



Singapore CA Qualification Examination

INTEGRATIVE BUSINESS SOLUTIONS

Examination Day Documents

5 December 2022

INSTRUCTIONS TO CANDIDATES:

1. The time allowed for this examination paper is **4 hours and 30 minutes**. Please note, there is no separate prescribed reading time for this examination.
2. This is an open book examination. During the examination, you are allowed to use your laptop and any calculators that comply with the SAC's regulations. Please note that watches, mobile phones, tablets, and all other electronic devices **MUST NOT** be used during the examination.
3. During the examination, videos of you and your computer screen will be recorded for the purpose of ensuring examination integrity and you have consented to these recordings.

4. This examination paper and all video recordings are the property of the Singapore Accountancy Commission.
5. This is a hypothetical case written exclusively for this examination. Names, characters, places and incidents used are imaginary or fictional. Any resemblance to actual events or locales or persons, living or dead, is entirely coincidental. This case is not to be cited without permission from the Singapore Accountancy Commission.

IMPORTANT NOTICE:

If you are not feeling well, please do not press “Start Assessment”. If you have started and leave during the exam, you would be deemed to have attempted the paper.

Case study report instructions

These Examination Day Documents (EDD) complete the case study scenario and set out the requirements of the report that you are required to write (**Exhibit 18**). You must combine your pre-reading and analysis of the Advance Information (AI), your other pre-examination research, and the new information in the EDD to plan the content and structure of your report, and then to write the report.

Report format

Your report should follow the following format:

Requirement	eExam Qn. Number	Marks
Requirement 1 – An Executive Summary	2	10
Requirement 2 – Evaluation and strategic options	3, 4, 5, 6	42
Requirement 3 – Business options, financial reporting and tax	7, 8, 9, 10	23
Requirement 4 – Ethics and environmental, social and governance issues	11, 12, 13	25

You should clearly state any assumptions that you make and include any supporting data. Please put your appendices (if any) at the end of each question part.

Please note that **only your report commentary (including the assumptions made), appendices and workings entered in Cirrus on the day of the examination will be marked.**

Advance Information (AI) – List of Exhibits

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Advance Information (AI)		
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2	Encom: Company background, markets and governance	AI-11
3	Encom: Management accounts for the years ended 31 October 2021 and 31 October 2020	AI-21
4	Encom: Draft ESG report for the year ended 31 October 2022	AI-24
5	Minutes of board meeting discussing the purchase of an existing data centre or building a new one in Singapore	AI-27
6	Briefing paper from HR: Talent shortage in Singapore and short/medium/long term implications	AI-30
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8	Risk register extract concerning Covid-19 impact and lifting the moratorium	AI-36
9	Singapore Business News article: What you need to know about the updated Personal Data Protection Act	AI-38
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Examination Day Documents (EDD)– List of Exhibits

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Note: Unless otherwise stated, all dollar amounts (\$) are in Singapore dollars.

Management accounts for the year ended 31 October 2022

Statement of Profit and Loss

	Year ended 31 October	
	2022 \$000	2021 \$000
Revenue		
Colocation	851,549	789,176
Interconnection	232,241	197,455
Cloud and hybrid services	206,436	135,305
Total revenue	<u>1,290,226</u>	<u>1,121,936</u>
Cost of sales:		
Data centre staff salaries	(67,830)	(61,431)
Depreciation	(241,260)	(214,204)
Amortisation of intangibles	(34,583)	(34,932)
Rental payments	(104,534)	(101,489)
Energy and water costs	(271,936)	(136,000)
Repairs and maintenance	(10,117)	(9,822)
Total cost of sales	<u>(730,260)</u>	<u>(557,878)</u>
Gross profit	559,966	564,058
Sales and marketing	(128,529)	(126,009)
General and administrative	(225,731)	(221,305)
Profit before interest and tax	<u>205,706</u>	<u>216,744</u>
Interest cost	(24,000)	(24,000)
Profit before tax	<u>181,706</u>	<u>192,744</u>
Tax expense	(30,890)	(32,766)
Profit after tax	<u>150,816</u>	<u>159,978</u>
Dividends	(53,149)	(39,995)
Retained profit	<u>97,667</u>	<u>119,983</u>

Statement of financial position	Notes	At 31 October	
		2022 \$000	2021 \$000
Non-current assets			
Property plant and equipment	1	1,747,050	1,656,356
Intangible assets	2	215,783	208,849
Total non-current assets		1,962,833	1,865,205
Current assets			
Accounts receivable		126,072	115,908
Cash and cash equivalents		250,346	247,791
Total current assets		376,418	363,699
Total assets		2,339,251	2,228,904
Equity			
Share capital		400,000	400,000
Retained profits		1,377,117	1,279,450
Total equity		1,777,117	1,679,450
Long term liabilities			
Long term loans		400,000	400,000
Current liabilities			
Accounts payable		162,134	149,454
Total equity and liabilities		2,339,251	2,228,904

Notes to the management accounts:

1. Property, plant and equipment

	At 31 October	
	2022	2021
	\$000	\$000
Land and buildings	1,309,438	1,146,092
Leasehold improvements	344,812	343,845
Core systems	1,686,766	1,405,638
Construction in progress	50,999	164,486
Total cost	3,392,015	3,060,061
Less: accumulated depreciation	(1,644,965)	(1,403,705)
Net book value	1,747,050	1,656,356

Note: Three new data centres were opened during the year ended 31 October 2022.

2. Intangible assets

	At 31 October	
	2022	2021
	\$000	\$000
Capitalised internal use software	319,274	277,757
Licenses	4,849	4,849
Less: accumulated amortisation	(108,340)	(73,757)
Total	215,783	208,849

3. Non- financial information

	At 31 October	
	2022	2021
Average number of clients	1,800	1,700
Number of data centres at end of year	44	41
Average number of employees		
Engineering and Operations	798	798
Sales and marketing	314	315
Management finance and administration	740	735
Total	1,852	1,848

END OF EXHIBIT 12

Analyst report: Encom's ESG performance: concerns

Singapore: 30 November 2022

Encom Ltd continues to impress financially. The financial results for the year ended 31 October 2022 have not been announced yet, but given growth in earlier years, it looks like a business that continues to do well. However, I am not recommending it as an investment due to concerns about its Environmental, Social and Governance (ESG) performance.

Investors are increasingly demanding that the companies that they invest in not only have a good financial record, but can also show that they have wider benefits to society and the environment as a whole, or at least they do not harm them. Sadly, this is not the case at Encom, in my opinion.

The problem lies in the huge amount of energy that the data centres consume. On average, it is estimated that one of Encom Ltd's data centres uses around 30 gigawatt hours of electricity every year. The average household uses around 3,000 kilowatt hours, which means that one data centre uses the same amount of electricity as 10,000 homes. Clearly this leads to a huge amount of carbon emissions. Given that the world is facing a climate disaster if we do not curb our carbon emissions, I feel that no responsible investor should touch this company until they can show what actions they will take to reduce their carbon emissions.

Our ranking: Avoid.

END OF EXHIBIT 13

Email from IT and Operations Director to CEO: Breach of data security

Valerie Huang – IT and Operations Director

To: Cheng Tan
From: Valerie Huang
Subject: **Breach of data security**
Date: 1 December 2022

Hi Cheng,

I need to inform you about a data breach that may have occurred yesterday to a system that we host on behalf of Asclepius Health Insurance Company (AHIC).

Our monitoring systems picked up an unusual amount of activities late last night, with several attempts to log into the system unsuccessfully. However, one attempt was successful, and a user logged in at 11.43 pm last night. Fortunately, our monitoring systems picked up this unusual activity very quickly and at 11.44 pm the user was blocked. They were therefore in the system for a maximum of 60 seconds.

We can see that no records were downloaded, but it is possible that the intruder was able to view and possibly record details of a number of patients. Our system logs are now being reviewed and we will hopefully be able to identify exactly which records were accessed by the intruder. I estimate that no more than 10 records were accessed, if any.

The question we need to consider now is whether we need to disclose this breach. We may need to disclose it to the Personal Data Protection Commission, and/or to the individuals affected and to the client. I will update you once we obtain more information, but wanted to give you a heads-up.

Val

END OF EXHIBIT 14

Email from Finance Director to finance team: Investment appraisal assumptions for purchasing an existing data centre or building a new one

Nicole Lau – Finance Director

To: Investment Appraisal (IA) Team, Finance Department
From: Nicole Lau
Subject: **Singapore capacity expansion**
Date: 10 October 2022

Dear IA team

I hope you are well. As discussed at our last meeting, I have spent time with Valerie Huang and would like our appraisal to be based on the following assumptions. The 2 options we will consider will be buying an existing data centre, or tendering to build a new one.

Purchase of existing data centre

Singagiga is looking to sell one of their five Singapore data centres. Quite why we are unsure, but we will undertake due diligence if this is our preferred option.

- The capacity would be similar to building a new site.
- Cost of the acquisition would be in the region of \$350 million.
- Additional capex spend of \$50 million would be required immediately, then \$25 million at the end of the first year, growing each year by 25%.
- Operational expenditure is likely to be around \$50 million at the end of the first year, growing at 10% per annum indefinitely.
- Consider a time horizon of 5 years before significant investment will be needed.

Tender for a new centre

High environmental specifications will need to be offered to win the tender.

- Estimated construction costs:
 - Land acquisition: \$100m
 - Building work: \$200m
 - Hardware and software - \$200m
 - Network connectivity: dedicated fibre optic cable - \$5m
 - Eco-cooling systems - \$80m
 - Training and commissioning costs – \$20m
- Ongoing capex is likely to \$25m at the end of year 1, growing at 25% a year thereafter.
- Operating costs are likely to be 50% more than the existing centre under the purchase option above in any one year, reflecting the green energy tariff we will need to use and the sophisticated cooling equipment.
- Estimated life before major reinvestment is required is 8 years.

Common assumptions:

- A discount rate of 10% should be used, which broadly reflects our existing cost of capital.
- For the purposes of this evaluation assume that both sites would be commissioned on 1 November 2023, with initial investment costs being payable on that date.

At this stage, ignore revenue projections, as it can be assumed that revenue would be the same under both options. Financial evaluation should focus on comparing the discounted annual cost of the two options.

I would be grateful if you could please prepare an investment appraisal calculation, assuming our objective is the maximisation of long term shareholder wealth.

Any questions, please ask.

Nicole Lau

Finance Director, Encom

END OF EXHIBIT 15

Memo from IT and Operations Director detailing spending on AI product during the year

Memo:

To: Nicole Lau, Finance Director

From: Valerie Huang, IT and Operations Director

Date: November 2022

Subject: AI Research and Development costs

Hi Nicole,

You asked me for details of the spending on research and development on the use of Artificial Intelligence (AI) in 2022. As you know, Encom developed AI tools for internal use during the years 2020 and 2021 to manage our data centres – for example in identifying unusual activity which could indicate that there are potential cyber-attacks. These tools have been in use throughout 2022. The costs of developing these was capitalised and included within Intangible Assets.

During the year 2022, we have been looking into the possibility of developing AI based applications that can be used by our clients. We would sell the clients a license to use the applications. The applications are fairly easy to develop as they are based on our own internal AI tools, which have been modified for more general use.

The work performed so far on the project has been as follows:

Jan 2022: \$10,000 of engineers' time was spent on researching what AI applications are available in the market and testing these to identify their strengths and weaknesses. Clients were also contacted to gauge their interest in such a product.

Feb 2022: A feasibility study was performed based on market research performed. This concluded that the development of an AI product by Encom would be technically and commercially feasible. The cost of the feasibility study was \$5,000. At the end of February,

based on the feasibility study, the board gave their approval that the project should go ahead.

Mar – Jun 2022: A team of software engineers worked exclusively on developing the AI product. It was ready for testing at the end of June. The salary costs of the engineers for this period were \$97,500.

July 2022: A pilot site was set up at a client site where the product was tested to identify whether further modifications would improve the client experience. It was concluded that no further modifications were necessary. The cost of this was \$20,000 and related to payments to third party consultants to perform the work.

August 2022: The product development manager signed off on the project and it has been available for clients to purchase since 1 September 2022.

We have already made sales and earned consulting fees from helping clients to implement the system.

Please note, currently all research and development costs are included within expenses in the statement of profit and loss. The market research costs, and third party pilot costs are included within sales and marketing expenses, while the rest are included in data centre staff salaries.

Best regards,

Valerie Huang,

IT and Operations Director

END OF EXHIBIT 16

Email from Cheng Tan to Jasmine Eng engaging Swan Chartered Accountants LLP to prepare a report on Encom

Cheng Tan

From: Cheng Tan <CTan@Encom.sg>
Sent: 10 December 2022 13:21
To: Jasmine Eng <ENG_Jasmine@SwanCA.sg>
Subject: Engaging Swan Chartered Accountants LLP to write a report on Encom

Dear Mrs Eng,

It was very nice to meet you this morning.

As I mentioned during our discussions, we would like to seek your professional advice to identify and understand the complex strategic challenges that Encom and the wider Data Centre industry are facing. Mindful of this, I would like your firm's input on a range of matters. I would like you to present your views and recommendations in a formal report to me by 31/12/2022.

The elements that I wish to see in the report are set out in the attachment to this email (Exhibit 18).

Best wishes,

Cheng Tan

END OF EXHIBIT 17

Encon: Requirements

Your formal report should comprise the following four elements:

**e-Exam
Question
Number**

Requirement 1: An executive summary

2

- (a) Write an executive summary to accompany your report. Your Executive Summary should allow Mr Tan to obtain a general understanding of what your report contains, including the key numbers. You should also include clearly stated assumptions, conclusions, and recommendations.

Note: While your Executive Summary should not contain any material or points that you have not discussed in the main body of the report, you are required to highlight any potential interactions between the individual standalone requirements below.

(Total: 10 marks)

**e-Exam
Question
Number**

Requirement 2: Evaluation and strategic review

- 3** (a) Analyse the financial performance of Encom for the year ended 31 October 2022 compared with the previous year.

(10 marks)

- 4** (b) Identify and evaluate the geo-political risks that are faced by the data centre industry and recommend steps that Encom can take to mitigate these risks.

(8 marks)

- 5** (c) Evaluate the option to purchase an existing data centre compared to building a new one in Singapore. You should discuss both financial and non-financial considerations, including calculations of the equivalent annual cost for each of the two options as at 1 November 2023.

(12 marks)

- 6** (d) Recommend and justify improvements to the cybersecurity policy and governance relating to:

(i) Governance, General Software and Data (six improvements)

(6 marks)

(ii) Hardware (six improvements)

(6 Marks)

(Total: 42 marks)

**e-Exam
Question
Number**

Requirement 3: Business options, financial reporting and tax

7 (a) Evaluate the provision of AI network management services to clients using a suitable framework.
(6 marks)

8 (b) Explain and identify the correct accounting treatment of the research and development expenditure incurred in 2022 on the Artificial Intelligence product for clients. (Exhibit 16)
(6 marks)

9 (c) Explain the tax implications of the research and development expenditure incurred in 2022 on Artificial Intelligence.
(3 marks)

10 (d) Explain AI, big data and data science, and discuss how they can be used by the finance department.
(8 marks)

(Total: 23 marks)

**e-Exam
Question
Number**

**Requirement 4: Ethics and environmental, social and governance
issues**

- 11** (a) Using the information in the draft ESG report (Exhibit 4):
- (i) Evaluate Encom's ESG performance for the year ended 31 October 2022.
- (8 marks)**
- (ii) Identify and explain three additional pieces of information that would improve a user's understanding of Encom's ESG performance.
- (3 marks)**
- 12** (b) Explain any legal and ethical concerns you have in relation to selling the anonymised customer data.
- (6 marks)**
- 13** (c) Evaluate the ethical issues surrounding the disclosure of the data breach.
- (8 marks)**
- (Total: 25 Marks)**

END OF EXHIBIT 18

END OF PAPER