考試科目	個體經濟學	所別	經濟學系 461	考試時間	2 月 23 日(日) 第一節

Please answer the following FOUR questions on the sheet(s) provided. Show your work because (i) partial credit will sometimes be awarded and (ii) full credit may not be awarded for answers that appear without accompanying work. Good luck!

1. (30%) Government childcare subsidies are common throughout the world. Suppose that parents with income ***m*** consume two types of goods, childcare ($\mathbf{X_1}$) and all other goods ($\mathbf{X_2}$), such as food and housing. The utility function of typical parents is given by $U(X_1, X_2) = (X_1X_2)^{1/2}$.
   (a) (10%) Write down the expenditure minimization problem and find out the expenditure function for the parents. Let the price of X_1 be $\mathbf{P_1}$ and the price of X_2 be $\mathbf{P_2}$.

   To keep the analysis as easy as possible, assume that the original prices and income were $P_1 = \$4$, $P_2 = \$4$, and $m = \$40$ for the rest of the question.

   (b) (10%) Suppose that the government decides to subsidize the price of childcare and the new price changes to $P_1' = \$1$. Compute the corresponding compensating variation (CV) and equivalent variation (EV) due to this policy.
   (c) (5%) Use a graph to show how you get the answers in part (b) and mark the price effect (PE), substitution effect (SE), and income effect (IE) with X_1 on the horizontal axis and X_2 on the vertical axis. Is the childcare a normal or inferior goods? Why?
   (d) (5%) For a given government expenditure, does a price subsidy or a lump-sum subsidy provide greater benefit to recipients? Which option results in more quantity demanded for childcare services? Explain your work on the graph in part (c).

2. (20%) There are two students, Allen and Brian, consuming only coconuts. They use the coconuts for two purposes: either they consume them for food, or they burn them in a public religious sacrifice because they believe that this sacrifice will help their exam performance. Suppose that Allen and Brian have initial endowments of coconuts w_A and w_B, respectively, and both are great than 0. Their utility functions are given by $u_i(x_i, G) = x_i + a_i \ln(G)$, where $i = A, B$; $x_i \geq 0$ is the amount of coconuts that i consumes, and constant $a_A > a_B > 1$. Moreover, $G = g_A + g_B$, $g_i \geq 0$ is the amount of coconuts that i gives to the public offering.
   (a) (5%) Write down a utility maximization problem that determines the public gift for Allen and Brian.
   (b) (10%) What is the equilibrium amount of the public gift in part (a)? Please specify the contributions of Allen and Brian.
   (c) (5%) Could Allen and Brian do better in part (b) in terms of welfare improvement? If you answer "no," why not? If you answer "yes," please explain how to do. What is the new equilibrium?

備註	試題隨卷繳交