

**CS-134**  
**PROFESSIONAL ISSUES AND SOFTWARE ENGINEERING**  
*Attempt 2 questions out of 3*

**Question 1**

- (a) Describe the utilitarian ethical viewpoint. How does the deontological viewpoint differ from it?  
**[8 Marks]**
- (b) A local health centre has just purchased 100 mobile heart monitors. A patient wears the monitor and it alerts the centre if they are likely to suffer heart problems. There are too few monitors for all the patients that might benefit from one. Some patients are young, others old; some have children, others are single; some work, others are unemployed. Using a utilitarian perspective, discuss which patients should have priority.  
**[8 Marks]**
- (c) Outline John Rawls' *Theory of Justice*. How can knowledge of this help software designers and engineers to create better systems?  
**[4 Marks]**
- (d) Professional organisations for software developers such as the British Computer Society (BCS) and the Association for Computing Machinery (ACM) have developed a Code of Conduct for their members. What do such codes contain and what purposes do they serve?  
**[5 Marks]**

**Question 2**

- (a) “*Sharing music and video with people over the Internet isn't wrong. Everyone does it these days.*” Do you agree or disagree with this statement? Justify your position.  
**[8 Marks]**
- (b) Discuss the approaches that might be taken by governments and organisations in attempts to limit the sharing of electronic media. For each approach you identify, discuss how effective it is and whether it is beneficial for society as a whole.  
**[8 Marks]**
- (c) Some countries are using technology to allow prisoners to serve their sentence in the community instead of being locked in gaol.
- Describe the components of such a system.
  - In what ways might the system be used to ensure the prisoner was penalised for their crime?
  - List the positive and negative aspects to this approach.
- [9 Marks]**

### Question 3

- (a) Define *open source software*. **[2 marks]**
- (b) Draw a *simple* version of the spiral model software development life cycle, emphasising the four quadrants and their role. Briefly describe the advantages of this model compared to the waterfall model. **[7 marks]**
- (c) Briefly describe the characteristics of *agile software development* and its goals. In your answer name one example of an agile development method. **[3 marks]**
- (d) Contrast the priorities of agile software development against the goals of Boehm's spiral development model. Would you recommend Extreme Programming or the Spiral Development model for a small project with approximately ten programmers and designers working on a website? Justify your answer with the priorities of the two approaches. **[8 marks]**
- (e) You are asked to recommend whether a commercial project uses an 'open-source' philosophy. The developers want to ensure that they get a wide adoption of their new software system that provides peer-to-peer support for large databases. Again, justify your answer with the benefits and disadvantages of the open-source approach. **[5 marks]**