Escola Tècnica Superior d'Enginyers de Camins, Canals i Ports de Barcelona
UNIVERSITAT POLITÈCNICA DE CATALUNYA

Departament d'Enginyeria Civil i Ambiental

INTERMEDIATE EXAM

1,5 HOURS

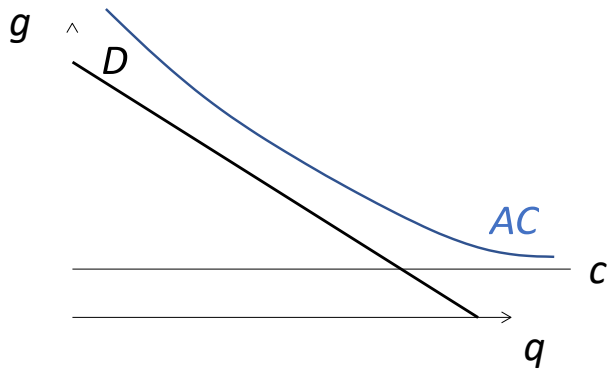
1. Describe briefly: [4 points]

   a) In terms of microeconomics, does a long-term cost function have fix costs?
   b) Indicate the diminishing returns law.
   c) In the case of increasing return to scale, Is the marginal cost higher than the average cost? Provide a brief explanation.
   d) Represent the short-term average cost curve and marginal cost curve.

2. Let's suppose an economy with only two types of goods, x1 (with a market price of p1) and x2 (a market price of p2). The utility function of a consumer is as follows: $u(x1, x2)$ and can not spend more than m. Indicate graphically the solution of his/her election (Theory of Election). [2 points]

3. Road pricing: [2 points]

   a) Let's suppose a road without congestion. "g" is the generalized cost per user, "q" is the traffic flow, "AC" the average cost and "c" the marginal cost. Indicate in the graph the optimal price of the road to maximize the social welfare, the consumer surplus and the producer surplus.



   b) Let's assume now a road with congestion problems. Represent graphically 1) the average cost, marginal cost, social marginal cost and the optimum level of traffic flow and user's cost to maximize the social welfare and 2) the toll (or tax) to charge to road user's in order to reach this optimal point.

4. Answer briefly: [2 points]

   a) What should be the main objectives of parking regulation?
   b) Justify the economic reason that the public transportation is usually in deficit.