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

Question 1

(a) Explain what is meant by 'Intellectual Property'. Describe two advantages and two disadvantages of protecting intellectual property by means of a patent.

[5 marks]

(b) Draw a diagram showing the key stages in the Classical Waterfall Model. By reference to this diagram, describe the work that must be carried out at each stage and summarise any major difficulties that may arise as work proceeds.

[10 marks]

(c) Software testing forms a critical part of the software life-cycle. In connection with the testing process clearly answer each of the following:

   (i) Clearly describe the process of white-box testing. Your account should explain the concepts of 'equivalence partitioning' and 'boundary value analysis'.

   (ii) By means of an example, describe why a white-box testing strategy cannot normally be used to prove that a program is error-free.

[10 marks]

Question 2

(a) Describe three MAJOR problems associated with the development of the software requirements specification.

[5 marks]

(b) Draw a diagram showing the key stages employed in the Rapid Prototyping Model. Using this diagram as a basis answer each of the following:

  (i) Explain how this model may be used to support the Classic Waterfall Model.

  (ii) Describe two disadvantages associated with the Rapid Prototyping Model.

[10 marks]

(c) Software modularisation is critical in software development. Within this context answer each of the following:

  (i) Why is software modularisation so important?

  (ii) State two advantages and two disadvantages of software modularisation.

  (iii) What is meant by the term 'information hiding'?

[10 marks]

Question 3

(a) Although software does not wear out, it does have a finite life-span. Provide three reasons in support of this statement.

[**5 marks**]

(b) The concepts of Cohesion and Coupling are often used when modularising software. In this context answer the following:

   (i) Describe what is meant by Cohesion and Coupling.

  (ii) The degrees of Cohesion and Coupling may each be indicated by a range of characteristics. For both Cohesion and Coupling describe these characteristics.

[**10 marks**]

(c) Explain the meaning of the Cyclomatic Complexity metric and state three ways in which it may be measured from a flow graph.

[**5 marks**]

(d) Suppose that you are working in a software development company. The current software project on which you are working is running well behind schedule and some 100 end users are awaiting its release. So as to save time your boss suggests that the software testing process will be scaled down. Although extensive white-box testing will be performed, only minimal time will be spent on black-box testing. Write a letter to your boss indicating whether or not you agree with this decision. You must fully explain the reasons for your views.

[**5 marks**]