



Oxford Cambridge and RSA

Friday 17 January 2025 – Morning

Level 3 Cambridge Technical in Engineering

05873 Unit 24: Project management for engineers

Time allowed: 2 hours

C307/2501



You must have:

- a calculator



Please write clearly in black ink. Do not write in the barcodes.

Centre number

--	--	--	--	--	--

Candidate number

--	--	--	--

First name(s)

---

Last name

---

Date of birth

D	D	M	M	Y	Y	Y	Y
---	---	---	---	---	---	---	---

**INSTRUCTIONS**

- Use black ink. You can use an HB pencil, but only for graphs and diagrams.
- Write your answer to each question in the space provided. If you need extra space use the lined pages at the end of this booklet. The question numbers must be clearly shown.
- Answer **all** the questions.

**INFORMATION**

- The total mark for this paper is **80**.
- The marks for each question are shown in brackets [ ].
- This document has **20** pages.

**ADVICE**

- Read each question carefully before you start your answer.

**Text 1**

Anders plc is a large, multinational company that makes protein powder for the healthcare industry. The company operates from production sites in the UK, Australia and Canada.

Protein powder has been included in dietary supplements, designed to increase fitness and wellbeing, for many years. Anders plc's protein powder is currently made from soya beans, rice, eggs and milk. The company mainly sells its powder to manufacturers of weight loss products, superfood supplements and sports nutrition.

Recently, protein powder has become a popular ingredient in ready-to-eat snack products, such as protein bars and breakfast cereals. Many snack manufacturers are reformulating their products to include protein powder so that they can be marketed as being 'high in protein' and sold at a higher price.

Anders plc has received several enquiries from ready-to-eat snack manufacturers wanting to purchase its protein powder. However, Anders plc has been unable to agree supply either because the quantities they wish to order are too large for the company's current production capacity or because the price the snack manufacturers are willing to pay is too low.

Shanti, Anders plc's CEO, is based at the company's headquarters in the UK. Shanti thinks the growth in the protein powder market is likely to be long-term and that the company would benefit from supplying this new market. To this end, Shanti has initiated a formal project to meet this increased demand.

The project includes:

- 1 a technological upgrade at all three sites to increase production capacity
- 2 a reformulation of ingredients to include some cheaper insect-based protein to enable more competitive pricing.

The project steering committee comprises Shanti and the Operational Director from each of the company's three production sites. Shanti is the project sponsor. Ryan, a skilled engineer who has worked at the company for seven years, has been assigned as project manager. Two project team leaders have also been assigned, one to lead the technological upgrade and one to lead the reformulation of ingredients.

As the skills required to deliver the technological upgrade are not available in-house, Ryan will need to instruct a technological contractor. He will also need to liaise with an expert consultant regarding the introduction of insect-based protein, and find one or more suppliers.

Ryan is an experienced project manager. On his last project, he was praised for the quality of his initiation documentation and his excellent planning skills. However, Ryan's leadership skills are weak. He also needs to improve his delegation skills.

1 Use Text 1.

(a) Identify **one** key role of each of the following people involved in the project.

- Ryan (project manager) .....
- .....
- the contractor (technological upgrade) .....
- .....
- the consultant (insect protein) .....
- .....
- a supplier (insect protein) .....
- .....
- Shanti (project sponsor) .....
- .....

[5]

(b) Identify with a tick (✓) whether the communication between Ryan and each of the following personnel would be internal or external.

You should only place **one** tick in each row.

	Internal communication?	External communication?
A supplier (insect protein)		
Shanti (project sponsor)		
The consultant (insect protein)		
The contractor (technological upgrade)		

[4]

(c) Identify **one** benefit to each of the following of Ryan improving his delegation skills.

Anders plc .....

.....

project team leaders .....

.....

Ryan .....

.....

[3]

(d) Describe **three** items which Ryan should include in the project proposal.

1 .....

.....

.....

.....

2 .....

.....

.....

.....

3 .....

.....

.....

.....

[6]

(e) Ryan should include details about 'reporting' and 'information sharing' in the project's communication strategy.

Explain **one** difference between 'reporting' and 'information sharing'.

.....

.....

.....

.....

[2]

**5**  
**BLANK PAGE**

**DO NOT WRITE ON THIS PAGE**  
**Turn over for the next question**

## Text 2

The first stage of the project – initiation – has been completed. The project has been given a timescale of two years. A budget of £60 million has been allocated, which will be externally funded using debt finance. The project has also been set a target to reduce production costs by at least 7.5%.

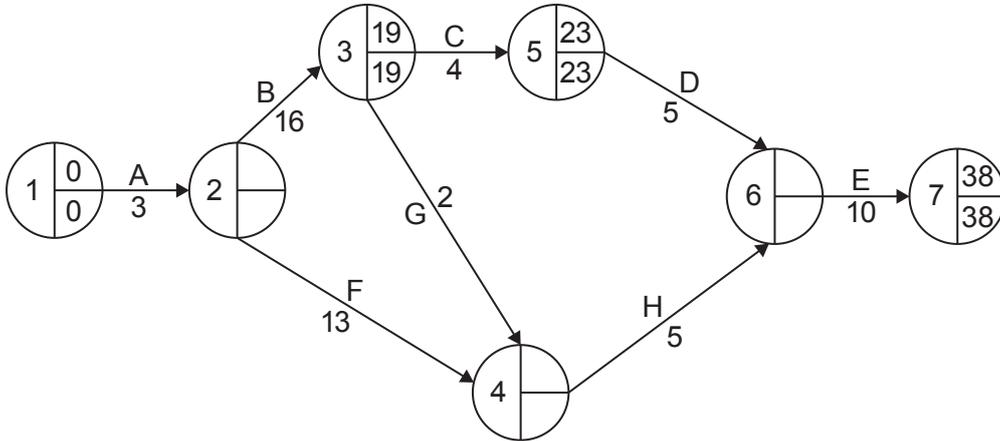
The second stage of the project – planning – requires Ryan to produce eight plans. Ryan begins by creating a critical path network diagram for the planning stage of the project.

## 2 Use Text 2.

(a)

- (i) Complete the critical path network diagram below by inserting the EST (earliest start times) and LFT (latest finish times) for nodes 2, 4 and 6 into the blank spaces on the diagram.

## Critical path network diagram for the planning stage of the project



## Task key:

A: Outline plan

E: Financial plan

B: Stakeholder analysis

F: Resource plan

C: Risk analysis

G: Quality plan

D: Contingency plan

H: Project schedule

Duration: All timings are in days.

[6]





**BLANK PAGE**

**DO NOT WRITE ON THIS PAGE**

**Turn over for the next question**

## Text 3

The third stage of the project – implementation – is now well underway. Gyantics, based in France, has been selected as the company's sole supplier of insect protein.

To help decide what proportion of insect protein to use in the new formulation of protein powder, the expert consultant recommended conducting taste tests with prospective buyers. Prospective buyers were asked to try each formulation and state their first choice. The results are shown in the table below.

Percentage of insect protein used in the formulation (by weight)	Percentage of prospective buyers who rated the formulation as their first choice
10%	17%
15%	20%
20%	24%
25%	24%
30%	10%
35%	5%

## 3 Use Text 3.

(a)

(i) When choosing which insect protein supplier to use, Ryan based his decision on three criteria.

Identify with a tick (✓) the type of information on which each decision-making criterion is based.

You should only place **one** tick in each row.

	Quantitative information?	Qualitative information?
Price of the product		
Size of the business		
Standard of the product		

[3]

- (ii) Anders plc placed an initial order for 150 tonnes of insect protein from Gyantics at the current price of €4000 per tonne.

The Pounds Sterling exchange rate against the Euro is 1.2 Euros to the Pound.

Calculate the cost of this order in Pounds Sterling.

.....

.....

.....

..... [2]

- (iii) Explain **one** way that relying on Gyantics as sole supplier may affect project outcomes negatively.

.....

.....

.....

..... [2]

(b)

- (i) Using the information in **Text 3**, rank the protein powder formulations according to the preferences of the prospective buyers.

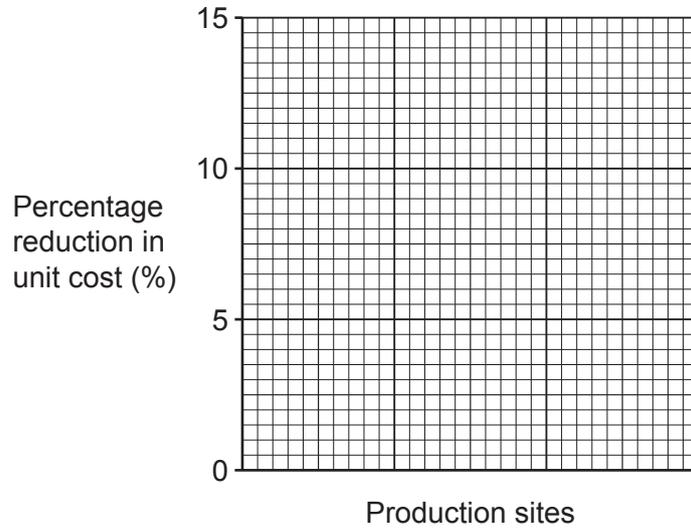
Rank	Percentage of insect protein used in the formulation (by weight)
1 (most preferred)	%
2	%
3	%
4	%
5	%
6 (least preferred)	%

[2]



- (i) Using the information in **Table 1**, create a fully labelled bar chart to show the percentage reduction in the unit cost of production at each of Anders plc's three production sites.

**Anders plc's production sites percentage reduction in unit cost**



You may use this box for your workings.

[6]

- (ii) Evaluate whether the project has met its target of reducing the company's production costs by at least 7.5%.

.....

.....

.....

.....

.....

.....

.....

[3]

**Text 4**

The project has now entered the project closure stage with an £80 million budget spend, time creep of almost six months and some quality erosion. Ryan had thought that the quality of the initiation documentation and excellent planning skills would have led to greater success for the project. Ryan intends to investigate the reasons for this underperformance, beginning by studying various completion figures and analysing the issue logs. Ryan intends to provide detailed feedback to all relevant stakeholders, including Gyantics, the selected supplier of insect protein.

**4 Use Text 4.**

(a) Explain, using a suitable example, what is meant by the term 'completion figures'.

.....  
.....  
.....  
..... [2]

(b) Explain **one** reason issue logs should be used when measuring the success of the project.

.....  
.....  
.....  
..... [2]



(e) Explain **one** benefit to Gyantics of receiving feedback on its own performance at the end of the project.

.....

.....

.....

..... [2]

**END OF QUESTION PAPER**

**EXTRA ANSWER SPACE**

If you need extra space use these lined pages. You must write the question numbers clearly in the margin.

The page contains a large rectangular area for writing, bounded by horizontal dotted lines. A solid vertical line is positioned on the left side of this area, creating a margin. This layout is intended for students to write their answers to questions, with the question numbers being written in the margin.





**DO NOT WRITE ON THIS PAGE**

---

**OCR**

Oxford Cambridge and RSA

**Copyright Information**

OCR is committed to seeking permission to reproduce all third-party content that it uses in its assessment materials. OCR has attempted to identify and contact all copyright holders whose work is used in this paper. To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced in the OCR Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download from our public website ([www.ocr.org.uk](http://www.ocr.org.uk)) after the live examination series.

If OCR has unwittingly failed to correctly acknowledge or clear any third-party content in this assessment material, OCR will be happy to correct its mistake at the earliest possible opportunity.

For queries or further information please contact The OCR Copyright Team, The Triangle Building, Shaftesbury Road, Cambridge CB2 8EA.

OCR is part of Cambridge University Press & Assessment, which is itself a department of the University of Cambridge.