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KIBABII UNIVERSITY

**UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR**

**FOURTH YEAR FIRST SEMESTER
SUPPLEMENTARY EXAMINATIONS**

FOR THE DEGREE OF BSC CHEMISTRY

COURSE CODE: SCH 432

COURSE TITLE: POLYMER CHEMISTRY

DATE: 1/2/21 **TIME:** 2-4 PM

INSTRUCTIONS TO CANDIDATES:

TIME: 2 Hours

Answer **question ONE** and **any TWO** of the remaining

KIBU observes ZERO tolerance to examination cheating

Question 1 (30 Marks)

- a) List 10 examples of typical polymer additives (10 marks)
- b) Explain the four levels of describing the structure of both synthetic and natural polymers (8 marks)
- c) Describe the Molecular Interactions in polymer molecules (12 marks)

Question 2 (20 marks)

- a) List six methods used for the determination of the molecular weight of polymers (3 marks)
- a) What are some of the examples of naturally occurring polymers (3 marks)
- b) Explain addition and condensation polymers (4 marks)
- c) Highlight the differences between stepwise and chain polymerizations (10 marks)

Question 3 (20 marks).

- a) Discuss the testing and spectrometric characterization of polymers (14 marks)
- b) Explain what are additives and highlight their benefits (6 marks)

Question 4 (20 marks).

- a) Discuss the properties and uses of some important condensation type polymers (9 marks)
- b) What is the difference between cationic and anionic polymerization (2 marks)
- c) List the major techniques used in the production of important vinyl polymers (4 marks)
- d) Briefly describe Free Radical Chain Polymerization (5 marks)

Question 5 (20 marks).

- a) Explain what is Copolymerization (10 marks)
- b) Discuss the applications of Organometallic and Metalloid Polymers (10 marks)