PROFESSIONAL LEVEL EXAMINATION

WEDNESDAY 9 DECEMBER 2015

(2½ hours)

FINANCIAL MANAGEMENT

This paper consists of **THREE** questions (100 marks).

1. Ensure your candidate details are on the front of your answer booklet. You will be given time to sign, date and print your name on the answer booklet, and to enter your candidate number on this question paper. You may not write anything else until the exam starts.

2. Answer each question in black ballpoint pen only.

3. Answers to each question must begin on a new page and must be clearly numbered. Use both sides of the paper in your answer booklet.

4. The examiner will take account of the way in which answers are presented.

5. When the assessment is declared closed, you must stop writing immediately. If you continue to write (even completing your candidate details on a continuation booklet), it will be classed as misconduct.

A Formula Sheet and Discount Tables are provided with this examination paper.

IMPORTANT Question papers contain confidential information and must NOT be removed from the examination hall. **DO NOT TURN OVER UNTIL YOU ARE INSTRUCTED TO BEGIN WORK**	You MUST enter your candidate number in this box.

1. You should assume that the current date is 31 December 2015

Alliance plc (Alliance) is a manufacturer of electronic devices. At a recent board meeting two agenda items were discussed as follows:

1. The possible development of an automatic watering system (Autowater) for indoor potted plants in private houses and business premises. The sales director commented that there are similar more expensive products on the market and it is likely that competitors will develop their technology and bring down their prices in future. Therefore, it would be prudent to assume a life cycle of four years for the Autowater.

2. For other projects that have already been appraised using NPV analysis, the 2016 capital expenditure budget (excluding Autowater) should not exceed £350 million. The £350 million will be allocated to projects, excluding Autowater, on the basis of maximising shareholder wealth.

   The chairman of Alliance closed the meeting with the following statement:

   "We will continue to see excellent opportunities to invest in profitable projects across our business and we have no difficulty in raising finance. However we will be disciplined in our approach to committing to capital expenditure. I would now like the finance director to evaluate the Autowater project and to determine in which other projects the £350 million 2016 capital expenditure budget is going to be invested."

The following information is available regarding the Autowater project:

- The selling price will be £800 per unit for the year to 31 December 2016 and will then increase by 5% pa. Contribution is 40% of the selling price.

- The number of units sold in the year to 31 December 2016 is expected to be 9,000 per month. For the year to 31 December 2017 the number of units sold will increase by 15%. Because of increased competition in the market it is anticipated that in the two years to 31 December 2019 the number of units sold will decline by 10% pa.

- Incremental fixed production costs are expected to be £4 million pa and will increase after 31 December 2016 by the general level of inflation.

- Alliance will rent a factory at an annual rent of £1.5 million, payable in advance on 31 December. The rent is not subject to inflationary increases.

- Investment in working capital will be £2 million on 31 December 2015 and will increase or decrease at the start of each year in line with sales volumes and the unit selling price. Working capital will be fully recoverable on 31 December 2019.

- On 31 December 2015 the project will require an investment in machinery and equipment of £60 million, which is expected to have a realisable value of £5 million (in 31 December 2019 prices) at the end of the project. The machinery and equipment will attract 18% (reducing balance) capital allowances in the year of expenditure and in every subsequent year of ownership by the company, except the final year.

In the final year, the difference between the machinery and equipment's written down value for tax purposes and its disposal proceeds will be treated by the company either:

(i) as a balancing allowance, if the disposal proceeds are less than the tax written down value, or
(ii) as a balancing charge, if the disposal proceeds are more than the tax written down value.

- Assume that the rate of corporation tax will be 21% pa for the foreseeable future and that tax flows arise in the same year as the cash flows that gave rise to them.

- An appropriate real cost of capital for the Autowater project is 7% pa and the level of general inflation is expected to be 3% pa.

The following information relates to the 2016 capital expenditure budget of £350 million and excludes the Autowater project.

The indivisible projects available for investment of the £350 million are:

Project	**Initial expenditure £ million**	**NPV £ million**
A	100	180
B	50	90
C	40	100
D	140	150
E	100	140

Requirements

(a) Using money cash flows, calculate the net present value of the Autowater project on 31 December 2015 and advise the board whether it should accept the project. **(16 marks)**

(b) **Ignoring the effects on working capital**, calculate the sensitivity of the Autowater project to changes in sales revenue and indicate whether there is a sufficient margin of safety for the project to go ahead. **(4 marks)**

(c) Discuss the disadvantages of sensitivity analysis and explain how simulation might be a better way to assess the risk of the project. **(6 marks)**

(d) With regard to the 2016 capital expenditure budget of £350 million:

(i) Discuss the differences between hard and soft capital rationing and comment on the form of capital rationing that is being employed by Alliance. **(5 marks)**

(ii) Determine the combination of projects that will maximise shareholder wealth. **(4 marks)**

Total: 35 marks

2. BBB Sports plc (BBB) operates gyms and health clubs in the UK and it is considering diversifying by setting up a division called “Climbhigh” which would operate indoor climbing walls in several cities in other countries. Some of these countries have unstable governments and/or are countries where health and safety laws are not as strict as those in the UK. The chairman of BBB is anxious that any climbing walls that they operate overseas should be of the highest standard and meet the national guidelines in the UK, which are available from the Association of British Climbing Walls (ABC).

The finance director of BBB, who is an ICAEW Chartered Accountant, has available the following information regarding the Climbhigh project:

- The finance for Climbhigh can be raised in the UK in such a way as to leave the existing debt:equity ratio (by market values) of BBB unchanged after the diversification.

- An appropriate equity beta for a company that operates climbing walls is 1.90 at a debt:equity ratio (by market values) of 4:6.

- An email has been received from a contractor in one of the other countries. The contractor intends to tender for the contract to build one of the climbing walls. Part of the email stated:

  “The ABC guidelines are very strict and we can build a cheaper, but safe, wall by just ignoring them. We do things differently here and can save you a lot of money by cutting corners!”

- If the Climbhigh project goes ahead the overall equity beta of BBB will be made up of 80% existing operations and 20% Climbhigh.

The following information relates to BBB without the Climbhigh project.

Extracts from the most recent management accounts:

Balance Sheet at 30 November 2015

	£m
Ordinary share capital (20p shares)	365
Retained earnings	4,788
	5,153
5% Redeemable debentures at nominal value	2,200
	7,353

On 30 November 2015 BBB’s ordinary shares each had a market value of 360p (cum-div) and an equity beta of 1.10. For the year ended 30 November 2015, the dividend declared was 10p per ordinary share and the earnings yield (earnings per share divided by ex-div share price) was 7%.

BBB’s debentures had a market value at 30 November 2015 of £99 (cum-interest) per £100 nominal value and are redeemable at par on 30 November 2019.

The market return is expected to be 7% pa and the risk free rate 2% pa.

Assume that the corporation tax rate will be 21% pa for the foreseeable future.

Requirements

(a) Ignoring the Climbhigh project, calculate the WACC of BBB at 30 November 2015 using:

 (i) the CAPM **(8 marks)**

 (ii) the Gordon growth model **(6 marks)**

(b) Using the CAPM, calculate a WACC that is suitable for appraising the Climbhigh project and explain the rationale for using this as the discount rate for the project. **(6 marks)**

(c) By calculating an overall equity beta and using the CAPM, estimate the overall WACC of BBB assuming that the Climbhigh project goes ahead and comment upon the implications for the value of BBB of any change from the WACC that you have calculated in part (a) (i) above. **(6 marks)**

(d) Advise BBB on how political risk could potentially affect the value of the Climbhigh project and how it might limit its effects where such risk exists. **(6 marks)**

(e) Explain the ethical issues for the finance director in relation to the email received from the contractor who wishes to tender for building one of the climbing walls and briefly outline the action that he should take. **(3 marks)**

Total: 35 marks

3. **You should assume that the current date is 31 December 2015.**

David Mann (David) is the finance director of Bridge Engineering plc (BE). David has approached your firm to give a presentation to the board of BE on the characteristics and use of options in the following two situations:

(1) BE has been expanding in recent years by acquisition. David would like to know how his company might use traded options to protect itself against a fall in the value of the small shareholdings that it holds in potential acquisitions. One such potential acquisition is Stickle plc (Stickle) in which BE has a holding on 31 December 2015.

The following information is available:

On 31 December 2015 the share price of Stickle is 287 pence (ex div) and traded options on its shares are available as follows (all figures in pence):

	Calls		**Puts**	
Exercise price	**January**	**March**	**January**	**March**
280	8.5	16	1.5	10.5
290	2.5	11	5.5	16

(2) BE currently uses forward rate agreements (FRAs) and interest rate futures to hedge its interest rate risk. David is now considering the use of traded interest rate options. BE needs to take out a loan of £20 million on 31 July 2016 for a period of seven months and David has agreed with BE's bank that the loan will have an interest rate of LIBOR + 4% pa.

LIBOR on 31 December 2015 is 0.62% pa and David wishes to hedge against any increase in this rate between 31 December 2015 and 31 July 2016.

The following information is available:

At 31 December 2015 the following traded interest rate options on three month interest rate futures with a contract size of £500,000 are available (option premiums are in annual % terms):

		Calls			**Puts**	
Exercise price	**March**	**June**	**September**	**March**	**June**	**September**
99.13	0.05	0.09	0.13	0.26	0.31	0.35
99.38	0.02	0.03	0.05	0.48	0.50	0.52
99.63	0.01	0.02	0.03	0.71	0.73	0.74

Assume that the options in (1) and (2) above expire at the end of the relevant month and that premiums are payable on 31 December 2015. The interest implications of paying the premium on 31 December 2015 can be ignored.

You have been asked to prepare briefing notes for the presentation on options to be given to the board of BE.

Requirements

Prepare the briefing notes for the presentation that include:

(a) A calculation of the intrinsic value and time value of each of the options on Stickle's shares at 31 December 2015. **(4 marks)**

(b) A brief explanation of the three factors that affect the time value of the options on Stickle's shares. **(3 marks)**

(c) A brief explanation of the two factors that affect the intrinsic value of the options on Stickle's shares. **(2 marks)**

(d) A demonstration, using options, of how BE can protect itself against a fall in the Stickle share price in the period up to 31 March 2016 when it will decide whether to make an offer for the whole of Stickle. Assume Stickle's share price will be 250p on 31 March 2016. **(4 marks)**

(e) A demonstration of how traded interest rate options on interest rate futures can be used by BE to hedge against LIBOR rising above 0.62% pa, showing the effective interest rate on the loan, if on 31 July 2016:

   (i) LIBOR is 0.80% pa and the futures price is 99.15.

   (ii) LIBOR is 0.40% pa and the futures price is 99.66 **(10 marks)**

(f) An explanation of the comparative advantages and disadvantages of using traded interest rate options, rather than FRAs and interest rate futures, to hedge BE's interest rate risk. **(7 marks)**

Total: 30 marks