Cognitive Psychology
(B.Sc. Engineering Psychology – Aalto University)

Nr. of question	Chosen answer			
1	A	B	C	D
2	A	B	C	D
3	A	B	C	D
4	A	B	C	D
5	A	B	C	D
6	A	B	C	D
7	A	B	C	D
8	A	B	C	D
9	A	B	C	D
10	A	B	C	D
11	A	B	C	D
12	A	B	C	D
13	A	B	C	D
14	A	B	C	D
15	A	B	C	D
16	A	B	C	D
17	A	B	C	D
18	A	B	C	D
19	A	B	C	D
20	A	B	C	D
21	A	B	C	D
22	A	B	C	D

Note
- There **is only one correct answer** to each of the questions in multiple-choice format. The selected answer must be marked with a cross on this cover sheet.
- Read the questions thoroughly. Note that questions may consist of several sub-questions. One point each.
- Be **brief** when answering the open questions. Limit yourself to the essentials. There are no extra points for additional aspects that are not directly related to the question.
- If a bulleted list is required (e.g., "Give two examples."), please list as many points as are required. **There are no extra points.** If you list more than the required number of answers, only the first ones will be scored according to chronological order.
- Please write legibly. **Answers that are not legible will not be scored.**
- Please write in blue or black **pen**.
- You can answer open questions in **english, swedish and finish**.
- **Recommendations** regarding the points, the answer format and length can be found for all open questions (not binding)
- Add your name and student number to **each page**
- No supporting devices or materials are permitted for usage in the exam

PART 1: Multiple-Choice Questions (24 Points)

1. Which learning phenomenon is called imprinting?
   a Habituation to a stimulus that attracts attention the first time it is presented, but no longer does when presented repeatedly.
   b Addition of a conditional reflex to a natural, usually innate unconditional reflex.
   c Learning process in which rapid and relatively irreversible learning occurs during a critical period
   d increased occurrence of rewarded, previously insignificant spontaneous behavior

2. Information is represented in the long-term memory in different ways. The following statement retrieves memory content of which type? "I can still remember when we were kids skating on the village pond."
   a Episodic
   b Semantic
   c Procedural
   d Priming

3. what are the characteristics of working memory?
   a low capacity, semantic representations, retention time less than 30 s
   b large capacity, representation is modality specific, retention time less than 0.5 s
   c practically infinite capacity, semantic representations, long retention time
   d low capacity, flexible phonological and visual representations, retention time of about 15 s

4. Problems are characterized by the fact that a barrier must be overcome to solve them. The Tower of Hanoi is a ...
   a Interpolation barrier.
   b Analysis barrier.
   c Synthesis barrier.
   d Dialectic barrier.

5. Paul is just learning to swim. He can already stay afloat, but he still has to concentrate on his arm and leg movements. He notices that swimming is more successful when he makes all the movements synchronously. Which phase of skill acquisition is Leon in?
   a dissociative phase
   b associative phase
   c convenient phase
   d autonomous phase

6. According to Gestalt psychologists, problem-solving takes place through ...
    a   ... gradual approach to the goal state.
    b   ... mental restructuring of the problem situation.
    c   ... trial & error.
    d   ... application of means-ends analysis.

7. Tapio is increasingly using social networks. If they get a lot of "likes" for an uploaded photo, they are happy and immediately look for new photos to post. Which type of learning plays a dominant role here?
    a   Classical conditioning
    b   Habituation
    c   Imprinting
    d   Operant conditioning

8. which statement about the phenomenon of insight is NOT true?
    a   Insight happens gradually
    b   An "aha" moment takes place.
    c   It happens after Impasse
    d   Re-representation is usually required.

9. The problem-solving approach of taking the step that will get you closest your goal each time, is called:
    a   representativeness heuristic
    b   Means-ends analysis
    c   Loop avoidance heuristic
    d   Difference reduction method

10. "If Henri understood the subject matter, then she gets a good grade. Henri did not get a good grade. Henri did not understand the subject matter."
What is the rule of inference behind this deductive inference?
    a   modus ponens
    b   denial of the antecendent
    c   modus tollens
    d   affirmation of the consequent

11. Petra has been working doggedly for hours to solve a problem. Since she can't find a solution, she first goes jogging for half an hour. After that, she deals with the problem again and immediately finds the right solution. What is this effect called?
    a   Stroop effect
    b   Framing effect
    c   Incubation effect
    d   Fan effect

12. according to Atkinson & Shiffrin's (1971) memory model, iconic and echoic memory are components of the ...
   a   Short-term memory
   b   Sensory register/Memory
   c   Long-term memory
   d   Working memory

13. Shanon's number denotes...
   a   Maximum solution depth of the human mind in chess
   b   Approximation of the possible moves in a game of chess
   c   Ranking of players in chess
   d   Minimum possible reaction time denoting the maximum speed in blitz chess

14. What was the subject of Sperling's investigations by means of partial reporting procedures?
   a   Storage capacity of the sensory memory/registers
   b   Storage capacity of short-term memory
   c   Storage duration of short-term memory
   d   Storage duration of the episodic long-term memory

15. In the study by Edwards (1968), tokens are drawn from two possible bags. The subjects are asked to recognize from which bag a token was drawn. To which heuristic are the results of the study attributable?
   a   Conservatism
   b   Availability heuristic
   c   Anchor heuristic
   d   Recognition heuristic

16. Greeno (1978) distinguishes between different types of problem solving with respect to cognitive requirements. Accordingly, solving anagrams (citgonion → cognition) belongs to the group of
   a   Transformational problems.
   b   High-knowledge problem.
   c   Problem of structure.
   d   Induction problems.

17 Declarative knowledge is
   a   implicit
   b   non-conscious
   c   automatized
   d   possible to verbalize

18 Metcalfe and Wiebe (1987) were able to show with their experiment that during the processing of insight problems
    a   subjects have no sense of how close they actually are to the solution even immediately before the problem is solved.
    b   habitual use of objects prevents their use in a different function.
    c   existing prior knowledge can hinder the recognition of simpler solution strategies.
    d   unnoticed solution hints of the trainer lead faster to the solution.

19 Nissen and Bullemer (1987) were able to show the following type of learning in their classical paradigm of sequence learning (lights and keypresses).
    a   Operant conditioning
    b   Habituation
    c   One-shot learning
    d   Implicit learning

20. A more difficult reproduction of a second learned list after a first list has been learned is called
    a   Retroactive interference
    b   Proactive interference
    c   Fan effect
    d   Affective interference

21. Which component of Baddeley's working stores multimodal codes
    a   Central executive
    b   Phonological loop
    c   Visuospatial Sketchpad
    d   Episodic Buffer

22. which classical problem is an example of the fact that people find it particularly difficult to solve problems if they first have to move further away from the target state?
    a   the two-rope problem
    b   the Hobbits & Orcs problem
    c   Duncker's candle problem
    d   Duncker's ray problem

PART 2: Open Questions (24 Points)

23. Briefly explain the concept of functional fixedness using Duncker's candle problem (2 points; text with 2-4 sentences)

24. What is the recency effect, what structure is central to it, and what experimental manipulation can prevent the effect from occurring? (3 points; text with about 3-7 sentences)

25. Name and define the five characteristics of complex problems according to Dörner and give an example for each! (5 points; in bullets)

26. The Tower of Hanoi with three discs has 2^3 - 1 = 7 states. Explain problem space theory and argue whether it can predict human behavior for a problem of 10 discs. (6 points; text with about 6 to 12 sentences)
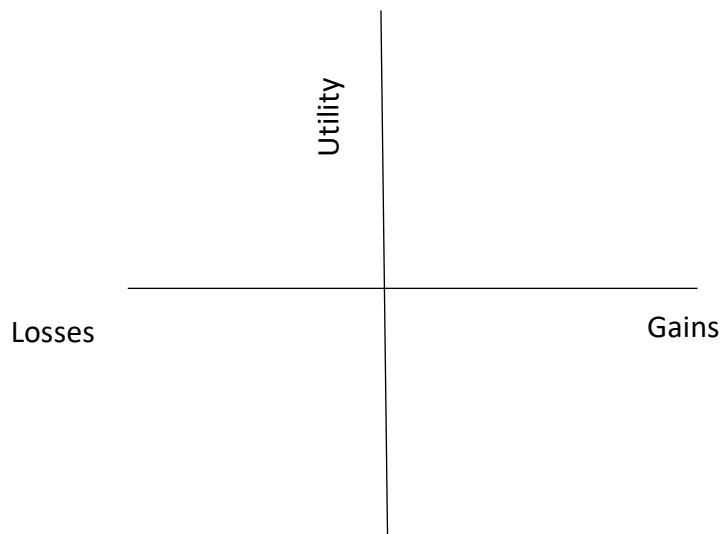
27. In the context of multi-option and multi-attribute decision-making, provide an example where an individual chooses an option that meets their minimum requirements rather than searching for the optimal solution. (1 point; text with about 1-5 sentences)

28. Explain why the semantic network model (Collins & Quillian, 1969) is in difficulty due to the following empirical finding: The reaction time to the sentence "The whale is a plant" is shorter than the reaction time to the sentence "The whale is a fish. Draw the corresponding semantic network for explanation and label the essential nodes! (4 points; drawing with explanations; short text explanation with 3-6 sentences)

29. What is gamblers-fallacy? Explain with an example (2 points; 1-5 sentences in text)

30. How are profits and losses valued according to the "Prospect Theory" of Tversky and Kahnemann (1979)? Enter the corresponding value function in the coordinate system. (2 points; only drawing)

Utility

Losses   Gains

31. Draw the 9-point problem and its solution! What is the type of barrier and what makes the problem difficult to solve? (2.5 points; one drawing, text with 1-5 sentences)