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Inbound logistics and operations

Two big topics

Task 1 - Supply operations

- According to market research, the company will be able to sell 540,000 units of Product A next year, up 10 % from this year. Its production capacity allows it to secure this volume and it therefore plans to produce the amount of expected demand. According to the standard, 20 kg of raw material S is used per product.
- The actual stock on 1 July, i.e. the balance sheet date, is 1 200 tonnes. The expected consumption by the end of the year is 5 100 tonnes, the expected value of material deliveries in III. and IV. quarter is total 4 800 tonnes, total consumption for the year is 9 818 tonnes. The safety stock standard is 45 days. Material consumption is proportionally dependent on production volume.

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Task 1 - Supply operations

- Calculate the expected consumption of raw material S, set up a balance equation and determine the supply needs of this raw material in the next year. How many deliveries will you order if the fixed cost of the order is 200 000,- CZK, the interest rate is 15 %, the storage cost rate is 5 %. The supplier offers to provide the ordered quantity of raw material in one, two or four deliveries per year.
- Use the balance equation formulae in your calculations:

- Is + D = C + Fs

- Where Is is the initial stock of raw material S
- D - delivery of raw material S
- C - consumption of raw material S
- Fs - final raw material stock S

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Task 2 Narrow point - TOC

- The dog feed company is not able to satisfy all orders (10 000 bags per month in total) and produces 5 000 bags. It is therefore analysing the current production process and looking for bottlenecks.
- The company has four production facilities - a warehouse, a drying room, a mixing room and a filling room.

Task 2 Narrow point - TOC

- The warehouse has a capacity of 5 000 bags of 50 kg each. Once a month, the grain is weighed in and processed.
- The drying plant operates in one shift (8 hours per day, 22 days per month), with 15 % of the working time for lunch and other breaks. 70 bags of grain can be dried per hour.
- The mixing plant mixes 45 kg of grain with other ingredients per minute. The mixing plant is open 7 hours a day, 21 days a month.-
- The filling plant is capable of filling 2 bags per minute. It operates continuously 8 hours a day, 22 days a month. Where is the bottleneck that prevents the company from satisfying all orders? How can it be removed?

Task 3 – portfolio

- Ferometal PLC supplies four products to the market with the following prices per unit (P), total cost per unit (TCu or AC) and sales quantities (Q).
- After a drastic price fall, the selling price of products A and B no longer covers costs. Ferometal s.r.o.'s fixed costs for the period were estimated at CZK 120 million.
- In calculating the cost per unit, the fixed costs were spread evenly over the total sales quantity of 4 million units.
- Which of these products should be phased out?

Product	*Q*	*P*	*TCu(AC)*
A	1 mil	100,-	120,-
B	1 mil.	200,-	250,-
C	1 mil.	80,-	50,-
D	1 mil.	240,-	170,-

Task 3 b) – portfolio – portfolio dependencies

- If you stop production of A, then there will be rise of substitute C by 250 000 pieces.
- If you stop production of B, then there will be decline of complement D by 250 000 pieces.

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Task 3 b) – portfolio – portfolio dependencies

Product	*Q*	*P*	*TCu(AC)*
A	1 mil	100,-	120,-
B	1 mil.	200,-	250,-
C	1 mil.	80,-	50,-
D	1 mil.	240,-	170,-

- Fixed costs 120 milion.
- Stop A === C + 250 000
- Stop C === D – 300 000

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Task 4

- The publishing house Knowladge Inc. intends to publish a professional book for which it expects to sell 8,000 copies per year in the coming years. The fixed costs of publication (production) amount to CZK 360 000 per issue. The capital tied up in the printed but not yet sold books must bear interest at 10 % p.a. Sales will be continuous, i.e. without fluctuations in time. How high should the circulation (optimum production rate) be so that the interest and production costs per book are as low as possible, since the proportional costs (paper, binding, printing ink, etc.) are:
  - 100 CZK/piece
  - 400 CZK/piece
- In which of the two cases will the issue be lower?

– Thank you…

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