INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

28 April 2022 (am)

Subject SP9 – Enterprise Risk Management Specialist Principles

Time allowed: Three hours and twenty minutes

In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator.

If you encounter any issues during the examination please contact the Assessment Team on T. 0044 (0) 1865 268 873.

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1 The final of Country Z's premier reality TV show 'The Business Plan' is tonight. Contestants go on the show with the aim of getting funding to set up a business. They are required to submit a detailed business plan, describing their business strategy. The contestant that wins the competition will receive a prize of a Z£250,000 (Country Z pounds) investment into their company. There are two contestants remaining (Contestant A and Contestant B). The final includes an interview with each of the contestants about their business plan.

One of the judges has asked for your assistance in making the decision on which contestant should win the investment. Specifically, you have been asked which business plan has applied Enterprise Risk Management (ERM) to the greatest effect, in particular in the areas of governance, pricing, risk monitoring and business planning.

Contestant A's proposed business is to manufacture their own range of chocolates, called 'Contestant A Chocolates'. Contestant B's proposed business is to sell parts for a new piece of innovative technology that has just been released in Country Z.

(i) Discuss how aspects of the different business plans could lead to similarities and differences in the ERM approaches between the two businesses. [8]

(ii) Discuss criteria that you should consider when evaluating which business plan has applied ERM to the greater effect. [7]

(iii) Suggest suitable interview questions that should be asked to each of Contestant A and Contestant B that will help you assess the businesses against these criteria. [7]

After careful consideration, the judges awarded Contestant A the prize. Contestant A established their company called Contestant A Chocolate Company (CACC). The following information is an extract from CACC's financial statements, published a number of years later:

Balance sheet

Assets	Z£'000
Cash	300
Tangible assets	1,000
Intangible assets	1,000
Debtors	400
Total assets	**2,700**
Liabilities	
Bank debt	1,800
Creditors	200
Total liabilities	**2,000**
Equity	
Capital	500
Retained earnings	200
Shareholders' funds	**700**

Profit & loss statement

Revenues	400
Staff costs	(70)
IT costs	(10)
Marketing costs	(70)
Interest on bank debt	(90)
Other costs	(30)
Profit pre-tax	**130**
Tax	(13)
Profit post-tax	**117**

You have been asked to return to provide an assessment on CACC for an investor.

(iv) Evaluate CACC's business performance and key risks, based on the information above. [10]

As part of the assessment, you have been asked to calculate some risk measures. You have been informed by CACC management that the regulatory liabilities can be assumed to be normally distributed with mean Z£2,000,000 and standard deviation Z£150,000.

(v) Calculate the value of the following liability risk metrics at the 99.5th percentile, commenting on your results:

- regulatory capital
- Value at Risk (VaR)
- Tail Value at Risk (TVaR).

[5]

As part of your research, you have discovered that the market for the specific strain of cocoa bean that is the key ingredient used to make CACC's chocolate is dominated by one supplier (which is based in Country Z), with which CACC has an exclusive supply contract.

(vi) Describe the main risk arising from this arrangement for Contestant A's business. [2]

(vii) Discuss the ways CACC may mitigate against this risk. [6]

[Total 45]

2 In Country Y, there has been significant activity in the hotel industry. The large Lofty Hotel group ('Lofty') has purchased the Compact group ('Compact'). Compact are based in an area of Country Y where they own a number of farms that produce world-class food, which is often sold to larger luxury hotel chains such as Lofty. Compact also derives much of their revenue from hosting food trade shows at these farms.

You have been hired by the Chief Executive Officer of Lofty Hotel group to assess the Compact Hotels' ERM framework with a view to integrating the two frameworks.

One of the members of the Lofty Board has made the following comment:

'I don't understand why we don't just make Compact comply with our framework, it's more sophisticated and at a higher standard'.

(i) Outline the key points that you would make to the board member when talking about integrating the two frameworks. [8]

(ii) Describe key lessons learned based on past case studies, which the Lofty Board will need to consider when integrating the ERM frameworks. [7]

Credit risk has been identified as a key risk for Compact, particularly in relation to trading arrangements with the hotels, which often purchase food on credit. As a result, Compact is setting up a new credit risk policy.

(iii) Set out the issues to be considered in determining Compact's approach to calculating the probability of default and the loss given default for its credit risk policy. [5]

Y Credit Ratings (YCR) is the main credit rating agency in Country Y. YCR uses six ratings (A, B, C, D, E, F), where A is the most secure and F is the least secure. They have recently issued the following table:

Migration rates

Initial rating	*One-year migration rates (%)*							
	Year-end rating							
	A	*B*	*C*	*D*	*E*	*F*	*Default*	*Unrated*
A	90.0	6.0	0.4	0.3	0.2	0.1	0.01	2.99
B	1.0	85.0	7.0	0.4	0.3	0.2	0.1	6.0
C	0.1	2.0	80.0	8.0	0.4	0.3	0.2	9.0
D	0.2	0.4	3.0	74.0	9.0	0.4	1.0	12.0
E	0	0.3	0.7	4.0	65.0	10.0	5.0	15.0
F	0	0	0.5	1.5	5.0	45.0	30.0	18.0

Lofty has a bond in issue that has a YCR rating of C. The projected bond values by year-end rating have been provided by YCR and are listed below:

Projected bond values

Year-end rating	*Projected bond value given rating*
A	110.0
B	105.0
C	100.0
D	95.0
E	90.0
F	80.0
Default	60.0
Unrated	–

(iv) (a) Calculate the expected value and variance of the value of the bond. [5]

(b) An alternative bond has an expected value of 100 and variance of 5. Describe the considerations an investor may wish to take into account as they decide which bond is more suitable for them. [3]

[Total 28]

3 The CERA Sports League (CSL), where Sport C is played, is a successful league in Country X. Sport C is a team sport where matches are between two teams of players.

CSL has a simple governance structure, comprised of a committee formed by representatives of the teams, overseen by one chairman. The committee has two ideas on how to increase the revenue and exposure of Sport C:

- Holding an 'eSportC' league, where teams of players can play Sport C in an online environment. CSL will host matches at neutral venues around Country X and provide the hardware. There will be no spectators at the venue, and spectators can watch matches online.
- Holding a competition where entrants pick a team of players and obtain a score based on their team's performance in the league (the C Fantasy League, or CFL). They can change their team every week on a dedicated website.

Both ideas would involve an entry fee and prizes.

(i) Suggest, for both of the options above, how reputational risk to CSL could arise. [8]

(ii) Suggest possible actions CSL could take to manage the risks identified in part (i). [5]

You have been asked by CSL to build a financial model to determine which approach they should proceed with.

(iii) Set out how you may use a financial model to undertake this work. [7]

As a result of the process, it was decided to proceed with the eSportC league. A company, 'SC', was hired to manage the league and has set up the eSportC business as a subsidiary, 'ESC'. As part of the annual regulatory disclosures and to attract investment, SC makes the ESC financial statements publicly available.

(iv) Describe, with reasons, seven stakeholders who will be interested in this information. [7]

[Total 27]

END OF PAPER