# INSTITUTE AND FACULTY OF ACTUARIES

# EXAMINATION

21 September 2023 (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** ABC is a school for children aged between 5 and 10 years old. The school maintains a risk register that contains all the key risks to which the school is exposed. The risk register is regularly updated and is reviewed and approved by ABC's governing board on an annual basis.

(i) List six data fields that you would expect to find for each risk in the risk register. [3]

ABC offers an after-school 'dinner club', where any children whose caregivers cannot collect them at the end of the school day, are looked after until their caregivers are able to collect them. Children are offered a hot meal during dinner club.

In addition to dinner club, ABC offers several after-school clubs that are held on a separate site. For these clubs, a school minibus is used to transport children to the separate site, and caregivers collect their children directly from that site.

Spaces on the dinner club and the other after-school clubs must be booked in advance, with appropriate consent forms signed by caregivers.

(ii) Discuss three key risks associated with the dinner club and three key risks associated with the other after-school clubs. [8]

(iii) Suggest, with reasons, for each of the risks described in part (ii), two controls to manage that risk. [16]

Two 5-year old children typically attend dinner club for 15 minutes, and are then taken by the school minibus (along with other children and a supervising teacher) to attend an after-school club on a separate site.

On one occasion last week however, a risk incident occurred involving these two children. In this incident, although both children were safe and accompanied by a suitable adult at all times, the relevant teachers were not aware of their location for an extended period of time. The school has identified this as a risk incident and carried out an investigation to understand what happened. A timeline of events from this investigation is below:

3:30 pm

- The two children did not board the school minibus to attend the after-school club and the minibus set off without them.
- As a result, the two children did not arrive at their usual after-school club.
- The teachers running the after-school club assumed that the two children had not been in school that day.

4:00 pm

- One of the teachers at dinner club realised that the two children should have been taken to the alternative site on the minibus but had been left behind.
- The teacher contacted the minibus driver, who returned and collected these two children.

- After the children had set off in the minibus, the teacher then immediately contacted the children's caregivers to explain that they had arrived at the after-school club later than expected.

4:05 pm

- On the journey to the separate site, one of the children suffered a nosebleed.
- On arrival at the site, the minibus driver took both children to the on-site first aider, in a separate building to the after-school club.
- The minibus driver then returned to the main school site.

4:15 pm

- The after-school club finished.
- The two children were still with the first aider in a separate building to the after-school club.
- The two children's caregivers arrived to collect their children and were distressed to find that the children did not arrive at the after-school club, despite the caregivers having been told at 4:00 pm that the two children had arrived later than expected.
- While the teachers were contacting the main school site to find out what had happened, the first aider arrived at the club with both children.

As a result of the investigation, the school has implemented several improved processes and controls.

(iv) Suggest, with reasons, four controls that would have prevented this incident from occurring. [4]

Prior to this incident occurring, this type of event was not previously captured in the risk register. At a subsequent school board meeting, one board member argued that the fact that this incident was not captured in the risk register proves that the risk register is not fit for purpose.

(v) Discuss this governor's argument. [5]

The school decides to undertake a ground-up review of its risk register to ensure that all relevant risks are identified and captured. The school chooses to use brainstorming as its key risk identification technique.

(vi) Describe, in detail, how the school may carry out a brainstorming exercise to identify risks. [3]

(vii) Describe three other risk identification techniques that may be suitable for the school to use. [5]

[Total 44]

**2** (i) Describe the key principles of Enterprise Risk Management (ERM). [2]

(ii) List the five main steps in the ERM control cycle. [2]

XYZ is a company that makes components for industrial machinery. The Chief Executive Officer (CEO) of XYZ has stated that 'ERM is just a buzzword used by bankers, it has no use for a traditional manufacturing company like us'.

(iii) Comment on the CEO's statement. [3]

Despite these comments, the board has decided that XYZ should implement an ERM framework within the next 18 months. The board is particularly concerned about how difficult it may be to improve the company's risk culture.

(iv) Describe the features that a company should have for it to have a good risk culture. [3]

(v) Discuss different actions that XYZ could undertake to improve its risk culture. [5]

As part of the ERM framework, XYZ has decided to use Strengths, Weaknesses, Opportunities, Threats (SWOT) analysis as a tool to help it identify its key risks.

(vi) Describe three other risk identification tools that XYZ could use. [3]

XYZ has identified one of its key risks as an over-reliance on a single supplier of raw materials. XYZ requires many different raw materials for its production processes, but over 80% of them come from that supplier.

(vii) Discuss different actions that XYZ's management may take to mitigate this risk. [5]

Two other key risks that XYZ have identified are:

- A significant increase in the cost of XYZ's raw materials
- A significant drop in demand for XYZ's products.

XYZ would like to build a model to understand the range of different potential outcomes were these risks to crystallise. XYZ's CEO would like to use a deterministic model, whereas XYZ's Chief Financial Officer has suggested using a stochastic model.

(viii) Discuss the pros and cons to XYZ of each of these types of models. [3]

XYZ has decided to use a deterministic model to better understand its exposure to these risks, as well as other risks.

(ix) Set out how XYZ would design and build a deterministic model appropriate for its risk profile. [5]

(x) Explain how XYZ would use such a model to better understand its exposure to the risks described above. [5]

Having carried out the modelling and discussed the results, XYZ's board is concerned about the level of exposure that XYZ has to the risk of a significant economic downturn. In an economic downturn, it is likely that both the risks identified above would crystallise at the same time. That is, the cost of raw materials would increase at the same time as demand for XYZ's finished products would decrease.

XYZ's management have suggested to the board that an appropriate response to this risk would be to purchase financial derivatives that would pay out in the event of a material economic downturn.

(xi) Discuss the pros and cons of this approach. [5]

(xii) Discuss four alternative strategies that XYZ could adopt instead. [15]

[Total 56]

## END OF PAPER