

12. Correct. The answer is false. The MRP_I is the factor demand for I for a competitive firm. From profit maximization in the input market:

$$\text{F.O.C. } \pi = P_Q * Q(I) - P_I * I$$

$$\frac{\partial \pi}{\partial I} = P_Q * (\frac{\partial Q(I)}{\partial I}) - P_I = 0$$

$$MRP_I = P_I.$$

$$\text{S.O.C. } MRP_{II} < 0$$

So the electricity producer is willing to purchase I up to a point where P_I is equal to the MRP_I .

E.g. referring to the graph below, if the price of the input is P_1 then the producer is willing to buy the input I up to the quantity I_1 , where $MRP_I = P_1$. Similarly, if the price of the input is P_2 , the producer makes profits up to the quantity I_2 . Thus, MRP_I shows the willingness of the producer to buy additional units of input, i.e. it is its demand for that input.

