



Institute
and Faculty
of Actuaries

EXAMINERS' REPORT

SP9 - Enterprise Risk Management Specialist Principles

September 2023

Introduction

The Examiners' Report is written by the Chief Examiner with the aim of helping candidates, both those who are sitting the examination for the first time and using past papers as a revision aid and also those who have previously failed the subject.

The Examiners are charged by Council with examining the published syllabus. The Examiners have access to the Core Reading, which is designed to interpret the syllabus, and will generally base questions around it but are not required to examine the content of Core Reading specifically or exclusively.

For numerical questions the Examiners' preferred approach to the solution is reproduced in this report; other valid approaches are given appropriate credit. For essay-style questions, particularly the open-ended questions in the later subjects, the report may contain more points than the Examiners will expect from a solution that scores full marks.

For some candidates, this may be their first attempt at answering an examination using open books and online. The Examiners expect all candidates to have a good level of knowledge and understanding of the topics and therefore candidates should not be overly dependent on open book materials. In our experience, candidates that spend too long researching answers in their materials will not be successful either because of time management issues or because they do not properly answer the questions.

Many candidates rely on past exam papers and examiner reports. Great caution must be exercised in doing so because each exam question is unique. As with all professional examinations, it is insufficient to repeat points of principle, formula or other text book works. The examinations are designed to test "higher order" thinking including candidates' ability to apply their knowledge to the facts presented in detail, synthesise and analyse their findings, and present conclusions or advice. Successful candidates concentrate on answering the questions asked rather than repeating their knowledge without application.

The report is written based on the legislative and regulatory context pertaining to the date that the examination was set. Candidates should take into account the possibility that circumstances may have changed if using these reports for revision.

Sarah Hutchinson
Chair of the Board of Examiners
November 2023

A. General comments on the *aims of this subject and how it is marked*

The aim of the Enterprise Risk Management (ERM) subject is to instil in successful candidates the key principles underlying the implementation and application of ERM within an organisation, including governance and process, as well as quantitative methods of risk measurement and modelling. The candidate should gain the ability to apply the knowledge and understanding of ERM practices to any type of organisation.

The SP9 examination generally requires bullet-point or short form essay style answers, together with concise mathematical applications. The answers given below are just one possible set of acceptable answers.

Candidates who give well-reasoned and relevant points, not presented in the marking schedule, are awarded marks for doing so.

B. Comments on *candidate performance in this diet of the examination.*

Successful candidates were able to tailor their knowledge, and therefore could demonstrate how ERM can be applied in a wide range of situations.

Many candidates did not appear to plan their answers, and therefore were unable to benefit from question parts that built upon and developed ideas linked to each other.

Some candidates also struggled to demonstrate depth of understanding in explaining how risk management tools and techniques can be used in practice. These candidates tended to fall back on reproducing material from the core reading and did not score well.

C. Pass Mark

The Pass Mark for this exam was 55.
131 presented themselves and 62 passed.

Solutions for Subject SP9 - September 2023

Q1

(i)

Unique identifier	[½]
Risk category	[½]
Description of the risk	[½]
Information on the likelihood of the risk	[½]
Information on the severity of the risk	[½]
A specified risk owner	[½]
Details of other risks to which this risk is linked	[½]
Details of any controls in place	[½]
Details of any residual risks after allowing for controls	[½]
Meta-data, such as the date and individual recording the risk	[½]
<i>(other valid suggestion - award once)</i>	[½]

[Marks available 5½, maximum 3]

(ii)

Dinner club:

Allergic reaction to hot food	[½]
It is likely that some children will have food allergies or intolerances	[½]
Their usual teachers are likely to be aware of these, but the staff at dinner club may not be.	[½]
If they are served food to which they are allergic, this could be very serious	[½]
Or even fatal	[½]
Child eats inappropriate food	[½]
For instance, a vegetarian child being served a meat dish without realising	[½]
Caregivers may have made a choice, or have a religious belief, that certain foods are unacceptable	[½]
Serving unacceptable foods to the children of such caregivers is likely to cause distress	[½]
Food poisoning	[½]
Food may make children ill if it is not properly prepared	[½]
Or if hygiene standards are not upheld in the kitchen	[½]
This will cause harm and distress to the affected children	[½]
And their families	[½]
And may also cause reputational harm to the school	[½]
Bullying or injuries at dinner club	[½]
Children may be emotional or tired at the end of the day	[½]
This may lead to behaviour that is worse than, or different to, normal	[½]
Children of different ages mix during dinner club	[½]
Older children may not realise the harm they can do to younger children if they do not usually mix in this way	[½]
May be physical harm, if there is a fight	[½]
Or mental harm, if they are unkind to each other	[½]
Or physical harm from accident (e.g. with hot food)	[½]
Any other sensible, well-explained risk	[½]
Explanation should include a description of the event	[½]
And a description of the harm / damage incurred as a result of that event	[½]
<i>not listed above)</i>	[1½]

After-school clubs:

Minibus accident	[½]
The minibus could be involved in an accident en-route to the alternative site	[½]
This would potentially hurt or traumatised the children on board	[½]
And cause financial loss to the school	[½]
And make children late for the club	[½]
Possibly even not having arrived by collection time	[½]
Which would cause further concern for the caregivers	[½]
Bad behaviour on the bus	[½]
Children may decide to stand up or walk around the minibus while it is moving	[½]
This would put them at risk of harm	[½]
It may also distract the driver, leading to a greater likelihood of being involved in an accident	[½]

Minibus gets lost en route:

The minibus driver may not know how to get to the alternative site	[½]
Or there may be a diversion on the way	[½]
As a result, the minibus may arrive late, or not at all	[½]
This would cause distress to the children	[½]
And their caregivers	[½]
Particularly if the children have not arrived by collection time	[½]
It may also lead to a deterioration in the relationship with those running the after-school club.	[½]
Other minibus issues (capacity, logistics)	[½]
The minibus may not be large enough to take all children at once	[½]
The minibus may need to make several back-and-forth trips	[½]
Which would mean additional supervision for the children waiting	[½]
And children arriving at different times.	[½]
Collection problems	
Those running after-school club may not know each child's caregivers, or other pickup arrangements	[½]
Particularly if those arrangements are different to normal (e.g., neighbour collecting the child today)	[½]
This leads to the risk that a child is allowed to go home with someone without the caregivers' permission for that person to collect their child	[½]
Which may cause significant distress	[½]
And potential legal or reputational issues (safeguarding)	[½]
Any other sensible, explained risk	[½]
Explanation should include a description of the event	[½]
And a description of the harm / damage incurred as a result of that event	[½]

[Marks available 28½, maximum 8]

(iii)

Dinner club	
Allergic reaction to hot food	
Ensure catering staff have a list of all children attending after-school club and their allergies	[½]
This should ensure that the catering staff are able to provide appropriate food for each child.	[½]

Provide caregivers with menus in advance	[½]
This would allow caregivers to raise any objections if required	[½]
The school could even ask caregivers to sign a form stating that this menu is OK.	[½]
Child eats inappropriate food:	
Ensure catering staff have a list of all children attending after-school club and their dietary requirements	[½]
This should ensure that the catering staff are able to provide appropriate food for each child.	[½]
Provide caregivers with menus in advance	[½]
This would allow caregivers to raise any objections if required	[½]
The school could even ask caregivers to sign a form stating that this menu is OK.	[½]
Food poisoning:	
Ensure all staff involved in food preparation have adequate training	[½]
This will prevent food from spoiling as a result of inadequate knowledge	[½]
Ensure all staff involved in food preparation follow relevant guidelines	[½]
This will prevent food from spoiling through failure of people to follow processes	[½]
Ensure adequate kitchen equipment is provided	[½]
And appropriately maintained	[½]
This will prevent food from spoiling through failure of equipment	[½]
Bullying or injuries at dinner club:	
Ensure a sufficient number of staff are available to adequately supervise the number of children attending	[½]
This will ensure that situations can be dealt with by a responsible adult before escalating	[½]
Ensure staff are aware of any existing difficulties between individual children	[½]
This will ensure that particular attention can be paid to those children	[½]
To prevent issues before they arise	[½]
Ensure different members of staff are supervising the children and serving food	[½]
This will ensure that behaviour is still suitably monitored while food is being served.	[½]
Ensure that children are accompanied to and from different areas of the school (e.g. toilets) if relevant	[½]
This will ensure that children cannot misbehave when they are temporarily unsupervised.	[½]
After-school clubs:	
Minibus accident	
Ensure minibus drivers are suitably trained	[½]
And qualifications are up to date	[½]
This will prevent accidents occurring due to inadequately trained / qualified / experienced drivers	[½]
Ensure minibus is appropriately serviced and maintained	[½]
This will prevent accidents occurring due to mechanical failures	[½]
Ensure minibus is replaced every X years	[½]
To reduce likelihood of it breaking down	[½]
Ensure appropriate insurance is held	[½]
This will mitigate the financial loss in the case of an accident	[½]

Bad behaviour on bus:

Ensure that an additional member of staff (in addition to the driver) is on the bus at all times	[1/2]
This will ensure that children can be adequately supervised while the bus is moving	[1/2]
Ensure safety rules (remain seated, seatbelts on, etc.) are explained at the start of every trip	[1/2]
This will reduce the chances of poor behaviour starting in the first place	[1/2]

Minibus gets lost en route:

Ensure that drivers know the route in advance	[1/2]
This will ensure that the minibus does not get lost due to inadequate training / experience	[1/2]
Provide suitable navigation equipment (sat nav / map)	[1/2]
This will ensure that the minibus does not get lost due to inadequate provision of technology support	[1/2]
Ensure any diversions are known about and communicated in advance	[1/2]
This will ensure that the minibus does not get lost due to temporary changes in the route	[1/2]
Provide the driver with a mobile phone	[1/2]
And ensure that the staff at after-school club have its phone number	[1/2]
This will ensure that the driver and after-school club can communicate the situation if the minibus does get lost	[1/2]
Which will allow the teachers to provide directions to the driver	[1/2]
And allow them to manage caregivers' expectations.	[1/2]

Other minibus issues (capacity, logistics):

Extra transportation (e.g. more minibuses or bigger bus)	[1/2]
To reduce the need for multiple journeys	[1/2]

Collection problems:

Require caregivers to inform the school in advance who will be collecting their child	[1/2]
This will ensure that teachers are confident children are collected by the appropriate adult	[1/2]
Have each child provide a password that is only known by the person collecting them	[1/2]
This will ensure that teachers are confident children are collected by the appropriate adult	[1/2]

[Marks available 28, maximum 16]

(iv)

Minibus driver should have a list of children to collect	[1/2]
This would have prevented the driver from leaving without the two children	[1/2]
Teachers running the after-school club should have a list of children attending	[1/2]
This would have alerted these teachers to the missing children immediately	[1/2]
And this could have been communicated to the minibus driver at the time	[1/2]
Communications with caregivers should go through central admin (e.g., school office)	[1/2]

This would have prevented miscommunication with the caregivers, who expected that the children had arrived	[1/2]
This would ensure that parental communications were fully accurate	[1/2]
Children on the minibus should always be accompanied by a teacher as well as the driver	[1/2]
This would have meant that an additional adult was present at the alternative site	[1/2]
To communicate with the after-school club as to the children's locations	[1/2]
When passing children from one care to another (e.g. dinner club to minibus, minibus to first-aider), the handover should include basic information	[1/2]
Like how many children are expected, where they are going next, etc.	[1/2]
This would have ensured that the school was aware of the children's location throughout the period	[1/2]
[Marks available 7, maximum 4]	

(v)

The governor's argument is not necessarily correct	[1/2]
The risk register should be a live document	[1/2]
So risks can, and should, be added to and updated on an ongoing basis	[1/2]
A key part of this process is lessons learned from actual risk incidents	[1/2]
In fact, this gap was identified and escalated to the governors quickly	[1/2]
Which suggests that this part of the risk identification process is working well.	[1/2]
Dismissing the risk register as a whole because of this one incident may discourage people from raising risk incidents in future	[1/2]
Which is not building a good risk culture	[1/2]
However, it may be that the risk register is not fit for purpose	[1/2]
And this incident is simply new data which highlights this issue	[1/2]
So it would be sensible to review the risk register to check its continued appropriateness	[1/2]
Unless such a review has recently been carried out and remains relevant despite the new evidence	[1/2]
Such a review can be relatively low resource	[1/2]
This could involve checking the register directly	[1/2]
e.g. spot-checking compared to certain expectations	[1/2]
Or could involve a review of the risk identification process used in developing the risk register	[1/2]
[Marks available 8, maximum 5]	

(vi)

Brainstorming is an unrestrained or unstructured group discussion	[1/2]
Initially, all ideas should be welcomed	[1/2]
And recorded	[1/2]
Without much critique or commentary	[1/2]
This is intended to draw out a wide range of ideas	[1/2]
The school will need to decide which participants to include in the brainstorming	[1/2]
E.g. school staff/caregivers/governors/dinner club and after-school club leaders	[1/2]
The facilitator can then encourage the group to discuss ideas in more detail	[1/2]
The facilitator can then remove duplicated or irrelevant ideas	[1/2]
And group the remaining ideas into themes	[1/2]
It is important to get a strong facilitator for successful brainstorming	[1/2]
Though this is not necessarily someone who is an expert in the relevant business	[1/2]

areas	[1/2]
	[Marks available 6, maximum 3]
(vii)	
Independent group analysis	[1/2]
Similar to brainstorming	[1/2]
But initial ideas are written down in isolation rather than verbally in front of the group	[1/2]
The ideas are then discussed as a group	[1/2]
And subsequently ranked by each member of the group independently and anonymously	[1/2]
The composition of the group is therefore important to ensure a balanced perspective.	[1/2]
Surveys	[1/2]
Create a list of questions about the relevant topic	[1/2]
Request answers from as wide a range of participants as possible	[1/2]
Low response rates can invalidate the results	[1/2]
Questions must be designed very carefully	[1/2]
A pilot survey is often used to ensure the questions are suitable	[1/2]
Gap analysis	[1/2]
Similar to surveys	[1/2]
But questions focus on two distinct areas: the current situation and the desired situation	[1/2]
The two types of questions might be asked to different audiences	[1/2]
Delphi technique	[1/2]
Similar to surveys	[1/2]
But generally much more flexible, open questions	[1/2]
And targeted towards a smaller, more expert set of participants	[1/2]
After receiving the responses, the survey is updated to allow for that feedback	[1/2]
And another round is carried out	[1/2]
This iterates the group towards a common consensus.	[1/2]
The initial survey design is important	[1/2]
But most important is the iterative process	[1/2]
Interviews	[1/2]
Open discussion with SMEs	[1/2]
Allows follow-up questions and clarification immediately	[1/2]
Can be very time-consuming	[1/2]
And the framing of questions / interviewer's style can impact the results	[1/2]
Working groups	[1/2]
Usually set up after initial risk identification	[1/2]
To delve into more detail on specific risks	[1/2]
The relevant SMEs should be gathered to discuss the specifics of the risk	[1/2]
And present results back to the rest of the organisation	[1/2]
	[Marks available 17½, maximum 5]
	[Total 44]

Part (i) was well answered by many candidates.

Candidates who planned their answers to parts (ii), (iii) and (iv) together tended to score highly, and those who were able to think broadly about the scenario without falling back on reproducing core reading material performed well.

Part (v) was reasonably answered by successful candidates. However, many candidates did not demonstrate a good understanding of how a risk register should be used in practice.

Parts (vi) and (vii) were well answered overall.

Q2

(i)

Risks should be managed holistically	[½]
Upside as well as downside risk should be considered	[½]
ERM should consider the environment in which an organisation is operating	[½]
ERM should develop a common risk taxonomy	[½]
To facilitate discussion and understanding	[½]
Both quantifiable and non-quantifiable risks should be considered	[½]
Other sensible suggestion (maximum of 1)	[½]

[Marks available 3½, maximum 2]

(ii)

Identification	[½]
Assessment/measurement	[½]
Management	[½]
Monitoring	[½]
Modification	[½]

[Marks available 2½, maximum 2]

(iii)

The CEO is mistaken	[½]
ERM can be applied to any organisation	[½]
But it should be proportionate to the organisation's size and risk profile	[½]
ERM can reduce risk incidents (e.g. accidents)	[½]
And improve returns	[½]
And identify opportunities	[½]
This comment suggests a poor risk culture	[½]
Where the CEO is not engaging with risk concepts	[½]
Seemingly based on a principle or prejudice rather than evidence	[½]

[Marks available 4½, maximum 3]

(iv)

Culture is set at the top	[½]
A good risk culture will have risk embedded into the very top level of decision-making	[½]

In a good risk culture, all employees should see themselves as risk owners	[1/2]
And an open dialogue about risk issues should be encouraged	[1/2]
Including a no-blame culture, where people are supported for raising risk incidents.	[1/2]
This dialogue should always be two-directional: whether between staff and management or between staff and the CRF	[1/2]
Professional qualifications and CPD should be encouraged	[1/2]
And lessons learned shared widely throughout the organisation	[1/2]
Risk management metrics can be included in performance appraisals	[1/2]
Risk management should be seen as a value-adding activity, not a tick-box exercise	[1/2]
[Marks available 5, maximum 3]	

(v)

Whatever actions are suggested, it will be important to have buy-in from the top of the organisation	[1/2]
An announcement from the CEO or senior management as to the importance of risk would be helpful	[1/2]
Ongoing communications to that effect would be even more useful	[1/2]
Since messages are often forgotten or overlooked if not repeated	[1/2]
All staff should be encouraged to come forward with risk incidents	[1/2]
Without fear of punishment or reprisals	[1/2]
All staff should be educated as to their role in the risk management framework	[1/2]
Which may include mandatory training on risk management	[1/2]
Staff should be educated as to the benefits of ERM	[1/2]
To encourage them to choose to adopt it	[1/2]
In particular, focussing on upside potential and opportunities as well as threats	[1/2]
Best-practice risk-management case studies should be shared with the organisation	[1/2]
Especially where the case study is relevant - ideally internal	[1/2]
And where the case study shows a clear benefit to the organisation of having implemented risk management	[1/2]
Introduce reward and recognition for staff exhibiting best practice behaviour	[1/2]
Promote an open feedback culture, allowing staff to raise issues and speak-up	[1/2]
[Marks available 8, maximum 5]	

(vi)

Risk checklists	[1/2]
An existing list of risks that is available for cross-referencing	[1/2]
Often available from third-parties, or from experienced staff	[1/2]
Risk prompt lists	[1/2]
E.g. PEST(ELI)	[1/2]
A known list of prompts used to specify categories of risks to be considered	[1/2]
Risk taxonomy	[1/2]
Similar to risk prompt lists	[1/2]
Use an existing taxonomy to identify the different categories or areas of risks to be considered	[1/2]
Risk trigger questions	[1/2]
A list of questions designed to trigger a response which identifies risks in a specific area	[1/2]
Often based on prior experience or events	[1/2]
Case studies	[1/2]
Historical examples of actual risk events	[1/2]

Discussion of these events can be used as a trigger for potential new events	[1/2]
These events might be external (e.g. from the press) or internal risk events	[1/2]
Process analysis	[1/2]
Review a process in detail and identify the individual steps where a risk might crystallise.	[1/2]

[Marks available 9, maximum 3]

(vii)

Accept this risk:

If there are no reasonable alternatives then this may be the least-bad option.	[1/2]
Monitor the supplier (e.g. financial status/metrics for early warning signs to act)	[1/2]

Transfer the risk:

Purchase insurance/credit default swap to cover the losses arising from non-delivery by this company	[1/2]
This would not impact the potential reputational damage from failing to deliver final products	[1/2]
Potentially quite costly - the insurance premium would have to cover the expected losses as well as the insurer's overheads and profit margin	[1/2]
Introduces a basis risk, whereby non-delivery may be captured by an exclusion	[1/2]

Reduce the risk:

Identify and use other suppliers where possible	[1/2]
This may be more onerous from a logistical perspective and would need to be carefully handled to maintain the relationship with this key supplier	[1/2]
The costs of materials may also be higher through this route	[1/2]
Establish SLAs with the supplier	[1/2]
Such that non-delivery within a suitable timeframe would have financial implications	[1/2]
The supplier may not agree to that	[1/2]
and this would not impact on reputational damage either	[1/2]
Order materials well in advance to avoid unexpected surprises	[1/2]
Though this reduces the flexibility to change stock levels as demand fluctuates	[1/2]
Purchase the supplier	[1/2]
Vertical integration	[1/2]
ABC may not have the cash to do so	[1/2]
And ABC management may not have the expertise to run this supplier effectively	[1/2]

[Marks available 10½, maximum 5]

(viii)

Pros of stochastic models	
Gives a view of the likelihood of events happening/distribution of results	[1/2]
Allows for non-linear relationships / variables easily	[1/2]
Can identify new scenarios that weren't explicitly considered previously	[1/2]
Can identify what is driving a particular outcome	[1/2]
Cons of stochastic models	
Can be very time-consuming to run	[1/2]
Can be very expensive to run	[1/2]
Requires expertise, which can be difficult to obtain/retain	[1/2]

Difficult to explain the outputs	[½]
Pros of deterministic models	
Quick to run	[½]
Cheaper to run	[½]
Easy to explain the outputs to non-experts	[½]
Cons of deterministic models	
Does not provide a distribution of results/cannot infer probabilities	[½]
Does not allow for risk interactions as well as stochastic models	[½]
Too simplistic to allow adequately for 'cliff-edge' effects (e.g., guarantees)	[½]
	[Marks available 7, maximum 3]

(ix)

ABC would need to decide on:	
The sets of cash flows it would like to model	[½]
Both inwards and outwards	[½]
Assumptions about cash flows..	[½]
e.g. inflation of raw material prices (<i>other sensible example</i>)	[½]
e.g. decrease in revenue due to demand changes (<i>other sensible example</i>)	[½]
The time-steps required for modelling	[½]
The time horizon for the model	[½]
The granularity of the model	[½]
These decisions will be informed by the eventual use(s) of the model	[½]
Once these have been decided, ABC should gather data on each modelled cashflow	[½]
At the granularity and time-steps desired for modelling	[½]
ABC should modify the data as required	[½]
ABC should use the data to estimate its best view of each likely cashflow	[½]
At each modelled point in time	[½]
Allowing for dependencies between different cash flows	[½]
ABC can sum the cash flows at each point in time to understand its likely financial position at each point in time	[½]
ABC should seek to validate this model	[½]
By carrying out goodness of fit tests/statistical tests	[½]
By comparing to historical performance	[½]
By stress and / or sensitivity testing the assumptions	[½]
By comparing to appropriate external benchmarks	[½]
By expert judgement assessing whether or not the results are reasonable	[½]
By adjusting the inputs/cash flows/assumptions in the model (i.e. feedback loop)	[½]
	[Marks available 11½, maximum 5]

(x)

With this model, ABC should understand all the important cash flows for its business	[½]
For each of the risks, ABC should identify how that risk might impact these cash flows	[½]
Allowing for the interaction between different cash flows	[½]
These impacts may be obvious	[½]
But if not, ABC may need to undertake some discovery	[½]
For instance, brainstorming with subject matter experts	[½]
Or surveying staff	[½]

Or any other identification technique (<i>maximum 2 x ½ marks for examples of different techniques</i>)	[½]
ABC can then put these stressed cash flows through its model	[½]
To understand the potential financial impact of the risk	[½]
ABC might want to carry out different levels of stress	[½]
e.g., a low / medium / high stress	[½]
These different stresses may have larger / smaller impacts on the relevant cash flows	[½]
But there may also be certain cash flows which are only affected in the more extreme stress scenarios	[½]
This provides ABC's management with a conditional insight into its risk profile	[½]
i.e., if risk A crystallises in this way, the impact could be B.	[½]
But does not provide ABC with any indication as to the likelihood of these events occurring.	[½]
	[Marks available 8½, maximum 5]

(xi)

Pros:

Limits the down-side risk of economic down-turn	[½]
Well-understood/can be relatively simple/little execution risk	[½]
May have relatively little counterparty risk	[½]
Since margin calls are often included in the derivative	[½]
And OTC derivatives may be centrally cleared	[½]
But if not, the counterparty is likely to be a large bank, which has good security	[½]
Should pay out quickly in the event of being triggered.	[½]

Cons:

ABC is unlikely to have the expertise to assess the opportunity in-house	[½]
ABC is also unlikely to have access to derivative markets in-house	[½]
So expensive brokers may need to be involved in the transaction	[½]
There may be counterparty risk if the derivative is an OTC arrangement	[½]
There is a material basis risk	[½]
The risk being mitigated (economic downturn) is not the one to which ABC is exposed (cost increase and demand decrease occurring simultaneously)	[½]
This may lead to the derivative not paying out when needed	[½]
Depending on the derivative chosen, ABC may be exposed to the risk that the economy performs better than expected (i.e., lose out on upside)	[½]
This can result in additional losses to ABC	[½]
And / or margin calls on ABC, leading to liquidity difficulties.	[½]
	[Marks available 8½, maximum 5]

(xii)

Purchase additional raw materials now	[½]
This would lock in today's prices	[½]
For as much stock as could be purchased	[½]
But requires significant up-front cash payment	[½]
And reduces flexibility in future	[½]
If different raw materials are required	[½]
Since the materials are likely to be illiquid	[½]
Or if prices drop in future	[½]

And requires storage of the physical raw materials	[½]
Which may be expensive itself	[½]
and may lead to degradation in quality of the materials	[½]
Purchase derivative products on the raw materials themselves	[½]
This would lock in today's prices	[½]
But comes at a set cost	[½]
This requires no (or relatively little) up-front cash payment	[½]
But may require margin payments over time	[½]
Provides flexibility in future	[½]
If prices drop	[½]
But not if different raw materials are required	[½]
Does not require any physical material storage	[½]
May introduce additional reporting obligations / administrative difficulties	[½]
Offer discounts for long-term commitment from clients	[½]
e.g. exclusivity deals for the next 24 months	[½]
Would support long-term demand	[½]
By making it harder for clients to switch suppliers	[½]
But this wouldn't mitigate against clients going bust or cutting back production	[½]
To gain this agreement, ABC would likely have to make material concessions elsewhere	[½]
Which will reduce profitability significantly	[½]
On an expected basis, this is likely to be a net negative impact on profit	[½]
This would incur significant overheads for the admin required	[½]
To draw up the agreement,	[½]
And monitor and enforce it	[½]
Attempt to broaden the range of raw materials used	[½]
Which would allow ABC to substitute in different materials if the current ones became too expensive	[½]
Broaden business across different country/sectors	[½]
There may be existing alternatives which could be easily substituted in	[½]
Or some R&D may be required to identify alternative materials	[½]
This is likely to be expensive	[½]
So the long-term benefits would have to be significant	[½]
This may have other benefits as well, if the alternative materials are better in some way	[½]
It is plausible that both the current and alternative materials increase in price at the same time.	[½]
Accept the risk	[½]
Depending on ABC's view of likely economic conditions, this may be a risk that the Board is willing to accept	[½]
If so, it should develop early-warning indicators of this risk	[½]
And actively monitor them	[½]
With a pre-agreed set of possible actions to be taken if the risk seems to be crystallising	[½]
At specific, pre-determined threshold levels of the indicators	[½]
This would incur no direct costs	[½]

Though the management time and focus spent on monitoring may be significant [½]
This may impede the ability of ABC to take on other risks elsewhere - i.e. it may
have an opportunity cost [½]
board is willing to accept [½]

[Marks available 25, maximum 15]

[Total 56]

Part (i) and (ii) were generally well-answered by most candidates.

Responses to part (iii) tended to be no as good, with many candidates simply stating the benefits of Enterprise Risk Management without considering the context provided in the question.

Parts (iv) to (viii) were shorter questions, which were well-answered by many candidates. Some candidates did not pay attention to the marks on offer and struggled to articulate concisely the pros and cons of deterministic and stochastic models.

Part (ix) was not well-answered, and many candidates did not appear to consider the features, assumptions and cash flows that would need to be incorporated for the model to be relevant for XYZ.

Part (x) was not well-answered, with many candidates giving generic answers covering the benefits of modelling risks, but without referring to the specific risks highlighted for XYZ.

Part (xi) was generally well-answered by most candidates.

Part (xii) was not well-answered by all except the better prepared candidates. In some cases, it appeared that candidates had not planned sufficient time to provide a well-balanced discussion of four strategies.

[Paper Total 100]

END OF EXAMINERS' REPORT



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