

MARK PLAN AND EXAMINER'S COMMENTARY

The marking plan set out below was that used to mark this question. Markers were encouraged to use discretion and to award partial marks where a point was either not explained fully or made by implication. In many cases, more marks were available than could be awarded for each requirement. This allowed credit to be given for a variety of valid points which were made by candidates.

Question 1

Total marks: 35

General comments

This question was had the highest percentage mark on the paper. The vast majority of candidates achieved a "pass" standard in this question.

This was a five-part question that tested the candidates' understanding of the investment decisions element of the syllabus.

The scenario was based on a UK manufacturer of computer hardware. The company's board has decided to close down one of its subsidiary companies in three years time. This is due to the latter's recent poor performance. The board has learned that the subsidiary's senior management would like to investigate the possibility of a management buy-out (MBO). The board has decided that the subsidiary's buy-out price would be its current economic value, based on predicted trading results for the next three years. Question 1.1 was worth 18 marks and required candidates to make use of the information given and calculate the subsidiary's economic value, based on discounted future cash flows. In question 1.2, for four marks, candidates were asked to re-work their figures from question 1.1 because of a change in the data provided. This tested their understanding of sensitivity analysis. Question 1.3 was worth three marks and examined the Ethical Guide, with particular reference to the issues of integrity, objectivity and professional behaviour. Question 1.4, for five marks, tested candidates' understanding of real options and asked them to identify two real options that could apply to the subsidiary as alternatives to the MBO. Finally, in question 1.5, again for five marks, candidates had to explain the shareholder value analysis (SVA) approach to company valuation, with its advantages and disadvantages.

1.1			
	Y1	Y2	Y3
Year to	31/8/19	31/8/20	31/8/21
	£'000	£'000	£'000
Sales (W1)	6,375	4,411	2,653
VCs (30%)	(1,913)	(1,323)	(796)
FCs (W2)	(1,122)	(1,144)	(1,167)
Close down costs (W3)			(637)
Tax (W4)	(568)	(330)	(9)
P&M sale			1,500
P&M tax saving (W5)	101	83	122
Working capital	200	300	1,300
Net cash flows	3,073	1,997	2,966
11% factors	0.901	0.812	0.731
PV	2,769	1,622	2,168
Economic value	<u>6,559</u>		
Workings			
W1	Y1	Y2	Y3
	£'000	£'000	£'000
Sales (£7m x 0.7)	4,900	(£5m x 0.6) 3,000	2,500
(£4.5m x 0.3)	<u>1,350</u>	(£4m x 0.4) <u>1,600</u>	x (1.02) ³
	6,250	<u>4,600</u> x 0.7	<u>2,653</u>
	<u>x 1.02</u>	(£4m x 0.4) 1,600	
	<u>6,375</u>	(£3m x 0.6) <u>1,800</u>	
		<u>3,400</u> x 0.3	1,020
			4,240
			x (1.02) ²
			<u>4,411</u>

<u>W2</u>		£'000	
Annual fixed cost cash flows = [£1.7m – £0.6m]		£1.1m x 1.02	1,122 (Y1)
Depreciation excluded as not a cash flow		£1.1m x (1.02) ²	1,144 (Y2)
		£1.1m x (1.02) ³	1,167 (Y3)
<u>W3</u>			
Close down costs = £0.6m x (1.02) ³			£637,000
<u>W4</u>	Y1	Y2	Y3
	£'000	£'000	£'000
Sales	6,375	4,411	2,653
VCs	(1,913)	(1,323)	(796)
FCs	(1,122)	(1,144)	(1,167)
Close down costs			(637)
Taxable profit	<u>3,340</u>	<u>1,944</u>	<u>53</u>
Tax payable @ 17%	<u>568</u>	<u>330</u>	<u>9</u>
<u>W5</u>	Y1	Y2	Y3
	£'000	£'000	£'000
WDV b/f	3,300	2,706	2,219
WDA @ 18%/Balancing Allowance (BA)	(594)	(487)	(719)
WDV/sale	<u>2,706</u>	<u>2,219</u>	<u>1,500</u>
Tax saving (WDA/BA x 17%)	<u>101</u>	<u>83</u>	<u>122</u>
The majority of candidates produced good answers. Relevant cash flows were, in the main, correctly identified. However, the expected sales calculations did cause many candidates problems. Common errors made by candidates were:			
<ul style="list-style-type: none"> • Poor expected value (EV) calculations for Year 2. Some candidates showed no real understanding by producing an EV higher than any of the individual sales figures. • No explanation of why depreciation is ignored in the cash flows. • Closure costs were ignored as irrelevant when they weren't. • The tax written down value brought forward was treated as a cash outlay. • An extra writing down allowance was included in Year 0. • The money discount rate (given) was increased by the inflation rate in the question. 			
Total possible marks			18
Maximum full marks			18

1.2		£'000
Scrap value = £1 million, therefore loss of cash = £1.5m - £1.0m		500
Tax rebate (balancing allowance)		x 83%
Discounted to Y0		<u>x 0.731</u>
Economic value decreases by		<u><u>303</u></u>
New economic value = £6,559 – £303		<u><u>6,256</u></u>
This was answered very well by most candidates. They demonstrated a good understanding of the key factors involved in the sensitivity analysis.		
Total possible marks		4
Maximum full marks		4

1.3	
An ICAEW member is being asked to falsify the economic value of Snowdog and thus mislead potential buyers, i.e. Snowdog's directors. To do so would break the principles of the ICAEW Ethical Guide which states, <i>inter alia</i> :	
A member should behave with integrity – i.e. be honest and truthful. The member's advice and work should not be influenced by the interests of other parties, which would be the case here were s/he to overvalue Snowdog.	
A member should strive for objectivity in all professional and business judgements – i.e. there should be no bias, conflict of interest or undue influence of others. The member has a conflict of interest here. S/he	

<p>is being asked to act with bias in favour of one party (Rumsey's directors) over another (Snowdog's directors).</p> <p>A member should behave professionally – i.e. avoid any action that discredits the profession. If the member falsified the valuation of Snowdog then the ICAEW's reputation is at risk.</p>	
<p>Answers here were very variable. Candidates who scored well will have explained why the key ethical issues (integrity, objectivity and professional behaviour) are under threat in the given scenario. Many candidates failed to do this and produced a "shopping list", without explanation. In addition a lot of candidates rolled integrity and objectivity into one issue rather than two.</p>	
Total possible marks	3
Maximum full marks	3

1.4	
<p>NPV analysis only considers cash flows related directly to a project. However, a project with a negative (or low) NPV could be accepted for strategic reasons. This is because of (real) options associated with a project that outweigh the poor NPV.</p> <p>With regard to Snowdog two real options are: Abandonment – if there is no MBO Snowdog could be closed before the three years are up Growth (calling it follow on or timing also ok) – if Snowdog performs better than expected it could be kept open longer than three years</p>	
<p>This was done well by the majority of candidates, but it was disappointing to see a number of scripts where the candidate did not know the definition of a real option. Also, many candidates did not apply their real option knowledge to the actual scenario. Instead, they listed many (some irrelevant) options. Finally, some candidates gave more than the two options required in the question.</p>	
Total possible marks	5
Maximum full marks	5

1.5	
<p>With SVA a company's value is based on the PV of its future cash flows, so it is forward-looking.</p> <p>The advantage is that this is theoretically the most superior valuation method compared with earnings (which may be manipulated) or assets (which don't focus on the income generated).</p> <p>SVA considers seven value drivers, which link to (or drive) company strategy:</p> <ol style="list-style-type: none"> 1. Life of projected cash flows 2. Sales growth rate 3. Operating profit margin 4. Corporate tax rate 5. Investment in non-current assets 6. Investment in working capital 7. Cost of capital <p>The disadvantage is that predictions are very difficult as cash flows are technically in perpetuity. Once a company's period of competitive advantage is over then its growth rate is much slower and a terminal (residual) value is calculated, based on its cash flows to perpetuity. This terminal value is often the major part of the overall value of the company.</p> <p>Once the total value of the company has been calculated, based on the future cash flows and value drivers, then, to calculate the value of equity, it is necessary to <u>add</u> the value of any short-term investments held and <u>deduct</u> the market value of any debt held.</p>	
<p>SVA has been examined many times recently and, as expected, most candidates produced very good answers. Typical errors here were: (a) not knowing the seven value drivers and (b) applying SVA as if this was an investment appraisal, rather than a company valuation.</p>	
Total possible marks	7
Maximum full marks	5

Question 2

Total marks: 35

General comments

This question was had the second highest percentage mark on the paper. A large majority of candidates reached a “pass” standard in the question.

This was a four-part question which tested the candidates’ understanding of the financing options element of the syllabus.

The question was centred on an online retailer of baby products which is based in the UK. The company’s market share has been falling and its board is investigating the possibility of establishing a small chain of shops across the UK, at a cost of £10 million. This expansion could be funded by a bank loan, thereby taking advantage of current low interest rates. An alternative view within the board is that the company should invest in a completely different type of business, in this case a chain of care homes. In question 2.1, for 20 marks, candidates were required to calculate the company’s current WACC figure, based on (a) Gordon’s Growth Model and (b) the CAPM. Question 2.2, for five marks, required candidates to compare and contrast the two valuation methods above. In question 2.3 (six marks) candidates were asked to advise the company’s board whether the existing WACC figure (from question 2.1) should be used in when appraising the proposed investment in shops. The candidates’ understanding of the APV technique was also tested here. Finally, question 2.4, for four marks, required candidates to explain the portfolio effect and discuss the validity of the proposal to invest in a completely different type of business.

2.1**(a)****K_e** Dividend growth (g = br)

Opening equity capital employed = £2,520 – (£1,050 - £630) £2,100

$$r = \frac{£1,050}{(£6,300 + £2,100)} = 12.5\%$$

$$b = \frac{£420}{£1,050} = 0.4$$

$$g = r \times b = 12.5\% \times 0.4 = 5\%$$

$$k_e = \frac{d_1 + g}{MV} = \frac{£630/6,300 \times 1.05 + 5\%}{£3.45 - £0.10} = 8.13\%$$

$$K_p = d/mv = \frac{£1 \times 9\%}{£1.62 - £0.09} = \frac{£0.09}{£1.53} = 5.89\%$$

K_{dr}	Yr	Cash Flow (£)	4%	PV (£)	5%	PV (£)
	0	(99)	1.000	(99.00)	1.000	(99.00)
	1-3	4	2.775	11.10	2.723	10.89
	3	100	0.889	<u>88.90</u>	0.864	<u>86.40</u>
				<u>1.00</u>		<u>(1.71)</u>

IRR = approx 4.4%

$$K_{dr} = 4.4\% \times 83\% = 3.65\%$$

$$K_{di} = i/mv = \frac{£5 \times 83\%}{£94} = 4.41\%$$
WACC

	MV (£'000)	Cost	Weighting	WACC
Ord. shares (6,300 x £3.35)	21,105.0	8.13%	x 21,105.0/24,091.3	7.1
Pref. shares (750 x £1.53)	1,147.5	5.89%	x 1,147.5/24,091.3	0.3
Redeemable debs (680 x £99%)	673.2	3.65%	x 673.2/24,091.3	0.1
Irredeemable debs (1,240 x £94%)	<u>1,165.6</u>	4.41%	x 1,165.6/24,091.3	<u>0.2</u>
	<u>24,091.3</u>			<u>7.7%</u>

(b)				
K _e via CAPM =		(8.25% – 3.35%) x 1.4 =		6.86%
				<u>3.35%</u>
				<u>10.21%</u>
	<u>MV (£'000)</u>	<u>Cost</u>	<u>Weighting</u>	<u>WACC</u>
Ord. shares (6,300 x £3.35)	21,105.0	10.21%	x 21,105.0/24,091.3	8.9%
Pref. shares (750 x £1.53)	1,147.5	5.89%	x 1,147.5/24,091.3	0.3%
Redeemable debts (680 x £99%)	673.2	3.65%	x 673.2/24,091.3	0.1%
Irredeemable debts (1,240 x £94%)	<u>1,165.6</u>	4.41%	x 1,165.6/24,091.3	<u>0.2%</u>
	<u>24,091.3</u>			<u>9.5%</u>
<p>The requirements of question 2.1 have been examined regularly in recent examinations. Accordingly, many candidates produced very good answers, scoring heavily. As expected, for candidates the most difficult element here was the calculation of the dividend growth rate (based on $g = b \times r$). It was clear that some candidates had no idea how to approach the calculation of $g = b \times r$. In addition many candidates calculated unrealistically high figures for g, b and r (and then the cost of equity) without question. Elsewhere, it was disappointing to see a number of candidates (wrongly) deducting the ordinary dividend for their preference share calculations and using the ordinary dividend growth rate with preference dividends. Also, a surprising number of candidates used 5% (the coupon rate) as the pre-tax irredeemable cost of debt, omitting to take the current market value of the debt into account. Most candidates' IRR calculations for the cost of redeemable debt were good. However, too many showed a lack of understanding from here and produced an illogical IRR calculation from NPV figures that were correct. The CAPM calculation for cost of equity was very straightforward and the vast majority of candidates scored full marks. However a significant number did not put the right numbers in to the CAPM and so did not calculate the correct cost of equity.</p>				
Total possible marks				20
Maximum full marks				20

2.2	
<p>Gordon's Growth Model (GGM) is also known as Earnings Retention Model. Dividend growth based on proportion of dividends that are retained and the rate of return on those retained profits. Thus $g = rb$. The GGM is based on the premise that these profits are the only source of funds. Growth is achieved by re-investing earnings. This is then put into the Dividend Valuation Model to get the cost of equity, assuming the value of a share = PV of growing future dividends.</p> <p>CAPM - specific/unsystematic risk can be diversified away by investors, so it's assumed that investors are rational and that they have a diversified portfolio. Systematic risk can't be diversified away – macro-economic factors. A company's beta is calculated from the performance of its share price against the market average and is taken as a measure of the market's view of the risk attached to the security in question. The higher the perceived risk, then the higher the beta figure and thus the higher the equity return required by investors. .</p> <p>The overall standard of answers given for question 2.2, 2.3 and 2.4 (theory and advice) was disappointing when compared to the accuracy of (most of) the calculations in question 2.1. Whilst many scripts scored well in question 2.2, far too many were unable to explain the basics of Gordon's Growth Model and the CAPM.</p>	
Total possible marks	
Maximum full marks	
6	
5	

2.3

When using WACC to appraise projects the following assumptions are implied:

1. Heath's historic proportions of debt and equity are not to be changed (which they are – see below)
2. Heath's systematic business risk is not to be changed (it does not change as it's still the same industry)
3. The finance is not project-specific (e.g. cheap government loans, which it isn't)

In this case the finance is very substantial, i.e. 42% of total funds at market value (£10m/£24m) and as it would be borrowed money then this will affect the company's gearing level significantly (it's only just over 12% at present and would increase to 38% @ MV).

APV – increased gearing may lead to a fall in WACC because of the tax shield on loan interest. To find the new WACC requires the new MV of the company's shares. However this requires the NPV of the proposed investment to be known, which needs the new WACC. So

1. Calculate a base case value
2. Calculate the PV of the tax shield
3. Adjust for issue costs

Total up 1, 2 & 3 to give APV - if positive then proceed with investment.

Too few candidates explained the three conditions required to use the existing WACC and then apply them to the given scenario. Generally, there was a good understanding of the APV technique, but typical errors here were choosing the wrong cost of equity (it should be ungeared) and then deducting (rather than adding) the PV of the tax shield.

Total possible marks

8

Maximum full marks

6

2.4

A portfolio is a combination of investments. Many investors attempt to reduce their risks by holding a portfolio. The idea is that by investing in different securities they are "not putting all of their eggs in one basket". It is better to spread investment risks.

Investors can spread the risk themselves (via their investment strategy) and don't need managers to do it for them. Indeed managers may want to diversify in order to protect their own jobs – which aren't diversified. This creates agency conflict.

Heath's managers may well not know anything about running a care home (conglomerate discount) and so it may be dangerous for investors to allow this investment.

Some of Heath's investors may not be diversified or may be unable to purchase certain investments because they are private companies.

Most candidates showed a good understanding of portfolio theory. However, too many failed to distinguish between company and investor portfolios in the scenario.

Total possible marks

6

Maximum full marks

4

Question 3**Total marks: 30****General comments**

This question had the lowest average mark on the paper, but most candidates achieved a “pass” standard.

This was a four-part question that tested the candidates’ understanding of the risk management element of the syllabus.

The scenario here involved a UK manufacturer of home and garden appliances. The company has recently received a large order from an American customer. Its board is considering whether or not to hedge the foreign exchange rate risk. Question 3.1, for 16 marks, required candidates to calculate the net sterling receipt for each of four possible strategies. These were (a) no hedge, (b) a forward contract, (c) a money market hedge and (d) sterling traded currency options. Question 3.2 was worth six marks and required candidates to advise the company’s board, based on their previous calculations. In question 3.3 (five marks) candidates needed to demonstrate their understanding of interest rate parity. Question 3.4 was worth three marks. Here, candidates were asked to explain whether, taking into account the information provided, additional sales to the USA might expose the company to economic risk.

3.1No hedge

Spot rate	1.3350	Spot rate	1.4050
	<u>\$2,300,000</u>		<u>\$2,300,000</u>
	1.3350		1.4050
	£1,722,846		£1,637,011

Forward contract (FC)

1.3775 - 0.0044 = 1.3731	<u>\$2,300,000</u>		£1,675,042
	1.3731		
Fee	<u>\$2,300,000</u> = 23,000 x £0.30	(£6,900)	
	\$100		£1,668,142

Money market hedge (MMH)

Borrow \$	<u>\$2,300,000</u>		\$2,277,228
	1.01		
Convert @ spot	<u>£2,277,228</u>		£1,653,160
	1.3775		
Lend @ UK			£1,653,160
		x	
		1.0115	£1,672,171

Option

Buying £s, so a **November call** option

No. of contracts =	<u>\$2,300,000</u>	<u>£1,703,704</u>	54.52	55 contracts
	\$1.35	£31,250		

Cost of option	55 x 0.0199 x 31,250		<u>\$34,203</u>	£25,048
			1.3655	

Future spot rate	1.3350		1.4050
Bought for	(1.3500)		(1.3500)
(Loss)/Profit	(0.0150)		<u>0.0550</u>

So therefore	Abandon option		Take up option
Gain on option			\$0.0550 x 31,250 x 55 <u>\$94,531</u>
Due from customer	\$2,300,000		\$2,300,000
Gain on option	0		94,531
Due from customer	<u>\$2,300,000</u>		<u>\$2,394,531</u>
Converted to £ (\$2.3m/1.3350)	£1,722,846	(\$2,394,531/1.4050)	£1,704,293
less: Cost of option	<u>(25,048)</u>		<u>(25,048)</u>
Net receipt	<u>£1,697,798</u>		<u>£1,679,245</u>
<p>For most elements candidates scored well. Forward contracts (FC) and money market hedges (MMH) are examined regularly and most candidates accrued full marks here. Candidates need to make the best use of the spreadsheet provided in the examination. In a number of instances candidates reduced their exchange rates to two decimal places, thus losing marks unnecessarily. One common error amongst candidates was to add, rather than subtract, the forward contract fee. It was disappointing to see that some candidates used the two future spot rates given to calculate alternative sterling receipts for the FC and then also for the MMH. Both of these hedging techniques produce one, fixed sterling figure each. As expected candidates found the currency options element of the question more difficult. Whilst many of them scored well, common errors noted were:</p> <ul style="list-style-type: none"> • Choosing a put rather than a call option and then getting the exercise/abandon decision wrong as well. • Calculating the wrong number of contracts, by failing to use the option exercise price. • Calculating the profit on exercising the option in sterling rather than in \$. • Treating it as an OTC option rather than a sterling traded currency option. 			
Total possible marks			16
Maximum full marks			16

3.2			
	Spot rate <u>1.3350</u>	Spot rate <u>1.4050</u>	
No hedge	£1,722,846	£1,637,011	
FC	£1,668,142	£1,668,142	
MMH	£1,672,171	£1,672,171	
Option	£1,697,798	£1,679,245	
<p>So with spot rate at 1.3350 (weakening £ and strengthening \$) the best outcome for Eddyson is not to hedge the dollar receipt.</p> <p>With the spot rate at 1.4050 (strengthening £ and weakening \$) the best outcome is to hedge the dollar receipt via the traded option. The FC and the MMH both give a fixed sterling receipt – the MMH produces a slightly higher figure. The FC and MMH are safest techniques to use for a risk-averse board.</p> <p>The £/\$ interest rates and the forward contract £ premium indicate that the market is expecting the dollar to strengthen (sterling to weaken). This would be good for Eddyson, an exporter, as sterling receipts would be higher. The board's attitude to risk will be important here.</p> <p>More general points on the various hedging techniques.</p>			
<p>This was answered reasonably well, but too many scripts made rather general points. Too few candidates recognised that the FC premium suggests that sterling will be weakening, which is good news for a UK exporter.</p>			
Total possible marks			6
Maximum full marks			6

3.3	
Average spot rate x $\frac{1 + \text{Average dollar interest rate (3 mos.)}}{1 + \text{Average sterling interest rate (3 mos.)}}$ = Average forward rate	
<p>The dollar interest rates are lower than those of sterling. Using the <u>interest rate parity (IRP)</u> equation above (which shows that differences in interest rates can't be exploited as forward rate will adjust to offset any gains), the value of sterling against the dollar will fall. The dollar's gain in value is called a premium. So, using the data in the question:</p> <p>Average UK rate 5.10% pa or 1.01275% per 3 mos. Average US rate 3.6% pa or 1.009% per 3 mos. Average spot rate = 1.3715 Forward rate = $1.3715 \times 1.009 / 1.01275 = 1.3664$ i.e. a premium of \$0.0051/£ Average premium given = \$0.0052/£ so IRP is working</p>	
Interest rate parity (IRP) has been examined fairly regularly and many candidates did well here. However there were quite a few poor scripts and some candidates used twelve months rather than three months when trying to prove that the IRP was working in this scenario.	
Total possible marks	5
Maximum full marks	5

3.4	
<p>Currently very little economic risk as the majority of Eddyson's sales are in the UK (96%). However if more sales are to the USA then economic risk would increase - \$ sales and € purchases A weakening \$ and a strengthening € would both be bad for Eddyson.</p>	
This produced a very varied set of answers. Whilst many candidates scored full marks here, many scored zero, as they had no understanding of economic risk, frequently mentioning (wrongly) the impact of tariffs, quotas and political unrest.	
Total possible marks	3
Maximum full marks	3