Construction Finance and Risk
24CVB112

Semester 2 2025 In-Person Exam paper

This examination is to take place in-person at a central University venue under exam conditions. The standard length of time for this paper is **2 hours**.

You will not be able to leave the exam hall for the first 30 or final 15 minutes of your exam. Your invigilator will collect your exam paper when you have finished.

Help during the exam

Invigilators are not able to answer queries about the content of your exam paper. Instead, please make a note of your query in your answer script to be considered during the marking process.

If you feel unwell, please raise your hand so that an invigilator can assist you.

You may use a calculator for this exam. It must comply with the University's Calculator Policy for In-Person exams, in particular that it must not be able to transmit or receive information (e.g. mobile devices and smart watches are **not** allowed).

Answer four questions in total:
Answer **TWO QUESTIONS in Section A.**
Answer **TWO QUESTIONS in Section B.**

Use a separate answer book for each section. Print **Section A** and **Section B** on the front page of each answer book.

All questions carry equal marks.

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SECTION A
(Answer **TWO QUESTIONS in Section A**)

1. (a) Discuss two types of construction bonds and explain their use from a risk management perspective.

[7 marks]

(b) Discuss the role of contracts in risk management. Explain both expressed and implied terms. Provide an example for each.

[6 marks]

(c) Explain the Linear Approach Process in Risk Management. Provide brief explanations for the following stages:

1. Risk Identification
2. Risk Assessment
3. Risk Response
4. Planning and Implementation of Controls
5. Monitoring and Review

[5 marks]

(d) A construction company is evaluating two potential projects based on the available information regarding uncertainties. The company must decide which project to proceed with by assessing the potential financial outcomes.

The details of the two projects are as follows:

Project 1:
Success (80% probability): The company gains **£500,000**.
Failure (20% probability): The company incurs a loss of **£200,000**.

Project 2:
Success (70% probability): The company gains **£600,000**.
Failure (30% probability): The company incurs a loss of **£300,000**.

Using a **decision tree analysis**, determine which project the company should proceed with. **Clearly show all calculations,** including the **Expected Monetary Value (EMV) for each project**, and justify your final decision.

[7 marks]

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2. A public sector department has an ambitious plan for an infrastructure development scheme involving several mega and complex projects within the next 5 years. The department, however, has inherent problems with a lack of expertise in complex project management and a limited availability of financial resources. The relevant Minister is very keen to get the development completed within time, within cost and to prescribed quality standards. The Minister has asked for your advice and help. Some external consultants to the department have suggested Pure Project Finance and Public Private Partnerships (PPP) as alternatives for funding the scheme.

   (a) Briefly explain why the PPP alternative should be deemed a suitable solution for the scheme.

   [5 marks]

   (b) Outline and discuss 5 key issues that would form the basis of your advice to the Minister in order to reduce the risk of PPP failure for the scheme.

   [10 marks]

   (c) The Minister is not clear about the difference between **corporate financing** and **pure project financing**. Describe the two options of financing in terms of their suitability for the development scheme.

   [10 marks]

3. (a) By explaining the term Payback Period, justify its use to evaluate the viability of projects.

   [5 marks]

   (b) Table Q3 presents the following expected cash flow streams for a proposed project.

Table Q3

Cash flow stream for proposed project (£)	Year
-1000	0
150	1
250	2
350	3
450	4
500	5
500	6

   i) Describe and compute the payback period for the project using free cash flows.

   [7 marks]

   ii) What will be the payback period if a discount rate of 8% is applied to the cashflow streams (show calculations)?

   [8 marks]

   iii) In your opinion discuss which of the two options 3bi and 3bii (cash flow without and with discounting) should be applied to evaluate the viability of a project if you are a conservative investor to make your decision.

   [5 marks]

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SECTION B
(Answer **TWO QUESTIONS in Section B**)

4. Look at the financial accounts below for the question.

	2024 £m	2023 £m
P&L Account		
Turnover	300	260
Cost of sales	240	195
Gross profit	**60**	**65**
Administration	30	35
Operating profit	**30**	**30**
Interest Payable	2	2
Interest Receivable	1	0
Profit before tax	**29**	**28**
Tax	7	6
Profit after tax	**22**	**22**

Balance Sheet		
Current Asset		
Cash in the bank	6	4
Debtors	60	56
Stock	22	21
	88	**81**
Non-Current assets		
Offices and plant	70	68
Negative Goodwill	(6)	(6)
Provision	2	2
	66	64
Current liabilities		
Creditors	40	45
Bank overdraft	5	1
Noncurrent liabilities		
Long term loan	6	5
Long term lease	2	1
Net assets		
Equity		
Shareholder funds	82	82
Share premium	10	8
Retained earnings		
Number of shares	10k	10k

Question 4 continues/…

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(a) Calculate the retained earnings and possible dividend per share for both years.
[2 marks]

(b) Explain the terms: share premium, negative goodwill and provision identified in the accounts.
[6 marks]

(c) Calculate the gross profit margin, the operating profit margin and net profit margins, and discuss the possible reasons for the differences between each.
[9 marks]

(d) Calculate the current ratio, the acid test ratio, and explain the results.
[5 marks]

(e) State three possible items that could be included the Stock term in the Balance Sheet.
[3 marks]

5. The Infrastructure Construction Company (ICC) starts to obtain more ground works projects that require large amounts of concrete. ICC are considering merging with a concrete company through vertical integration, having a Joint Venture with a concrete company for the three largest projects. The other alternative is to grow the company internally by employing more staff. For these three situations:

(a) Discuss the advantages and disadvantages of vertical merging.
[9 marks]

(b) Discuss the advantages and disadvantages of joint ventures.
[8 marks]

(c) Discuss the advantages and disadvantages of growing the business internally.
[8 marks]

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6. A project is being monitored using the earned value method, has a budget of £10m and is planned to complete in 12 months. The following table shows the values for BCWS and BCWP at the end of the sixth month. The ACWP at month six is £1.5m. All costs relate to labour only.

Activity	Start at the beginning of week	Duration in weeks	BCWS (£K)	BCWP % complete	ACWP
A	**0**	**4**	10	**100**	
B	**0**	**8**	30	**100**	
C	**5**	**12**	**300**	**60**	
D	**9**	**8**	**320**	**50**	
E	**17**	**12**	**600**	**40**	
F	**13**	**8**	**500**	**30**	
G	**25**	**12**	**600**	**30**	

Required:

(a) Draw an earned value diagram updated to show the position at the end of six months (24 weeks). Label your diagram as fully as possible.

[7 marks]

(b) Why is it possible for values for BCWS to be available beyond the current date (assumed to be end of twenty-four weeks) but not values for BCWP and ACWP?

[3 marks]

(c) At the end of week twenty-four, what are the values of the cost variance and schedule variance? Explain the meaning of these values.

[4 marks]

(d) At the end of week twenty-four, what would you estimate the cost at completion and the likely time for completion of the project to be, making two different assumptions about future performance?

[5 marks]

(e) What can a project manager deduce about a project in this situation? Explain how this situation may have occurred. Suggest actions that a project manager might take to manage a project in this situation.

[6 marks]

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