UNIVERSITY OF EXETER IN CORNWALL

CAMBORNE SCHOOL OF MINES

EUROPEAN MINING COURSE

FINAL EXAMINATIONS

PROJECT MANAGEMENT

MODULE M067

March 2005 **3 HOURS**

Answer question 1 and any 3 other questions. Question 1 is compulsory.

1. You are the Project Manager for the construction of a skid mounted pump.

   The attached planning schedule is based upon the following task (activity) weightings. The plan is based upon an 8 hour working day and a 5 day working week:

Fabricate Skid:	320 man hours (welders)
Pre-Fabricate Pipework:	480 man hours (welders)
Install Pump:	32 man hours (fitters)
Install Motor:	32 man hours (fitters)
Install Pipework:	720 man hours (welders)
Install Cables:	352 man hours (electricians)
Install Instruments:	120 man hours (fitters)
Paint:	160 man hours (painters)
Test:	80 man hours (technicians)

   The man-hour costs are as follows:

Welders -	£16 per hour
Fitters -	£18 per hour
Electricians -	£21 per hour
Painters -	£11 per hour
Technicians -	£25 per hour

   (a) Produce the planned progress curve based upon man hours. (5 marks)

Q.1 cont'd over .....

Q.1 cont'd .....

(b) It is now 24 days into the project and your internal progress report reads as follows:

Activity	Hours Earned	Hours Spent
Fabricate Skid	320	324
Pre-fabricate pipework	472	486
Install Pump	32	26
Install Motor	32	29
Install pipework	432	402
Install cables	42	42

(i) Quantify actual progress and relate this to planned progress in terms of man hours. Estimate the completion date if the remaining work proceeds to schedule. (6 marks)

(ii) What concerns might you have about the work, and why? (3 marks)

(iii) Quantify the expenditure on labour to date, relative to the planned expenditure on labour to date and relative to the total project budget for labour. (6 marks)

(iv) If an earlier completion date was now required, suggest ways in which the remaining work could be accelerated in order to improve the completion date. Describe the potential consequences of your suggestions. (5 marks)

2. (a) Describe the process of producing a planning schedule for a complex, multi-disciplinary project. (5 marks)

(b) Explain the process by which the progress of a complex, multi-disciplined project is monitored. (5 marks)

(c) Define Critical Path Analysis and explain how it is used as a project management tool. (5 marks)

(d) Define each of the following terms in the context of project planning:

(i) float
(ii) milestone
(iii) logic link
(iv) S-curve (4 marks)

(e) Produce a list of suitable headings to be included in a weekly project report for a large scale construction project and describe the nature of the information that would be reported under each heading. (6 marks)

Over / ....

3. (a) Describe the responsibilities of a project manager in the context of a construction project. (4 marks)

(b) Outline an appropriate procedure for the receipt of "free issue" equipment and material. (2 marks)

(c) Define "Force Majeure". (1 mark)

(d) Describe the purpose and content of a mobilisation plan. (5 marks)

(e) Define the term "scope of work". (3 marks)

(f) Describe the process of compiling a project budget for a complex construction project with a well defined scope of work. (5 marks)

(g) Identify the potential consequences of a poorly defined scope of work. (5 marks)

4. (a) Which stage of a construction project is most likely to be inefficient in terms of man-hours and why? (3 marks)

(b) Outline the reasons that a project cost report could be misleading. (2 marks)

(c) Produce a list of key characteristics that a likely to be found in a successful project manager. (3 marks)

(d) A project manager should make a visit to a proposed construction site well in advance of mobilisation. Describe the purpose of this visit. (4 marks)

(e) Describe the monitoring of the engineering design phase of a complex construction project for both quality and progress. (4 marks)

(f) Outline the quantitative methods would you use for the monitoring of safety on a project and describe how these measures could be used to promote safety performance amongst contractors. (3 marks)

(g) Contrast the planning of construction activities with the planning of commissioning activities and describe the difficulties that can arise as a result when a project involves the building of a structure containing dispersed systems. (4 marks)

(h) Identify 2 circumstances that would justify a change to a contractual completion date. (2 marks)

Over / ....

PROJECT MANAGEMENT

5. (a) Produce a list of factors that can contribute significant risk to a project and characterise them as technical, contractual/commercial or financial. (3 marks)

(b) A mineral processing company is considering the construction of a new processing plant. Discuss the factors that should be considered when assessing the amount of technical risk that the company is taking with this project. (5 marks)

(c) Outline the reasons that military projects tend to result in more technical innovation than purely commercial projects. (3 marks)

(d) List the main types of contract pricing in order of increasing risk to the contractor and identify the circumstances in which each is appropriate. (3 marks)

(e) You are engaging a contractor to perform the construction phase of a major project. What measures might you take to limit the financial risks arising from the possible non-performance of the contractor? (3 marks)

(f) You have been appointed as the Project Manager for a contracting company and have been assigned to manage the tender for a major construction project. Your company is experienced in work of this nature and the scope of work is clearly defined. Describe the factors that you would take into account when determining the price you will tender. (8 marks)

6. (a) Identify the potential consequences of a poorly planned project schedule. (5 marks)

(b) You are the project manager for a mineral processing company seeking to engage a contractor for the design and construction of a new processing plant.

(i) Produce a list of requirements that you would place upon the contractor to assure the quality of the work and explain the purpose of each requirement. (6 marks)

(ii) Discuss the effect that different payment terms may have on the lump sum price for this project. (4 marks)

(c) A construction contractor is bidding for a contract on a unit rate basis. What may the contractor do to maximise his cash flow in this situation and what risks may he be taking in order to achieve this? (4 marks)

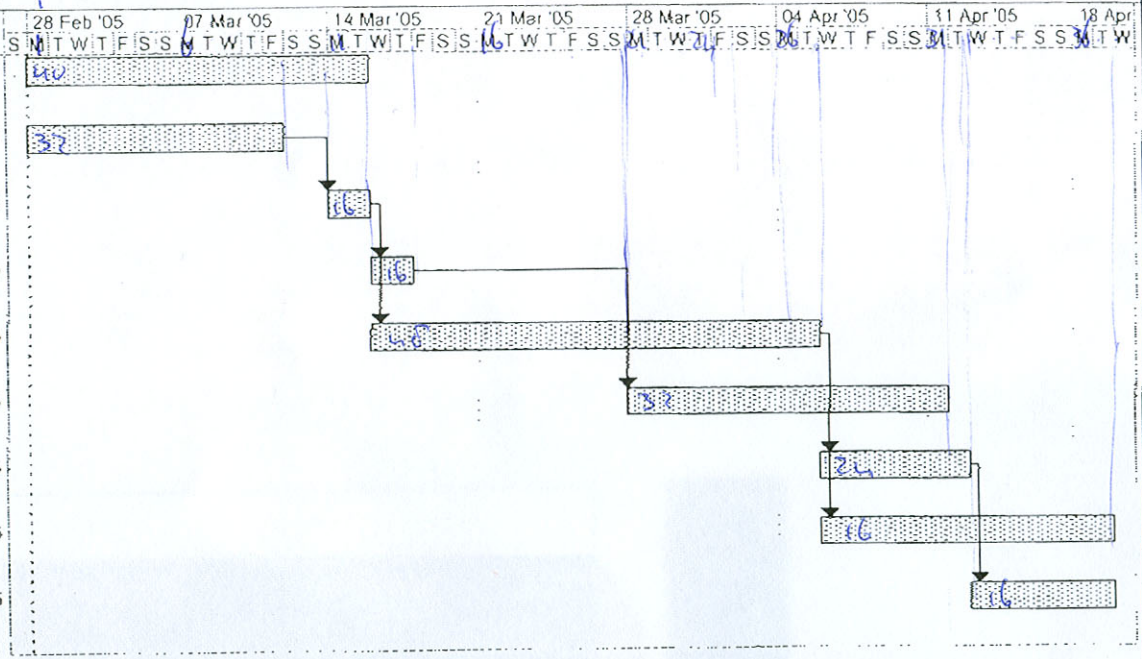
(d) You are project managing a tender for the performance of a high technology construction project in a remote area of a third world country. You have experience in projects of this nature but not of the country where the work is to be performed.

Discuss the additional information you would seek and measures you would take before submitting a tender for this project. (6 marks)

Examiner: **N Wood**
Accessories: **Graph Paper**

MSc - Project Management - Attachment to Question 1

ID	Task Name	Duration	Start	Finish
1	Pre-fabricate pipework	12 days	Mon 28/02/05	Tue 15/03/05
2	Fabricate Skid	10 days	Mon 28/02/05	Fri 11/03/05
3	Install Pump	2 days	Mon 14/03/05	Tue 15/03/05
4	Install Motor	2 days	Wed 16/03/05	Thu 17/03/05
5	Install Pipework	15 days	Wed 16/03/05	Tue 05/04/05
6	Install Cables	11 days	Mon 28/03/05	Mon 11/04/05
7	Install Instruments	5 days	Wed 06/04/05	Tue 12/04/05
8	Paint	10 days	Wed 06/04/05	Tue 19/04/05
9	Test	5 days	Wed 13/04/05	Tue 19/04/05



Project: MSC Skid Pump Project
Date: Mon 28/02/05

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline