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Chartered Accountant SINGAPORE

Singapore CA Qualification Examination

20 June 2024

Business Value, Governance & Risk

INSTRUCTIONS TO CANDIDATES:

1. The time allowed for this examination paper is **3 hours 15 minutes**.
2. This examination paper has **FOUR (4)** questions and comprises **NINETEEN (19)** pages (including this instruction sheet). Each question may have **MULTIPLE** parts and **ALL** questions are examinable.
3. This is an open-book examination. During the examination, you are allowed to use your laptop and any calculators that comply with the ISCA's regulations. Please note that smartwatches, mobile phones, tablets, and all other electronic devices **MUST NOT** be used during the examination.
4. 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.
5. This examination paper and all video recordings of this exam are the property of the Accounting and Corporate Regulatory Authority.

MODULE-SPECIFIC INSTRUCTIONS:

6. This case is hypothetical and has been written exclusively for the purpose of 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 the permission of the Accounting and Corporate Regulatory Authority.

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.

e-Exam Question Number

1

****VERY IMPORTANT NOTICE****

1. Your question paper is attached under the **"Resources"** tab found at the bottom right of **EACH** question.

2. You may also download the question paper that allows annotation throughout your exam in Question 1 of the e-Exam portal.

Other important information:

3. You will be allowed to access your reference materials but **will not be allowed** to communicate with anyone either physically or through any electronic means.

4. You are **NOT ALLOWED** to access any websites during the exam.

5. You are **NOT ALLOWED** to print the question paper.

6. **Please take note that your screen will be monitored throughout the examination. If you are found to have accessed any websites, or if you cheat or attempt to cheat, you will be liable to severe disciplinary action.**

   Should you encounter any issues during the exam, please call the following numbers:

   +65 6028 9811

7. **You do not need to fill in an answer to this instruction question.**

Note to Candidates: Assume today is 15 June 2024.

Company Information

High Technology Circuit Boards Limited (HTCB) is a small company listed on the Singapore Exchange (SGX) Catalist board.

HTCB manufactures Printed Circuit Boards (PCBs) at its factory in Singapore. To do this, it purchases microchips, semiconductors, and other electronic components, as well as raw materials such as silicon, copper, and gold.

About Printed Circuit Boards

A PCB is the traditional name for the bare board used to mount electronic components such as microchips, semiconductors, and other components to create completed circuit boards.

PCBs are utilised to connect electronic components using conductive pathways etched from copper sheets laminated onto a non-conductive substrate. Electronic components like microchips and semiconductors are soldered or fastened onto the PCB either by highly skilled employees or by computerised production machinery. PCBs have become an essential part of modern electronic and computer equipment because they can accommodate a large number of tiny electronic components.

These components would be impossible to connect using traditional wires without the aid of PCBs. This has significantly reduced the size of electronic devices over the past forty years.

PCBs provide solutions for complex electronic circuits like central fire alarm systems, fibre optic receptors, nuclear detection systems, and space probe equipment.

Manufacturing PCBs

A PCB substrate is created by combining woven glass fibre with epoxy resin and then rolling it to the desired thickness. This substrate is semi-cured in an oven and cut into panels. These panels are then stacked in alternating layers with adhesive copper foil.

PCBs can be single sided (one copper layer), double-sided (two copper layers on both sides of one substrate layer), or multi-layer (outer and inner layers of copper, alternating with substrate layers). Multi-layer PCBs allow for much higher component density.

Polybrominated Biphenyls (PBBs) contained in PCBs can have a detrimental impact on health if humans are exposed to it. HTCB performs regular testing to ensure PBB levels contained in their PCBs are within the legal thresholds.

Manufacturing PCBs at HTCB

HTCB offers a standard range of single, double, and multi-layer PCBs of various sizes. It also provides bespoke solutions to customers of its computing and electrical equipment. HTCB collaborates with research and development departments of major electrical and computing manufacturers to create unique PCB solutions for its new electronic products.

Customers prioritise high PCB volumes, the highest product quality, zero product failure rates, and reliable, on-time PCB delivery above price. This means companies in this industry, including HTCB, enjoy high margins. Yet, substantial investments in PCB product development, design, and manufacturing machinery are necessary to maintain a competitive edge.

The PCB market is becoming more challenging due to the scarcity of some precious metals and electronic components. Additionally, the rapid pace of electronic product development and product miniaturisation can make it hard for PCB manufacturers to adapt swiftly enough to secure contracts.

Some PCB manufacturers can adapt more quickly to customers' needs, giving them a competitive edge. Some of HTCB's international competitors are much larger and benefit from economies of scale, resulting in a pricing advantage. HTCB has lost some competitive bids for these reasons and sometimes faces uncertainty in demand for its PCB products from its existing customers and the PCB market generally.

HTCB's manufacturing operations in Singapore are crucial. It is essential to maintain a sterile, contaminant-free, temperature-controlled environment to produce consistently high-specification products. Even minor defects in manufactured PCBs can make them unusable in computers or other electronic products. Quality control is the responsibility of the HTCB's Production Manager.

The COVID-19 pandemic led to a decrease in the supply of metals and electronic components essential for HTCB's PCB manufacturing and resulted in rising prices. While HTCB has met all its customers' orders due to its suppliers' loyalty over the years, it relies on single suppliers for certain components.

HTCB is also exposed to fluctuations in raw material costs and foreign exchange volatility from its suppliers which are based outside Singapore.

Employees in PCB manufacturing must be highly skilled to operate advanced manufacturing equipment, ensuring consistent high-quality PCB production daily. The electronics manufacturing industry faces skilled labour supply challenges due to high-paying job opportunities, international possibilities, and the impact of COVID-19. Some manufacturing workers who sought alternative employment during the COVID-19 shutdown have remained in those sectors. The production area of HTCB is currently male-dominated with few female skilled production employees.

A recent comment from one of HTCB's Non-Executive Directors highlighted potential improvements in HTCB's PCB product range. Currently, none of the components or raw materials are sourced from recycled materials. The Production Manager explained that the Board had not prioritised sustainability, especially during the COVID-19 emergency.

HTCB's Human Resource Director noted a slight increase in employee turnover in the year to 31 March 2024, which might have resulted from a change in HTCB's employment policy. The employment policy change allowed the Management to increase production shifts to 12 hours, with up to 24 hours' notice. Some employees cited this as a reason for leaving, even though the Management has not yet exercised this option due to efficient production levels.

Risk Evaluation at HTCB

During a recent internal audit review of risk management processes at HTCB, the internal auditor suggested that the Risk Committee could do more in implementing qualitative and quantitative risk evaluation tools. This would enhance their understanding of how risk impacts the manufacturing process at HTCB.

The Head of the Risk Committee at HTCB identified four potential risk evaluation tools:

1. Probability estimates and analysis;
2. Scenario planning or stress testing;
3. Human reliability analysis; and
4. Root cause analysis.

However, during recent discussions with the Board, the Head of the Risk Committee admitted there was limited knowledge or experience in using these risk evaluation tools within the committee.

Consequently, the Risk Committee is seeking advice on how these tools could help evaluate risks at HTCB, aiming to improve the management of PCB manufacturing-related risks.

e-Exam Question Number	Question 1 required:
2	**(a)** Identify and explain **NINE** different strategic, operational or market risks which are evident at HTCB. **Note:** Candidates are advised to use the scenario provided to identify relevant risks. There is no requirement for Candidates to present a minimum number of risks identified in each risk category. **(9 marks)**
	(b) Advise the Board on a risk mitigation strategy for each risk identified in **part (a)**. **(9 marks)**
3	**(c)** Explain the following four risk evaluation tools to the Risk Committee and advise how each risk evaluation tool could improve risk evaluation of the PCB manufacturing process at HTCB. • Probability estimates and analysis; • Scenario planning or stress testing; • Human reliability analysis; and • Root cause analysis. **Note:** Candidates are strongly advised to focus on the PCB manufacturing process set out in the scenario provided. **(8 marks)** **(Total: 26 marks)**

Securing the Supply Chain for Microchips

With global demand for microchips rising in recent years and driving up prices, the Directors of HTCB agree it is time to establish a more cost-effective and sustainable supply of microchips. Additionally, HTCB has faced recent supply chain disruptions leading to manufacturing delays and challenges in meeting customers commitments.

The existing supply contract with M-Chips, its current Singapore-based microchips manufacturer and supplier, will conclude at the end of June 2025. While M-Chips has proposed renewal terms, they also made it clear that they cannot guarantee minimum microchips volume to HTCB. This poses uncertainty about whether HTCB can meet future customer demand.

The Board of HTCB acknowledges the pressing need to decide between renewing the supply contract with M-Chips or securing a guaranteed supply by establishing their own microchip factory in Taiwan. This venture would be substantial, necessitating a year to set up the new manufacturing facility. To facilitate this, the Board has voted to raise S$50 million of new investment capital.

Taiwan exchange rate information

The exchange rate expected at 1 July 2024 is 22.8 Taiwan dollars (NT$) equals 1 Singapore dollar (S$1). Forecast average annual interest rates in Taiwan and Singapore are as follows:

Average annual interest rates for year to 30 June	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
In Taiwan	4.00%	4.25%	3.75%	3.25%	3.00%	2.75%
In Singapore	4.50%	4.75%	4.25%	3.75%	3.50%	3.25%

New Manufacturing Facility for HTCB in Taiwan

HTCB has pinpointed a suitable, ready-built manufacturing facility in Taiwan available for acquisition from 1 July 2024. HTCB anticipates manufacturing its microchips for at least five years, but for investment appraisal, they are assuming a five-year production span.

Project capital investment

HTCB can secure patent rights to produce the required microchip technology for its circuit boards. They will have the rights to these materials and other variable production costs for a five-year period starting from 1 July 2025. A one-time fee for the patent of NT$125,000,000 is due on 1 July 2024. Additionally, producing the HTCB microchip would require an investment of NT$575,000,000 in new manufacturing machinery and equipment on 1 July 2024.

The Directors of HTCB have assumed that all capital items will have a collective resale value of NT$100,000,000 on 30 June 2030.

The first year will be dedicated to setting up and testing the manufacturing process, estimated to cost NT$75,000,000, covering site lease and running costs for that year. These costs are payable at the end of year 1 and are 100% tax-deductible.

Project cashflows

The Directors are confident that manufacturing of the HTCB microchip will commence by 1 July 2025.

The maximum production capacity at this site for the forecast production period is 225,000 microchips per annum.

Production completed is based on sales demand for the year and no excess inventory is kept.

The Marketing Director estimates each microchip will save HTCB a supplier cost equivalent to NT$2,200 per unit in current values. The HTCB manufacturing subsidiary will bill HTCB Singapore this unit price. Materials and other variable production costs

are expected to be NT$668 per unit. Both the estimated selling price and variable production costs are stated at 1 July 2024 prices and are forecast to rise with annual inflation.

The Marketing Director has forecasted the following production demand for the initial five years of live production:

Year to 30 June 2026	Year to 30 June 2027	Year to 30 June 2028	Year to 30 June 2029	Year to 30 June 2030
200,000	210,000	220,000	230,000	240,000

In the first year of microchip manufacturing, additional fixed costs including factory lease costs, site running costs and machine set-up, maintenance, repair, and quality control costs are expected to be NT$40,000,000, rising annually with expected inflation for the remaining four production years.

Also, additional working capital to support production at the HTCB manufacturing facility will be required once production commences. The Directors estimate that the required increase in working capital requirement will be sufficiently covered by 15% of the annual manufacturing revenue, which is assumed to be in place at the beginning of each year of production. It can be assumed that working capital will be released in full after five years of production and sales.

Project inflation and cashflow assumption

All revenues and costs are stated at current values, unless stated otherwise, and are subject to inflation of 3% per annum. Inflation is not expected to materially change over the forecast manufacturing period. For investment appraisal purposes, the Board assumes all cash flows occur on the last day of each year except for the purchase of plant and machinery which is assumed to be 1 July 2024.

Taxation on project operating cashflows

The Directors require that a Taiwanese corporate tax rate of 20% is applied to all taxable, operating cash flows over the project's duration for investment appraisal purposes. The Directors of HTCB have assumed that all tax either payable or

receivable, is settled at the end of the year to which it relates, and all tax losses in the year can be offset against HTCB profits elsewhere. Also, the Directors advise that all new patent rights and machinery and equipment will qualify for capital allowances of 20% annually on a reducing balance basis, which will be claimed at the end of the year of acquisition. A balancing charge or allowance should be applied when the machinery is expected to be sold on 30 June 2030.

Project discount rate

The Directors have advised that HTCB's expected weighted average cost of capital (WACC) after the issuance of new finance required to fund the new manufacturing facility should be used in this investment appraisal. The Directors advise that when determining HTCB's WACC, assume all HTCB current and new debt finance is tax allowable at the Singapore corporate tax rate of 17%.

Project evaluation

The Board requires that all new investments to be able to demonstrate their capacity to generate a positive net present value in no later than five years, evaluated at the forecast weighted average cost of capital.

New investment capital to finance the Taiwan manufacturing facility

HTCB has significant cash reserves to fund the investment in the proposed Taiwan-based manufacturing facility and other possible ventures. However, to ensure there is sufficient capital, the Board is considering raising an additional S$50 million from the issuance of new corporate debentures to investors in the financial markets.

If the new finance proceeds, the debentures will be issued on 1 July 2024 in two issues of S$25 million, with each issue having a different maturity. This is to appeal to a wider group of potential investors and to stagger the repayment of each issue which will help HTCB to manage its future capital and liquidity position.

The Directors proposed the following terms for each issue of new corporate debentures:

- **Issue 1:** S$25m nominal value at 5.75% annual interest coupon with a five-year maturity and redemption at par value.

- **Issue 2:** S$25m nominal value at 5.25% annual interest coupon with a ten-year maturity and redemption at par value.

As a result of the new issue of corporate debentures, a respected investor analyst has advised the Board of HTCB that its credit rating is likely to decrease from its current "A rating" to a "BBB rating" which will impact its existing debenture and the two newly issued debentures.

The Board has agreed to issue the corporate debenture at a price which aligns with market expectations of value for new BBB-rated debentures to ensure the issue attracts sufficient investors.

Credit premium yields for A and BBB-rated companies currently quoted in the corporate debenture market are as follows:

Credit rating	**Debenture Maturity**						
Measured in basis point	**1 year**	**2 years**	**3 years**	**5 years**	**7 years**	**10 years**	**20 years**
A	72	90	96	110	115	122	134
BBB	86	112	127	149	165	179	205

(Note: 100 basis points = 1%**)**

Current HTCB and other financial market information

HTCB currently has 200 million shares in issue and has S$15 million of existing debt finance in the form of A-rated, three-year debentures.

HTCB has a current quoted equity beta of 1.98 and a quoted share price on SGX Catalist of S$0.575 per share.

Assume the risk-free rate (R_f) is currently 3.75% per annum and the return on the equity market (R_m) is 7.65% per annum.

At a recent investor communication delivered by HTCB's CEO, a significant institutional investor said there would be some questions from investors for the Board of HTCB if gearing levels exceeded 35% (as measured by market value of debt/debt

plus equity) as this is considered by investors as the maximum acceptable gearing in PCB manufacturing sector.

e-Exam Question Number	Question 2 required:
4	**(a)** Recommend an issue price for each of the proposed two issues of corporate debentures of S$25 million each (S$50 million in total). **(8 marks)**
5	**(b)** Calculate the existing weighted average cost of capital (WACC) of HTCB. **(5 marks)**
6	**(c)** Measure the impact on WACC, calculated in **part (b)**, and change in gearing if HTCB proceeded with the issue of S$50 million of new corporate debentures and HTCB's credit rating decreased from A to BBB. **(8 marks)**
7	**(d)** Comment on your results from **part (c)**. **(2 marks)** **(Total: 23 marks)**

e-Exam Question Number	Question 3 required:
8	**(a)** Evaluate the net present value (NPV) of setting up manufacturing operations in Taiwan. **Note:** Your answer should be in S$'000 and stated to one decimal place. **(17 marks)**
9	**(b)** Evaluate **THREE** advantages and **FIVE** disadvantages of setting up manufacturing operations in Taiwan. **(8 marks)**
10	**(c)** Advise on **FIVE** areas of further analysis or due diligence which HTCB should undertake prior to its Board's decision to proceed with a new microchip manufacturing facility in Taiwan. **(5 marks)** **(Total: 30 marks)**

HTCB's Sustainability Report and ESG Performance Metrics

HTCB's 2024 Sustainability Report covers the sustainability performance of HTCB's operations in Singapore for the financial year to 31 March 2024.

The following extract has been prepared in accordance with the "comply or explain" provisions of the Listing Rule 711A published by the Singapore Exchange (SGX) which requires every issuer to prepare an annual sustainability report and which describes the issuer's sustainability practices with reference to the primary components set out in Listing Rule 711B on a 'comply or explain' basis.

Beginning of extract

The governance of sustainability matters at HTCB is undertaken by the Board of Directors of HTCB (the "Board") who are solely accountable for the ESG strategies and ESG reporting and are responsible for overseeing and managing our ESG-related risks. This report has been reviewed and approved by the Board.

Implementation of decisions affecting ESG performance is subject to HTCB's risk management practices undertaken by HTCB's Risk Committee which is also under scrutiny by the Board.

The following key environmental, social and governance (ESG) metrics are continually measured and monitored throughout the year:

ESG area	ESG performance metric	At 31 March 2024	Performance Metric Measurement Methodology
1. Environmental	**Emissions and pollution** • CO_2 emissions (tCO_2 per m^2) • Particulate Matter (PM)	• 0.035 • 7.1%	Regular emissions testing by emissions capture technology installed at the HTCB manufacturing facilities

	(tons per annum)		
2. Environmental	**Energy consumption** Energy (Gigajoules) usage per annum	1,722,334	The amount of electricity and gas used at HTCB manufacturing facilities and its product distribution and other logistics
3. Social	**Employment diversity** Workforce by gender (M:F ratio)	68% (M): 32% (F)	The ratio of male to female staff is measured based on human resource records at the year-end
4. Social	**Health and Safety** Number of workplace accidents per annum	3	Recorded accidents logged in on-site accident logbook at HTCB manufacturing facilities
5. Social	**Development and training** Average employee completed training hours per annum	9	Measured as training hours recorded by Human Resources/Number of HTCB employees

6. Social	**Local community support** % employment utilisation of charitable day entitlement	53.2%	Number of employees utilising their charitable workdays entitlement/number of HTCB employees

End of extract

Proposed sustainability initiative by the Board: Reducing CO_2 emissions by installing solar panels at its Singapore manufacturing site

Recently, the Board has grown increasingly concerned about climate change and the impact of HTCB's manufacturing processes on global CO_2 emissions. In response, the Board is considering investing in renewable energy for its manufacturing plant in Singapore, which is currently leased from the building's owner. Implementing solar panels would reduce the plant's dependency on the Singapore National Grid, which relies on a mix of energy sources. The Singapore manufacturing facility has a large, flat roof, which the Directors believe could accommodate an array of solar panels.

Improving future sustainability reporting

The Board of HTCB have agreed to expand the disclosure of ESG performance metrics in the next HTCB Sustainability Report. The Board has requested for advice to implement new ESG performance metrics to be monitored and disclosed. Each new performance metric should focus on a relevant aspect of ESG currently not disclosed in the 2024 HTCB Sustainability Report.

The Board would like to introduce four new sustainability metrics and for these to include at least one from each of the following categories:

- Environmental
- Social
- Governance

e-Exam Question Number	Question 4 required:
11	**(a)** Describe how governance provided by the following groups can improve the setting, monitoring, and achieving of HTCB sustainability-related objectives: **(i)** HTCB Board of Directors **(2 marks)** **(ii)** HTCB Audit Committee **(2 marks)** **(iii)** HTCB Risk Committee **(1 mark)** **(5 marks)**
12	**(b)** Recommend how each ESG performance metric currently disclosed in HTCB's 2024 Sustainability Report could be adapted to improve disclosure of HTCB's sustainability performance. **(6 marks)**
13	**(c)** Discuss **ONE** benefit and **THREE** uncertainties of the proposed sustainability initiative by the Board of HTCB to reduce its CO_2 emissions and recommend if HTCB should proceed with a technical feasibility study to evaluate the proposal further. **(4 marks)**
14	**(d)** Recommend **FOUR** new ESG performance metrics which HTCB could monitor which are currently not disclosed in the HTCB's 2024 Sustainability Report and explain how each metric could improve sustainability performance at HTCB. **Note:** Your response should include at least one performance metric for each ESG category (Environmental, Social and Governance). **(6 marks)** **(Total: 21 marks)**

END OF PAPER