

**Exam: October 11<sup>th</sup>, 2007**

*NOTES:*

- *Correctness in English is NOT taken into account in the evaluation of the exam.*

- *Hint 1: "brief" and "short" indicate that 3~5 lines of answer are sufficient. The capability of understanding well the question and summarizing efficiently the important technical aspects is a "plus".*
- *Hint 2: Please be focused in your answer. If I ask "what is a motion vector" do not write a three-page description of a video codec.*

1. What is temporal redundancy in a video sequence? Why is it important in video coding? What is the technique that is used in video coding to exploit the temporal redundancy?
2. Provide a short explanation of the following terms:
  - (a) Blocking artifact
  - (b) Motion vector.
  - (c) Slice
  - (d) CIF format
  - (e) Payload format header
3. Draw a block diagram of a basic video **encoder** (such as the H.261 encoder) which is based on motion compensated prediction and DCT coding of the prediction error. The input to the encoder is a sequence of video frames, the output is the compressed video bit stream. Make visible (different color, or thicker line) one part of the encoder where a coding error is introduced. Explain briefly what happens there.
4. Why do we normally include a decoder loop in a video encoder? .What is its role? What would happen if it would not be used?
5. What is "progressive downloading"? How does an audio/video file need to be built in order to be usable for progressive download?