

1.4 Name two (02) theories which are used to explain the dissolution. (02 marks)

- I).....
- II).....

02. Answer All Parts

2.1 What is thixotropy? (01 mark)

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2.2 Write two (02) main criteria which are used to categorized suspensions. (02 marks)

- I).....
- II).....

2.3 Briefly explain Hydrogen bonded complexes. (05 marks)

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2.4 Write the radioactive decay equation and define the terms.

(02 marks)

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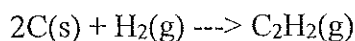
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Part C (60 marks)01. Answer **All** Parts

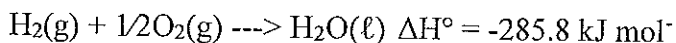
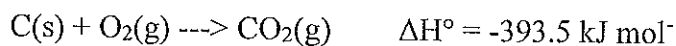
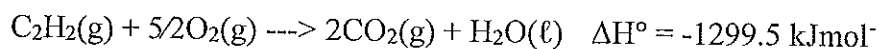
- 1.1 Write four (04) main pathways in chemical decomposition of drugs. (02 marks)
- 1.2 To overcome the chemical degradation by one of these pathways, one IV single dose ampoule manufacturer uses opaque box to store ampoules. Name and briefly explain the relevant pathway. (02 marks)
- 1.3 What is an elementary reaction? (01 mark)
- 1.4 An unexposed co-amoxicillin suspension undergoes chemical degradation due to atmospheric water. This degradation obeys zero order reaction kinetics rule. Give the equation which can be used to calculate the time taken to reduce its concentration by half of its initial concentration (A_0). (01 marks)
- 1.5 When the $t = 0$, the drug container had co-amoxicillin 99.90 mg/mL and after 60 minutes it had only 38.90 mg/mL. Calculate the time that take to reduce its concentration by half of its initial concentration. (04 marks)
- 1.6 What will be the time if the degradation follows first order reaction kinetics? (05 marks)

02. Answer **All** Parts

- 2.1 What is thermodynamics? (02 marks)
- 2.2 What is the temperature that 0.654 moles of neon gas occupy 12.30 liters volume at 1.95atm (atmospheres)? What should be your assumption to use the ideal gas equation for a real gases? ($R = 0.08206 \text{ L atm mol}^{-1} \text{ K}^{-1}$) (03 marks)
- 2.3 What is the meaning of isothermal expansion of gas? (01 marks)
- 2.4 Write four (04) applications of Thermodynamics in Pharmacy. (02 marks)
- 2.5 What is entropy? (02 marks)
- 2.6 Calculate the enthalpy (ΔH°) for the following reaction. Comment on the calculated value. (05 marks)



Use following thermochemical equations:



03. Answer All Parts

- 3.1 What is a polymer? (01 marks)
- 3.2 Write four (04) uses of polymers in pharmacy? (02 marks)
- 3.3 What are the main four (04) classes of polymers? (02 marks)
- 3.4 What are thermoplastic and thermoset polymers? (02 marks)
- 3.5 What is polymerization? (01 marks)
- 3.6 Briefly explain the addition polymerization. (05 marks)
- 3.7 What is the addition homo-polymerization? (02 marks)

04. Answer All Parts

- 4.1 What is complexation? (01 marks)
- 4.2 Chemical complexes can be divided into classes. Write two (02) main classes. (02 marks)
- 4.3 What are the purposes of analyzing chemical complexes? (02 marks)
- 4.4 Write two (02) methods which are used to analyse chemical complexes. (01 marks)
- 4.5 Briefly explain three (03) experimental methods which are used to determine protein binding with drugs. (06 marks)
- 4.6 Briefly explain protein binding mechanism. (03 marks)