DEPARTMENT OF CHEMISTRY

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA.

SECOND SEMESTER EXAMINATION 2018/2019 SESSION

COURSE CODE: CHM 561

COURSE TITLE: ADHESIVES, FILMS & COATINGS (3 UNITS)

INSTRUCTION: ANSWER ANY FOUR QUESTIONS ONLY

TIME ALLOWED: 2 HOURS

Q1 (a) State the functional purposes of each of the following:

(i) Adhesives (ii) Coatings (iii) Films (**6mks**)

b) Explain the mechanism of "Diffusion" as applicable to adhesive bonding. (**9mks**)

Q2 (a) Discuss "Wetting" as a thermodynamic phenomenon. (**10mks**)

b) Differentiate between "Spreading coefficient" and "Spreading pressure". (**5mks**)

Q3 (a) Outline the surface preparation techniques required for adhesive bonding of each of the following substrates: (i) Concrete (ii) Metal (iii) Plastic (**9 mks**)

b) List the important applications of each of the following polymeric films: (i) Cellophane (ii) PTFE (iii) Nylon (**6 mks**)

Q4 (a) Given that the surface tensions of paraffin and water are 31.8 and 72.5mNm^{-1} respectively, and their corresponding interfacial tension is 57.2mNm^{-1}, deduce whether or not wetting will occur on the substrate. (**9 mks**)

b) Enumerate any three advantages and three disadvantages each of waterborne paint. (**6 mks**)

Q5 (a) Explain the mechanism of curing of an oil-based paint (**9 mks**)

b) State any two difference (s) and similarity (ies) between surface tension and surface free energy? (**6 mks**)