Name: ....

BA in MBA / Erasmus

Do not forget to fill the Answer Sheet on the last page! Time limit: 55 minutes.

Exercise 1: Multiple Choice (only one answer is correct)

1.	Let z be 1,65 (95%), and the standard deviation of demand is 500 units during the lead time. What is the optimal level of buffer-stock? a.) 330 units b.) 990 units c.) 660 units d.) 825 units
2.	Why to account for seasonal fluctuations in inventory management? a.) The production of many goods or services has significantly different opportunities and costs in different time-intervals in a year b.) There is an unpredictable variability in the need for some goods c.) The need for some products or services are significantly but unpredictably needed more in certain times of a year d.) Seasonal fluctuations are important only for those areas, where there are at least two seasons in a year
3.	.... is responsible for obtaining the materials, parts, and supplies and services needed to produce a product or provide a service. a.) Logistics b.) marketing c.) procurement d.) inventory
4.	Which one of the four main types of inventory costs is NOT important in the determination of the order quantity? a.) Carrying cost b.) Ordering cost c.) Item cost d.) Stockout cost
5.	In .... are determined stock level (reorder point) is given, at which the replenishement order will be placed. a) economic order quantity systems b) fixed order quantity systems c) periodic review systems d) every inventory systems
6.	What is not a key issue of the supply chain management? a.) Managing suppliers. b.) Managing finance. c.) Managing customer relationships. d.) Managing risks.
7.	.... is the amount of goods that have left a firm's warehouse but have not been bought by the consumers, and are therefore still within the firm's distribution chain. a) In-process stock b) Pipeline stock c) Working stock d) Speculative stock
8.	What is the advantage of "disintermediation"? a.) Reduces ordering costs b.) Reduces the length of the supply chain. c.) Improves quality d.) Increase product variety

9.	In which phase of a projects life are there the highest level of effort needed? In the…
	a.) Definition phase b.) Planning phase c.) Execution phase d.) Delivery

10.	Which word fits the gap in the following text? The … is a tool used to define and group a project's discrete work elements (or tasks) in a way that helps organize and define the total work scope of the project.
	a.) Material requirement plan
	b.) Work breakdown structure
	c.) Logical framework matrix
	d.) Problem-tree

11.	If utilization is 0,5 and actual output is 10, what is designed capacity?
	a.) 2,5 b.) 0,25 c.) 5 d.) 20

12.	Which pair is not true?
	a) kanban - a manual system responds to signals of the need for delivery of parts
	b) Pull system – produce only what is needed
	c) Heijunka –each worker is expected to perform ongoing quality assurance
	d) Muda – waste and inefficiency must be minimized

13.	In the critical path (in project management) there is no …… time.
	a.) flank c.) critical
	b.) probabilistic d.) slack

14.	Determine takt time, if there is 2 shifts, in each shift a 30 minutes lunch break and three 10 minutes break. Daily demand is 110 pieces.
	a) 4 minutes
	b) 8 minutes
	c) 7,64 minutes
	d) 3,82 minutes

15.	…… is a mathematical expression of the goal.
	a.) Decision variable c.) Parameter
	b.) Objective function d.) Objective tree

16.	What SMED refers to?
	a) it is the method of preventive maintenance
	b) it refers to the setup time between different products
	c) it is the breakdown of equipments
	d) evaluating method for failures' risk

17.	Pair the following statement with one of Garvin's approaches on quality below: *"Quality is measured by the manufacturer's ability to target the requirements consistently with little variability."*
	a) Transcendent approach
	b) Product-Based approach
	c) Manufacturing approach
	d) Value based approach

18.	Which formula is used to calculate the total cost of inventory in the EOQ model?
	a.) $TC = S \cdot (D/Q) + H \cdot (Q/2)$ c.) $TC = (2 \cdot D \cdot S / H)^{0,5}$
	b.) $TC = H \cdot (D/Q) + S \cdot (Q/2)$ d.) $TC = (2 \cdot D \cdot S / H)^2$

19.	Which statement is NOT TRUE about quality management system?
	a) It ensure that mistakes can not arise at all
	b) On regular audits the whole system is compared with specifications stated in documentations.
	c) It regards to the whole system: organization, processes, resources,
	d) Its main goal is separate refuse.

20.	According to the ………….., inventories are progressively larger moving backward through the supply chain.
	a.) bullwhip effect b.) purchasing cycle c.) reverse logistics d.) saw-tooth

Problem solving (calculation)

Exercise 2

Determine the *average demand per day*, the *buffer stock in tons*, the *Economic Order Quantity* and the *First reordering day (R₁)* if the following data is given, and you can use the saw-tooth model! Plot the *inventory level over time* (till the consumption of the first reordered stock starts to be consumed) in the empty diagram in the answer sheet! Calculate the *ROP* in tons!

Initial quantity on stock: 3000 tons.

Buffer stock should be enough for 5 days.

The lead time is 15 days.

The planning period is 250 days long, and the total demand during this period is 10000 tons.

The ordering cost is 120 euros per order. The cost of stock holding is 12 euros per one ton.

Exercise 3

Plot the AON (activity on node) network diagram, and determine the critical path with its activities, the length the critical path and the duration of the whole project if the following data is given!

activity	Duration (days)	Predecessor
a	2	–
b	3	a
c	6	a
d	2	b
e	4	b
f	4	d, e
g	2	f, c
h	2	g

Exercise 4

14 customers were asked about a product's quality features. Than on the basis of twelve consistent decision makers' answers, we created the summarized preference matrix (see below). Determine how much the answerers agree! *Calculate the Kendall's coefficient of concordance!*

	I1	I2	I3	I4	I5	I6	I7
I1		5	4	10	9	7	10
I2	7		8	12	8	10	8
I3	8	4		8	10	6	8
I4	2	0	4		1	1	5
I5	3	4	2	11		0	3
I6	5	2	6	11	12		11
I7	2	4	4	7	9	1	

Answer Sheet

Total Points: 70 (20 multiple choice + 50 calculation)

1. Multiple Choice (maximum points: 20)   Points: .... / 20

1	D	5	B	9	C	13	D	17	C
2	A	6	B	10	B	14	C	18	A
3	C	7	B	11	D	15	B	19	D
4	C	8	B	12	C	16	B	20	A

2. Problem solving 1 (maximum points: 16)   Points: ..../ 15

d=...40...t/day (2 pts)   b = ...200... tons (2 pts)   EOQ=...447.21...tons (4 pts) R_1=...55...day (4 pts)

ROP = ...800... tons (1 pts)
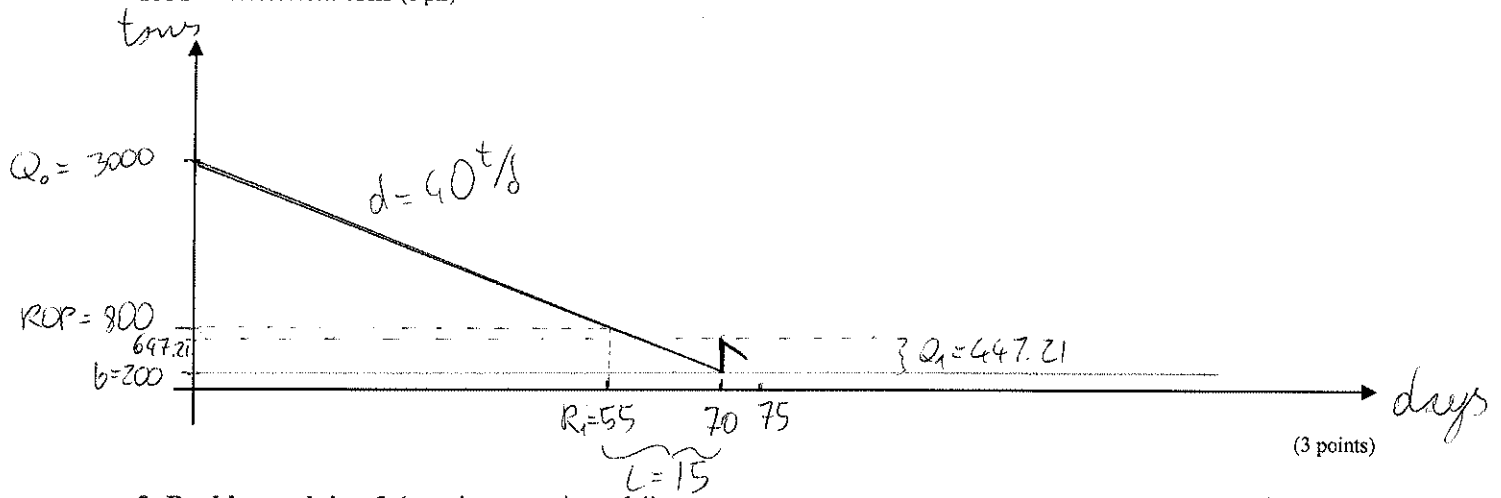
(3 points)

3. Problem solving 2 (maximum points: 14)   Points: ..../ 15
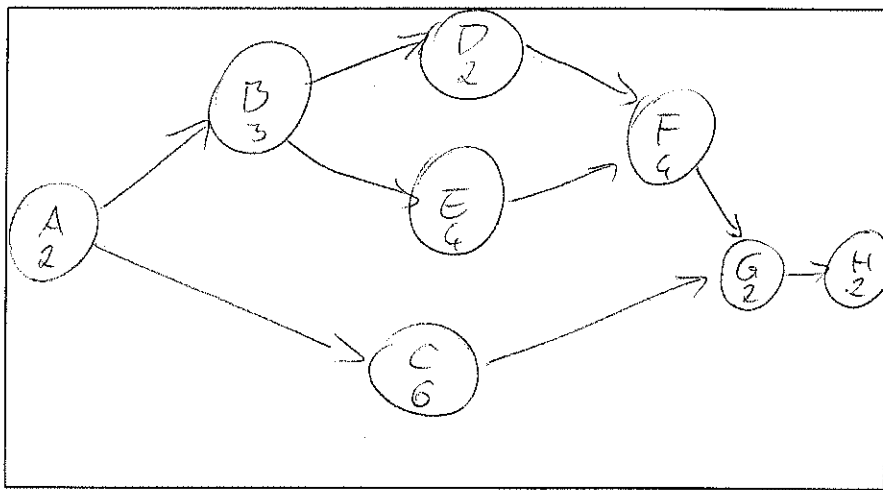
(4 points)

The critical path: a, b, e, f, g, h ... = ...17... days (5 + 2 points)

The project duration: ...17...days (2 points)

4. Problem solving 3 (maximum points: 20)   Points: ..../ 20

Rj_{mean}=___36___ (6 points) Δ_{max}=___4032___ (4 points)

Δ=___1334___ (6 points)   K=___$33,09$___% (4 points)