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.

General point about candidates' handwriting

As in previous papers, there were a number of instances in the scripts where the markers found it extremely difficult to read the candidates' handwriting. If a marker is unable to read what has been written then no marks can be awarded for the passage in question.

QUESTION 1

Total marks: 35

General comments
This question had the highest average mark on the paper. Candidate performance was very good.

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

In the first part of the scenario (16 marks) a UK transport company had to choose (using the NPV approach) whether to hire or purchase extra buses to operate on new bus routes. Candidates, as an employee of the company, had to advise its board. They were given estimated incremental income and cost flows and had to take account of inflation rates and corporation tax implications. Secondly, for four marks, they were required to calculate the sensitivity of that decision to the trade-in value of new buses. For a further five marks they were asked to estimate the IRR of the bus purchase proposal and to explain the advantages and disadvantages of the IRR method of investment appraisal. Finally, for ten marks, candidates were tested on their understanding of replacement analysis. Here the company had to choose between three types of coach and candidates were required to advise the board as to which was the most cost effective method of replacing its coaches.

1(a)(i)

Bus Hiring	**Year to 30/4/15 £**	**Year to 30/4/16 £**	**Year to 30/4/17 £**	**Year to 30/4/18 £**
Fares(W1)		936,768	2,340,900	3,661,168
Fuel Costs(W2)		(444,960)	(473,586)	(534,999)
Other Costs (W3)		(766,850)	(869,232)	(955,536)
Taxation (W4)		57,759	(209,597)	(455,833)
Net Cash flow after taxation	0	(217,283)	788,485	1,714,800
10% factor	1.000	0.909	0.826	0.751
PV	0	(197,510)	651,289	1,287,814
NPV	**1,741,593**			

Bus Purchase	**Year to 30/4/15**	**Year to 30/4/16**	**Year to 30/4/17**	**Year to 30/4/18**
Bus(purchase)/Sale	(1,600,000)			400,000
Tax relief on buses (W5)	60,480	49,594	40,667	101,260
Fares		936,768	2,340,900	3,661,168
Fuel Costs		(444,960)	(473,586)	(534,999)
Other Costs (W3)		(406,850)	(509,232)	(595,536)
Taxation (W6)		(17,841)	(285,197)	(531,433)
Net cash flow after taxation	(1,539,520)	116,711	1,113,552	2,500,460
10% factor	1.000	0.909	0.826	0.751
PV	(1,539,520)	106,090	919,794	1,877,845
NPV	**1,364,209**			

Ignore depreciation as it is not a cash flow.

The bus hiring scheme produces the higher NPV and so should be chosen as this will enhance shareholder wealth more.

Workings

W1

	Year to 30/4/15 £	Year to 30/4/16 £	Year to 30/4/17 £	Year to 30/4/18 £
Fares (April 2015 prices)			2,250,000	3,450,000
Inflate at 2% pa		x 1.02	x $(1.02)^2$	x $(1.02)^3$
"Money" fares		936,768	2,340,900	3,661,168

W2

Fuel costs (April 2015 prices)		432,000	446,400	489,600
Inflate at 3% pa		x 1.03	x $(1.03)^2$	x $(1.03)^3$
"Money" fuel costs		444,960	473,586	534,999

W3

Other costs (April 2015 prices)		755,000	840,000	905,000
less: Hire costs (8 x £45,000)		(360,000)	(360,000)	(360,000)
		395,000	480,000	545,000
Inflate at 3% pa		x 1.03	x $(1.03)^2$	x $(1.03)^3$
"Money" Other costs		406,850	509,232	595,536
plus: Hire costs		360,000	360,000	360,000
Total other costs		766,850	869,232	955,536

W4

"Money" fares (W1)		936,768	2,340,900	3,661,168
"Money" fuel costs (W2)		(444,960)	(473,586)	(534,999)
Total other costs (W3)		(766,850)	(869,232)	(955,536)
Taxable profit/(loss)		(275,042)	998,082	2,170,633
Tax (payable)/due @ 21%		57,759	(209,597)	(455,833)

W5

Bus purchase/WDV	1,600,000	1,312,000	1,075,840	882,189
WDA @ 18%/Bal. All'ce	(288,000)	(236,160)	(193,651)	482,189
WDV/sale	1,312,000	1,075,840	882,189	400,000
Tax (21% x WDV/BA)	60,480	49,594	40,667	101,260

W6

"Money" fares (W1)		936,768	2,340,900	3,661,168
"Money" fuel costs (W2)		(444,960)	(473,586)	(534,999)
"Money" other costs (W3)		(406,850)	(509,232)	(595,536)
Taxable profit/(loss)		84,958	1,358,082	2,530,633
Tax payable @ 21%		(17,841)	(285,197)	(531,433)

This was well answered by most candidates and they showed a good understanding of relevant cash flows and the impact of inflation and taxation. The most common mistakes made by candidates here were (i) not multiplying the hire cost by eight [years] and (ii) not inflating the cash flows correctly (i.e. not compounding the inflation adjustment).

Total possible marks	16
Maximum full marks	16

1(a)(ii)

Change required in NPV (£1,741,593 - £1,364,209)	£377,384
Adjustment required for tax relief on capital allowances (£377,384/79%)	£477,701
Adjustment required for time value of money (£477,701/0.751)	£636,087
Total sale price of buses would need to be £636,087 higher, i.e.	£79,511 each
Sale price per bus would need to be (£50,000 + £79,511)	£129,511

Overall, part (a)(ii) was poorly done. Most candidates used NPV/PV cash flows, which doesn¹t work when there's a balancing allowance involved, which was the case here.

Total possible marks	4
Maximum full marks	4

1(a)(iii)

IRR of bus purchase scheme

NPV @10% £1,364,209

Rework cash flows at 20%:

	£	£	£	£
Net cash flow after tax	(1,539,520)	116,711	1,113,552	2,500,460
20% factor	1.000	0.833	0.694	0.579
PV	(1,539,520)	97,220	772,805	1,447,766
NPV	**£778,271**			

IRR approximation 20% + ((£778,271/(£1,364,209 – £778,271)) x 10%) 33%

IRR takes into account cash flows and the time value of money. It represents a break-even point, so an exact cost of capital is not needed. It's easier to use and communicate practically.

However, it may give conflicting advice to that given by NPV (which is technically superior)

Candidates' performance here was very variable. A positive NPV at 10% means that the discount rate should go up not down for the next NPV calculation. Weaker scripts demonstrated a poor use of the IRR extrapolation formula and very poor understanding of the advantages/disadvantages of the IRR approach.

Total possible marks	5
Maximum full marks	5

1(b)

		£	£	
Deluxe	Initial cost (Year 0)		(260,000)	
	Annual running costs	(57,000)		
		x		
	Year 6 annuity factor (@ 10%)	4.355		
			(248,235)	
			(508,235)	
Equivalent annual running cost	(£508,235)/4.355			(116,701)
Mid-Range	Initial cost (Year 0)		(210,000)	
	Annual running costs	(54,000)		
		x		
	Year 4 annuity factor (@ 10%)	3.170		
			(171,180)	
			(381,180)	
Equivalent annual running cost	(£381,180)/3.170			(120,246)
Economy Three year cycle	Initial cost (Year 0)		(160,000)	
	Annual running costs	(70,000)		
		x		
	Year 3 annuity factor (@ 10%)	2.487		
			(174,090)	
			(334,090)	
Equivalent annual running cost	(£334,090,180)/2.487			(134,334)
Economy Six year cycle	Initial cost (Year 0)		(160,000)	
	Annual running costs (Y1-Y3)	(70,000)		
		x		
	Year 3 annuity factor (@ 10%)	2.487		
			(174,090)	
			(334,090)	
	plus: Repair costs at Year 3 (£90,000 x 0.751)		(67,590)	
	plus: Running costs (Y4-Y6) (£85,000 x 2.487 x 0.751)		(158,758)	
			(560,438)	
Equivalent annual running cost	(£560,438)/4.355			(128,688)

Thus the cheapest replacement cycle is for the Deluxe coach and, ignoring any other factors, this coach type should be purchased.

Candidates' answers to part (b) were also very variable. Many scored full marks, but many failed to discount the cash flows and/or divide by the annuity factor. A lot of candidates couldn¹t calculate the NPV of the extended life (Economy coach) correctly. A significant minority of candidates wasted time by calculating annuity factors that were already there for them in the tables supplied.

Total possible marks	10
Maximum full marks	10

QUESTION 2

Total marks: 35

General comments
This question had easily the lowest percentage mark on the paper, which was disappointing as some basic finance concepts were examined here

It was a six-part question that tested the candidates' understanding of the financing options element of the syllabus.

It was based around a paper manufacturing company which needed to make a range of financing calculations and decisions. Part (a) of the question (for eight marks) required candidates to calculate the company's current WACC figure. In part (b) they were then asked to explain whether this figure should be used rather than the company's current WACC. Part (c) was worth seven marks and here candidates had to discuss the logic underpinning the CAPM and explain how it can be used to calculate the WACC. For part (d) candidates were required to calculate the market price of redeemable debentures, having been given the required yield figure. This was worth four marks. The last two parts of the question dealt with share buy-backs. In the scenario the company was considering a buy-back and in part (e), for five marks, candidates were asked to explain the how it works and its implications for shareholders. Finally, for seven marks, part (f) required candidates to discuss how the buy-back would affect the company's gearing and its WACC.

2(a)

Cost of equity (k_e)	£4,976,400 x 1.02 / £63,800,000	+ 2%	9.96%
Cost of preference shares (k_p)	£313,400 / £5,400,000		5.80%
Cost of irredeemable debentures (k_d)	(£405,000 x 79%) / £14,175,000		2.26%

WACC	Market Value (£'000)	Cost			WACC
ke	63,800	9.96%	x	63,800/83,375	7.62%
kp	5,400	5.80%	x	5,400/83,375	0.38%
kd	14,175	2.26%	x	14,175/83,375	0.38%
Total	83,375				8.38%

So, based on the figures given, PP's WACC figure is approximately 8.4%

Most candidates scored well here, but in the weaker scripts candidates divided by cost not market value when calculating the cost of preference shares and debentures.

Total possible marks	8
Maximum full marks	8

2(b)

PP's WACC (8.4%) is higher than the 6.5% figure currently used and this should be used as a hurdle rate in investment appraisal. Otherwise PP could be taking on projects that have an IRR of more than 6.5%, but less than 8.4%. To do so would mean that PP's shareholders' wealth would decline as these projects would produce negative NPV's.

Candidates scored well if they explained the implications of using the wrong discount rate (WACC) for project NPV's (and shareholder wealth). A minority of candidates failed to do this adequately.

Total possible marks	4
Maximum full marks	4

2(c)

The Capital Asset Pricing Model (CAPM) is an alternative method of calculating the cost of equity. As such it can be used within the WACC calculation.
The CAPM assumes that investors are diversified, i.e. they have diversified specific risk away. Thus it takes account of systematic risk only and measures the systematic risk of investments. This risk is measured as an index (beta). The beta index of a security is applied to the risk premium of the market portfolio (equity shares). The risk premium is the rate of return from the market portfolio less rate of return from risk-free securities. Thus, with the CAPM, a higher beta (systematic risk) index will mean a higher cost of equity.

Overall this part was poorly answered. Too many candidates just explained how the CAPM equation works or just wrote out what was on the formulae sheet without working through the underpinning logic. Also a disappointing number of candidates answered the wrong question, i.e. they explained how to de-gear/re-gear using a similar quoted company, beta and new project

Total possible marks	7
Maximum full marks	7

2(d)

Selling price of redeemable debentures

Year		Cash flow (£)	5% factor	PV (£)
1-4	Interest	4.00	3.546	14.18
4	Redemption	100.00	0.823	82.30
	PV of future cash flows at a yield of 5% pa			96.48

Total funds raised = £9m x 96.48% £8.68m

In effect, this required candidates to work backwards through a cost of debt calculation. A good number were able to do it, but, sadly, far too many were not.

Total possible marks	4
Maximum full marks	4

2(e)

Share buy-back and implications
A company buys back its equity from shareholders. It is often used when there is no other use for surplus cash funds available, e.g. (i) no investments available that have positive NPV's or (ii) no wish to alter company's dividend policy (via a special dividend).
Control implications – control is maintained if the buy-back is in proportion to existing shareholdings. However a buy-back can be used to remove an awkward shareholder.
Tax implications – income tax would be due on dividends (e.g. special dividend) whereas CGT would be due on a buy-back.

Parts (e) and (f) were generally well done and most candidates were able to demonstrate an understanding of the workings and implications of a share buy-back.

Total possible marks	5
Maximum full marks	5

2(f)

WACC and gearing
A buy-back reduces equity and so PP's gearing ratio would increase.

The effect of the buy-back on PP's WACC:
Consider the theories - traditional view, M&M 1958 and 1963
Consider the modern view – optimum gearing level (maximisation of company value) is a balance between the benefits of the tax shield and bankruptcy costs. The impact on PP's WACC (and value) depends on where its optimum gearing level is.

Parts (e) and (f) were generally well done and most candidates were able to demonstrate an understanding of the workings and implications of a share buy-back.

Total possible marks	7
Maximum full marks	7

QUESTION 3

Total marks: 30

General comments
The average mark for this question was very good and most candidates demonstrated a good understanding of this area of the syllabus.

This was a four-part question which tested the candidates' understanding of the risk management element of the syllabus and there was also a small section with an ethics element to it.

In the scenario a logistics company was investigating how it might (i) hedge interest payments on a proposed loan and (ii) hedge against a fall in the value of its share portfolio. In part (a), for ten marks, candidates had to demonstrate how interest rate futures could be used to hedge against interest rate movements. Part (b) required candidates to prepare calculations to demonstrate how traded FTSE100 options could be employed to hedge against adverse movements in share prices. This was worth eight marks. Part (c), also for eight marks, was similar to part (b), but here the hedging instrument was FTSE100 stock index futures. Finally, for four marks, candidates had to explain the ethical issues arising for an ICAEW Chartered Accountant when given insider knowledge.

3(a)

CJ will sell June futures

No. of contracts = £11.5m/£500,000 x 9/3 — 69

Futures profit/(loss)

	(i)	(ii)	(iii)
Opening rate	91.50	91.50	91.50
Closing rate	93.25	90.50	89.25
Movement	(1.75)	1.00	2.25
Profit/(loss) on futures	(1.75% x 3/12 x 69 x £500k)	(1% x 3/12 x 69 x £500k)	(2.25% x 3/12 x 69 x £500k)
	(£150,938)	**£86,250**	**£194,063**

Overall cost

Payment on spot market	**£**	**£**	**£**
£11.5m x 9/12 x 6.5%	(560,625)		
£11.5m x 9/12 x 9%		(776,250)	
£11.5m x 9/12 x 10%			(862,500)
Futures profit/(loss)	(150,938)	86,250	194,063
Total interest cost	**(711,563)**	**(690,000)**	**(668,437)**

Upside and downside risk are both removed by futures unlike options which remove only downside risk.

Most candidates' answers here were good, but common errors noted were (i) using a twelve months' borrowing cost (rather than nine), (ii) using different profits/losses on futures to the ones given in the question (many altered the futures price by the % in the question rather than just taking it as the profit/loss).

Total possible marks	10
Maximum full marks	10

3(b)

CJ should buy May put option contracts as follows:

£18.225m / (6750 x £10) = 270 contracts

	Portfolio & Index falls	Portfolio & Index rises
Portfolio value at 1 May	£17,955,000	£18,360,000
Option exercised ([6750 - 6650] x 270 x £10)	270,000	0
	18,225,000	18,360,000
Cost of option (135 x 270 x £10)	(364,500)	(364,500)
	17,860,500	17,995,500
Current value of portfolio	18,225,000	18,225,000
Decrease in portfolio value	364,500	229,500

Part (b) was also generally well answered, but too many candidates failed to recognise that the company would buy put option contracts and then failed to make the correct decision regarding the option (i.e. exercise/abandon).

Total possible marks	8
Maximum full marks	8

3(c)

CJ should sell futures £18.225m / (6720 x £10) = 272 contracts rounded up

	£
Portfolio value at 1 May	17,955,000
Gain on future ([6720 - 6630] x 272 x £10)	244,800
	18,199,800
Current value of portfolio	18,225,000
Decrease in portfolio value	25,200

Not 100% efficient because (i) basis i.e. 1 April values of FTSE100 index and futures contract are different and (ii) the rounding of the number of contracts.

This was generally well answered and most candidates scored high marks.

Total possible marks	8
Maximum full marks	8

3(d)

The key ethical issue here is confidentiality.
One should not take financial advantage of unpublished “inside” information. Keep the information confidential, do not disclose it, even inadvertently in social settings. And do not use it for personal gain.

This was straightforward and most candidates demonstrated a good understanding of the key ethical issues.

Total possible marks	4
Maximum full marks	4