SGN-5406 Virtual Reality

Answer shortly but sufficiently in English. Less than one page for each question is enough!

Answer all 5 questions. Good luck for the exam.

Write clearly to each paper:
- SGN-5406 Virtual Reality
- Date
- Name
- Student number

1. Explain shortly the following terminology. 1-2 sentences are enough. (12 points)
   a) Registration
   b) HRTF
   c) Accommodation of the eye
   d) Field of Regard
   e) Autostereoscopic display
   f) Nanopresence

2. When viewed on two-dimensional displays, such as computer monitors, even very simple virtual environments can give the user a compelling sense of depth. Discuss the depth cues that a person might employ to formulate a three dimensional interpretation of the scenes presented in the two pictures shown below:
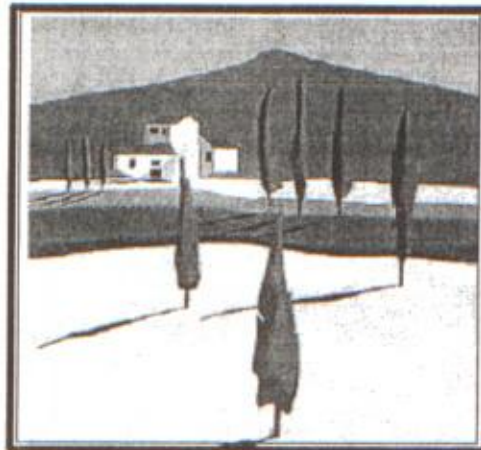
(i)   (ii)

In your discussion, highlight any conflicting depth cues that may be present in either of the two pictures. If the picture in (ii) was rendered in colour, what further aid to depth perception might be apparent? (12 points)

3. Sketch a fitness VR simulator that fitness centers might like to buy. It should provide a nice and exciting environment for the fitness biker or runner in the fitness center. The purpose is to make training more pleasant and more efficient. What kind of a system would you propose and what would be the price of it? Describe the main technical components and the overall structure of the system. (12 points)

4. Explain the basic principles and properties of 3D tracking methods for VR. How do they differ in performance and pricing? What is the best tracking method, or is there one? (12 points)

5. Answer shortly. 1-2 sentences are enough. (12 points)
   a) What does "augmented reality" mean?
   b) What are the advantages and disadvantages of an exoskeleton tracker?
   c) What is immersion?
   d) What are the three basic principles of human hearing for sensing the direction of sound?
   e) How wide is human field of view? How about the area of stereoscopic view? How does narrow or wide field of view affect on simulator sickness?
   f) What is tracker drift?