UNIVERSITY OF EXETER IN CORNWALL

CAMBORNE SCHOOL OF MINES

EUROPEAN MINING COURSE

FINAL EXAMINATIONS

FINANCE AND PROJECT APPRAISAL

MODULE M069

March 2005 **3 HOURS**

Answer questions 1 plus any 3 other questions. Question 1 is compulsory.

1. (a) Distinguish between long term, medium term and short term sources of a company's capital. (2 marks)

(b) Define gearing in terms of a company's capital structure and discuss the effect of gearing on a company's performance. (4 marks)

(c) A company has earnings per share of 22.72p and pays a dividend of 7.1p per share.

(i) Calculate the dividend cover. (1 mark)

(ii) If an investor is looking for a yield of 5%, at what price would the investor be willing to buy share in this company? (2 marks)

(iii) If the company has 152 million shares in issue, and the return on capital employed is 25%, what would be the total net value of capital employed shown in the balance sheet? (3 marks)

(d) Explain the purpose of depreciation and illustrate the difference between the straight line method and the reducing balance method. (5 marks)

(e) Define the term "Current Ratio" and explain its use in the analysis of a company's balance sheet. Compare use of the Current Ratio with the use of the Quick Ratio. (4 marks)

(f) Investing in more sophisticated machinery will often enable a company to reduce its marginal costs whilst increasing its capital employed. Discuss the impact of such an investment on the potential profitability of a company. (4 marks)

Over / ....

2. (a) Your company is upgrading its site utilities, a labour intensive project that involves digging trenches for upgraded water supplies and laying new drains. On-site roads are being re-made and an earth bund is being constructed.

The Project Director is concerned that the Project Manager does not have full control of the project as with the project now approximately half complete, he is forecasting a cost over-run of 5.59% on direct labour. His last forecast, just 1 week previously stated that labour costs would be below budget.

A copy of the current man-hour report from the project is attached. Direct labour is valued at £19 per hour.

Give your assessment of the Project Manager's cost forecast. If you do not agree with it, produce your own forecast for the total direct labour cost to completion and explain why your forecast differs from that of the Project Manager.

(20 marks)

(b) Before embarking upon this project, the company had received a quotation from a potential subcontractor to carry out the work. The quotation had given a lump sum price of £259,950 for the work. However, the company chose instead to perform the work with in-house labour seconded from its maintenance department under the project management of a newly appointed graduate engineer.

Evaluate the subcontractor's price against the company's planned in-house costs for the project.

(5 marks)

Over / ....

3. (a) Characterise the factors that contribute technical risk to a project. Describe the pressures that favour the acceptance of technical risk and contrast these with the pressures that favour risk avoidance. Illustrate your answer with examples of environments that favour extremes of technical risk and extremes of technical conservatism. (8 marks)

(b) A commercial organisation is considering a high cost development project that is judged to have a high degree of technical risk. The development will take 5 years to complete but if successful will result in the organisation securing a significant reduction in its operating costs giving a substantial commercial advantage over its competitors.

Discuss what should be taken into account in assessing the viability of the proposed project. In the event that a decision is taken to proceed with the project, describe the most appropriate options for raising the very large amount of capital that would be required to fund the project. (9 marks)

(c) A fuel distribution company is considering the construction of a plant to produce biodiesel to supply the UK market. The proposed plant would have a production capacity of 12,000 tonnes per year and would take around 3 years to plan and build. Current biodiesel production in the UK amounts to 20,000 tonnes per year, with a further 720,000 tonnes of annual capacity already under construction. When this new capacity is complete, the output of biodiesel in the UK will amount to around 1.4% of the total diesel market. It is anticipated that biodiesel will displace sales of conventional diesel.

Discuss the factors that the company should consider in making its decision on the viability of the project. (8 marks)

Over / ....

4. (a) Outline the elements that make up a free market. (3 marks)

(b) In a free market, describe the factors that govern the price of a commodity and why the price of a commodity changes over time. (3 marks)

(c) In the western world, the majority of homes now have access to the internet and consumers are increasingly gaining confidence in internet shopping. With reference to the theory of markets, predict the impact that internet shopping will have on traditional retailers over the next 5 years. (9 marks)

(d) A company making toasters has 2 manufacturing plants.

One plant is in western Europe and is highly automated. The overhead and depreciation costs of the equipment amount to £200,000 per year for each machine. Each machine requires 1 operator at a cost of £9 per hour and produces 1,125 toasters in a working week of 37.5 hours. The power to run the machine costs £1 per hour and material costs amount to £1.25 per toaster.

The other plant is in a developing country and has almost no automation. Each toaster requires materials costing £1.00 and 2 hours of labour at £1.10 per hour including overheads. The cost of shipping the toasters to Western Europe for sale is £0.15 per toaster. However, labour rates are rising at 20% per year as economic development in the country gathers pace.

The company wants to increase capacity to satisfy a growing demand for toasters in Western Europe. Produce a plan to increase capacity for optimum profit. (10 marks)

Over / ....

5. (a) Outline the differences between a long term supply decision and a short term supply decision. (2 marks)

(b) A company produces a commodity for sale into a free market. The fixed costs of running the production plant amount to £15,000 per week and when fully manned the plant produces 84 tonnes of the commodity per hour. Each man employed in the production plant contributes 4 tonnes of production in an 8-hour working day. Each man costs £96 per standard working day on the dayshift. The plant can also be worked during the nightshift at a cost of £240 per man per shift. Overtime can be worked up to a maximum of 4 hours per shift at a labour cost of double the hourly rate for the shift. Doubling the potential production capacity would require a 12 month construction project and would increase the total fixed costs (including the existing capacity) to £25,000 per week.

(i) Below what selling price for the commodity should the decision be taken to close the plant temporarily? (2 marks)

(ii) Calculate the range of selling prices that would justify operating the plant in each potential combination of shifts and overtime working. (8 marks)

(iii) At what forecast long term selling price should the decision be taken to increase the capacity of the plant? (3 marks)

(c) A company producing fishing rods has just 1,200 hours of production capacity on its filament winding machine available in the next month. The variable cost of running the filament winding machine is $1.40 per minute. Additional capacity can be purchased from a subcontractor. The company receives 2 purchase orders from customers for delivery by the end of next month. The first order is for 12,000 spinning rods at a price of $22.50 each and the second order is for 7,500 beach rods at a price of $31.20 each.

The production data for each type of rod is as follows:

	Spinning Rod	**Beach Rod**
Min. in-house batch quantity	20	12
Time on filament winding machine	5.8 mins	9.2 mins
Material cost	$2.10	$3.85
Min. subcontract batch quantity	150	100
Subcontract cost	$11.55	$17.05

(i) Determine the maximum level of marginal profit that can be gained from these 2 orders. (8 marks)

(ii) Identify the gross margin obtained for each combination of product and manufacturer. (2 marks)

Over / ....

6. Three brothers each inherit £250,000.

The first brother invests his money for 5 years in preference shares issued by a long established property company listed on the London Stock Exchange. The preference shares bear an interest rate of 10% per annum, payable at the end of each year, and were purchased at a cost of 91p per £1.00 nominal value immediately after the payment of a dividend. The interest is reinvested in a bank savings account at an interest rate of 5% per year. After 5 years, immediately after the receipt of the dividend, the preference shares are sold at a price of 97p per £1.00 nominal value.

The second brother invests his money in warrants issued by a small, recently formed, Australian mining company. The warrants were purchased at a cost of 20p each and gave the right to purchase the underlying ordinary shares at the price of 100p each. The underlying share price at the time of purchase was 75p and the warrants were exercisable on a fixed date just over 5 years into the future. After 5 years, the underlying share price had a value of 186p.

The third brother bought a fleet of 20 hire cars at a cost of £12,500 each. The rental income achieved by each car averaged £9,500 per year. The running costs of each car amounted to £1,400 per year (excluding depreciation) and the cars are replaced each year, achieving a selling price of £8,200 . Any profits were reinvested in additional cars, with the balance being invested in a bank account bearing 5% interest per year.

Compare the levels of risk taken by each of the brothers over the 5 year period and assess the adequacy of the profits achieved.

(25 marks)

Examiner: N Wood

Question 2 - data

Site Utilities Improvement Project

Project Progress Data - Direct Man-Hour Report:

Task No.	Total Planned Hours	Planned Hours to Date	Earned Hours	Recorded Hours
1	140	140	140	144
2	360	360	360	346
3	320	320	320	304
4	750	720	740	732
5	750	720	660	656
6	800	704	698	696
7	420	344	360	352
8	900	720	750	752
9	60	42	38	68
10	110	72	60	60
11	820	492	506	528
12	1200	600	606	712
13	920	405	392	492
14	1050	420	362	444
15	840	277	266	282
16	1100	220	280	328
17	720	72	80	80
18	600	48	0	0
19	510	0	4	16
20	620	0	0	0
21	350	0	0	0
22	280	0	0	0
	13622	6676	6652	6992

Standard Man-hour cost = £19/hr.

Critical Path Tasks: 1 > 4 > 8 > 12 > 14 > 20 > 22