Questions

LEARNING MEDIA

ACCA examiner's answers

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FINANCIAL MANAGEMENT FUNCTION

Questions 1 and 2 cover Financial Management Function, the subject of Part A of the BPP Study Text for Paper F9.

1 ABC Co **45 mins**

Summary financial information for ABC Co is given below, covering the last two years.

	Current year	*Previous year*
	€'000	€'000
Revenue	74,521	68,000
Cost of sales	28,256	25,772
Salaries and wages	20,027	19,562
Other costs	11,489	9,160
Profit before interest and tax	14,749	13,506
Interest	1,553	1,863
Tax	4,347	3,726
Profit after interest and tax	8,849	7,917
Dividends payable	4,800	3,100
Shareholders' funds	39,900	35,087
Long term debt	14,000	17,500
Number of shares in issue ('000)	14,000	14,000
P/E ratio (average for year)		
ABC Co	14.0	13.0
Industry	15.2	15.0

Required

(a) Using profitability, debt, and shareholders' investment ratios, discuss the performance of ABC Co over the last two years. **(12 marks)**

(b) Explain why how accounting profits may not be the best measure of a company's achievements. **(5 marks)**

(c) Discuss how good corporate governance procedures can help to manage under-performance in private sector companies. **(8 marks)**

(Total = 25 marks)

2 RZP Co (FMC, 6/05) **45 mins**

As assistant to the Finance Director of RZP Co, a company that has been listed on the London Stock Market for several years, you are reviewing the draft Annual Report of the company, which contains the following statement made by the chairman:

'This company has consistently delivered above-average performance in fulfilment of our declared objective of creating value for our shareholders. Apart from 20X2, when our overall performance was hampered by a general market downturn, this company has delivered growth in dividends, earnings and ordinary share price. Our shareholders can rest assured that my directors and I will continue to deliver this performance in the future'.

The five-year summary in the draft Annual Report contains the following information:

Year	*20X4*	*20X3*	*20X2*	*20X1*	*20X0*
Dividend per share	2.8p	2.3p	2.2p	2.2p	1.7p
Earnings per share	19.04p	14.95p	11.22p	15.84p	13.43p
Price/earnings ratio	22.0	33.5	25.5	17.2	15.2
General price index	117	113	110	105	100

A recent article in the financial press reported the following information for the last five years for the business sector within which RZP Co operates:

Share price growth	average increase per year of 20%
Earnings growth	average increase per year of 10%
Nominal dividend growth	average increase per year of 10%
Real dividend growth	average increase per year of 9%

You may assume that the number of shares issued by RZP Co has been constant over the five-year period. All price/earnings ratios are based on end-of-year share prices.

Required

(a) Analyse the information provided and comment on the views expressed by the chairman in terms of:

(i) growth in dividends per share;
(ii) share price growth;
(iii) growth in earnings per share.

Your analysis should consider both arithmetic mean and equivalent annual growth rates. **(13 marks)**

(b) Calculate the total shareholder return (dividend yield plus capital growth) for 20X4 and comment on your findings. **(3 marks)**

(c) Discuss the factors that should be considered when deciding on a management remuneration package that will encourage the directors of RZP Co to maximise the wealth of shareholders, giving examples of management remuneration packages that might be appropriate for RZP Co. **(9 marks)**

(Total = 25 marks)

FINANCIAL MANAGEMENT ENVIRONMENT

Questions 3 and 4 cover Financial Management Environment, the subject of Part B of the BPP Study Text for Paper F9.

3 Tagna (FMC, 6/03, amended) 45 mins

Tagna is a medium-sized company that manufactures luxury goods for several well-known chain stores. In real terms, the company has experienced only a small growth in turnover in recent years, but it has managed to maintain a constant, if low, level of reported profits by careful control of costs. It has paid a constant nominal (money terms) dividend for several years and its managing director has publicly stated that the primary objective of the company is to increase the wealth of shareholders. Tagna is financed as follows:

	$m
Overdraft	1.0
10 year fixed interest bank loan	2.0
Share capital and reserves	4.5
	7.5

Tagna has the agreement of its existing shareholders to make a new issue of shares on the stock market but has been informed by its bank that current circumstances are unsuitable. The bank has stated that if new shares were to be issued now they would be significantly under-priced by the stock market, causing Tagna to issue many more shares than necessary in order to raise the amount of finance it requires. The bank recommends that the company waits for at least six months before issuing new shares, by which time it expects the stock market to have become strong-form efficient.

The financial press has reported that it expects the Central Bank to make a substantial increase in interest rate in the near future in response to rapidly increasing consumer demand and a sharp rise in inflation. The financial press has also reported that the rapid increase in consumer demand has been associated with an increase in consumer credit to record levels.

Required

(a) On the assumption that the Central Bank makes a substantial interest rate increase, discuss the possible consequences for Tagna in the following areas:

(i) sales;
(ii) operating costs; and,
(iii) earnings (profit after tax). **(10 marks)**

(b) Explain and compare the public sector objective of 'value for money' and the private sector objective of 'maximisation of shareholder wealth'. **(6 marks)**

(c) Outline the economic problems caused by monopoly and explain the role of government in maintaining competition between companies. **(9 marks)**

(Total = 25 marks)

4 Phoenix **45 mins**

Phoenix has carried on business for a number of years as a retailer of a wide variety of consumer products and it operates from a number of stores. In recent years the entity has found it necessary to provide credit facilities to its customers in order to maintain growth in revenue. As a result of this decision the liability to its bankers has increased substantially. Extracts from the financial statements for the year are provided below.

INCOME STATEMENTS FOR THE YEARS ENDED 30 JUNE

	20X7	*20X8*	*20X9*
	$m	$m	$m
Revenue	1,850	2,200	2,500
Cost of sales	(1,250)	(1,500)	(1,750)
Gross profit	600	700	750
Other operating costs	(550)	(640)	(700)
Profit from operations	50	60	50
Interest from credit sales	45	60	90
Interest payable	(25)	(60)	(110)
Profit before taxation	70	60	30
Income tax expense	(23)	(20)	(10)
Profit for the year	47	40	20

STATEMENTS OF FINANCIAL POSITION AT 30 JUNE

	20X7	20X8	20X9
	$m	$m	$m
Property, plant and equipment	278	290	322
Inventories	400	540	620
Trade receivables	492	550	633
Cash	12	12	15
	1,182	1,392	1,590
Share capital	90	90	90
Reserves	282	292	282
	372	382	372
Bank loans	320	520	610
Other interest bearing borrowings	200	200	320
Trade payables	270	270	280
Tax payable	20	20	8
	1,182	1,392	1,590

Other information

- Depreciation charged for the three years in question was as follows.

Year ended 30 June	*20X7*	*20X8*	*20X9*
	$m	$m	$m
	55	60	70

- The other interest bearing borrowings are secured by a floating charge over the assets of Phoenix. Their repayment is due on 30 June 20Y9.
- The bank loans are unsecured. The maximum lending facility the bank will provide is $630m.
- Over the past three years the level of credit sales has been:

Year ended 30 June	*20X7*	*20X8*	*20X9*
	$m	$m	$m
	300	400	600

The entity offers extended credit terms for certain products to maintain market share in a highly competitive environment.

Given the steady increase in the level of bank loans which has taken place in recent years, the entity has recently written to its bankers to request an increase in the lending facility. The bank is concerned at the steep escalation in the level of the loans and has requested an urgent meeting.

Required

(a) Using suitable ratios, analyse the information provided and recommend what action should be taken. **(12 marks)**

(b) Explain what is meant by the 'risk/return trade-off' and its relevance to the bank in assessing the request for further loan finance. **(5 marks)**

(c) A bank is an example of a financial intermediary. Explain the role of financial intermediaries and their usefulness to the private investor. **(8 marks)**

(Total = 25 marks)

WORKING CAPITAL MANAGEMENT

Questions 5 to 16 cover Working Capital Management, the subject of Part C of the BPP Study Text for Paper F9.

5 East Meets West Co — 45 mins

You are an accounting technician working at East Meets West Co, a company that manufactures and distributes clothing. You have estimated the following figures for the coming year:

Sales	$5,600,000
Average receivables	$506,000
Gross profit margin	25% on sales
Average inventories	
Finished goods	$350,000
Work in progress	$550,000
Raw materials	$220,000
Average payables	$210,000

Material costs represent 50% of the total cost of sales.

East Meets West Co imports most of its materials from overseas countries, especially Pernisia. The high inflation rates in Pernisia have meant that the company's cost of materials has risen rapidly over recent years. This has led to a significant deterioration in the company's margins, which, coupled with its increasing liquidity problems, is making the shareholders nervous.

Required

(a) Calculate the cash operating cycle, to the nearest day. **(6 marks)**

(b) Suggest four methods of reducing the length of the cash operating cycle. **(4 marks)**

(c) Discuss:

(i) The significance of trade payables in a firm's working capital cycle; and **(4 marks)**
(ii) The dangers of over-reliance on trade credit as a source of finance. **(4 marks)**

(d) Explain the general problems associated with inflation. **(7 marks)**

(Total = 25 marks)

6 JIT and EOQ — 45 mins

PS Co has an opportunity to engage in a just-in-time stock delivery arrangement with its main customer, which normally takes 90 days to settle accounts with PS Co. The customer accounts for 20% of PS Co's annual turnover of $20 million. This involves borrowing $0.5m on overdraft to invest in dedicated handling and transport equipment. This would be depreciated over five years on a straight-line basis. The customer is uninterested in the early payment discount but would be prepared to settle after 60 days and to pay a premium of 5% over the present price in exchange for guarantees regarding product quality and delivery. PS Co judges the probability of failing to meet these guarantees in any one year at 5%. Failure would trigger a penalty payment of 10% of the value of total sales to this customer (including the premium). PS Co borrows from the bank at 13%.

Required

(a) Calculate the improvement in *profits before tax* to be expected in the first trading year after entering into the JIT arrangement. Comment on your results. **(8 marks)**

(b) Suggest the benefits PS Co might expect to derive from a JIT agreement in addition to the benefits specified in the question. **(6 marks)**

(c) SP Co purchases many hundreds of components each year from external suppliers for assembling into products. It uses 40,000 units pa of one particular component. It is considering converting its purchasing, delivery and stock control of this item to a just-in-time system. This will raise the number of orders placed but lower the administrative and other costs of placing and receiving orders. If successful, this will provide the model for switching most of its inwards supplies on to this system. Details of actual and expected ordering and carrying costs are given in the table below.

	Actual	*Proposed*
Ordering cost per order (O)	\$100	\$25
Purchase cost per item (P)	\$2.50	\$2.50
Inventory holding cost (as a percentage of the purchase cost) (I)	20%	20%

To implement the new arrangements will require 'one-off' reorganisation costs estimated at \$4,000 which will be treated as a revenue item for tax purposes. The rate of corporation tax is 30% and SP can obtain finance at 12%. The effective life span of the new system can be assumed to be eight years.

Required

(i) Determine the effect of the new system on the Economic Order Quantity (EOQ).
(ii) Determine whether the new system is worthwhile in financial terms.

Note. EOQ is given by EOQ = $\sqrt{\frac{2C_0D}{C_H}}$. **(11 marks)**

(Total = 25 marks)

7 TNG Co (FMC, 6/05) 45 mins

TNG Co expects annual demand for product X to be 255,380 units. Product X has a selling price of \$19 per unit and is purchased for \$11 per unit from a supplier, MKR Co. TNG places an order for 50,000 units of product X at regular intervals throughout the year. Because the demand for product X is to some degree uncertain, TNG maintains a safety (buffer) inventory of product X which is sufficient to meet demand for 28 working days. The cost of placing an order is \$25 and the storage cost for Product X is 10 cents per unit per year.

TNG normally pays trade suppliers after 60 days but MKR has offered a discount of 1% for cash settlement within 20 days.

TNG Co has a short-term cost of debt of 8% and uses a working year consisting of 365 days.

Required

(a) Calculate the annual cost of the current ordering policy. Ignore financing costs in this part of the question. **(4 marks)**

(b) Calculate the annual saving if the economic order quantity model is used to determine an optimal ordering policy. Ignore financing costs in this part of the question. **(5 marks)**

(c) Determine whether the discount offered by the supplier is financially acceptable to TNG Co. **(4 marks)**

(d) Critically discuss the limitations of the Economic Order Quantity model as a way of managing inventory. **(4 marks)**

(e) Discuss the advantages and disadvantages of using just-in-time inventory management methods. **(8 marks)**

(Total = 25 marks)

8 PNP Co (FMC, 6/07) 45 mins

The following financial information relates to PNP Co for the year just ended:

	£'000
Turnover	5,242.0
Variable cost of sales	3,145·0
Inventory	603·0
Receivables	744.5
Payables	574.5

Segmental analysis of receivables

	Balance	*Average payment period*	*Discount*	*Bad debts*
	£			£
Class 1	200,000	30 days	1·0%	none
Class 2	252,000	60 days	nil	12,600
Class 3	110,000	75 days	nil	11,000
Overseas receivables	182,500	90 days	nil	21,900
	744,500			45,500

The receivable balances given are before taking account of bad debts. All sales are on credit. Production and sales take place evenly throughout the year. Current sales for each class of receivables are in proportion to their relative year-end balances before bad debts. The overseas receivables arise from regular export sales by PNP to the USA. The current spot rate is $1·7348/£ and the three-month forward rate is $1·7367/£.

It has been proposed that the discount for early payment be increased from 1·0% to 1·5% for settlement within 30 days. It is expected that this will lead to 50% of existing Class 2 receivables becoming Class 1 receivables, as well as attracting new business worth £500,000 in turnover. The new business would be divided equally between Class 1 and Class 2 receivables. Fixed costs would not increase as a result of introducing the discount or by attracting new business. PNP finances receivables from an overdraft at an annual interest rate of 8%.

Required

(a) Calculate the net benefit or cost of increasing the discount for early payment and comment on the acceptability of the proposal. **(9 marks)**

(b) Calculate the current cash operating cycle and the revised cash operating cycle caused by increasing the discount for early payment. **(4 marks)**

(c) Determine the effect of using a forward market hedge to manage the exchange rate risk of the outstanding overseas receivables. **(2 marks)**

(d) Identify and explain the key elements of a receivables management system suitable for PNP Co. **(10 marks)**

(Total = 25 marks)

9 Thorne Co (FMC, 12/05) 45 mins

Thorne Co values, advertises and sells residential property on behalf of its customers. The company has been in business for only a short time and is preparing a cash budget for the first four months of 20X6. Expected sales of residential properties are as follows.

	20X5	*20X6*	*20X6*	*20X6*	*20X6*
Month	December	January	February	March	April
Units sold	10	10	15	25	30

The average price of each property is $180,000 and Thorne Co charges a fee of 3% of the value of each property sold. Thorne Co receives 1% in the month of sale and the remaining 2% in the month after sale. The company has nine employees who are paid on a monthly basis. The average salary per employee is $35,000 per year. If more than 20 properties are sold in a given month, each employee is paid in that month a bonus of $140 for each additional property sold.

Variable expenses are incurred at the rate of 0.5% of the value of each property sold and these expenses are paid in the month of sale. Fixed overheads of $4,300 per month are paid in the month in which they arise. Thorne Co pays interest every three months on a loan of $200,000 at a rate of 6% per year. The last interest payment in each year is paid in December.

An outstanding tax liability of $95,800 is due to be paid in April. In the same month Thorne Co intends to dispose of surplus vehicles, with a net book value of $15,000, for $20,000. The cash balance at the start of January 20X6 is expected to be a deficit of $40,000.

Required

(a) Prepare a monthly cash budget for the period from January to April 20X6. Your budget must clearly indicate each item of income and expenditure, and the opening and closing monthly cash balances. **(10 marks)**

(b) Discuss the factors to be considered by Thorne Co when planning ways to invest any cash surplus forecast by its cash budgets. **(5 marks)**

(c) Discuss the advantages and disadvantages to Thorne Co of using overdraft finance to fund any cash shortages forecast by its cash budgets. **(5 marks)**

(d) Explain how the Baumol model can be employed to reduce the costs of cash management and discuss whether the Baumol cash management model may be of assistance to Thorne Co for this purpose. **(5 marks)**

(Total = 25 marks)

10 Velm Co (FMC, 6/03) 45 mins

Velm Co sells stationery and office supplies on a wholesale basis and has an annual turnover of $4,000,000. The company employs four people in its sales ledger and credit control department at an annual salary of $12,000 each. All sales are on 40 days' credit with no discount for early payment. Bad debts represent 3% of turnover and Velm Co pays annual interest of 9% on its overdraft. The most recent accounts of the company offer the following financial information:

Velm Co: Statement of Financial Position as at 31 December 20X2

	$'000	$'000
Non-current assets		17,500
Current assets		
Inventory of goods for resale	900	
Receivables	550	
Cash	120	
		1,570
		19,070
Equity and liabilities		
Ordinary shares	3,500	
Reserves	11,640	
		15,140
Non-current liabilities		
12% Debenture due 20Y0		2,400
Current liabilities		
Trade payables	330	
Overdraft	1,200	
		1,530
		19,070

Velm Co is considering offering a discount of 1% to customers paying within 14 days, which it believes will reduce bad debts to 2.4% of turnover. The company also expects that offering a discount for early payment will reduce the average credit period taken by its customers to 26 days. The consequent reduction in the time spent chasing customers where payments are overdue will allow one member of the credit control team to take early retirement. Two-thirds of customers are expected to take advantage of the discount.

Required

(a) Using the information provided, determine whether a discount for early payment of 1 per cent will lead to an increase in profitability for Velm Co. **(5 marks)**

(b) Discuss the relative merits of short-term and long-term debt sources for the financing of working capital. **(6 marks)**

(c) Discuss the different policies that may be adopted by a company towards the financing of working capital needs and indicate which policy has been adopted by Velm Co. **(7 marks)**

(d) Outline the advantages to a company of taking steps to improve its working capital management, giving examples of steps that might be taken. **(7 marks)**

(Total = 25 marks)

11 PCB Co 45 mins

PCB Co manufacture printed circuit boards for use in pocket calculators. It is now December 20X8. Since the year 20X5 business has been expanding very rapidly and the company has now encountered a liquidity problem, as illustrated by the most recent balance sheets reproduced below.

PCB Co Statement of Financial Position extracts

	As at 30 November 20X8	*As at 30 November 20X7*
	$	$
Non-current assets	308,000	264,000
Current assets		
Inventory	220,000	95,000
Receivables	210,000	108,000
Cash	Nil	1,750
	430,000	204,750
Current liabilities		
Bank	158,000	41,250
Trade payables	205,000	82,500
Net current assets	67,000	81,000
Capital and reserves		
Issued share capital	18,000	18,000
Reserves	357,000	327,000
Equity		
Shareholders' funds	375,000	345,000

Other information

(a) Sales for the year to 30 November 20X7 were $1.7 million, yielding a gross profit of $330,000, and a net profit before tax of $82,000.

(b) The tax rate on company profits is 30%.

(c) For the year ending 30 November 20X7 dividends of $35,000 were paid out.

(d) At the beginning of the year to 30 November 20X8 the company bought some new manufacturing equipment and recruited six more sales staff.

(e) Sales for the year to 30 November 20X8 were $3 million, with a gross profit of $450,000, and net profit before tax of $60,000.

(f) Dividends payable for the year to 30 November 20X8 amounted to $12,000.

Required

(a) Illustrating your answer with figures taken from the question, explain why it is not unusual for manufacturing companies to face a cash shortage when sales are expanding very rapidly. **(7 marks)**

(b) Explain why PCB Co has not increased its net profit, despite the large increase in sales between 20X7 and 20X8. **(5 marks)**

(c) How has the mix of funding used by PCB changed between the two years, and what are the implications of such changes in terms of investor and payable risks? **(7 marks)**

(d) Suggest ways in which PCB might seek to resolve its current funding problems, and avoid the risks associated with overtrading. **(6 marks)**

(Total = 25 marks)

12 Special Gift Suppliers (FMC, 12/01) 45 mins

Special Gift Suppliers Co is a wholesale distributor of a variety of imported goods to a range of retail outlets. The company specialises in supplying ornaments, small works of art, high value furnishing (rugs, etc) and other items that the chief buyer for the company feels would have a market. In seeking to improve working capital management, the financial controller has gathered the following information.

	Months
Average period for which items are held in inventory	3.5
Average receivables collection period	2.5
Average payables payment period	2.0

Required

(a) Calculate Special Gift Suppliers' funding requirement for working capital measured in terms of months. **(2 marks)**

In looking to reduce the working capital funding requirement, the financial controller of Special Gift Suppliers is considering factoring credit sales. The company's annual turnover is $2.5m of which 90% are credit sales. Bad debts are typically 3% of credit sales. The offer from the factor is conditional on the following.

1 The factor will take over the sales ledger of Special Gift Suppliers completely.

2 80% of the value of credit sales will be advanced immediately (as soon as sales are made to the customer) to Special Gift Suppliers, the remaining 20% will be paid to the company one month later. The factor charges 15% per annum on credit sales for advancing funds in the manner suggested. The factor is normally able to reduce the receivables' collection period to one month.

3 The factor offers a 'no recourse' facility whereby they take on the responsibility for dealing with bad debts. The factor is normally able to reduce bad debts to 2% of credit sales.

4 A charge for factoring services of 4% of credit sales will be made.

5 A one-off payment of $25,000 is payable to the factor.

The salary of the Sales Ledger Administrator ($12,500) would be saved under the proposals and overhead costs of the credit control department, amounting to $2,000 per annum, would have to be reallocated. Special Gift Suppliers' cost of overdraft finance is 12% per annum. Special Gift Suppliers pays its sales force on a commission only basis. The cost of this is 5% of credit sales and is payable immediately the sales are made. There is no intention to alter this arrangement under the factoring proposals.

Required

(b) Evaluate the proposal to factor the sales ledger by comparing Special Gift Suppliers' existing receivable collection costs with those that would result from using the factor (assuming that the factor can reduce the receivables collection period to one month). **(8 marks)**

(c) As an adviser to Special Gift Suppliers Co, write a report to the financial controller that outlines:

   (i) How a credit control department might function

   (ii) The benefits of factoring

   (iii) How the financing of working capital can be arranged in terms of short and long term sources of finance

In particular, make reference to:

(1) The financing of working capital or net current assets when short term sources of finance are exhausted

(2) The distinction between fluctuating and permanent current assets. **(15 marks)**

(Total = 25 marks)

13 Ulnad Co (Pilot paper) 45 mins

Ulnad Co has annual sales revenue of $6 million and all sales are on 30 days' credit, although customers on average take ten days more than this to pay. Contribution represents 60% of sales and the company currently has no bad debts. Accounts receivable are financed by an overdraft at an annual interest rate of 7%.

Ulnad Co plans to offer an early settlement discount of 1.5% for payment within 15 days and to extend the maximum credit offered to 60 days. The company expects that these changes will increase annual credit sales by 5%, while also leading to additional incremental costs equal to 0.5% of turnover. The discount is expected to be taken by 30% of customers, with the remaining customers taking an average of 60 days to pay.

Required

(a) Evaluate whether the proposed changes in credit policy will increase the profitability of Ulnad Co. **(6 marks)**

(b) Renpec Co, a subsidiary of Ulnad Co, has set a minimum cash account balance of $7,500. The average cost to the company of making deposits or selling investments is $18 per transaction and the standard deviation of its cash flows was $1,000 per day during the last year. The average interest rate on investments is 5.11%.

Determine the spread, the upper limit and the return point for the cash account of Renpec Co using the Miller-Orr model and explain the relevance of these values for the cash management of the company. **(6 marks)**

(c) Identify and explain the key areas of accounts receivable management. **(6 marks)**

(d) Discuss the key factors to be considered when formulating a working capital funding policy. **(7 marks)**

(Total = 25 marks)

14 PKA Co (12/07) **45 mins**

PKA Co is a European company that sells goods solely within Europe. The recently-appointed financial manager of PKA Co has been investigating the working capital management of the company and has gathered the following information:

Inventory management

The current policy is to order 100,000 units when the inventory level falls to 35,000 units. Forecast demand to meet production requirements during the next year is 625,000 units. The cost of placing and processing an order is €250, while the cost of holding a unit in stores is €0·50 per unit per year. Both costs are expected to be constant during the next year. Orders are received two weeks after being placed with the supplier. You should assume a 50-week year and that demand is constant throughout the year.

Accounts receivable management

Domestic customers are allowed 30 days' credit, but the financial statements of PKA Co show that the average accounts receivable period in the last financial year was 75 days. The financial manager also noted that bad debts as a percentage of sales, which are all on credit, increased in the last financial year from 5% to 8%.

Accounts payable management

PKA Co has used a foreign supplier for the first time and must pay $250,000 to the supplier in six months' time. The financial manager is concerned that the cost of these supplies may rise in euro terms and has decided to hedge the currency risk of this account payable. The following information has been provided by the company's bank:

Spot rate ($ per €):	1·998 ± 0·002
Six months forward rate ($ per €):	1·979 ± 0·004

Money market rates available to PKA Co:

	Borrowing	**Deposit**
One year euro interest rates:	6.1%	5.4%
One year dollar interest rates:	4.0%	3.5%

Assume that it is now 1 December and that PKA Co has no surplus cash at the present time.

Required

(a) Identify the objectives of working capital management and discuss the conflict that may arise between them. **(3 marks)**

(b) Calculate the cost of the current ordering policy and determine the saving that could be made by using the economic order quantity model. **(7 marks)**

(c) Discuss ways in which PKA Co could improve the management of domestic accounts receivable. **(7 marks)**

(d) Evaluate whether a money market hedge, a forward market hedge or a lead payment should be used to hedge the foreign account payable. **(8 marks)**

(Total = 25 marks)

15 FLG Co (6/08) **45 mins**

FLG Co has annual credit sales of \$4·2 million and cost of sales of \$1·89 million. Current assets consist of inventory and accounts receivable. Current liabilities consist of accounts payable and an overdraft with an average interest rate of 7% per year. The company gives two months' credit to its customers and is allowed, on average, one month's credit by trade suppliers. It has an operating cycle of three months.

Other relevant information:

Current ratio of FLG Co	1·4
Cost of long-term finance of FLG Co	11%

Required

(a) Discuss the key factors which determine the level of investment in current assets. **(6 marks)**

(b) Discuss the ways in which factoring and invoice discounting can assist in the management of accounts receivable. **(6 marks)**

(c) Calculate the size of the overdraft of FLG Co, the net working capital of the company and the total cost of financing its current assets. **(6 marks)**

(d) FLG Co wishes to minimise its inventory costs. Annual demand for a raw material costing \$12 per unit is 60,000 units per year. Inventory management costs for this raw material are as follows:

Ordering cost:	\$6 per order
Holding cost:	\$0·5 per unit per year

The supplier of this raw material has offered a bulk purchase discount of 1% for orders of 10,000 units or more. If bulk purchase orders are made regularly, it is expected that annual holding cost for this raw material will increase to \$2 per unit per year.

Required

(i) Calculate the total cost of inventory for the raw material when using the economic order quantity. **(4 marks)**

(ii) Determine whether accepting the discount offered by the supplier will minimise the total cost of inventory for the raw material. **(3 marks)**

(Total = 25 marks)

16 HGR Co (6/09) — 45 mins

The following financial information relates to HGR Co:

Statement of financial position at the current date (extracts)

	$000	$000	$000
Non-current assets			48,965
Current assets			
Inventory		8,160	
Accounts receivable		8,775	
		16,935	
Current liabilities			
Overdraft	3,800		
Accounts payable	10,200		
		14,000	
Net current assets			2,935
Total assets less current liabilities			51,900

Cash flow forecasts from the current date are as follows:

	Month 1	Month 2	Month 3
Cash operating receipts ($000)	4,220	4,350	3,808
Cash operating payments ($000)	3,950	4,100	3,750
Six-monthly interest on traded bonds ($000)		200	
Capital investment ($000)			2,000

The finance director has completed a review of accounts receivable management and has proposed staff training and operating procedure improvements, which he believes will reduce accounts receivable days to the average sector value of 53 days. This reduction would take six months to achieve from the current date, with an equal reduction in each month. He has also proposed changes to inventory management methods, which he hopes will reduce inventory days by two days per month each month over a three-month period from the current date. He does not expect any change in the current level of accounts payable.

HGR Co has an overdraft limit of $4,000,000. Overdraft interest is payable at an annual rate of 6·17% per year, with payments being made each month based on the opening balance at the start of that month. Credit sales for the year to the current date were $49,275,000 and cost of sales was $37,230,000. These levels of credit sales and cost of sales are expected to be maintained in the coming year. Assume that there are 365 working days in each year.

Required:

(a) Discuss the working capital financing strategy of HGR Co. **(7 marks)**

(b) For HGR Co, calculate:

(i) the bank balance in three months' time if no action is taken; and
(ii) the bank balance in three months' time if the finance director's proposals are implemented.

Comment on the forecast cash flow position of HGR Co and recommend a suitable course of action. **(10 marks)**

(c) Discuss how risks arising from granting credit to foreign customers can be managed and reduced. **(8 marks)**

(Total = 25 marks)

INVESTMENT APPRAISAL

Questions 17 to 32 cover Investment Appraisal, the subject of Part D of the BPP Study Text for Paper F9.

17 Preparation question: Investment appraisal

Rainbow Co, a medium-sized company specialising in the manufacture and distribution of equipment for babies and small children, is evaluating a new capital expenditure project. In a joint venture with another separate company, it has invented a remote controlled pushchair, one of the first of its kind on the market. It has been unable to obtain a patent for the invention, but is sure that it will monopolise the market for the first three years. After this, it expects to be faced with stiff competition.

The details are set out below.

(1) The project has an immediate cost of $2,100,000.

(2) Sales are expected to be $1,550,000 per annum for years 1 to 3, falling to $650,000 per annum for the two years after that. No further sales of the product are expected after the end of this five-year period.

(3) Cost of sales is 40% of sales.

(4) Distribution costs represent 10% of sales.

(5) 20% of net profits are payable to the joint venture partner the year after the profits are earned.

(6) The company's cost of capital is 5%.

Required

(a) Calculate the net present value of the project at the company's required rate of return.

Assume that all cash flows arise annually in arrears unless otherwise stated. Conclude whether the project is financially viable.

(b) Calculate the project's internal rate of return (IRR) to the nearest percent.

(c) Calculate the project's simple payback period. Assume all cash flows arise at the end of the year apart from the immediate investment costs.

18 Chromex Co **45 mins**

It is now June 20X8. Chromex Co manufactures bicycles for the UK and European markets, and has made a bid of $150 million to take over Bexell Co, their main UK competitor, which is also active in the German market. Chromex currently supplies 24% of the UK market and Bexell has a 10% share of the same market.

Chromex anticipates labour savings of $700,000 per year, created by more efficient production and distribution facilities, if the takeover is completed. In addition, the company intends to sell off surplus land and buildings with a balance sheet value of $15 million, acquired in the course of the takeover.

Total UK bicycle sales for 20X7 were $400 million. For the year ended 31 December 20X7, Bexell reported an operating profit of $10 million, compared with a figure of $55 million for Chromex. In calculating profits, Bexell included a depreciation charge of $0.5 million.

Note. The takeover is regarded by Chromex in the same way as any other investment, and is appraised accordingly.

Required

(a) 'Despite the theoretical limitations of the payback method of investment appraisal, it is the method most used in practice.'

Discuss this statement briefly. **(5 marks)**

(b) Assuming that the bid is accepted by Bexell, calculate the payback period (pre-tax) for the investment, if the land and buildings are immediately sold for $5 million less than the balance sheet valuation, and Bexell's sales figures remain static. **(3 marks)**

(c) Chromex has also appraised the investment in Bexell by calculating the present value of the company's future expected cash flows. What additional information to that required in (b) would have been necessary? **(5 marks)**

(d) Explain how and why the UK Government might seek to intervene in the takeover bid for Bexell. **(6 marks)**

(e) Suggest four ratios, which Chromex might usefully compute in order to compare the financial performance of Bexell with that of companies in the same manufacturing sector. You should include in your answer a justification of your choice of ratios. Briefly explain why it is important to base a comparison on companies in the same sector. **(6 marks)**

(Total = 25 marks)

19 Preparation question: NPV with inflation and tax

PQP Co is a wholesaler of specialist books which is keen to explore the financial implications of making a significant investment in equipment and the development of a website.

Due to the fast-changing nature of the equipment and the Internet software, PQP's management has set a project lifetime of three years, ie the equipment will be replaced at the end of 20X6 and a new website designed. €60,000 would be paid for the new equipment on 31 December 20X3. The supplier has agreed to pay €10,000 as a trade-in price in December 20X6.

PQP's estimated final sales for the current accounting year (which ends on 31 December 20X3) are €1,200,000. The company's costs behave in such a way that its contribution to sales ratio for 20X3 is expected to be 40% and its net margin 10%. A considerable proportion of PQP's total fixed costs are marketing expenses. The proposed project will lead to savings in this area. So, in 20X4 fixed costs (at 31 December 20X4 prices) will total €316,800.

Sales estimates are shown below.

	Total sales if no investment (at 31 December 20X3 prices)	*Total sales with investment (at 31 December 20X3 prices)*
	€	€
Year to 31 December 20X4	1,240,000	1,288,000
Year to 31 December 20X5	1,265,000	1,325,000
Year to 31 December 20X6	1,290,000	1,362,000

From 1 January 20X4 inflation will have the following effects on PQP's operations.

(i) Sales prices will increase by 5% per annum.
(ii) All costs (ie variable and fixed) will increase by 10% per annum.

The increase in sales will mean that PQP will carry an additional investment in working capital as follows (all at 31 December 20X3 prices).

20X3	An initial	€20,000
20X4	Another	€10,000
20X5	Reduced to	€15,000
20X6	Reduced to	€0

This investment will also be affected by inflation from 1 January 20X4, at the same annual rate as the variable and fixed costs, ie 10%.

The website would be designed and installed during the first four months of 20X4. It will cost €150,000 (at 20X4 prices) payable at the end of 20X4. The suppliers will be paid a retaining/advisory fee of €10,000 in both 20X5 and 20X6. These are at 31 December 20X4 prices and it is anticipated that, due to inflation, they will increase at the same rate as all other costs.

PQP has a nominal cost of capital of 10% and pays tax at an annual rate of 30% in the year profits are earned. It can claim capital allowances on a 25% reducing balance basis.

Required

Advise the management of PQP whether it should proceed with the proposed investment. Your recommendation should be supported by relevant workings and a calculation of NPV.

20 Charm Co (FMC, 6/06) **45 mins**

Charm Co, a software company, has developed a new game, 'Fingo', which it plans to launch in the near future. Sales of the new game are expected to be very strong, following a favourable review by a popular PC magazine. Charm Co has been informed that the review will give the game a 'Best Buy' recommendation. Sales volumes, production volumes and selling prices for 'Fingo' over its four-year life are expected to be as follows.

Year	*1*	*2*	*3*	*4*
Sales and production (units)	150,000	70,000	60,000	60,000
Selling price ($ per game)	$25	$24	$23	$22

Financial information on 'Fingo' for the first year of production is as follows:

Direct material cost	$5.40 per game
Other variable production cost	$6.00 per game
Fixed costs	$4.00 per game

Advertising costs to stimulate demand are expected to be $650,000 in the first year of production and $100,000 in the second year of production. No advertising costs are expected in the third and fourth years of production. Fixed costs represent incremental cash fixed production overheads. 'Fingo' will be produced on a new production machine costing $800,000. Although this production machine is expected to have a useful life of up to ten years, government legislation allows Charm Co to claim the capital cost of the machine against the manufacture of a single product. Capital allowances will therefore be claimed on a straight-line basis over four years.

Charm Co pays tax on profit at a rate of 30% per year and tax liabilities are settled in the year in which they arise. Charm Co uses an after-tax discount rate of 10% when appraising new capital investments. Ignore inflation.

Required

(a) Calculate the net present value of the proposed investment and comment on your findings. **(11 marks)**

(b) Calculate the internal rate of return of the proposed investment and comment on your findings. **(5 marks)**

(c) Discuss the reasons why the net present value investment appraisal method is preferred to other investment appraisal methods such as payback, return on capital employed and internal rate of return. **(9 marks)**

(Total = 25 marks)

21 Trecor Co (Pilot paper) **45 mins**

Trecor Co plans to buy a new machine to meet expected demand for a new product, Product T. This machine will cost $250,000 and last for four years, at the end of which time it will be sold for $5,000. Trecor Co expects demand for Product T to be as follows:

Year	*1*	*2*	*3*	*4*
Demand (units)	35,000	40,000	50,000	25,000

The selling price for Product T is expected to be $12.00 per unit and the variable cost of production is expected to be $7.80 per unit. Incremental annual fixed production overheads of $25,000 per year will be incurred. Selling price and costs are all in current price terms.

Selling price and costs are expected to increase as follows:

	Increase
Selling price of Product T:	3% per year
Variable cost of production:	4% per year
Fixed production overheads:	6% per year

Other information

Trecor Co has a real cost of capital of 5.7% and pays tax at an annual rate of 30% one year in arrears. It can claim capital allowances on a 25% reducing balance basis. General inflation is expected to be 5% per year.

Trecor Co has a target return on capital employed of 20%. Depreciation is charged on a straight-line basis over the life of an asset.

Required

(a) Calculate the net present value of buying the new machine and comment on your findings (work to the nearest $1,000). **(13 marks)**

(b) Calculate the before-tax return on capital employed (accounting rate of return) based on the average investment and comment on your findings. **(5 marks)**

(c) Discuss the strengths and weaknesses of internal rate of return in appraising capital investments. **(7 marks)**

(Total = 25 marks)

22 Preparation question: Sensitivity analysis

A company is considering a project with the following cash flows.

Year	*Initial investment*	*Variable costs*	*Cash inflows*	*Net cash flows*
	$'000	$'000	$'000	$'000
0	11,000			
1		(3,200)	10,300	7,100
2		(3,200)	10,300	7,100

Cash flows arise from selling 1,030,000 units at $10 per unit. The company has a cost of capital of 9%.

Required

(a) Calculate the NPV of the project.

(b) Measure the sensitivity of the project to changes in the following variables.

(i) Initial investment
(ii) Sales volume
(iii) Selling price
(iv) Variable costs
(v) Cost of capital

(c) Outline the weaknesses of sensitivity analysis.

23 Umunat Co (FMC, 12/04) 45 mins

Umunat Co is considering investing $50,000 in a new machine with an expected life of five years. The machine will have no scrap value at the end of five years. It is expected that 20,000 units will be sold each year at a selling price of $3.00 per unit. Variable production costs are expected to be $1.65 per unit, while incremental fixed costs, mainly the wages of a maintenance engineer, are expected to be $10,000 per year. Umunat Co uses a discount rate of 12% for investment appraisal purposes and expects investment projects to recover their initial investment within two years.

Required

(a) Explain why risk and uncertainty should be considered in the investment appraisal process. **(5 marks)**

(b) Calculate and comment on the payback period of the project **(4 marks)**

(c) Evaluate the sensitivity of the project's net present value to a change in the following project variables:

(i) sales volume;
(ii) sales price;
(iii) variable cost;

and discuss the use of sensitivity analysis as a way of evaluating project risk. **(10 marks)**

(d) Upon further investigation it is found that there is a significant chance that the expected sales volume of 20,000 units per year will not be achieved. The sales manager of Umunat Co suggests that sales volumes could depend on expected economic states that could be assigned the following probabilities:

Economic state	Poor	Normal	Good
Probability	0.3	0.6	0.1
Annual sales volume (units)	17,500	20,000	22,500

Calculate and comment on the expected net present value of the project. **(6 marks)**

(Total = 25 marks)

24 Duo Co (12/07) 45 mins

Duo Co needs to increase production capacity to meet increasing demand for an existing product, 'Quago', which is used in food processing. A new machine, with a useful life of four years and a maximum output of 600,000 kg of Quago per year, could be bought for $800,000, payable immediately. The scrap value of the machine after four years would be $30,000. Forecast demand and production of Quago over the next four years is as follows:

Year	*1*	*2*	*3*	*4*
Demand (kg)	1.4 million	1.5 million	1.6 million	1.7 million

Existing production capacity for Quago is limited to one million kilograms per year and the new machine would only be used for demand additional to this.

The current selling price of Quago is $8·00 per kilogram and the variable cost of materials is $5·00 per kilogram. Other variable costs of production are $1·90 per kilogram. Fixed costs of production associated with the new machine would be $240,000 in the first year of production, increasing by $20,000 per year in each subsequent year of operation.

Duo Co pays tax one year in arrears at an annual rate of 30% and can claim capital allowances (tax-allowable depreciation) on a 25% reducing balance basis. A balancing allowance is claimed in the final year of operation.

Duo Co uses its after-tax weighted average cost of capital when appraising investment projects. It has a cost of equity of 11% and a before-tax cost of debt of 8·6%. The long-term finance of the company, on a market-value basis, consists of 80% equity and 20% debt.

Required

(a) Calculate the net present value of buying the new machine and advise on the acceptability of the proposed purchase (work to the nearest $1,000). **(13 marks)**

(b) Calculate the internal rate of return of buying the new machine and advise on the acceptability of the proposed purchase (work to the nearest $1,000). **(4 marks)**

(c) Explain the difference between risk and uncertainty in the context of investment appraisal, and describe how sensitivity analysis and probability analysis can be used to incorporate risk into the investment appraisal process. **(8 marks)**

(Total = 25 marks)

25 SC Co (6/08) 45 mins

SC Co is evaluating the purchase of a new machine to produce product P, which has a short product life-cycle due to rapidly changing technology. The machine is expected to cost $1 million. Production and sales of product P are forecast to be as follows:

Year	*1*	*2*	*3*	*4*
Production and sales (units/year)	35,000	53,000	75,000	36,000

The selling price of product P (in current price terms) will be $20 per unit, while the variable cost of the product (in current price terms) will be $12 per unit. Selling price inflation is expected to be 4% per year and variable cost inflation is expected to be 5% per year. No increase in existing fixed costs is expected since SC Co has spare capacity in both space and labour terms.

Producing and selling product P will call for increased investment in working capital. Analysis of historical levels of working capital within SC Co indicates that at the start of each year, investment in working capital for product P will need to be 7% of sales revenue for that year.

SC Co pays tax of 30% per year in the year in which the taxable profit occurs. Liability to tax is reduced by capital allowances on machinery (tax-allowable depreciation), which SC Co can claim on a straight-line basis over the four-year life of the proposed investment. The new machine is expected to have no scrap value at the end of the four-year period.

SC Co uses a nominal (money terms) after-tax cost of capital of 12% for investment appraisal purposes.

Required

(a) Calculate the net present value of the proposed investment in product P. **(12 marks)**

(b) Calculate the internal rate of return of the proposed investment in product P. **(3 marks)**

(c) Advise on the acceptability of the proposed investment in product P and discuss the limitations of the evaluations you have carried out. **(5 marks)**

(d) Discuss how the net present value method of investment appraisal contributes towards the objective of maximising the wealth of shareholders. **(5 marks)**

(Total = 25 marks)

26 Rupab Co (12/08) 45 mins

Rupab Co is a manufacturing company that wishes to evaluate an investment in new production machinery. The machinery would enable the company to satisfy increasing demand for existing products and the investment is not expected to lead to any change in the existing level of business risk of Rupab Co.

The machinery will cost $2.5 million, payable at the start of the first year of operation, and is not expected to have any scrap value. Annual before-tax net cash flows of $680,000 per year would be generated by the investment in each of the five years of its expected operating life. These net cash inflows are before taking account of expected inflation of 3% per year. Initial investment of $240,000 in working capital would also be required, followed by incremental annual investment to maintain the purchasing power of working capital.

Rupab Co has in issue five million shares with a market value of $3.81 per share. The equity beta of the company is 1·2. The yield on short-term government debt is 4.5% per year and the equity risk premium is approximately 5% per year.

The debt finance of Rupab Co consists of bonds with a total book value of $2 million. These bonds pay annual interest before tax of 7%. The par value and market value of each bond is $100.

Rupab Co pays taxation one year in arrears at an annual rate of 25%. Capital allowances (tax-allowable depreciation) on machinery are on a straight-line basis over the life of the asset.

Required

(a) Calculate the after-tax weighted average cost of capital of Rupab Co. **(6 marks)**

(b) Prepare a forecast of the annual after-tax cash flows of the investment in nominal terms, and calculate and comment on its net present value. **(8 marks)**

(c) Explain how the capital asset pricing model can be used to calculate a project-specific discount rate and discuss the limitations of using the capital asset pricing model in investment appraisal. **(11 marks)**

(Total = 25 marks)

27 PV Co (6/09) **45 mins**

PV Co is evaluating an investment proposal to manufacture Product W33, which has performed well in test marketing trials conducted recently by the company's research and development division. The following information relating to this investment proposal has now been prepared.

Initial investment	$2 million
Selling price (current price terms)	$20 per unit
Expected selling price inflation	3% per year
Variable operating costs (current price terms)	$8 per unit
Fixed operating costs (current price terms)	$170,000 per year
Expected operating cost inflation	4% per year

The research and development division has prepared the following demand forecast as a result of its test marketing trials. The forecast reflects expected technological change and its effect on the anticipated life-cycle of Product W33.

Year	*1*	*2*	*3*	*4*
Demand (units)	60,000	70,000	120,000	45,000

It is expected that all units of Product W33 produced will be sold, in line with the company's policy of keeping no inventory of finished goods. No terminal value or machinery scrap value is expected at the end of four years, when production of Product W33 is planned to end. For investment appraisal purposes, PV Co uses a nominal (money) discount rate of 10% per year and a target return on capital employed of 30% per year. Ignore taxation.

Required:

(a) Identify and explain the key stages in the capital investment decision-making process, and the role of investment appraisal in this process. **(7 marks)**

(b) Calculate the following values for the investment proposal:

  (i) net present value;
  (ii) internal rate of return;
  (iii) return on capital employed (accounting rate of return) based on average investment; and
  (iv) discounted payback period. **(13 marks)**

(c) Discuss your findings in each section of (b) above and advise whether the investment proposal is financially acceptable. **(5 marks)**

(Total = 25 marks)

28 AGD Co (FMC, 12/05) **45 mins**

AGD Co is a profitable company which is considering the purchase of a machine costing $320,000. If purchased, AGD Co would incur annual maintenance costs of $25,000. The machine would be used for three years and at the end of this period would be sold for $50,000. Alternatively, the machine could be obtained under an operating lease for an annual lease rental of $120,000 per year, payable in advance.

AGD Co can claim capital allowances on a 25% reducing balance basis. The company pays tax on profits at an annual rate of 30% and all tax liabilities are paid one year in arrears. AGD Co has an accounting year that ends on 31 December. If the machine is purchased, payment will be made in January of the first year of operation. If leased, annual lease rentals will be paid in January of each year of operation.

Required

(a) Using an after-tax borrowing rate of 7%, evaluate whether AGD Co should purchase or lease the new machine. **(12 marks)**

(b) Explain and discuss the key differences between an operating lease and a finance lease. **(8 marks)**

(c) The after-tax borrowing rate of 7% was used in the evaluation because a bank had offered to lend AGD Co \$320,000 for a period of five years at a before-tax rate of 10% per year with interest payable every six months.

Required

(i) Calculate the annual percentage rate (APR) implied by the bank's offer to lend at 10% per year with interest payable every six months. **(2 marks)**

(ii) Calculate the amount to be repaid at the end of each six-month period if the offered loan is to be repaid in equal instalments. **(3 marks)**

(Total = 25 marks)

29 Leaminger Co (FMC, 12/02) 45 mins

Leaminger Co has decided it must replace its major turbine machine on 31 December 20X2. The machine is essential to the operations of the company. The company is, however, considering whether to purchase the machine outright or to use lease financing.

Purchasing the machine outright

The machine is expected to cost \$360,000 if it is purchased outright, payable on 31 December 20X2. After four years the company expects new technology to make the machine redundant and it will be sold on 31 December 20X6 generating proceeds of \$20,000. Capital allowances for tax purposes are available on the cost of the machine at the rate of 25% per annum reducing balance. A full year's allowance is given in the year of acquisition but no writing down allowance is available in the year of disposal. The difference between the proceeds and the tax written down value in the year of disposal is allowable or chargeable for tax as appropriate.

Leasing

The company has approached its bank with a view to arranging a lease to finance the machine acquisition. The bank has offered two options with respect to leasing which are as follows:

	Finance lease	*Operating lease*
Contract length (years)	4	4
Annual rental	\$135,000	\$140,000
First rent payable	31 December 20X3	31 December 20X2

General

For both the purchasing and the finance lease option, maintenance costs of \$15,000 per year are payable at the end of each year. All lease rentals (for both finance and operating options) can be assumed to be allowable for tax purposes in full in the year of payment. Assume that tax is payable one year after the end of the accounting year in which the transaction occurs. For the operating lease only, contracts are renewable annually at the discretion of either party. Leaminger Co has adequate taxable profits to relieve all its costs. The rate of tax on profits can be assumed to be 30%. The company's accounting year-end is 31 December. The company's annual after tax cost of capital is 10%.

Required

(a) Calculate the net present value at 31 December 20X2, using the after tax cost of capital, for

(i) purchasing the machine outright;
(ii) using the finance lease to acquire the machine; and
(iii) using the operating lease to acquire the machine.

Recommend the optimal method. **(12 marks)**

(b) Assume now that the company is facing capital rationing up until 30 December 20X3 when it expects to make a share issue. During this time the most marginal investment project, which is perfectly divisible, requires an outlay of \$500,000 and would generate a net present value of \$100,000. Investment in the turbine would reduce funds available for this project. Investments cannot be delayed.

Calculate the revised net present values of the three options for the turbine given capital rationing. Advise whether your recommendation in (a) would change. **(5 marks)**

(c) As their business advisor, prepare a report for the directors of Leaminger Co that assesses the issues that need to be considered in acquiring the turbine with respect to capital rationing. **(8 marks)**

(Total = 25 marks)

30 Preparation question: Bread Products Co

Bread Products Co is considering the replacement policy for its industrial size ovens which are used as part of a production line that bakes bread. Given its heavy usage each oven has to be replaced frequently. The choice is between replacing every two years or every three years. Only one type of oven is used, each of which costs $24,500. Maintenance costs and resale values are as follows.

Year	*Maintenance per annum*	*Resale value*
	$	$
1	500	
2	800	15,600
3	1,500	11,200

Original cost, maintenance costs and resale values are expressed in current prices. That is, for example, maintenance for a two year old oven would cost $800 for maintenance undertaken now. It is expected that maintenance costs will increase at 10% per annum and oven replacement cost and resale values at 5% per annum. The money discount rate is 15%.

Required

(a) Calculate the preferred replacement policy for the ovens in a choice between a two year or three year replacement cycle.

(b) Identify the limitations of net present value techniques when applied generally to investment appraisal.

31 Filtrex Co — 45 mins

(a) Explain how cash shortages can restrict the investment opportunities of a business. **(5 marks)**

(b) Distinguish between 'hard' and 'soft' capital rationing, explaining why a company may deliberately choose to restrict its capital expenditure. **(5 marks)**

(c) Filtrex Co is a medium-sized, all equity-financed, unquoted company which specialises in the development and production of water- and air-filtering devices to reduce the emission of effluents. Its small but ingenious R & D team has recently made a technological breakthrough which has revealed a number of attractive investment opportunities. It has applied for patents to protect its rights in all these areas. However, it lacks the financial resources required to exploit all of these projects, whose required outlays and post-tax NPVs are listed in the table below. Filtrex's managers consider that delaying any of these projects would seriously undermine their profitability, as competitors bring forward their own new developments. All projects are thought to have a similar degree of risk.

Project	*Required outlay*	*NPV*
	$	$
A	150,000	65,000
B	120,000	50,000
C	200,000	80,000
D	80,000	30,000
E	400,000	120,000

The NPVs have been calculated using as a discount rate the 18% post-tax rate of return which Filtrex requires for risky R & D ventures. The maximum amount available for this type of investment is $400,000, corresponding to Filtrex's present cash balances, built up over several years' profitable trading. Projects A and C are mutually exclusive and no project can be sub-divided. Any unused capital will either remain invested in short-term deposits or used to purchase marketable securities, both of which offer a return well below 18% post-tax.

Required

(i) Advise Filtrex Co, using suitable supporting calculations, which combination of projects should be undertaken in the best interests of shareholders; and

(ii) Suggest what further information might be obtained to assist a fuller analysis. **(9 marks)**

(d) Explain how, apart from delaying projects, Filtrex Co could manage to exploit more of these opportunities. **(6 marks)**

(Total = 25 marks)

32 Basril Co (FMC, 12/03) 45 mins

Basril Co is reviewing investment proposals that have been submitted by divisional managers. The investment funds of the company are limited to $800,000 in the current year. Details of three possible investments, none of which can be delayed, are given below.

Project 1
An investment of $300,000 in work station assessments. Each assessment would be on an individual employee basis and would lead to savings in labour costs from increased efficiency and from reduced absenteeism due to work-related illness. Savings in labour costs from these assessments in money terms are expected to be as follows:

Year	**1**	**2**	**3**	**4**	**5**
Cash flows ($'000)	85	90	95	100	95

Project 2
An investment of $450,000 in individual workstations for staff that is expected to reduce administration costs by $140,800 per annum in money terms for the next five years.

Project 3
An investment of $400,000 in new ticket machines. Net cash savings of $120,000 per annum are expected in current price terms and these are expected to increase by 3.6% per annum due to inflation during the five-year life of the machines.

Basril Co has a money cost of capital of 12% and taxation should be ignored.

Required

(a) Determine the best way for Basril Co to invest the available funds and calculate the resultant NPV:

(i) on the assumption that each of the three projects is divisible;
(ii) on the assumption that none of the projects are divisible. **(10 marks)**

(b) Explain how the NPV investment appraisal method is applied in situations where capital is rationed. **(3 marks)**

(c) Discuss the reasons why capital rationing may arise. **(7 marks)**

(d) Discuss the meaning of the term 'relevant cash flows' in the context of investment appraisal, giving examples to illustrate your discussion. **(5 marks)**

(Total = 25 marks)

BUSINESS FINANCE

Questions 33 to 41 cover Business Finance, the subject of Part E of the BPP Study Text for Paper F9.

33 Tirwen Co (FMC, 12/04) 45 mins

Tirwen Co is a medium-sized manufacturing company which is considering a 1 for 5 rights issue at a 15% discount to the current market price of $4.00 per share. Issue costs are expected to be $220,000 and these costs will be paid out of the funds raised. It is proposed that the rights issue funds raised will be used to redeem some of the existing loan stock at par. Financial information relating to Tirwen Co is as follows:

Current statement of financial position

	$'000	$'000
Non-current assets		6,550
Current assets		
Inventory	2,000	
Receivables	1,500	
Cash	300	
		3,800
		10,350
Ordinary shares (par value 50c)		2,000
Reserves		1,500
12% loan notes 2X12		4,500
Current liabilities		
Trade payables	1,100	
Overdraft	1,250	
		2,350
		10,350

Other information:

Price/earnings ratio of Tirwen Co:		15.24
Overdraft interest rate:		7%
Tax rate:		30%
Sector averages:	debt/equity ratio (book value):	100%
	interest cover:	6 times

Required

(a) Ignoring issue costs and any use that may be made of the funds raised by the rights issue, calculate:

(i) the theoretical ex rights price per share;
(ii) the value of rights per existing share. **(3 marks)**

(b) What alternative actions are open to the owner of 1,000 shares in Tirwen Co as regards the rights issue? Determine the effect of each of these actions on the wealth of the investor. **(6 marks)**

(c) Calculate the current earnings per share and the revised earnings per share if the rights issue funds are used to redeem some of the existing loan notes. **(6 marks)**

(d) Evaluate whether the proposal to redeem some of the loan notes would increase the wealth of the shareholders of Tirwen Co. Assume that the price/earnings ratio of Tirwen Co remains constant. **(3 marks)**

(e) Discuss the reasons why a rights issue could be an attractive source of finance for Tirwen Co. Your discussion should include an evaluation of the effect of the rights issue on the debt/equity ratio and interest cover. **(7 marks)**

(Total = 25 marks)

34 PG

45 mins

(a) PG Co has a paid-up ordinary share capital of $4,500,000 represented by 6 million shares of 75c each. It has no loan capital. Earnings after tax in the most recent year were $3,600,000. The P/E ratio of the company is 15.

The company is planning to make a large new investment which will cost $10,500,000, and is considering raising the necessary finance through a rights issue at 800c.

Required

(i) Calculate the current market price of PG Co's ordinary shares. **(2 marks)**

(ii) Calculate the theoretical ex-rights price, and state what factors in practice might invalidate your calculation. **(6 marks)**

(iii) Briefly explain what is meant by a deep-discounted rights issue, identifying the main reasons why a company might raise finance by this method. **(3 marks)**

(b) As an alternative to a rights issue, PG Co might raise the $10,500,000 required by means of an issue of convertible loan notes at par, with a coupon rate of 6%. The loan notes would be redeemable in seven years' time. Prior to redemption, the loan notes may be converted at a rate of 11 ordinary shares per $100 nominal loan notes.

Required

(i) Explain the term *conversion premium* and calculate the conversion premium at the date of issue implicit in the data given. **(4 marks)**

(ii) Identify the advantages to PG Co of issuing convertible loan notes instead of the rights issue to raise the necessary finance. **(5 marks)**

(iii) Explain why the market value of convertible loan notes is likely to be affected by the dividend policy of the issuing company. **(5 marks)**

(Total = 25 marks)

35 Newsam Co

45 mins

It is now December 20X4. Newsam Co is a quoted company which produces a range of branded products all of which are well-established in their respective markets, although overall sales have grown by an average of only 2% per annum over the past decade. The board of directors is currently concerned about the company's level of financial gearing, which although not high by industry standards, is near to breaching the covenants attaching to its 15% debenture issue, made in 20W2 at a time of high market interest rates. Issued in order to finance the acquisition of the premises on which it is secured, the debenture is repayable at par value of $100 per unit at any time during the period 20X4-X7.

There are two covenants attaching to the debenture, which state:

'At no time shall the ratio of debt capital to shareholders' fund exceed 50%. The company shall also maintain a prudent level of liquidity, defined as a current ratio at no time outside the range of the industry average (as published by the corporate credit analysts, Creditex), plus or minus 20%.'

Newsam's most recent set of accounts is shown in summarised form below. The buildings have been depreciated since 20W2 at 4% per annum, and most of the machinery is only two or three years old, having been purchased mainly via a bank overdraft. The interest rate payable on the bank overdraft is currently 9%. The finance director argues that Newsam should take advantage of historically low interest rates on the European money markets by issuing a medium-term Eurodollar bond at 5%. The dollar is currently selling at a premium of about 1% on the three-month forward market.

Newsam's ordinary shares currently sell at a P/E ratio of 14, and look unattractive compared to comparable companies in the sector which exhibit an average P/E ratio of 18. According to the latest published credit assessment by Creditex, the average current ratio for the industry is 1.35. The loan stock currently sell in the market at $15 above par.

Summarised financial accounts for Newsam Co for the year ended 30 June 20X4

STATEMENT OF FINANCIAL POSITION AS AT 30 JUNE 20X4

	$m	$m
Assets employed		
Non-current (net):		
Land		5.0
Premises		4.0
Machinery and vehicles		11.0
		20.0
Current:		
Inventory	2.5	
Receivables	4.0	
Cash	0.5	
		7.0
		27.0
Financed by:		
Ordinary shares (25c par value)		5.0
Reserves		10.0
Long-term payables:		
15% Loan notes 20X4-X7		5.0
Current liabilities:		
Payables	4.0	
Bank overdraft	3.0	
		7.0
		27.0

INCOME STATEMENT EXTRACTS FOR THE YEAR ENDED 30 JUNE 20X4

	$m
Sales	28.00
Operating profit	3.00
Interest payable	(1.00)
Profit before tax	2.00
Taxation	(0.66)
Profit after tax	1.34
Dividend	(0.70)
Retained profit	0.64

Required

(a) Calculate appropriate gearing ratios for Newsam Co using:

(i) book values; and
(ii) market values. **(3 marks)**

(b) Assess how close Newsam Co is to breaching the debenture covenants. **(3 marks)**

(c) Discuss whether Newsam Co's gearing is in any sense 'dangerous'. **(6 marks)**

(d) Discuss what financial policies Newsam Co might adopt:

(i) in order to lower its capital gearing; and
(ii) to improve its interest cover. **(9 marks)**

(e) Explain what strategy a company might be pursuing when raising capital in the form of convertible debt as distinct from raising straight debt or straight equity. **(4 marks)**

(Total = 25 marks)

36 Arwin (FMC, 6/04) **45 mins**

Arwin plans to raise $5m in order to expand its existing chain of retail outlets. It can raise the finance by issuing 10% loan notes redeemable in 2X15, or by a rights issue at $4.00 per share. The current financial statements of Arwin are as follows.

Income statement for the last year	$'000
Sales	50,000
Cost of sales	30,000
Gross profit	20,000
Administration costs	14,000
Profit before interest and tax	6,000
Interest	300
Profit before tax	5,700
Taxation at 30%	1,710
Profit after tax	3,990
Dividends	2,394
Retained earnings	1,596

Statement of Financial Position extract	$'000
Net non-current assets	20,100
Net current assets	4,960
12% loan notes 2X10	2,500
	22,560
Ordinary shares, par value 25c	2,500
Retained profit	20,060
	22,560

The expansion of business is expected to increase sales revenue by 12% in the first year. Variable cost of sales makes up 85% of cost of sales. Administration costs will increase by 5% due to new staff appointments. Arwin has a policy of paying out 60% of profit after tax as dividends and has no overdraft.

Required

(a) For each financing proposal, prepare the forecast income statement after one additional year of operation. **(5 marks)**

(b) Evaluate and comment on the effects of each financing proposal on the following:

(i) Financial gearing;
(ii) Operational gearing;
(iii) Interest cover;
(iv) Earnings per share. **(12 marks)**

(c) Discuss the dangers to a company of a high level of gearing, including in your answer an explanation of the following terms:

(i) Business risk;
(ii) Financial risk. **(8 marks)**

(Total = 25 marks)

37 Food retailers **45 mins**

Food Retailers: Ordinary Shares, Key Stock Market Statistics

Company	*Current*	*Share price (cents)* *52 week high*	*52 week low*	*Dividend Yield (%)*	*P/E ratio*
Ply	63	112	54	1.8	14.2
Axis	291	317	187	2.1	13.0
Spin	187	201	151	2.3	21.1

Required

(a) Illustrating your answer by use of data in the table above, define and explain the term P/E ratio, and comment on the way it may be used by an investor to appraise a possible share purchase. **(7 marks)**

(b) Using data in the above table, calculate the dividend cover for Spin and Axis, and explain the meaning and significance of the measure from the point of view of equity investors. **(8 marks)**

(c) Under what circumstances might a company be tempted to pay dividends which are in excess of earnings, and what are the dangers associated with such an approach?

You should ignore tax in answering this question. **(6 marks)**

(d) The directors of AXIS Co are currently considering whether to raise finance by means of a debenture issue or an issue of preference shares.

Describe the reasons why the directors might choose to issue loan notes rather than preference shares to raise the required finance. **(4 marks)**

(Total = 25 marks)

38 CF Co **45 mins**

CF Co is about to commence trading as a wholesaler of hats. CF's only shareholders, Mr and Mrs Topper, worked as employees of a hat retailer for many years, but have recently been made redundant. They intend to subscribe $200,000 as the initial share capital.

Sales in 20X2 are expected to be as follows.

	Units
January	2,400
February	3,600
March	4,800
Thereafter	9,600 each month

The average selling price of each hat is to be $10. All sales will be made on credit terms, requiring settlement two months after the date of sale. However, if settlement is made by customers within one month, a 2.5% cash discount will be given. Of the total sales, 60% are expected to be settled two months after the date of sale and 40% (before any discount is deducted) are expected to be settled one month after the date of sale.

The average purchase price for each hat will be $7. CF intends to make purchases at the end of each month in order to maintain inventories at a sufficient level to cover the following month's sales. Initially, therefore, purchases of 2,400 hats will be made in December 20X1. Payment for purchases will be made one month in arrears.

Non-current assets are expected to cost $250,000, payable on 1 January 20X2. Depreciation on these assets will be $5,000 each month, commencing January 20X2. These assets are likely to have a low net realisable value.

Annual rent is expected to be $24,000 and will be payable quarterly in advance, commencing January 20X2.

Monthly wages are expected to be $4,000 and are payable in the month they are incurred. Other overheads are expected to be $6,000 each month, half of which are payable in the month they are incurred and half are payable one month later.

Required

(a) Prepare a monthly cash budget for CF Co for the period January 20X2 to May 20X2 inclusive. It should show the expected net cash flow for each month and the cumulative budgeted cash surplus or deficit at the end of each month. Assume for the purposes of this cash budget that the bank has not provided any loan finance. Ignore interest charges and taxation payments. **(8 marks)**

(b) Discuss the finance needs of CF. **(5 marks)**

(c) Explain and evaluate the sources of finance available to small businesses for non-current assets. **(8 marks)**

(d) Describe four circumstances in which a business might seek venture capital finance. **(4 marks)**

(Total = 25 marks)

39 TFR Co (FMC, 6/07) 45 mins

TFR Co is a small, profitable, owner-managed company which is seeking finance for a planned expansion. A local bank has indicated that it may be prepared to offer a loan of $100,000 at a fixed annual rate of 9%. TFR Co would repay $25,000 of the capital each year for the next four years. Annual interest would be calculated on the opening balance at the start of each year. Current financial information on TFR Co is as follows:

Current turnover	$210,000
Net profit margin	20%
Annual taxation rate	25%
Average overdraft	$20,000
Average interest on overdraft	10% per year
Dividend payout ratio	50%
Shareholders funds	$200,000
Market value of non-current assets	$180,000

As a result of the expansion, turnover would increase by $45,000 per year for each of the next four years, while net profit margin would remain unchanged. No capital allowances would arise from investment of the amount borrowed.

TFR Co currently has no other debt than the existing and continuing overdraft and has no cash or near-cash investments. The non-current assets consist largely of the building from which the company conducts its business. The current dividend payout ratio has been maintained for several years.

Required

(a) Assuming that TFR is granted the loan, calculate the following ratios for TFR Co for each of the next four years.

(i) interest cover
(ii) medium to long-term debt/equity ratio
(iii) return on equity
(iv) return on capital employed **(10 marks)**

(b) Comment on the financial implications for TFR Co of accepting the bank loan on the terms indicated above. **(8 marks)**

(c) Discuss the difficulties commonly faced by small firms such as TFR Co when seeking additional finance. **(7 marks)**

(Total = 25 marks)

40 Echo Co (12/07) 45 mins

The following financial information relates to Echo Co:

Income statement information for the last year

	$m
Profit before interest and tax	12
Interest	3
Profit before tax	9
Income tax expense	3
Profit for the period	6
Dividends	2
Retained profit for the period	4

Balance sheet information as at the end of the last year

	$m	$m
Ordinary shares, par value 50c	5	
Retained earnings	15	
Total equity		20
8% loan notes, redeemable in three years' time		30
Total equity and non-current liabilities		50

Average data on companies similar to Echo Co:

Interest coverage ratio	8 times
Long-term debt/equity (book value basis)	80%

The board of Echo Co is considering several proposals that have been made by its finance director. Each proposal is independent of any other proposal.

Proposal A

The current dividend per share should be increased by 20% in order to make the company more attractive to equity investors.

Proposal B

A bond issue should be made in order to raise $15 million of new debt capital. Although there are no investment opportunities currently available, the cash raised would be invested on a short-term basis until a suitable investment opportunity arose. The loan notes would pay interest at a rate of 10% per year and be redeemable in eight years' time at par.

Proposal C

A 1 for 4 rights issue should be made at a 20% discount to the current share price of $2·30 per share in order to reduce gearing and the financial risk of the company.

Required

(a) Analyse and discuss Proposal A. **(5 marks)**

(b) Evaluate and discuss Proposal B. **(7 marks)**

(c) Calculate the theoretical ex rights price per share and the amount of finance that would be raised under Proposal C. Evaluate and discuss the proposal to use these funds to reduce gearing and financial risk. **(7 marks)**

(d) Discuss the attractions of operating leasing as a source of finance. **(6 marks)**

(Total = 25 marks)

41 JJG Co (6/09) **45 mins**

JJG Co is planning to raise $15 million of new finance for a major expansion of existing business and is considering a rights issue, a placing or an issue of bonds. The corporate objectives of JJG Co, as stated in its *Annual Report*, are to maximise the wealth of its shareholders and to achieve continuous growth in earnings per share. Recent financial information on JJG Co is as follows:

	20X8	*20X7*	*20X6*	*20X5*
Turnover ($m)	28·0	24·0	19·1	16·8
Profit before interest and tax ($m)	9·8	8·5	7·5	6·8
Earnings ($m)	5·5	4·7	4·1	3·6
Dividends ($m)	2·2	1·9	1·6	1·6
Ordinary shares ($m)	5·5	5·5	5·5	5·5
Reserves ($m)	13·7	10·4	7·6	5·1
8% Bonds, redeemable 20Y5 ($m)	20	20	20	20
Share price ($)	8·64	5·74	3·35	2·67

The par value of the shares of JJG Co is $1·00 per share. The general level of inflation has averaged 4% per year in the period under consideration. The bonds of JJG Co are currently trading at their par value of $100. The following values for the business sector of JJG Co are available:

Average return on capital employed	25%
Average return on shareholders' funds	20%
Average interest coverage ratio	20 times
Average debt/equity ratio (market value basis)	50%
Return predicted by the capital asset pricing model	14%

Required:

(a) Evaluate the financial performance of JJG Co, and analyse and discuss the extent to which the company has achieved its stated corporate objectives of:

(i) maximising the wealth of its shareholders;
(ii) achieving continuous growth in earnings per share.

Note: up to 7 marks are available for financial analysis. **(12 marks)**

(b) If the new finance is raised via a rights issue at $7·50 per share and the major expansion of business has not yet begun, calculate and comment on the effect of the rights issue on:

(i) the share price of JJG Co;
(ii) the earnings per share of the company; and
(iii) the debt/equity ratio. **(6 marks)**

(c) Analyse and discuss the relative merits of a rights issue, a placing and an issue of bonds as ways of raising the finance for the expansion. **(7 marks)**

(Total = 25 marks)

COST OF CAPITAL

Questions 42 to 50 cover Cost of Capital, the subject of Part F of the BPP Study Text for Paper F9.

42 XYZ Co — 45 mins

XYZ Co is a large company whose 200 million $1 shares are listed on a major international stock exchange. It manufactures a variety of concrete and clay building materials. It has decided to replace 100 of its grinding machines with 100 of a new type of machine that has just been launched. The company is unable to issue any further equity and is therefore considering alternative methods of financing the new machines.

The company's accounting year end is 31 December.

Option 1 – Issue debt to purchase the machines

The machines are expected to cost $720,000 each on 31 December 20X1 and on average are expected to have a useful economic life of 10 years. After this time, the company expects to scrap the machines, but it has no idea what proceeds would be generated from the sale.

If XYZ Co issues debt, it would do so on 31 December 20X1 for the full purchase price of the machines in order to finance the investment. The debt would be issued at a discount of 10% of par value (that is, at $90 per $100 nominal) being redeemable at par on 31 December 20Y1 (in ten years' time) and carrying a coupon annual interest rate of 6%. Debt interest is tax allowable and the corporation tax rate can be assumed to be 30% (ignore any tax on the redemption). If this option is chosen, the share price on 31 December 20X1 is expected to be $1.50, and the cost of equity 10%.

The debt would be secured by fixed and floating charges.

Option 2 – Long-term lease

The machines can be leased with equal annual rentals payable in arrears. The lease term would be eight years, but this can be extended indefinitely at the option of the company at a nominal rent. The lease cannot be cancelled within the minimum lease term of eight years. The company would need to pay its own maintenance costs.

Option 3 – Short-term leases

The machines can be leased using a series of separate annual contracts. Maintenance costs would be paid by the lessor under these contracts but, even so, the average lease rentals would be much higher than under option 2. There is no obligation on either party to sign a new annual contract on the termination for the previous lease contract.

Required

(a) Calculate the after tax cost of debt at 31 December 20X1 to be used in Option 1. **(8 marks)**

(b) Calculate the weighted average cost of capital for Option 1. **(4 marks)**

(c) Discuss the appropriateness of using the after tax cost of debt or the weighted average cost of capital to evaluate XYZ Co's investment in grinding machines. **(5 marks)**

(d) Write a memorandum to the directors of XYZ Co which identifies the factors that should be considered when deciding which of the three methods of financing the grinding machines is the most appropriate. **(8 marks)**

(Total = 25 marks)

43 D Co **45 mins**

The summarised Statement of Financial Position of D Co at 30 June 20X9 was as follows.

	$'000	$'000
Non-current assets		15,350
Current assets	5,900	
Creditors falling due within one year	(2,600)	
Net current assets		3,300
9% loan notes		(8,000)
		10,650
Ordinary share capital (25c shares)		2,000
7% preference shares ($1 shares)		1,000
Share premium account		1,100
Retained earnings		6,550
		10,650

The current price of the ordinary shares is 135c ex dividend. The dividend of 10c is payable during the next few days. The expected rate of growth of the dividend is 9% per annum. The current price of the preference shares is 77c and the dividend has recently been paid. The loan notes interest has also been paid recently and the loan notes are currently trading at $80 per $100 nominal. Assume that D Co issued the loan notes one year ago to finance a new investment. Company income tax is at the rate of 30%.

Required

(a) Calculate the gearing ratio for D Co using:

(i) Book values

(ii) Market values **(5 marks)**

(b) Calculate the company's weighted average cost of capital (WACC), using the respective market values as weighting factors. **(7 marks)**

(c) Explain how the capital asset pricing model would be used as an alternative method of estimating the cost of equity, indicating what information would be required and how it would be obtained. **(8 marks)**

(d) Discuss the reasons why D Co may have issued loan notes rather than preference shares to raise the required finance. **(5 marks)**

(Total = 25 marks)

44 IML Co **45 mins**

IML Co is an all equity financed listed company. It develops customised software for clients which are mainly large civil engineering companies. Nearly all its shares are held by financial institutions.

IML Co's chairman has been dissatisfied with the company's performance for some time. Some directors were also concerned about the way in which the company is perceived by financial markets. In response, the company recently appointed a new finance director who advocated using the capital asset pricing model as a means of evaluating risk and interpreting the stock market's reaction to the company.

The following initial information was put forward by the finance director for two rival companies operating in the same industry:

	Beta
AZT Co	0.7
BOR Co	1.4

The *finance director* notes that the risk-free rate is 5% each year and the expected rate of return on the market portfolio is 15% each year.

The *chairman* set out his concerns at a meeting of the board of directors: 'I fail to understand these calculations. AZT Co operates largely in overseas markets with all the risk which that involves, yet you seem to be arguing that it is a lower risk company than BOR Co, whose income is mainly derived from long-term contracts in our domestic building industry. I am very concerned that we can take too much notice of the stock market. Take last year for instance, we had to announce a loss and the share price went up.'

Required

(a) Calculate, using the capital asset pricing model, the required rate of return on equity of:

(i) AZT Co
(ii) BOR Co **(4 marks)**

(b) Calculate the beta of IML Co, assuming its required annual rate of return on equity is 17% and the stock market uses the capital asset pricing model to calculate the beta, and explain the significance of the beta factor. **(6 marks)**

(c) As the new finance director, write a memorandum to the chairman which explains, in language understandable to a non-financial manager, the following:

(i) The assumptions and limitations of the capital asset pricing model; and
(ii) An explanation of why IML Co's share price could rise following the announcement of a loss.

In so doing, discuss the observations and concerns expressed by the chairman. You may refer, where appropriate, to your calculations in (a) and (b) above. **(15 marks)**

(Total = 25 marks)

45 KJI 45 mins

The following financial information is available for KJI.

	20X6	*20X7*	*20X8*	*20X9*
Earnings attributed to ordinary shareholders	\$200m	\$225m	\$205m	\$230m
Number of ordinary shares	2,000m	2,100m	2,100m	1,900m
Price per share	220c	305c	290c	260c
Dividend per share	5c	7c	8c	8c

Assume that share prices are as at the last day of each year.

Required

(a) Calculate KJI's earnings per share, dividend yield, dividend cover and price/ earnings ratio. Explain the meaning of each of these terms and why investors use them, and what limitations they may have. **(8 marks)**

(b) Explain why the changes that occurred in the figures calculated in (a) above over the past four years might have happened. **(6 marks)**

The following is an extract from the Statement of Financial Position of LI Co, a company in the same industry as KJI, at 31 December 20X9.

	\$'000
Ordinary shares of 50c each	5,200
Reserves	4,850
9% preference shares of \$1 each	4,500
14% loan notes	5,000
Total long-term funds	19,550

The ordinary shares are quoted at 80c. Assume the market estimate of the next ordinary dividend is 4c, growing thereafter at 12% per annum indefinitely. The preference shares which are irredeemable are quoted at 72c and the loan notes are quoted at par. Tax on profits is 33%.

Required

(c) Use the relevant data above to calculate the company's weighted average cost of capital (WACC), ie the return required by the providers of the three types of capital, using the respective market values as weighting factors. **(6 marks)**

(d) Assume that the loan notes have recently been issued specifically to fund the company's expansion programme under which a number of projects are being considered. It has been suggested at a project appraisal meeting that because these projects are to be financed by the loan notes, the cutoff rate for project acceptance should be the after-tax interest rate on the loan notes rather than the WACC. Discuss this suggestion. **(5 marks)**

(Total = 25 marks)

46 WEB Co — 45 mins

WEB Co operates a low-cost airline and is a listed company. By comparison to its major competitors it is relatively small, but it has expanded significantly in recent years. The shares are held mainly by large financial institutions.

The following are extracts from WEB Co's budgeted Statement of Financial Position at 31 May 20X2.

	$m
Ordinary shares of $1	100
Reserves	50
9% loan notes 20X5 (at nominal value)	200
	350

Dividends have grown in the past at 3% a year, resulting in an expected dividend of $1 per share to be declared on 31 May 20X2. (Assume for simplicity that the dividend will also be paid on this date.) Due to expansion, dividends are expected to grow at 4% a year from 1 June 20X2 for the foreseeable future. The price per share is currently $10.40 ex div, and this is not expected to change before 31 May 20X2.

The existing loan notes are due to be redeemed at par on 31 May 20X5. The market value of these loan notes at 1 June 20X2 is expected to be $100.84 (ex interest) per $100 nominal. Interest is payable annually in arrears on 31 May and is allowable for tax purposes. Tax is payable on profits at a rate for of 30%. Assume taxation is payable at the end of the year in which the taxable profits arise.

New finance

The company has now decided to purchase three additional aircraft at a cost of $10 million each. The board has decided that the new aircraft will be financed in full by an 8% bank loan on 1 June 20X2.

Required

(a) Calculate the expected weighted average cost of capital of WEB Co at 31 May 20X2. **(8 marks)**

(b) Without further calculations, explain the impact of the new bank loan on WEB Co's

(i) Cost of equity
(ii) Cost of debt
(iii) Weighted average cost of capital (using the traditional model). **(8 marks)**

(c) Explain and distinguish

(i) A bank loan
(ii) Loan notes

In so doing, explain why, in the circumstances of WEB Co, the cost of debt may be different for the two types of security. **(4 marks)**

(d) Explain why WEB might decide to raise capital in the form of a convertible debt issue rather than straight equity or debt. **(5 marks)**

(Total = 25 marks)

47 CAP Co **45 mins**

CAP Co is a listed company that owns and operates a large number of farms throughout the world. A variety of crops are grown.

Financing structure

The following is an extract from the Statement of Financial Position of CAP Co at 30 September 20X2.

	$ million
Ordinary shares of $1 each	200
Reserves	100
9% irredeemable $1 preference shares	50
8% loan notes 20X3	250
	600

The ordinary shares were quoted at $3 per share ex div on 30 September 20X2. The beta of CAP Co's equity shares is 0.8, the annual yield on treasury bills is 5%, and financial markets expect an average annual return of 15% on the market index.

The market price per preference share was $0.90 ex div on 30 September 20X2.

Loan notes interest is paid annually in arrears and is allowable for tax at a rate of 30%. The loan notes were priced at $100.57 ex interest per $100 nominal on 30 September 20X2. Loan notes are redeemable on 30 September 20X3.

Assume that taxation is payable at the end of the year in which taxable profits arise.

A new project

Difficult trading conditions in European farming have caused CAP Co to decide to convert a number of its farms in Southern Europe into camping sites with effect from the 20X3 holiday season. Providing the necessary facilities for campers will require major investment, and this will be financed by a new issue of loan notes. The returns on the new campsite business are likely to have a very low correlation with those of the existing farming business.

Required

(a) Using the capital asset pricing model, calculate the required rate of return on equity of CAP Co at 30 September 20X2. Ignore any impact from the new campsite project. Briefly explain the implications of a Beta of less than 1, such as that for CAP Co. **(5 marks)**

(b) Calculate the weighted average cost of capital of CAP Co at 30 September 20X2 (use your calculation in answer to requirement (a) above for the cost of equity). Ignore any impact from the new campsite project. **(10 marks)**

(c) Without further calculations, identify and explain the factors that may change CAP Co's equity beta during the year ending 30 September 20X3. **(5 marks)**

(d) Explain the limitations of the capital asset pricing model. **(5 marks)**

(Total = 25 marks)

48 FAQ **45 mins**

FAQ is a profitable, listed manufacturing company, which is considering a project to diversify into the manufacture of computer equipment. This would involve spending $220 million on a new production plant.

It is expected that FAQ will continue to be financed by 60% debt and 40% equity. The debt consists of 10% loan notes, redeemable at par after 10 years with a current market value of $90. Any new debt is expected to have the same cost of capital.

FAQ pays tax at a rate of 30% and its ordinary shares are currently trading at 453c. The equity beta of FAQ is estimated to be 1.21. The systematic risk of debt may be assumed to be zero. The risk free rate is 6.75% and market return 12.5%.

The estimated equity beta of the main competitor in the same industry as the new proposed plant is 1.4, and the competitor's capital gearing is 35% equity and 65% debt by book values.

Required

(a) Calculate the after-tax cost of debt of FAQ's loan notes. **(3 marks)**

(b) Calculate a project-specific discount rate for the proposed investment. **(9 marks)**

(c) Discuss the problems that may be encountered in applying this discount rate to the proposed investment. **(8 marks)**

(d) Explain briefly what is meant by pecking order theory. **(5 marks)**

(Total = 25 marks)

49 Droxfol Co (Pilot paper) 45 mins

Droxfol Co is a listed company that plans to spend \$10m on expanding its existing business. It has been suggested that the money could be raised by issuing 9% loan notes redeemable in ten years' time. Current financial information on Droxfol Co is as follows.

Income statement information for the last year

	\$000
Profit before interest and tax	7,000
Interest	(500)
Profit before tax	6,500
Tax	(1,950)
Profit for the period	4,550

Statement of Financial Position for the last year	\$000	\$000
Non-current assets		20,000
Current assets		20,000
Total assets		40,000
Equity and liabilities		
Ordinary shares, par value \$1	5,000	
Retained earnings	22,500	
Total equity		27,500
10% loan notes	5,000	
9% preference shares, par value \$1	2,500	
Total non-current liabilities		7,500
Current liabilities		5,000
Total equity and liabilities		40,000

The current ex div ordinary share price is \$4.50 per share. An ordinary dividend of 35 cents per share has just been paid and dividends are expected to increase by 4% per year for the foreseeable future. The current ex div preference share price is 76.2 cents. The loan notes are secured on the existing non-current assets of Droxfol Co and are redeemable at par in eight years' time. They have a current ex interest market price of \$105 per \$100 loan note. Droxfol Co pays tax on profits at an annual rate of 30%.

The expansion of business is expected to increase profit before interest and tax by 12% in the first year. Droxfol Co has no overdraft.

Average sector ratios:

Financial gearing: 45% (prior charge capital divided by equity share capital on a book value basis)
Interest coverage ratio: 12 times

Required

(a) Calculate the current weighted average cost of capital of Droxfol Co. **(9 marks)**

(b) Discuss whether financial management theory suggests that Droxfol Co can reduce its weighted average cost of capital to a minimum level. **(8 marks)**

(c) Evaluate and comment on the effects, after one year, of the loan note issue and the expansion of business on the following ratios:

(i) Interest coverage ratio.
(ii) Financial gearing.
(iii) Earnings per share.

Assume that the dividend growth rate of 4% is unchanged. **(8 marks)**

(Total = 25 marks)

50 Burse Co (6/08) — 45 mins

Burse Co wishes to calculate its weighted average cost of capital and the following information relates to the company at the current time:

Number of ordinary shares	20 million
Book value of 7% convertible debt	\$29 million
Book value of 8% bank loan	\$2 million
Market price of ordinary shares	\$5·50 per share
Market value of convertible debt	\$107·11 per \$100 bond
Equity beta of Burse Co	1·2
Risk-free rate of return	4·7%
Equity risk premium	6·5%
Rate of taxation	30%

Burse Co expects share prices to rise in the future at an average rate of 6% per year. The convertible debt can be redeemed at par in eight years' time, or converted in six years' time into 15 shares of Burse Co per \$100 bond.

Required

(a) Calculate the market value weighted average cost of capital of Burse Co. State clearly any assumptions that you make. **(12 marks)**

(b) Discuss the circumstances under which the weighted average cost of capital can be used in investment appraisal. **(6 marks)**

(c) Discuss whether the dividend growth model or the capital asset pricing model offers the better estimate of the cost of equity of a company. **(7 marks)**

(Total = 25 marks)

BUSINESS VALUATIONS

Questions 51 to 56 cover Business Valuations, the subject of Part G of the BPP Study Text for Paper F9.

51 MC

45 mins

MC provides a range of services to the medical and healthcare industry. These services include providing locum (temporary) cover for healthcare professionals (mainly doctors and nurses), emergency call-out and consultancy/advisory services to government-funded health organisations. The company also operates a research division that has been successful in recent years in attracting funding from various sources. Some of the employees in this division are considered to be leading experts in their field and are very highly paid.

A consortium of doctors and redundant health-service managers started the company some years ago. It is still owned by the same people, but has since grown into an organisation employing over 100 full-time staff throughout the UK. In addition, the company uses specialist staff employed in state-run organisations on a part-time contract basis. The owners of the company are now interested in either obtaining a stock market quotation, or selling the company if the price accurately reflects what they believe to be the true worth of the business.

Summary financial statistics for MC and a competitor company, which is listed on the UK Stock Exchange, are shown below. The competitor company is broadly similar to MC but uses a higher proportion of part-time to full-time staff and has no research capability.

	MC	*Competitor*
	Last year end:	*Last year end:*
	31.3.20X0	*31.3.20X0*
Shares in issue (m)	10	20
Earnings per share (pence)	75	60
Dividend per share (pence)	55	50
Net asset value (£m)	60	75
Debt ratio (outstanding debt as % of total financing)	10	20
Share price (pence)	N/A	980
Expected rate of growth in earnings and dividends (% per annum)	8	7

Notes

1 The treasurer of the company has provided the forecast growth rate for MC. The forecast for the competitor is based on published information.

2 The net assets of MC are the net book values of land, buildings, equipment and vehicles plus net working capital.

3 Sixty per cent of the shares in the competitor company are owned by the directors and their relatives or associates.

4 MC uses a 'rule-of-thumb' discount rate of 15% to evaluate its investments. The cost of equity of the competitor has been calculated to be 13%.

5 Assume that growth rates in earnings and dividends are constant per annum.

Required

Assume that you are an independent consultant retained by MC to advise on the valuation of the company and on the relative advantages of a public flotation versus outright sale.

Prepare a report for the directors that:

(a) Produces a range of share prices at which shares in MC might be issued. Use whatever information is available. Explain the methods of valuation that you have used and discuss their suitability for providing an appropriate valuation of the company. **(16 marks)**

(b) Discusses the relative advantages of flotation and direct sale of shares. **(6 marks)**

(c) Recommends a course of action that the company should take. **(3 marks)**

(Total = 25 marks)

52 BST

45 mins

BST Motors Co (BST) is a long-established listed company. Its main business is the retailing of new and used motor cars and the provision of after-sales service. It has sales outlets in most of the major towns and cities in the country. It also owns a substantial amount of land and property that it has acquired over the years, much of which it rents or leases on medium-long term agreements. Approximately 80% of its net current asset value is land and buildings.

The company has grown organically for the last few years but is now considering expanding by acquisition.

SM owns a number of car showrooms in wealthy, semi-rural locations. All of these showrooms operate the franchise of a well-known major motor manufacturer. SM is a long-established private company with the majority of shares owned by the founding family, many of whom still work for the company. The major shareholders are now considering selling the business if a suitable price can be agreed. The Managing Director of SM, who is a major shareholder, has approached BST to see if they would be interested in buying SM. He has implied that holders of up to 50% of SM's shares might be willing to accept BST shares as part of the deal.

The forecast earnings of BST for the next financial year are $35 million. According to the Managing Director of SM, his company's earnings are expected to be $4 million for the next financial year.

Financial statistics and other information on BST and SM are shown below:

	BST	*SM*
Shares in issue (millions)	25	1.5
Earnings per share (cents)	112.5	153
Dividend per share (cents)	50.6	100
Share price (cents)	1237	N/A
Net asset value attributable to equity ($m)	350	45
Debt ratio (outstanding debt as percentage of total market value of company)	20	0
Forecast growth rate percentage (constant, annualised)	4	5
Cost of equity	9%	N/A

SM does not calculate a cost of equity, but the industry average for similar companies is 10%

Required

Assume you are a financial manager working with BST. Advise the BST Board on the following issues in connection with a possible bid for SM:

(a) Methods of valuation that might be appropriate and a range of valuations for SM within which BST should be prepared to negotiate. **(10 marks)**

(b) The financial factors relating to both companies that might affect the bid. **(5 marks)**

(c) Explain the practical considerations in the valuation of shares and businesses. **(10 marks)**

(Total = 25 marks)

53 Phobis Co (12/07)

45 mins

(a) Phobis Co is considering a bid for Danoca Co. Both companies are stock-market listed and are in the same business sector. Financial information on Danoca Co, which is shortly to pay its annual dividend, is as follows:

Number of ordinary shares	5 million
Ordinary share price (ex div basis)	$3·30
Earnings per share	40·0c
Proposed payout ratio	60%
Dividend per share one year ago	23·3c
Dividend per share two years ago	22·0c
Equity beta	1·4

Other relevant financial information	
Average sector price/earnings ratio	10
Risk-free rate of return	4·6%
Return on the market	10·6%

Required

Calculate the value of Danoca Co using the following methods.

(i) price/earnings ratio method;
(ii) dividend growth model;

and discuss the significance, to Phobis Co, of the values you have calculated, in comparison to the current market value of Danoca Co. **(11 marks)**

(b) Phobis Co has in issue 9% bonds which are redeemable at their par value of \$100 in five years' time. Alternatively, each bond may be converted on that date into 20 ordinary shares of the company. The current ordinary share price of Phobis Co is \$4·45 and this is expected to grow at a rate of 6·5% per year for the foreseeable future. Phobis Co has a cost of debt of 7% per year.

Required

Calculate the following current values for each \$100 convertible bond:

(i) market value;
(ii) floor value;
(iii) conversion premium. **(6 marks)**

(c) Distinguish between weak form, semi-strong form and strong form stock market efficiency, and discuss the significance to a listed company if the stock market on which its shares are traded is shown to be semi-strong form efficient. **(8 marks)**

(Total = 25 marks)

54 THP Co (6/08) — 45 mins

THP Co is planning to buy CRX Co, a company in the same business sector, and is considering paying cash for the shares of the company. The cash would be raised by THP Co through a 1 for 3 rights issue at a 20% discount to its current share price.

The purchase price of the 1 million issued shares of CRX Co would be equal to the rights issue funds raised, less issue costs of \$320,000. Earnings per share of CRX Co at the time of acquisition would be 44·8c per share. As a result of acquiring CRX Co, THP Co expects to gain annual after-tax savings of \$96,000.

THP Co maintains a payout ratio of 50% and earnings per share are currently 64c per share. Dividend growth of 5% per year is expected for the foreseeable future and the company has a cost of equity of 12% per year.

Information from THP Co's statement of financial position:

	\$000
Equity and liabilities	
Shares (\$1 par value)	3,000
Reserves	4,300
	7,300
Non-current liabilities	
8% loan notes	5,000
Current liabilities	2,200
Total equity and liabilities	14,500

Required

(a) Calculate the current ex dividend share price of THP Co and the current market capitalisation of THP Co using the dividend growth model. **(4 marks)**

(b) Assuming the rights issue takes place and ignoring the proposed use of the funds raised, calculate:

   (i) the rights issue price per share;
   (ii) the cash raised;
   (iii) the theoretical ex rights price per share; and
   (iv) the market capitalisation of THP Co. **(5 marks)**

(c) Using the price/earnings ratio method, calculate the share price and market capitalisation of CRX Co before the acquisition. **(3 marks)**

(d) Assuming a semi-strong form efficient capital market, calculate and comment on the post acquisition market capitalisation of THP Co in the following circumstances:

   (i) THP Co does not announce the expected annual after-tax savings; and
   (ii) the expected after-tax savings are made public. **(5 marks)**

(e) Discuss the factors that THP Co should consider, in its circumstances, in choosing between equity finance and debt finance as a source of finance from which to make a cash offer for CRX Co. **(8 marks)**

(Total = 25 marks)

55 Dartig Co (12/08) 45 mins

Dartig Co is a stock-market listed company that manufactures consumer products and it is planning to expand its existing business. The investment cost of $5 million will be met by a 1 for 4 rights issue. The current share price of Dartig Co is $2·50 per share and the rights issue price will be at a 20% discount to this. The finance director of Dartig Co expects that the expansion of existing business will allow the average growth rate of earnings per share over the last four years to be maintained into the foreseeable future.

The earnings per share and dividends paid by Dartig over the last four years are as follows:

	20X3	*20X4*	*20X5*	*20X*	*20X7*
Earnings per share (cents)	27.7	29.0	29.0	30.2	32.4
Dividend per share (cents)	12.8	13.5	13.5	14.5	15.0

Dartig Co has a cost of equity of 10%. The price/earnings ratio of Dartig Co has been approximately constant in recent years. Ignore issue costs.

Required

(a) Calculate the theoretical ex rights price per share prior to investing in the proposed business expansion. **(3 marks)**

(b) Calculate the expected share price following the proposed business expansion using the price/earnings ratio method. **(3 marks)**

(c) Discuss whether the proposed business expansion is an acceptable use of the finance raised by the rights issue, and evaluate the expected effect on the wealth of the shareholders of Dartig Co. **(5 marks)**

(d) Using the information provided, calculate the ex div share price predicted by the dividend growth model and discuss briefly why this share price differs from the current market price of Dartig Co. **(6 marks)**

At a recent board meeting of Dartig Co, a non-executive director suggested that the company's remuneration committee should consider scrapping the company's current share option scheme, since executive directors could be rewarded by the scheme even when they did not perform well. A second non-executive director disagreed, saying the problem was that even when directors acted in ways which decreased the agency problem, they might not be rewarded by the share option scheme if the stock market were in decline.

Required

(e) Explain the nature of the agency problem and discuss the use of share option schemes as a way of reducing the agency problem in a stock-market listed company such as Dartig Co. **(8 marks)**

(Total = 25 marks)

56 KFP Co (6/09) **45 mins**

KFP Co, a company listed on a major stock market, is looking at its cost of capital as it prepares to make a bid to buy a rival unlisted company, NGN. Both companies are in the same business sector. Financial information on KFP Co and NGN is as follows:

	KFP Co		*NGN*	
	$m	*$m*	*$m*	*$m*
Non-current assets		36		25
Current assets	7		7	
Current liabilities	3		4	
Net current assets		4		3
Total assets less current liabilities		40		28
Ordinary shares, par value 50c	15		5	
Retained earnings	10		3	
Total equity		25		8
7% bonds, redeemable at par in seven years' time		15		
9% bonds, redeemable at par in two years' time				20
Total equity and non-current liabilities		40		28

Other relevant financial information:

Risk-free rate of return	4·0%
Average return on the market	10·5%
Taxation rate	30%

NGN has a cost of equity of 12% per year and has maintained a dividend payout ratio of 45% for several years. The current earnings per share of the company is 80c per share and its earnings have grown at an average rate of 4·5% per year in recent years.

The ex div share price of KFP Co is $4·20 per share and it has an equity beta of 1·2. The 7% bonds of the company are trading on an ex interest basis at $94·74 per $100 bond. The price/earnings ratio of KFP Co is eight times.

The directors of KFP Co believe a cash offer for the shares of NGN would have the best chance of success. It has been suggested that a cash offer could be financed by debt.

Required:

(a) Calculate the weighted average cost of capital of KFP Co on a market value weighted basis. **(10 marks)**

(b) Calculate the total value of the target company, NGN, using the following valuation methods:

(i) Price/earnings ratio method, using the price/earnings ratio of KFP Co; and
(ii) Dividend growth model. **(6 marks)**

(c) Discuss the relationship between capital structure and weighted average cost of capital, and comment on the suggestion that debt could be used to finance a cash offer for NGN. **(9 marks)**

(Total = 25 marks)

RISK MANAGEMENT

Questions 57 to 64 cover Risk Management, the subject of Part H of the BPP Study Text for Paper F9.

57 Marton Co — 45 mins

Marton Co produces a range of specialised components, supplying a wide range of UK and overseas customers, all on credit terms. 20% of UK turnover is sold to one firm. Having used generous credit policies to encourage past growth, Marton now has to finance a substantial overdraft and is concerned about its liquidity. Marton borrows from its bank at 13% per annum interest. No further sales growth in volume or value terms is planned for the next year.

In order to speed up collection from UK customers, Marton is considering two alternative policies.

Option one

Factoring on a with-recourse, service only basis, the factor administering and collecting payment from Marton's UK customers. This is expected to generate administrative savings of £200,000 per annum and to lower the average receivable collection period by 15 days. The factor will make a service charge of 1% of Marton's UK turnover and also provide credit insurance facilities for an annual premium of £80,000.

Option two

Offering discounts to UK customers who settle their accounts early. The amount of the discount will depend on speed of payment as follows.

Payment within 10 days of despatch of invoices: 3%

Payment within 20 days of despatch of invoices: 1.5%

It is estimated that UK customers representing 20% and 30% of Marton's sales respectively will take up these offers, the remainder continuing to take their present credit period.

In addition, Marton is concerned about the risk of its overseas earnings. All overseas customers pay in US dollars and Marton does not hedge currency risk, invoicing at the prevailing spot rate, which is currently US$1.45:£1. It is considering the use of an overseas factor and also hedging its US dollar income on the forward market. Its bank has offered to buy all of its dollar earnings at a fixed rate of US$1.55:£1. Marton's advisers estimate the following chances of various dollar/sterling rates of exchange:

US Dollars per £	*Probability*
1.60	0.1
1.50	0.2
1.45	0.4
1.40	0.2
1.30	0.1

Extracts from Marton's most recent accounts are given below.

	£'000	£'000
Sales (all on credit)		
Home	20,000	
Export	5,000	
		25,000
Cost of sales		(17,000)
Operating profit		8,000
Current assets		
Inventory	2,500	
Receivables*	4,500	
Cash	–	

*There are no overseas receivables at the year end.

Note. Taxes and inflation can be ignored in this question.

Required

(a) Calculate the relative costs and benefits *in terms of annual profit before tax* of each of the two proposed methods of reducing domestic receivables, and recommend the most financially advantageous policy. Comment on your results. **(13 marks)**

(b) Briefly outline the services provided by an overseas factor. **(4 marks)**

(c) (i) Calculate the maximum loss which Marton can sustain through movements in the dollar/sterling exchange rate if it does not hedge overseas sales. **(2 marks)**

(ii) Calculate the maximum opportunity cost of selling dollar earnings forward at US$1.55:$1. **(2 marks)**

(iii) Briefly discuss whether Marton should hedge its foreign currency risk. **(4 marks)**

(Total = 25 marks)

58 SDT — 45 mins

SDT plc is a UK based manufacturer of a wide range of printed circuit boards (PCBs) that are used in a variety of electrical products. SDT exports over 90% of its production to assembly plants owned by large multinational electronics companies all around the world. Two companies (A and B) require SDT to invoice them in a single currency, regardless of the export destination of the PCBs. The chosen currencies are the Japanese Yen (Company A) and the US$ (Company B) respectively. The remaining export sales all go to European customers and are invoiced in Euros.

The variable cost and export price per unit PCB are shown below.

Market	*Unit variable cost (£)*	*Unit export sales price*
Company A	2.75	Yen 632.50
Company B	4.80	US$ 10.2678
Europe	6.25	Euro 12.033

Goods are supplied on 60 day credit terms.

The following receipts for export sales are due in 60 days:

Company A	Yen 9,487,500
Company B	US$ 82,142
Europe	Euro 66,181

The foreign exchange rates to be used by SDT in evaluating its revenue from the export sales are as follows.

	Yen/£	*US$/£*	*Euro/£*
Spot market	199.887 ± 0.9	1.7723 ± 0.0103	1.4708 ± 0.0105
2 months forward	198.850 ± 1.182	1.7663 ± 0.0112	1.4644 ± 0.0140
3 months forward	197.230 ± 1.202	1.7559 ± 0.0118	1.4566 ± 0.0155
1 year forward	189.575 ± 1.417	1.7131 ± 0.0180	1.4251 ± 0.0175

The Managing Director of SDT believes that the foreign exchange markets are efficient and so the likelihood that SDT will make foreign exchange gains is the same as the likelihood that it will make foreign exchange losses. Furthermore, any exchange risk is already diversified across three currencies, each from countries in very different economic regions of the world. The Managing Director has therefore recommended that the Treasury Department should not hedge any foreign exchange risks arising from export sales.

Required

(a) Critically comment on the validity of the views and recommendations expressed by the Managing Director and explain how currency hedging might nevertheless be beneficial to SDT. **(6 marks)**

(b) (i) Calculate the sterling value of the contribution earned from exports to each of the customers (A, B and Europe) assuming that SDT:

(1) Hedges the risk in the forward market; **(3 marks)**

(2) Does not hedge the risk and the relevant spot exchange rates in two months' time are as follows:

Two month spot
Yen/£ 201.405 ± 1.225
US$/£ 1.770 ± 0.005
Euro/£ 1.464 ± 0.004

(3 marks)

(ii) Calculate the average contribution to sales ratio in each of the above scenarios and advise SDT accordingly on whether to hedge its foreign exchange exposure. **(3 marks)**

(c) Comment on why (based on relative risk analysis) a company might seek to generate higher rates of return from export sales compared to domestic sales. **(6 marks)**

(d) If the payment from Company B is received late, briefly explain what risk SDT is taking in hedging B's payment in the forward market, and how this risk could be avoided. **(4 marks)**

(Total = 25 marks)

59 BS — 45 mins

BS is an importer/exporter of heavy machinery for a variety of industries. It is based in the UK but trades extensively with the USA. Assume that you are a newly appointed management accountant with BS. The company does not have a separate treasury function and it is part of your duties to assess and manage currency risks. You are concerned about the recent fluctuations in the exchange rate between US$ and sterling and are considering various methods of hedging the exchange risk involved. Assume it is now the end of March. The following transactions are expected on 30 June.

Sales receipts	$450,000
Purchases payable	$250,000

Economic data

- The spot rate of exchange is US$1.6540-1.6590 to the £.
- The three-month forward rate that will apply for this contract is $1.6513/£
- Annual interest rates for three months' borrowing are: USA 6 per cent; UK 9 per cent.
- Annual interest rates for three months' lending are: USA 4 per cent; UK 6.5 per cent.

Required

(a) Calculate the net sterling receipts that BS can expect from its transactions if the company hedges the exchange risk using each of the following alternatives:

(i) The forward foreign exchange market
(ii) The money market

Accompany your calculations with brief explanations of your approach and recommend the most financially advantageous alternative for BS. Assume transaction costs would be 0.2 per cent of the US$ transaction value under either method, paid at the beginning of the transaction (ie now). **(10 marks)**

(b) Explain the factors the company should consider before deciding to hedge the risk using the foreign currency markets, and identify any alternative actions available to minimise risk. **(5 marks)**

(c) Discuss the causes of exchange rate fluctuations. **(10 marks)**

(Total = 25 marks)

60 Nedwen Co (Pilot paper) 45 mins

Nedwen Co is a UK-based company which has the following expected transactions.

One month:	Expected receipt of $240,000
One month:	Expected payment of $140,000
Three months:	Expected receipts of $300,000

The finance manager has collected the following information:

Spot rate ($ per £):	1.7820 ± 0.0002
One month forward rate ($ per £):	1.7829 ± 0.0003
Three months forward rate ($ per £):	1.7846 ± 0.0004

Money market rates for Nedwen Co:

	Borrowing	*Deposit*
One year sterling interest rate:	4.9%	4.6
One year dollar interest rate:	5.4%	5.1

Assume that it is now 1 April.

Required

(a) Discuss the differences between transaction risk, translation risk and economic risk. **(6 marks)**

(b) Explain how inflation rates can be used to forecast exchange rates. **(6 marks)**

(c) Calculate the expected sterling receipts in one month and in three months using the forward market. **(3 marks)**

(d) Calculate the expected sterling receipts in three months using a money-market hedge and recommend whether a forward market hedge or a money market hedge should be used. **(5 marks)**

(e) Discuss how sterling currency futures contracts could be used to hedge the three-month dollar receipt. **(5 marks)**

(Total = 25 marks)

61 Boluje Co (12/08) **45 mins**

Three years ago Boluje Co built a factory in its home country costing $3·2 million. To finance the construction of the factory, Boluje Co issued peso-denominated bonds in a foreign country whose currency is the peso. Interest rates at the time in the foreign country were historically low. The foreign bond issue raised 16 million pesos and the exchange rate at the time was 5·00 pesos/$.

Each foreign bond has a par value of 500 pesos and pays interest in pesos at the end of each year of 6·1%. The bonds will be redeemed in five years' time at par. The current cost of debt of peso-denominated bonds of similar risk is 7%.

In addition to domestic sales, Boluje Co exports goods to the foreign country and receives payment for export sales in pesos. Approximately 40% of production is exported to the foreign country.

The spot exchange rate is 6·00 pesos/$ and the 12-month forward exchange rate is 6·07 pesos/$. Boluje Co can borrow money on a short-term basis at 4% per year in its home currency and it can deposit money at 5% per year in the foreign country where the foreign bonds were issued. Taxation may be ignored in all calculation parts of this question.

Required

(a) Briefly explain the reasons why a company may choose to finance a new investment by an issue of debt finance. **(7 marks)**

(b) Calculate the current total market value (in pesos) of the foreign bonds used to finance the building of the new factory. **(4 marks)**

(c) Assume that Boluje Co has no surplus cash at the present time:

(i) Explain and illustrate how a money market hedge could protect Boluje Co against exchange rate risk in relation to the dollar cost of the interest payment to be made in one year's time on its foreign bonds. **(4 marks)**

(ii) Compare the relative costs of a money market hedge and a forward market hedge. **(2 marks)**

(d) Describe other methods, including derivatives, that Boluje Co could use to hedge against exchange rate risk. **(8 marks)**

(Total = 25 marks)

62 Preparation question: Interest rates

(a) It is 30 June. Bash Co will need a £20 million 6 month fixed rate loan from 1 October. The company wants to hedge using an FRA. The relevant FRA rate is 7% on 30 June.

(i) Explain how FRAs work and state what FRA is required in this situation.

(ii) Calculate the result of the FRA and the effective loan rate if the 6 month FRA benchmark rate has moved to

(1) 6%
(2) 9%

(b) Describe the likely implications to a typical company of lower interest rates.

(c) If you were the Financial Director of a company with a large investment programme and no capital gearing, explain what changes might result to both the investment programme and its financing as a result of falling interest rates.

63 Preparation question: QW

Assume that you are treasurer of QW, a company with diversified, international interests. The company wishes to borrow £10 million for a period of three years. Your company's credit rating is good and current market data suggests that you could borrow at a fixed rate of interest at 8 per cent per annum or at a floating rate of LIBOR + 0.2 per cent per annum. You believe that interest rates are likely to fall over the next three years, and favour borrowing at a floating rate.

You have been in the post for twelve months, having been recruited from a large financial institution. You have a keen interest in using financial derivatives (such as futures and options) to both manage risk and generate revenue. Some board members have expressed concern that your activities may be involving the company in unnecessary risk.

Required

(a) Describe and discuss different types of interest rate risk.

(b) Explain the meaning and use of financial derivatives, in general terms, and the advantages and disadvantages of their use for companies such as QW.

(c) Describe the characteristics and benefits of interest rate swaps compared with other forms of interest-rate-risk management, such as forward rate agreements and interest rate futures.

64 Gorwa Co (12/08) 45 mins

The following financial information related to Gorwa Co:

	20X7	20X6
	$'000	$'000
Sales (all on credit)	37,400	26,720
Cost of sales	34,408	23,781
Operating profit	2,992	2,939
Finance costs (interest payments)	355	274
Profit before taxation	2,637	2,665

	20X7		20X6	
	$'000	$'000	$000	$'000
Non-current assets		13,632	12,750	
Current assets				
Inventory	4,600		2,400	
Trade receivables	4,600		2,200	
	9,200		4,600	
Current liabilities				
Trade payables	4,750		2,000	
Overdraft	3,225		1,600	
	7,975		3,600	
Net current assets		1,225		1,000
		14,857		13,750
8% Bonds		2,425		2,425
		12,432		11,325
Capital and reserves				
Share capital		6,000		6,000
Reserves		6,432		5,325
		12,432		11,325

The average variable overdraft interest rate in each year was 5%. The 8% bonds are redeemable in ten years' time.

A factor has offered to take over the administration of trade receivables on a non-recourse basis for an annual fee of 3% of credit sales. The factor will maintain a trade receivables collection period of 30 days and Gorwa Co will save$100,000 per year in administration costs and $350,000 per year in bad debts. A condition of the factoring agreement is that the factor would advance 80% of the face value of receivables at an annual interest rate of 7%.

Required

(a) Discuss, with supporting calculations, the possible effects on Gorwa Co of an increase in interest rates and advise the company of steps it can take to protect itself against interest rate risk. **(7 marks)**

(b) Use the above financial information to discuss, with supporting calculations, whether or not Gorwa Co is overtrading. **(10 marks)**

(c) Evaluate whether the proposal to factor trade receivables is financially acceptable. Assume an average cost of short-term finance in this part of the question only. **(8 marks)**

(Total = 25 marks)