Prof. Dr. Sadrieh
Lehrstuhl für E-Business

OTTO VON GUERICKE UNIVERSITÄT MAGDEBURG
FAKULTÄT FÜR WIRTSCHAFTSWISSENSCHAFT

"Information, Reputation and interactive Marketing" (20187)

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Prof. Dr. Sadrieh

Please answer all of the following questions. Do not expect all numerical results to be integers. Please explain all your answers briefly, so that calculations and derivations can be fully accounted for. The use of calculators is permitted in accordance with the regulations of the faculty's examination office. Please, write your answers in English, if you are in our international Program. You may only answer in German, if you are in our German language program.

Task 1

Due to the enormous success of Dutch football managers (see Louis van Gaal, FC Bayern Munich) the famous soccer club 1.FC Magdeburg has also hired a Dutch coach called Ruud Kaiser. His goal is it to form a soccer team out of new, unknown football players. However, the financial background of the football club 1.FC Magdeburg is quite moderate. Hence, it is not possible to invite the new football players to a try-out. Ruud Kaiser and the decision makers of the football team cannot identify the quality of the football players. The football players know their own quality. The quality of a football player is perfectly correlated to his accepted monthly wage level. Quality is uniformly distributed between [0, 400]. On the other side, the 1.FC Magdeburg value the quality of a player 1.4 higher and is willing to pay a monthly wage which equals the quality of the players multiplied with 1.4. The coach has the opportunity to make an offer to every potential player. If the player agrees to this offer he will be one of the new team members. If the player declines the offer the coach can send an offer to the next player, but cannot update the offer to the player who has already declined.

a) Declare under which condition a player's engagement will be confirmed for a monthly wage offer of w. Derive the expected quality of a football player for an engagement that will be confirmed at an offer of w.
b) What is the optimal offer of the coach without any quality information? Which football players (qualities) will confirm the contract and will be members of the team?
c) Describe shortly two possible solutions which will help the 1.FC Magdeburg to form a football team with higher qualities.
d) You have an internship at the office of the 1.FC Magdeburg. Due to your lecture "Information, Reputation and interactive Marketing" you have the opinion that the players should signal their quality. Hence, you invite the football players to a try-out on which the coach can identify the real quality. Furthermore, the football players have to pay the costs for their accommodation and their meals by their own. The costs per player are 200. Which players (qualities) will follow your invitation? What is the optimal offer of the coach for the players who follow the invitation? Will this increase the quality of the team?

Task 2

On Christmas 2010 two celebrities will release new perfumes: "GaGaLaxis" and "Satellovely". Like every year the men along the Malibu Beach are thinking about 1 good present when Christmas Eve comes closer.
You realized that and opened a gift shop, located at Malibu Beach Avenue No. 1. You specialized in selling the "GaGaLaxis" perfume. Another gift shop is located right at the end of Malibu Beach Avenue, at No. 100. You know that the other shop has specialized in selling the "Satellovely" perfume. The Malibu Beach Avenue can be seen as a straight line with each house being nearly equal and also uniformly distributed along the street. (In house No. 1 and no. 100 there is also one man living.)

You know that the men take 1 $ (USD) into account for every house they have to pass to get to the shop but do not care for the price of the perfume.
You also know that the fraction fG of consumers served with advertisements causes costs according to $CG(fG) = 100000 * fG^2/2$, production costs are ignored.

Hint!
Men do only buy a perfume, if they are informed by at least one advertisement. If they get just one advertisement they buy for sure from the advertising gift shop. If they get both advertisements they buy from the gift shop which causes the lowest costs!

a) Derive the house number x* of the indifferent consumer.
b) Derive the profit function of your gift shop and calculate the two first order conditions for its optimal price pG and optimal fraction fG.
c) By chance you receive an advertisement of the other gift shop. Therefore you can see its price pS = 300. With an educated guess you estimate its fraction to be fS = 0.5. Using this information, what is the optimal fraction fG and the optimal price pG which maximizes your profit?
d) Receiving another advertisement from the other gift shop, you can see that it will reduce its price pS slightly. How does your optimal price pG and fraction fG change now? Explain the direction and the reason of this change verbally but briefly!
e) Calculate your total profit using the parameter constellation from task 2.c!