EXAMPLE: Written exam in Technology and Innovation Management: Introduction

Your student ID number (Immatrikulationsnummer):

- Please check if these papers are complete (you should have 10 **pages**).
- Leave all pages **stapled together**.
- The exam will last 60 minutes.
- You will be able attain a maximum of 60 points.
- Please be **brief** and **concise** and write **legibly**!
- Please write your answers on the exam papers only (if necessary, write on the back side of the paper).
- You can answer the questions either in English or in German – but please don't mix languages within one question.

Good luck!

Question	Points attained
1	
2	
3	
4	
5	
6	
7	
8	
Total	

1. **“Promotor” model (6 P):**

   Describe the “Promotor” model. How can its insights be used to overcome obstacles for innovation processes in firms? (5)

Points scored

2. **Appropriability and protection (6 P):**

   During the 90s there was a belief that the presumed decline in the global competitiveness of European firms was partly due to their failure to aggressively use patents to protect their investments in innovation. The European Commission therefore intended to encourage overall patenting among firms, to encourage patenting by small high-technology firms and possible improvements in patent legislation (e.g. lower application costs). Please comment on this effort referring to Arundel’s findings on the relative effectiveness of patents vs. secrecy.

Points scored

3. Complementary assets (5 P):

What are specialized and co-specialized complementary assets? Give one example for each category.

Points scored

4. <u>Market and demand analysis (5 P):</u>

A manufacturer of motorcycles has developed a revolutionary new engine which allows for much higher power while at the same time needing less fuel. Unfortunately the exhaust fumes are three times as high as for conventional engines. Emissions are currently a hot topic in the press and therefore the firm is worried about their public image and not sure if it should use the engine for their next generation of motorcycles. The head of marketing proposes to ask your customers in a conventional survey which engine they preferred, the conventional or the new one.

a) What problem do you see with this method?(1)

b) Which method would you suggest? Briefly explain this method. Give reasons why this would be a suitable method. (4)

Points scored

5. <u>Diffusion of innovations (5 P):</u>

According to Rogers the diffusion of an innovation depends on several attributes of the innovation. Please define those attributes and assess the diffusion potential for the case of a new broadcasting technology that allows users to watch TV on their mobile phones.

Points scored

6. Lead User Concept (10 P) :

a) Please describe the "Lead user concept" in comparison to classical market research methods. What are the advantages and disadvantages of the concept? (4)

b) Car maker "MyCar" is thinking about the development of a new generation of its infotainment unit in their premium cars. The CEO has heard about the Lead User method as a promising method to identify new trends and wants to run a Lead User project for the infotainment unit. He asks you to briefly outline how to conduct a Lead User project. Please briefly describe the relevant project steps and activities for the project on car infotainment. (6)

Points scored

7. Appropriation of returns (8 P):

Consider an innovator selling a single good to a market, facing a demand curve D = 400 – p, where p denotes the price of the good. The innovator has no fixed cost. The variable cost is made up of the price p_i of an input good and the variable production cost c per produced unit (c = 20). One unit of the input good is required for one unit of the final good. The supplier of the input good has zero variable cost and zero fixed cost. Please calculate what price the innovator charges, in order to maximize profits, when p_i is given (that is, p as a function of p_i). Using this result, calculate the profit-maximizing price of the supplier and the resulting price of the innovator. What profits do both make? Please interpret your findings in the context of appropriation of returns to an innovation.

Points scored

8. Stage-Gate Processes (15)

A firm in the automotive supply industry wishes to develop a Stage-Gate Process. It realises that, in order to achieve this, it will need feasible measures for each gate. Yet, the innovation activities should of course support the firm's corporate and innovation strategy and therefore needs to also address portfolio issues. The firm has just merged with another automotive supplier and is aiming at becoming a system supplier who provides car components for a large number of modules (such as brake systems, engine control systems and automotive electronics).

a) Propose a basic concept and structure of the Stage-Gate Process (which stages and gates, which links to corporate strategy?). (6)

b) Propose a number of criteria for the first gate and explain how these could be picked up at a higher level of detail at the next gate. (4)

c) A manager from the corporate planning department suggests also a number of criteria that should be identical for each gate and project. He also maintains that whatever innovation project the firm pursues the Stage-Gate Process should be exactly the same in order to achieve high comparability between innovation projects. He finally demands that at each gate, for each project a decision has to be made, either for the project to go on or to be cancelled. For a senior management meeting you are asked to comment on these proposals as the project manager in charge for implementing the Stage-Gate Process. What would your response be? (5)

Points scored