sucrose in a sample of it.

5. Indicate the methods used for the preparation of methyl orange and malachite green. Give equations illustrating the methods.

6. How would you synthesize urea starting from potassium cyanide? How may urea be prepared from urine? Describe tests whereby urea may be identified.

7. To what class of compounds does glycerine belong? How is glycerine prepared? Describe a process for the manufacture of a technically important product from it.

8. Give an account of optical isomerism, illustrating your answer by means of the tartaric acids.

9. The silver salt of a dibasic acid contains 65.06 per cent. of silver. The free acid on heating loses carbon dioxide and yields a monobasic acid, the silver salt of which contains 59.67 per cent. of silver. Determine the molecular weights of the two acids and, if possible, name the acids, giving an equation for the change on heating.

Ag = 108.