

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF APPLIED SCIENCES
COMPUTER SCIENCE DEPARTMENT
MAY 2001 EXAMINATIONS

SUBJECT: SOFTWARE PROJECT MANAGEMENT
CODE: SCS4204

INSTRUCTIONS TO CANDIDATES

This question paper consists of seven (7) questions.
Answer any five (5) questions.

3 HOURS

1. a) Zwana Lawe is the manager of a software development section. On Tuesday at 1000 hours he and his fellow section heads have a meeting with their group manager about the staffing requirements for the coming year. Zwana has already drafted a document "bidding" for staff. This is based on the work planned for his section for the next year. The document is discussed at the meeting. At 1400 hours Zwana has a meeting with his senior staff about an important project his section is undertaking. One of the programming staff has just had a road accident and will be in hospital for some time. It is decided that the project can be kept on schedule by transferring another team member from less urgent work to this project. A temporary replacement is to be brought in to do the less urgent work but this may take a week or so to arrange. Zwana has to phone the personnel manager about getting a replacement and the user for whom the less urgent work is being done to explain that it is likely to be delayed.
- Identify which of the eight management responsibilities Zwana was responding to at different points during his day. [8]
- b) What characteristic of a detailed design would enable the project manager to predict the amount of time spent on unit testing by a programmer?[6]
- c) A change in a program specification will normally be carried through into changes to the program design and then changed code. What other products may need to be modified. [6]
2. a) Classify each of the following metrics as a predictor metric or a result metric. For each result metric, suggest a predictor metric (not necessarily in the list) which might have been used to predict it.
- i) The number of person-hours expended on a project
 - ii) The number of IF statements in a program
 - iii) The size of the functional specification for a system

- iv) The number of defects in a program unit discussed during system testing.
- v) The complexity of a system design. [10]
- b) What is the cycle of project management software? [2]
- c) What features in Microsoft Project can you use to track the progress of your project? [8]
- 3. a) Explain why discounted cash flow techniques provide better criteria for project selection than net profit or return on investment. [5]
- b) Calculate the net present value (NPV) for each of the projects A, B and C shown on the table below using each of the discount rates 8%, 10% and 12%. For each of the discount rates, decide which is the best project. What can you conclude from these results? [10]

YEAR	PROJECT A (\$000)	PROJECT B (\$000)	PROJECT C (\$000)
0	-8000	-8000	-10000
1	4000	1000	2000
2	4000	2000	2000
3	2000	4000	6000
4	1000	3000	2000
5	500	9000	2000
6	500	-6000	2000
NET PROFIT	4000	5000	6000

- c) Social loafing is a problem that students often encounter when carrying out group assignments. What steps can participants in a group take to encourage team members to 'pull their weight' properly? [5]
- 4. a) Why is it important to list the assumptions made by the developer in producing the project plan? [4]
- b) For each assumption listed below, give one good reason why it is important for it to be documented, i.e. what impact could it have on the course of the project?
 - i) The minicomputer which will be supplied by the customer for developmental activities will be the same in every respect as the minicomputer on which the software will be installed.

- ii) All liaison with the customer staff for the purposes of requirements analysis will be with the same designated person, unless extreme circumstance occur such as staff leaving the customers employment.
 - iii) The customer will use the program design language chosen by the developer for all software, which is produced by the customer but is intended to be maintained by the developer. [2]
- c) A Program is to extract yearly salaries from a college payroll file, and hours taught on each course by each member of staff and the details of courses from two files maintained by the time-tabling system. The program will calculate the staff costs for each course and put the results into a computer file, which will then be read by the main accounting system. The program will also produce a report showing for each course the hours taught by each member of staff and the cost of these hours. Calculate the Albrecht function points for this subsystem assuming that the report is complex, but that all other elements are of average difficulty. [4]
5. a) A programmer working on a project has written the first 250 lines for a Cobol program that is estimated to require 500 lines of code. Why is it unreasonable to assume that the programming task is 50% complete? Can you make any estimate of how complete it might be? [6]
- b) A new analyst/programmer is to be recruited. The intention is to recruit someone who already has some experience.
- Make a list of the types of activities that the analyst/programmer should be capable of carrying out that can be used as the basis for job specification. [8]
- c) What in your view would be the most appropriate management style when dealing with the following subordinates?
- i) A former member of a local authority who has dealt with a college payroll for several years and who has been employed by the college to set up and manage a new payroll system.
 - ii) A new trainee analyst/programmer who has just joined a software company.
 - iii) A very experienced analyst/programmer in their 40s, who was recruited into the software development some time ago from the accounts department and who has been dealing with system support for the old maintenance accounting system that is now being revised. [6]

6. a) Identify specific instances in a software development environment where the requirements about the control of equipment, the recording of the testing status of all components, and the correct handling, storage, packaging and delivery of the product would be relevant. What procedures would apply in a software environment in relation to these requirements? [9]
- b) Why are low-level details, such as who is to carry out detailed design and in what order program units are to be implemented, not considered at the outline planning. [5]
- c) Why is a software project manager at a disadvantage when it comes to the initial planning of a project compared to a project manager in other engineering disciplines? [6]
7. a) List the products created by the Step Wise Planning Process [8]
- b) Draw an activity network using CPM conversions for each of the following projects:
- i) getting married
 - ii) choosing and purchasing a desktop computer
 - iii) organising and carrying out a survey of user's opinions of an information system [12]

END OF QUESTION PAPER

