1. Definitions (4 points each: 2pts for definition, 2 pts for application)
   
a. **Quantity-quality tradeoff**
   An application of household production model in which households tradeoff the quantity of children (time in household) vs. quality of children (market goods per child). Used to model how fertility responds to changes in the opportunity cost of time (e.g., wage rate).

b. **Job Ladder**
   A progression of jobs with increasing responsibility and pay within a firm with the lowest level being the entry port. Long ladders lead to management and short ladders are dead end jobs. Internal labor markets are composed of job ladders.

c. **Audit Study**
   Audit studies are simulated market transactions where matched pairs of individuals who differ only in demographic attributes but not skill, income, education, etc. each attempt to conduct the same transaction with a business. Audit studies are used to assess disparate treatment in housing, rental, labor and product markets.

d. **Human capital depreciation**
   The loss of skill from spending time away from the labor market. Human capital depreciation is one possible explanation for differences in earnings between similarly educated men and women if women are more likely to have discontinuous labor market participation.

e. **Disparate impact**
   When the same action/policy results in differential economic outcomes across demographic groups. Legal prohibitions against discrimination often target disparate impacts. When they are observed, the firm has to demonstrate that the action/policy is **bona fide** (necessary for business) and that there are no non-discriminatory options that would work as well.

2).
   a. (10 total points) (2 points each: 1 point for item, 1 point for effect)
      *Earnings from investment* ($ or college salary): increase incentives to invest
      *Opportunity cost of investment* (H or high school salary): lower incentives to invest
      *Time to recoup* (T, age or time to retirement): Increase incentives to invest
      *Interest rate* (r, discount rate): lower incentives to invest
      *Direct cost* (C, tuition/fees): lower incentives to invest
b. (4 points) As age increases, time to recoup the investment decreases and so fewer people will want to invest, consistent with the HK model.

c. (6 points: 3 each part)
   i. Women are now more likely than men to go to college
   ii. * Costs higher for women --- women might get fewer scholarships, face more social stigma at an Ag/Engineering school
       * Earnings from investment might be lower --- may be Ag/Engineering jobs pay women less than men
       * Opportunity cost high --- perhaps there are better market opportunities for high school educated women in Iowa
       * r & T less clear – could say Iowa women expect to have lower labor force participation (not true thought, employment rates for women are among highest in the nation).

3). a. (4 points) Duncan index, or $D_i = \sum_i |M_i - F_i|$, is the difference in the absolute value of percent of men in occupation i versus percent of women in occupation i, summed over all occupations. It is the percentage of men (or percentage of women) who would have to switch occupations to eliminate job segregation (or it is a measure of job segregation). Ranges from 0 to 100 with 0 being perfect integration and 100 complete segregation.


c. (6 points) If men and women are assigned to different entry ports with different lengths of job ladders, women may end up excluded from upper management positions in the firm. To the extent that training, promotion, and compensation decisions within the firm are insulated from the external labor market, this could hinder female wage growth if they are in the job ladders with less training and fewer rungs.

d. (6 points) Suppose men do not like working with women. Having an integrated workforce will require the firm to pay men a compensating differential ($W_M = W_F + d$) whereas having a segregated workforce would only require paying $W_M = W_F$. The firm
will have an incentive to hire only men or only women, but the pay would be the same, so $W_M = W_F$. Job segregation would not hinder female wage growth.

4)

a) (4 points) A has higher wages than B and so $W_A = \frac{MU_T}{MU_G}$ at a higher level of market good vs home time, holding constant the isoquant across households.

b) (4 points) C’s wages are so low that $W_C < \frac{MU_T}{MU_G}$ and so C spend all time in the home.

c) Rising wages since 1950 for both men and women would cause an income effect toward both home time and market goods and a substitution effect toward market goods and away from home time. For men, the two effects are of roughly equal size, and so there are only very small changes to male home time. For women, the substitution effect dominates and so women spend less time in the household as wages increase. This is especially true for women who are at point C initially, as steady increases in wages would eventually cause them to enter the market.

d) Easier substitution of market goods for home time flattens the isoquant which tends to cause individuals to spend more time in the market as shown below as the isoquant moves from U to U’.
5)

a) **8 points total for discussion of a theory that would allow discrimination to disappear**

Name the Theory (2 points): Employer discrimination or Statistical discrimination if expectations of group averages are incorrect

Why discrimination exists (3 points):

Why discrimination disappears (3 points)

b) **8 points total for discussion of a theory that would allow discrimination to persist**

Name the Theory (2 points): Employee or Customer discrimination; Crowding; Internal Labor Market; or statistical discrimination if expectations are self-fulfilling

Why discrimination exists (3 points):

Why discrimination persists (3 points)

c) **4 points for discussion of a paper discussed in class**

Name or identify the study (1 point)

Description (3 points)