JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES
UNIVERSITY EXAMINATIONS: 2020/2021 ACADEMIC YEAR
FOURTH YEAR SECOND SEMESTER EXAMINATIONS

SCH 405: Synthetic Organic Chemistry
Special Examinations

ANSWER ALL QUESTIONS IN SECTION A AND ANY TWO QUESTIONS IN SECTION B
SECTION A (30 MARKS): ANSWER ALL QUESTIONS

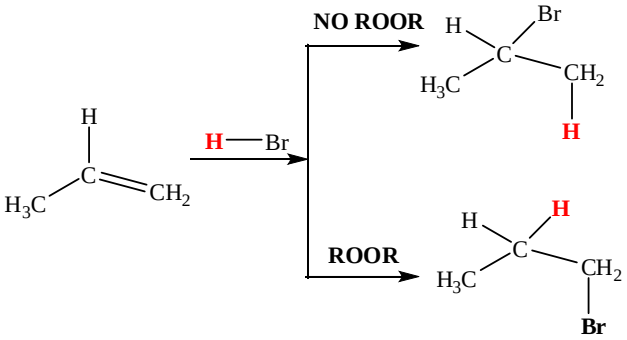
QUESTION 1 (30 MARKS)

a) Distinguish between the following terms; (10 marks)

i) Carbanion and carbine
ii) Inductive effect and electronegativity
iii) Linear and divergent synthesis
iv) SN1 and SN2 reaction mechanism
v) Secondary and tertiary carbocation

b) State and explain the importance of Organic synthesis (any Five); (10 marks)

c) i) Distinguish between the following reaction mechanisms; (5 marks)



ii) Which fundamental principle is reaction in c) (i) above represent? Explain your answer. (5 marks)

SECTION B (40 MARKS):
ANSWER ANY TWO QUESTIONS FROM THIS SECTION
EACH QUESTION CARRIES 20 MARKS

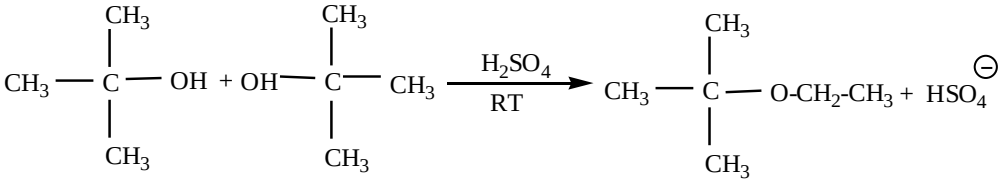
QUESTION 2 (20 marks)

Outline the mechanism of oxy-mercuration-de-mercuration. (20 marks)

QUESTION 3 (20 marks)

a) State and explain the limitations of Organic Synthesis (any Five) (10 marks)

b) Give the mechanism of the following reaction: (10 marks)



QUESTION 4 (20 marks)

a) Explain the following terms as used in Organic synthesis: (10 marks)

i) Reaction mechanism
ii) Retrosynthesis
iii) Methodology
iv) Reagent
v) Substrate

b) Explain the Grignard Synthesis of alcohols (5 marks)

c) Briefly discuss how the following factors can influence reaction rates.

i) Solvent effect (1 mark)
ii) Temperature (2 marks)
iii) Catalysis (2 marks)

QUESTION 5 (20 marks)

Outline the synthesis of;

i) Quinines (10 marks)
ii) Nicotine (10 marks)

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