Answers

Section C

31 (a) (i) The cash operating cycle can be calculated by adding inventory days and receivables days, and subtracting payables days.

Cost of sales = 3,500,000 x (1 – 0·4) = $2,100,000

Inventory days = 360 x 455,000/2,100,000 = 78 days
Trade receivables days = 360 x 408,350/3,500,000 = 42 days
Trade payables days = 360 x 186,700/2,100,000 = 32 days

Cash operating cycle of Pangli Co = 78 + 42 – 32 = 88 days

(ii) Inventory at end of January 20X7 = 455,000 + 52,250 = $507,250

At the start of January 20X7, 100% of December 20X6 receivables will be outstanding ($300,000), together with 40% of November 20X6 receivables ($108,350 = 40% x 270,875), a total of $408,350 as given.

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Trade receivables at start of January 20X7	408,350
Outstanding November 20X6 receivables paid	(108,350)
December 20X6 receivables, 60% paid	(180,000)
January 20X7 credit sales	350,000
Trade receivables at end of January 20X7	470,000

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Trade payables at start of January 20X7	186,700
Payment of 70% of trade payables	(130,690)
January 20X7 credit purchases	250,000
Trade payables at end of January 20X7	306,010

Overdraft decrease due to working capital movements = 52,250 + 61,650 – 119,310 = ($5,410)

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Overdraft at start of January 20X7	240,250
Decrease from working capital movements	(5,410)
Interest payment	70,000
Operating cash outflows	146,500
Overdraft expected at end of January 20X7	451,340

(iii) Current assets at start of January 20X7 = 455,000 + 408,350 = $863,350
Current liabilities at start of January 20X7 = 186,700 + 240,250 = $426,950
Current ratio at start of January 20X7 = 863,350/426,950 = 2·03 times

Current assets at end of January 20X7 = 507,250 + 470,000 = $977,250
Current liabilities at end of January 20X7 = 306,010 + 451,340 = $757,350
Current ratio at end of January 20X7 = 977,250/757,350 = 1·29 times

(b) Pangli Co could use the following techniques in managing trade receivables: assessing creditworthiness; managing accounts receivable; collecting amounts owing; offering early settlement discounts; using factoring and invoice discounting; and managing foreign accounts receivable.

Assessing creditworthiness
Pangli Co can seek to reduce its exposure to the risks of bad debt and late payment by assessing the creditworthiness of new customers. In order to do this, the company needs to review information from a range of sources. These sources include trade references, bank references, credit reference agencies and published accounts. To help it to review this information, Pangli Co might develop its own credit scoring process. After assessing the creditworthiness of new customers, Pangli Co can decide on how much credit to offer and on what terms.

Managing accounts receivable
Pangli Co needs to make sure that its credit customers abide by the terms of trade agreed when credit was granted following credit assessment. The company wants its customers to settle their outstanding accounts on time and also to keep to their agreed credit limits. Key information here will be the number of overdue accounts and the degree of lateness of amounts outstanding. An aged receivables analysis can provide this information.

Pangli Co also needs to make sure that its credit customers are aware of the outstanding invoices on their accounts. The company will therefore remind them when payment is due and regularly send out statements of account.

Collecting amounts owing
Ideally, credit customers will pay on time and there will be no need to chase late payers. There are many ways to make payment in the modern business world and Pangli Co must make sure that its credit customers are able to pay quickly and easily. If an account becomes overdue, Pangli Co must make sure it is followed up quickly. Credit control staff must assess whether payment is likely to be forthcoming and if not, a clear policy must be in place on further steps to take. These further steps might include legal action and using the services of a debt collection agency.

Offering early settlement discounts
Pangli Co can encourage its credit customers to settle outstanding amounts by offering an early settlement discount. This will offer a reduction in the outstanding amount (the discount) in exchange for settlement before the due date. For example, if the credit customer agreed to pay in full after 40 days, an early settlement discount might offer a 2% discount for settling after 25 days. Pangli Co must weigh the benefit of offering such an early settlement discount against the benefit expected to arise from its use by credit customers. One possible benefit might be a reduction in the amount of interest the company pays on its overdraft. Another possible benefit might be matching or bettering the terms of trade of a competitor.

Using factoring and invoice discounting
Pangli Co might use a factor to help manage its accounts receivable, either on a recourse or non-recourse basis. The factor could offer assistance in credit assessment, managing accounts receivable and collecting amounts owing. For a fee, the factor could advance a percentage of the face value of outstanding invoices. The service offered by the factor would be tailored to the needs of the company.

Invoice discounting is a service whereby a third party, usually a factor, pays a percentage of the face value of a collection of high value invoices. When the invoices are settled, the outstanding balance is paid to the company, less the invoice discounter's fee.

Managing foreign accounts receivable
Foreign accounts receivable can engender increased risk of non-payment by customers and can increase the value of outstanding receivables due to the longer time over which foreign accounts receivable are outstanding. Pangli Co could reduce the risk of non-payment by assessing creditworthiness, employing an export factor, taking out export credit insurance, using documentary credits and entering into countertrade agreements. The company could reduce the amount of investment in foreign accounts receivable through using techniques such as advances against collections and negotiating or discounting bills of exchange

Examiner's note: Only five techniques were required to be discussed.

32 (a) The terms risk and uncertainty are often used interchangeably in everyday discussion, however, there is a clear difference between them in relation to investment appraisal.

Risk refers to the situation where an investment project has several possible outcomes, all of which are known and to which probabilities can be attached, for example, on the basis of past experience. Risk can therefore be quantified and measured by the variability of returns of an investment project.

Uncertainty refers to the situation where an investment project has several possible outcomes but it is not possible to assign probabilities to their occurrence. It is therefore not possible to say which outcomes are likely to occur.

The difference between risk and uncertainty, therefore, is that risk can be quantified whereas uncertainty cannot be quantified. Risk increases with the variability of returns, while uncertainty increases with project life.

(b) NPV calculation

Year	1	2	3	4	5
	$000	$000	$000	$000	$000
Sales income	12,069	16,791	23,947	11,936	
Variable cost	(5,491)	(7,139)	(9,720)	(5,616)	
Contribution	6,578	9,652	14,227	6,320	
Fixed cost	(1,100)	(1,121)	(1,155)	(1,200)	
Taxable cash flow	5,478	8,531	13,072	5,120	
Taxation at 28%		(1,534)	(2,389)	(3,660)	(1,434)
TAD tax benefits		1,400	1,050	788	2,362
After-tax cash flow	5,478	8,397	11,733	2,248	928
Discount at 10%	0·909	0·826	0·751	0·683	0·621
Present values	4,980	6,936	8,812	1,535	576

	$000
PV of future cash flows	22,839
Initial investment	(20,000)
ENPV	2,839

Comment

The probability that variable cost per unit will be $12·00 per unit or less is 80% and so the probability of a positive NPV is therefore at least 80%. However, the effect on the NPV of the variable cost per unit increasing to $14·70 per unit must be investigated, as this may result in a negative NPV.

The expected NPV is positive and so the investment project is likely to be acceptable on financial grounds.

Workings

Sales revenue

Year	1	2	3	4
Selling price ($/unit)	26·50	28·50	30·00	26·00
Inflated at 3·5% per year	27·43	30·53	33·26	29·84
Sales volume (000 units/year)	440	550	720	400
Sales income ($000/year)	12,069	16,791	23,947	11,936

Variable cost

Mean variable cost = (0·45 x 10·80) + (0·35 x 12·00) + (0·20 x 14·70) = $12·00/unit

Year	1	2	3	4
Variable cost ($/unit)	12·00	12·00	12·00	12·00
Inflated at 4% per year	12·48	12·98	13·50	14·04
Sales volume (000 units/year)	440	550	720	400
Variable cost ($000/year)	5,491	7,139	9,720	5,616

Year	1	2	3	4
TAD ($000)	5,000	3,750	2,813	8,437
Tax benefits at 28% ($000)	1,400	1,050	788	2,362*

*(20,000 x 0·28) – 1,400 – 1,050 – 788 = $2,362,000

Alternative calculation of after-tax cash flow

Year	1	2	3	4	5
	$000	$000	$000	$000	$000
Taxable cash flow	5,478	8,531	13,072	5,120	
TAD ($000)	(5,000)	(3,750)	(2,813)	(8,437)	
Taxable profit	478	4,781	10,259	(3,317)	
Taxation at 28%		(134)	(1,339)	(2,873)	929
After-tax profit	478	4,647	8,920	(6,190)	929
Add back TAD	5,000	3,750	2,813	8,437	
After-tax cash flow	5,478	8,397	11,733	2,247	929

(c) There are several ways of considering risk in the investment appraisal process.

Sensitivity analysis

This technique looks at the effect on the NPV of an investment project of changes in project variables, such as selling price per unit, variable cost per unit and sales volume. There are two approaches which are used. The first approach calculates the relative (percentage) change in a given project variable which is needed to make the NPV zero. The second approach calculates the relative (percentage) change in project NPV which results from a given change in the value of a project variable (for example, 5%).

Sensitivity analysis considers each project variable individually. Once the sensitivities for each project variable have been calculated, the next step is to identify the key or critical variables. These are the project variables where the smallest relative change makes the NPV zero, or where the biggest change in NPV results from a given change in the value of a project variable. The key or critical project variables indicate where underlying assumptions may need to be checked or where managers may need to focus their attention in order to make an investment project successful. However, as sensitivity analysis does not consider risk as measured by probabilities, it can be argued that it is not really a way of considering risk in investment appraisal at all, even though it is often described as such.

Probability analysis

This technique requires that probabilities for each project outcome be assessed and assigned. Alternatively, probabilities for different values of project variables can be assessed and assigned. A range of project NPVs can then be calculated, as well as the mean NPV (the expected NPV or ENPV) associated with repeating the investment project many times. The worst and best outcomes and their probabilities, the most likely outcome and its probability and the probability of a negative NPV can also be calculated. Investment decisions could then be based on the risk profile of the investment project, rather than simply on the NPV decision rule.

Risk-adjusted discount rate

It is often said that 'the higher the risk, the higher the return'. Investment projects with higher risk should therefore be discounted with a higher discount rate than lower risk investment projects. Better still, the discount rate should reflect the risk of the investment project.

Theoretically, the capital asset pricing model (CAPM) can be used to determine a project-specific discount rate which reflects an investment project's systematic risk. This means selecting a proxy company with similar business activities to a proposed investment project, ungearing the proxy company equity beta to give an asset beta which does not reflect the proxy company financial risk, regearing the asset beta to give an equity beta which reflects the financial risk of the investing company, and using the CAPM to calculate a project-specific cost of equity for the investment project.

Adjusted payback

If uncertainty and risk are seen as being the same, payback can consider risk by shortening the payback period. Because uncertainty (risk) increases with project life, shortening the payback period will require a risky project to pay back sooner, thereby focusing on cash flows which are nearer in time (less uncertain) and so less risky.

Discounted payback can also be seen as considering risk because future cash flows can be converted into present values using a risk-adjusted discount rate. The target payback period normally used by a company can then be applied to the discounted cash flows. Overall, the effect is likely to be similar to shortening the payback period with undiscounted cash flows.

				Marks	*Marks*
Section C					
31	**(a)**	**(i)**	Cost of sales	0·5	
			Inventory days	0·5	
			Receivables days	0·5	
			Cash operating cycle	0·5	
					2
		(ii)	Inventory 31 January	0·5	
			Receivables 31 January	1	
			Payables 31 January	1	
			O/d increase from WC	0·5	
			Overdraft 31 January	1	
					4
		(iii)	Current ratio 1 January	2	
			Current ratio 31 January	2	
					4
	(b)		First technique	2	
			Second technique	2	
			Third technique	2	
			Fourth technique	2	
			Fifth technique	2	
					10
					20
32	**(a)**		Explain risk	1	
			Explain uncertainty	1	
			Discuss difference	1	
					3
	(b)		Inflated revenue	1	
			Mean variable cost	1	
			Inflated variable cost	1	
			Tax liabilities	1	
			TAD benefits	1	
			Timing of tax flows	1	
			Calculation of PVs	1	
			Comment on variable cost	1	
			Comment on NPV	1	
					9
	(c)		Sensitivity analysis	2	
			Probability analysis	2	
			Risk-adjusted rate	2	
			Adjusted payback	2	
					8
					20