This exam is about cereal. Answer 3 out of 4 questions.

1) You are given information on the quantity of cereal sold disaggregated by metropolitan statistical area (MSA), time, and brand of cereal. Describe in detail how to estimate a demand equation for cereal. Include characteristics of potential customers and characteristics of each brand. Include brand specific effects and explain why you are modelling them as random or fixed effects. Explain why price is endogenous and show how to control for its endogeneity.

2) You are given information on the number of new cereal products introduced each year, disaggregated by manufacturer. Describe what factors affect the number of new cereal products introduced and describe in detail how to estimate your model. Include manufacturer effects.

3) Write down an equilibrium economic model of how a cereal producer decides when to introduce a new product or retire a product (entry and exit) and then discuss how to estimate the parameters of your model.

4) You are asked to construct a nonstructural model of product exit. You are given data on histories of products; i.e., when each enters the market, sales each period, when the product exits. Using the timing of product exits as a dependent variable, consider two separate modelling strategies: survival analysis and correlated probit. Show mathematically that these two are equivalent; i.e., that any survival analysis model can be written as a correlated binary discrete choice model and any correlated binary discrete choice model can be written as a survival analysis model.