Answers

Section C

31 Tin Co

(a) **Financial statement data**

	$000	
Profit before interest and tax	1,597	
Finance costs (interest)	(315)	
Taxation	(282)	
Profit after tax	1,000	
Equity		
Ordinary shares	2,500	
Retained earnings	5,488	
Long-term liabilities		
7% loan notes	4,500	
Total equity and long-term liabilities	12,488	

Other information

Current share price ($/share)	5·00	
Rights issue discount (%)	20	
Current EPS ($/share) (given)	0·40	
Current PER (times) (given)	12·5	

(i) Rights issue price ($/share) 4·00
TERPS ($/share) 4·83 [(4 x $5) + (1 x $4)]/5

(ii)

	$000	
Increased PBIT	1,916	
Finance costs (interest)	(315)	
Revised profit before tax	1,601	
Taxation at 22%	(352)	
Revised profit after tax	1,249	
Increased number of shares	3,000,000	
Revised EPS ($/share) using equity	0·42	(1,249/3,000)

(iii)

	$000	
Increased PBIT	1,916	
Finance costs (interest)	(475)	(= 315 + 160)
Revised profit before tax	1,441	
Taxation at 22%	(317)	
Revised profit after tax	1,124	
Current number of shares	2,500,000	
Revised EPS ($/share) using debt	0·45	(1,124/2,500)

(iv) **Revised share prices ($/share)**

Using equity = 12·5 x 0·42 =	5·25
Using debt = 12·5 x 0·45 =	5·63

(v) **Discussion**

Gearing
Current D/E using BV = 4,500/(2,500 + 5,488) = 4,500/7,988 = 56·3%
Equity finance D/E using BV = 4,500/(7,988 + 2,000) = 4,500/9,988 = 45·1%
Debt finance D/E using BV = (4,500 + 2,000)/7,988 = 6,500/7,988 = 81·4%
Sector average D/E using BV = 60·5%

The gearing of Tin Co at 56·3% is just below the sector average gearing of 60·5%. If equity finance were used, gearing would fall even further below the sector average at 45·1%. If debt finance were used, gearing would increase above the sector average to 84·4%.

Interest cover
Current interest cover = 1,597/315 = 5·1 times
Interest cover using equity finance = 1,916/315 = 6·1 times
Interest cover using debt finance = 1,916/475 = 4·0 times
Sector average interest cover = 9 times

Interest cover calculations show that raising equity finance would make the interest cover of Tin Co look much safer. Interest cover of 4·0 times looks quite risky.

Share price changes
The shareholders of Tin Co experience a capital gain of $0·63 per share ($5·63 – $5·00) if debt finance is used, compared to a capital gain of $0·42 per share ($5·25 – $4·83) if equity finance is used. Although using debt finance looks more attractive, it comes at a price in terms of increased financial risk. It might be decided, on balance, that using equity finance looks to be the better choice.

(b) The forms of Islamic finance equivalent to a rights issue and a loan note issue are mudaraba and sukuk respectively. Musharaka is similar to venture capital and hence is not seen as equivalent to a rights issue, which is made to existing shareholders. Ijara, which is similar to lease finance, might be an alternative to a loan note issue, depending on the nature of the planned business expansion.

Mudaraba
A mudaraba contract is between a capital partner (rab al mal) and an expertise partner (mudarab) for the undertaking of business operations. The business operations must be compliant with Sharia'a law and are run on a day-to-day basis by the mudarab. The rab al mal has no role in relation to the day-to-day operations of the business.

Profits from the business operations are shared between the partners in a proportion agreed in the contract. Losses are borne by the rab al mal alone, as provider of the finance, up to the limit of the capital provided.

Sukuk
Conventional loan notes are not allowed under Sharia'a law because there must be a link to an underlying tangible asset and because interest (riba) is forbidden by the Quran. Sukuk are linked to an underlying tangible asset, ownership of which is passed to the sukuk holders, and do not pay interest.

Since the sukuk holders take on the risks and rewards of ownership, sukuk also has an equity aspect. As owners, sukuk holders will bear any losses or risk from the underlying asset. In terms of rewards, sukuk holders have a right to receive the income generated by the underlying asset and have a right to dismiss the manager of the underlying asset, if this is felt to be necessary.

Ijara
In this form of Islamic finance, the lessee uses a tangible asset in exchange for a regular rental payment to the lessor, who retains ownership throughout the period of the lease contract. The contract may allow for ownership to be transferred from the lessor to the lessee at the end of the lease period.

Major maintenance and insurance are the responsibility of the lessor, while minor or day-to-day maintenance is the responsibility of the lessee. The lessor may choose to appoint the lessee as their agent to undertake all maintenance, both major and minor.

32 Copper Co

(a) (i) ENPV calculation

Year	PV of Y1 CF	prob	PV of Y2 CF	prob	Total PV	joint prob	PV x JP	NPV
	$000		$000		$000		$000	$000
PV of cash flow 1	893	0·1	1,594	0·3	2,487	0·03	74·6	(1,013)
			2,391	0·6	3,284	0·06	197·0	(216)
			3,985	0·1	4,878	0·01	48·8	1,378
PV of cash flow 2	1,786	0·5	1,594	0·3	3,380	0·15	507·0	(120)
			2,391	0·6	4,177	0·30	1,253·1	677
			3,985	0·1	5,771	0·05	288·6	2,271
PV of cash flow 3	2,679	0·4	1,594	0·3	4,273	0·12	512·8	773
			2,391	0·6	5,070	0·24	1,216·8	1,570
			3,985	0·1	6,664	0·04	266·6	3,164
						Sum of PV	4,365	
						Investment	(3,500)	
						ENPV =	865	

Workings

Year	1	PV	2	PV
Cash flow 1	1,000	893	2,000	1,594
Cash flow 2	2,000	1,786	3,000	2,391
Cash flow 3	3,000	2,679	5,000	3,985

(ii)	**Negative NPV probability**	24%	Sum of joint probabilities with negative NPVs
(iii)	**Most likely outcome ($000)**	677·0	Highest joint probability

(iv) **Comment**

The mean (expected) NPV is positive and so it might be thought that the proposed investment is financially acceptable. However, the mean (expected) NPV is not a value expected to occur because of undertaking the proposed investment, but a mean value from undertaking the proposed investment many times. There is no clear decision rule associated with the mean (expected) NPV.

A decision on financial acceptability must also consider the risk (probability) of a negative NPV being generated by the investment. At 24%, this might appear too high a risk to be acceptable. The risk preferences of the directors of Copper Co will inform the decision on financial acceptability; there is no decision rule to be followed here.

(b) **Simulation**

Simulation is a computer-based method of evaluating an investment project whereby the probability distributions associated with individual project variables and interdependencies between project variables are incorporated.

Random numbers are assigned to a range of different values of a project variable to reflect its probability distribution. Each simulation run randomly selects values of project variables using random numbers and calculates a mean (expected) NPV.

A picture of the probability distribution of the mean (expected) NPV is built up from the results of repeated simulation runs. The project risk can be assessed from this probability distribution as the standard deviation of the expected returns, together with the most likely outcome and the probability of a negative NPV.

Adjusted payback

If risk and uncertainty are considered to be the same, payback can be used to adjust for risk and uncertainty in investment appraisal.

As uncertainty (risk) increases, the payback period can be shortened to increase the emphasis on cash flows which are nearer to the present time and hence less uncertain. Conversely, as uncertainty (risk) decreases, the payback period can be lengthened to decrease the emphasis on cash flows which are nearer to the present time.

Discounted payback adjusts for risk in investment appraisal in that risk is reflected by the discount rate employed. Discounted payback can therefore be seen as an adjusted payback method.

Risk-adjusted discount rates

The risk associated with an investment project can be incorporated into the discount rate as a risk premium over the risk-free rate of return.

The risk premium can be determined on a subjective basis, for example, by recognising that launching a new product is intrinsically riskier than replacing an existing machine or a small expansion of existing operations.

The risk premium can be determined theoretically by using the capital asset pricing model in an investment appraisal context. A proxy company equity beta can be ungeared and the resulting asset can be regeared to reflect the financial risk of the investing company, giving a project-specific equity beta which can be used to find a project-specific cost of equity or a project-specific discount rate.

(Examiner note: Only two methods were required to be discussed.)

				Marks	*Marks*
Section C					
31	**(a)**	**(i)**	Rights issue price	1	
			TERP	1	
					2
		(ii)	Increased PBIT	0·5	
			Revised PBT	0·5	
			Revised PAT	1	
			Number of shares	1	
			Revised EPS	1	
					4
		(iii)	Increased interest	1	
			Revised PAT	1	
			Revised EPS	1	
					3
		(iv)	Equity share price	0·5	
			Debt share price	0·5	
					1
		(v)	Financial analysis	1	
			Gearing	1	
			Interest cover	1	
			Share price effects	1	
					4
	(b)		First finance source	2	
			Second finance source	2	
			Additional detail	2	
					6
					20
32	**(a)**	**(i)**	Initial PVs	1	
			Total PVs	2	
			CF1 Joint prob	1	
			CF2 Joint prob	1	
			CF3 Joint prob	1	
			ENPV	2	
					8
		(ii)	Negative NPV prob		1
		(iii)	Most likely NPV		1
		(iv)	Comment on ENPV	1	
			Comment on risk	1	
					2
	(b)		First method	4	
			Second method	4	
					8
					20