

THE PAPUA NEW GUINEA UNIVERSITY OF TECHNOLOGY

FIRST SEMESTER EXAMINATION - 2021

CH213 – APPLIED ORGANIC CHEMISTRY

FRIDAY 4th JUNE 2021 – 12:50 PM

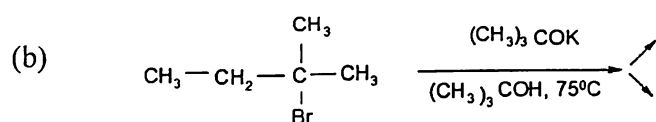
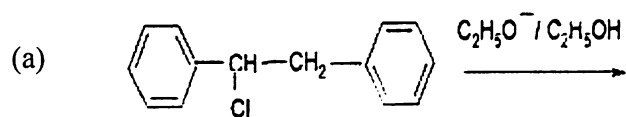
TIME ALLOWED: 2 HOURS

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. Complete the following reactions:



(5 Marks)

2. Define the following:

(a) α – Elimination

[1 Mark]

(b) β – Elimination

[2 Marks]

(c) Markovnikov's rule

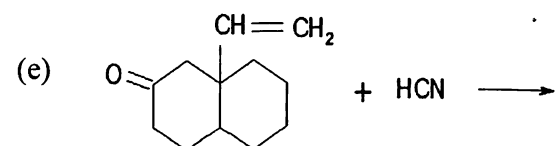
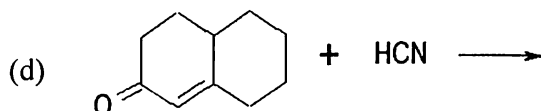
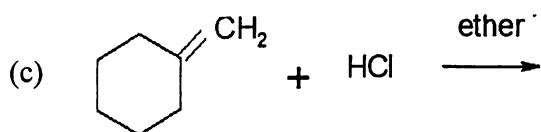
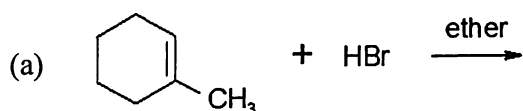
[2 Marks]

(Total:5 Marks)

3. Describe the mechanism of unimolecular nucleophilic substitution reaction (S_N1) in tertiary alkyl halide.

(5 Marks)

4. Predict the major product in the following reactions:



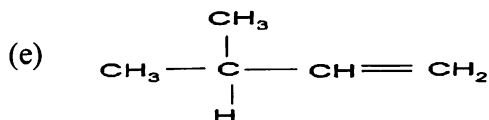
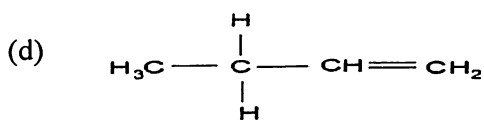
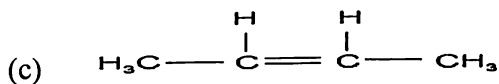
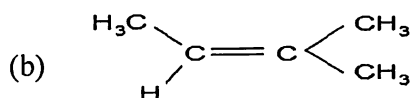
(5 Marks)

5. Separate the following compounds into electrophilic reagents and nucleophilic reagents:

BF_3 , H_2O , AlCl_3 , ROH , ZnCl_2 , RNH_2 , FeCl_3 , RSH

(5 Marks)

6. Find out the number of hyper conjugated bonds in the following compounds:



(5 Marks)

7. What are the differences between inductive effect and mesomeric effect?

(5 Marks)

8. What are the structural features of carbonium ions? Define the two types of carbonium ions with ONE example each.

(5 Marks)

9. Draw the possible acid-base complex structures of pyridine.

(5 Marks)

10. Write the equations for the following reactions:

(a) Friedel Craft's acylation reaction with thiophene.

(b) Desulphurisation of thiophene.

(5 Marks)