

PART A – Answer ALL questions

1. Critically analyse the characteristics of the prototyping paradigm that make it suitable for use in cases where an unsophisticated client wishes to have a system developed but is unsure of all of the system's requirements. (8 marks)
2. You have been asked to write the part of your company's quality manual for systems development. The first element that you have been asked to provide is a succinct definition of a software measurement programme. (8 marks)
3. Give an example of a way in which software measurement can be classified via a scale and, within that scale, provide an example of each type of classification. (8 marks)
4. In no more than 200 words describe the reasons why Myers' assertion that program testing was about proving that a program did *not* work was seen as so revolutionary at the time. (8 marks)
5. Define what is meant by the term 'software engineering' and identify three essential components of a software engineering programme (max. 60 words) (8 Marks)

PART B – Answer TWO Questions

6. a) It is possible to categorise CASE tools in many ways – provide three ways in which such tools are commonly categorised. (10 marks)

b) The early history of CASE tools was littered with many failures. It is generally now agreed that such failures were not caused by technical deficiencies but for "people reasons". Critically analyse the reasons why these early tools failed and, *providing examples from your own experience*, show why some modern tools are better able to satisfy the needs of their users. (20 marks)

7. a) A "well defined plateau on the path towards becoming a mature software organisation" is a description of each level of the Capability Maturity Model (CMM) provided by the Software Engineering Institute. Give reasons why they take this view and analyse whether it is justified. (12 marks)

b) In the following situations describe whether you would adopt or reject the CMM as a basis for improvement of your organisation, give your reasons. If you would reject CMM as the vehicle for improvement, suggest something that you believe would be more suitable. (18 Marks)

- i) You work for a large government department that has more than 1000 software developers. Each development group (consisting of 30 to 50 staff) operates its own interpretation of a set of government standards.
 - ii) Your company's main business is as an insurance broker. The company has less than 20 software developers, most development work centres around the tailoring of industry standard packages. Three years ago the company obtained (and still maintains) ISO 9000-3 certification.
8. It has been said that the software development manager's role is concerned primarily with the three "Ps" - Problem, Process and People.
 - a) Critically analyse why these three elements of a manager's responsibility are considered to be so important. (18 marks)
 - b) Which of the three "Ps" is acknowledged to be the most important, give reasons for your answer (12 marks)

9. a) Critically analyse whether the three terms “failure”, “fault” and “error ” are the same and if they are not, what each means. (10 Marks)
- b) A new colleague has recently joined your department and is unfamiliar with the Goal / Question / Measurement (GQM) paradigm. Provide a description of the paradigm (max 500 words, with a suitable example, to give your new colleague an overview of the subject. From your description and example the colleague should get a clear picture of the role of each of the three element – goals, questions and measurements. (20 Marks)