

Exam: October 11th, 2005

NOTES:

- Answers in English are preferred, and correctness in English is *NOT* taken into account in the evaluation of the exam.
- Hint: "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".

1. What is the difference between *size* and *resolution* of an image or a video frame?
2. What are the kinds of redundancy that are exploited in order to achieve compression in standard video coding technologies? Describe briefly at least two of them.
3. Provide a short explanation of the following terms:
 - (a) Chrominance
 - (b) Motion vector search area
 - (c) Picture start code (in H.261)
 - (d) QCIF format
 - (e) File format
4. 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) the part of the encoder diagram that constitute the *decoder loop*.
Bonus question: Why is a decoding loop needed also in the encoder?
5. What is the *error propagation* in video coding? How can it be controlled and reduced?