※ 考生請注意：本試題不可使用計算機。　請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

試回答下列各問題。中文題請用中文答題；英文題請用英文答題，英文題用中文答題者不予計分。答題時務必將所有推論過程清楚完整列示，如有需要，請自行擬定必要之假設與定義。

1. **(30%)** Greta Thunberg is a Swedish teenage environmental activist on climate change whose campaigning has gained international recognition. Protecting our environment is an essential issue nowadays. More and more people are aware of that economic development should not destroy our nature resources. Consider a production function of the form Y=AF(K, N, Z) where K represents capital, N represents labor, A represents technology, and Z is a measure of natural resources used in production. Assume this production function has constant returns to scale and diminishing returns in each factor.
   (1) People are fears that we were running out of natural resources and that this would limit economic growth. Discuss this view through analyzing what will happen to output per head if capital and labor both grow but Z is fixed, on the condition of technical progress(growth in A).(20%)
   (2) Please specify the influence of environmental problem to economic development in your own opinion. **(10%)**

2. **(25%)** 自從 2018 年諾貝經濟學獎得主，美國學者諾德豪斯（William D Nordhaus）提出「氣候變化綜合評估模型」（Integrated assessment modelling），採用量化方式描述經濟與氣候在全球的相互影響後，促成不少氣候相關的政策，例如「碳排放稅」（carbon taxes）。2019 年 12 月，德國國會議員通過了一項碳定價法案，內容決議企業將自 2021 年 1 月起，每用一公噸碳的額度就需繳納 25 歐元稅金，且逐年調高預計到 2025 年前，每噸將調漲至 55 歐元。試以短期、中期、長期之總合供需模型分析此政策對德國經濟之影響。

3. **(25%)** 科技進步促進了 API（application programming interface）經濟的發展，至今已日趨成熟。試說明何謂 API 經濟? 在 API 新經濟運行之下，是否仍有傳統經濟學探討資訊不對稱所衍生之相關問題? 請選擇一個市場舉例說明。

4. **(20%)** Comment on the following statement in economic perspective:
   (1) "The efficient-markets theory states that monetary policy is more efficient than fiscal policy in stimulating economic activity and increasing stock values." **(10%)**
   (2) "If interest rates in the U.S. increase due to expansionary fiscal policy, then the U.S. dollar will appreciate." **(10%)**