Version OC/5 WITH ANSWERS

EGT3
ENGINEERING TRIPOS PART IIB

Thursday 2 May 2024 9.30 to 11.10

Module 4E6

ACCOUNTING AND FINANCE

Answer not more than two questions.

Answer not more than one question from each section.

All questions carry the same number of marks.

The approximate percentage of marks allocated to each part of a question is indicated in the right margin.

*Write your candidate number **not** your name on the cover sheet.*

STATIONERY REQUIREMENTS
Single-sided script paper

SPECIAL REQUIREMENTS TO BE SUPPLIED FOR THIS EXAM
Engineering Data Book
CUED approved calculator allowed

10 minutes reading time is allowed for this paper at the start of the exam.

You may not start to read the questions printed on the subsequent pages of this question paper until instructed to do so.

You may not remove any stationery from the Examination Room.

Version OC/5 WITH ANSWERS

SECTION A

*Answer not more than **one** question from this section*

1 (a) Consider the journal entries for Firm X vs. Firm Y over the same time period in Table 1. Which of the following statements is true? Please explain your answer. [32%]

(i) Net Income for Firm Y is lower than it is for Firm X.

(ii) Firm X issued dividends and Firm Y did not.

(iii) Firm Y collected more cash than Firm X.

(iv) Firm Y offered credit to its customers and Firm X did not.

Table 1

Firm X	Firm Y
(Debit) Cash £100 (Credit) Sales £100 (Debit) Cost of Goods Sold £40 (Credit) Inventory £40	(Debit) Cash £50 (Debit) Acct Receivable £50 (Credit) Sales £100 (Debit) Cost of Goods Sold £40 (Credit) Inventory £40

(iv). Firm X: records revenue of £100 but at the same time records an increase of £100 in cash. It records £40 in COGS (decreasing inventory in £40), resulting in £60 net income. Firm Y: records revenue of £100, but records an increase of £50 in cash and £50 in receivables (credit to customer). It also records £40 in COGS (decreasing inventory in £40), resulting in £60 net income like Firm X. Therefore, (iv) is true, and (i) and (iii) are false. There is no transaction with shareholders recorded, therefore (ii) is false.

(b) During the Accounting part of the course, we discussed managerial incentives to report certain levels of earnings. Please list two financial statements accounts (or operations that affect accounts) that a manager might use to commit fraud and explain how s/he would do it. Several answers are possible. [40%]

Some possible answers:

•Revenues. Managers may recognize revenues from fake contracts or other non-existent sales, for instance, to fictitious customers.

•Accounts receivables. Managers may inflate the expected receivables by underestimating bad debts. Or, in good times, overestimate bad debts to create a buffer to boost profits in bad times.

•Write-offs. Managers may underestimate write-offs (e.g., concealing known problems with existing contracts, non-recognition of obsolete inventory) to mitigate negative impacts on earnings.

(c) Successful businesspeople judge cash flow as an important measure of economic performance and financial health of the firm. For instance, Virgin's Richard Branson advises to "(n)ever take your eyes off the cash flow because it's the life blood of business." Michael Dell, the founder of Dell Technologies, said that "(w)e were always focused on our profit and loss statement. But cash flow was not a regularly discussed topic. It was as if we were driving along, watching only the speedometer, when in fact we were running out of gas." Explain briefly what a cash flow statement is and discuss why these executives imply that it is a complement or it is even superior to the income statement. [28%]

The statement of cash flows shows the actual cash that the company received or disbursed, classified into three types of activities: operating, investing, and financing. It provides important additional information that the accrual-based income statement and balance sheet do not detail and is an important data source to assess a company's liquidity, solvency, and financial flexibility. Some claim it is superior to the income statement because, as mentioned in the previous item, frauds generally occur in estimates involving revenue recognition and accounts receivables, which affect earnings but not cash flows. However, it does not mean that the statement of cash flows is immune to fraud. As the Wirecard case shows, there can be a failure to properly audit the existence of the cash, leading to misleading cash flows and liquidity assessments.

The vast majority of candidates chose this option for the Accounting part. Most students did well, but not all seemed to grasp the differences between accrual accounting and cash accounting, nor the differences between stock quantities (e.g., balance sheet) and flow quantities (e.g., income statement or cash flow statement).

2 (a) Consider the actual footnote from the 2023 Walmart Annual Report in Figure 2. Which of the following statements is true? Please also provide a numerical example with journal entries to illustrate your answer. [32%]

(i) Walmart reports a "Sales Returns Expense" when a customer returns an item.

(ii) Walmart reduces its "Sales Revenue" as soon as it makes a sale, for the amount of estimated returns, based on historical patterns of returns by prior customers.

(iii) Walmart debits "Cash" for the amount of sales tax collected and credits "Sales Tax Revenue".

(iv) None of the previous items is true.

Revenue Recognition

Net Sales

The Company recognizes sales revenue, net of sales taxes and estimated sales returns, at the time it sells merchandise or services to the customer. eCommerce sales include shipping revenue and are recorded upon delivery to the customer. Estimated sales returns are calculated based on expected returns.

Fig. 2

(ii) The footnote says that sales revenue is recognized net of estimated sales returns. These returns are calculated as expected returns. For instance, assume that, historically, 1% of sales are returned. So, if Walmart sells $100 in merchandise, it expects $1 to be returned. Therefore, it recognizes $99 revenue:

(Debit) Either cash or accounts receivable: $100
(Credit) Sales revenue: $99
(Credit) Deferred revenue (anticipated returns liability): $1

(b) The balances in Table 2 were taken from the end-of-year trial balance before adjustments of Cam Company.

(i) Prepare the journal entry for estimated bad debts assuming that Allowance for Doubtful Accounts is estimated to be 6% of gross Accounts Receivable. Prepare the corresponding T-account for AFDA showing its final balance. [12%]

(cont.

If AFDA has to be 6% of Accounts Receivable, then its final balance must be £150,000 · 0.06 = £9,000 [credit]. However, there is an initial balance of £3,500 [credit]. The difference is £5,500 [credit]. Therefore:

(Debit) Bad debt expense: £5,500
(Credit) Allowance for Doubtful Accounts: £5,500

AFDA	
	£3,500 (beginning balance)
	£5,500 (credit to AFDA)
	£9,000 (ending balance)

(ii) Assume that all the information above is the same, except that the Allowance for Doubtful Accounts has a debit balance of £3,500 instead of a credit balance. How will this change affect the journal entry and T-account in part (i)? Show both the new journal entries and the new T-account. [8%]

If the balance is now a debit, it means it is a "negative" value, as AFDA is a contra-asset account. Thus, to end with a £9,000 credit, AFDA must be credited by £12,500:

(Debit) Bad debt expense: £12,500
(Credit) Allowance for Doubtful Accounts: £12,500

AFDA	
£3,500 (beginning balance)	
	£12,500 (credit to AFDA)
	£9,000 (ending balance)

(iii) What circumstance would have led to a debit balance in Allowance for Doubtful Accounts? [8%]

For the AFDA balance to be a debit, the previous estimates of bad debts were too low and the actual write-offs exceeded the allowance.
[Example: not mandatory] For instance, imagine that AFDA had a credit of £1,000, but during the period there were £4,500 in write-offs. We would have:

AFDA	
	£1,000 (beginning balance)
£4,500 (debit to AFDA)	
£3,500 (ending balance)	

Table 2

	Debit	Credit
Accounts Receivable	£150,000	
Allowance for Doubtful Accounts		£3,500
Net Sales (all on credit)		£810,000

(c) On 6 July 2020, Bloomberg published an article with the following title "Big Four Face Big Split as Watchdog Sets Separation Deadline", which beginning is transcribed:

> The U.K.'s dominant accounting firms must separate their audit units from other operations by June 2024 as the country's industry watchdog reacts to shortcomings that led to the collapse of several companies.
>
> The Financial Reporting Council is asking the so-called Big Four—KPMG, Deloitte, PricewaterhouseCoopers LLC and Ernst & Young—to agree to operational separation to ensure audit practices don't rely on "persistent cross-subsidy from the rest of the firm," it said Monday. [...]
>
> The guidelines seek to prevent accountants from being influenced by other parts of a firm's business that could divert the focus away from audit quality, the regulator said.
>
> Fixing the conflict of interest is a good first step, says Karthik Ramanna, a professor of public policy at the University of Oxford. But to work, that needs to be bolstered by genuine cultural change within the audit firms—away from the mindset that auditors are "advisers" to senior executives, he says.
>
> "Junior auditors need to know that their firms will reward and promote them for questioning their clients' management assumptions," says Ramanna. "Otherwise, it is easy to see how audit firms can be in compliance with the letter of the FRC's new rules without honouring the spirit."

(cont.

> The reaction from all of the Big Four to the FRC's announcement was broadly supportive.

> "It is clear however that operational separation of the U.K.'s audit firms is just the first step on the journey to restoring trust in U.K. Plc," said Jon Holt, KPMG's head of U.K. auditing, in a statement.

Prof. Karthik Ramanna stresses that "Junior auditors need to know that their firms will reward and promote them for questioning their clients' management assumptions."

Acting as a junior auditor, please list three questions you could ask the CFO of Apple about the assumptions used in its revenue recognition policy. Justify why you decided to ask these questions, notably by detailing their relevance to the specific context (industry and business model) of Apple. For context, Apple sells hardware products like the iPhone, MacBook laptops, and iPad tablets, which receive software updates over several years; it sells bundles of iPhone with AppleCare+, a type of insurance covering issues like damage protection; and it also sells services like Apple Music and Apple TV+ in separate or in bundles (Apple One). [40%]

(i) How does Apple account for the revenue from its subscription services, such as Apple Music and Apple TV+? According to the revenue recognition standard, revenue from contracts with customers should be recognized when the performance obligations are satisfied, which may not coincide with the billing or payment cycles. Therefore, it is important to understand how Apple allocates the transaction price to the various performance obligations and when it recognizes the revenue from each service.

(ii) How does Apple estimate the stand-alone selling prices of its products and services when they are sold in bundles or packages, such as the iPhone with AppleCare+ or the Apple One subscription plan? This question is relevant because Apple sells its products and services in bundles that offer discounts or incentives to customers. According to the revenue recognition standard, revenue from contracts with customers should be allocated to the performance obligations based on their relative stand-alone selling prices, which are the prices at which the entity would sell the goods or services separately to a customer. Therefore, it is important to understand how Apple determines the stand-alone selling prices of its products and services and whether they are consistent and reasonable.

(iii) How does Apple account for the revenue from its hardware products that are subject to software updates or enhancements, such as the iPhone, iPad, and Mac? This question is relevant because Apple provides software updates or enhancements to its hardware products. According to the revenue recognition standard, revenue from contracts with customers should be recognized over time as the company satisfies a performance obligation. Therefore, it is important to understand how Apple determines whether its software updates or enhancements constitute distinct performance obligations and how it recognizes the revenue over time or at a point in time.

Only a handful of candidates chose this option for the Accounting part. It may have to do with being more technical, asking for T-accounts and journal entries, than Option 1, which was more conceptual.

SECTION B

*Answer not more than **one** question from this section*

3 MedTech is a vaccine development company and has been undergoing rapid growth. The company therefore reinvests all of its profits into new vaccine research. Given its pipeline of opportunities, the company expects to start paying dividends in five years' time which is forecasted to be £4.50 per share. The dividends are expected to grow at a long-term annual average growth rate of 2.5%. Assume the discount rate for the dividends is 9%.

Calculate the price of the share today. [60%]

Intrinsic value in year 4 = $Div5/(r-g)$
- Div5 = £4.50
- r = 9%
- g = 2.5%

Therefore Intrinsic value in year 4 = 4.50/0.065 = 69.23
Present value of the year 4 Intrinsic value = $IV4/(1+r)^4$
Therefore Present value = 69.23/1.412 = £49.04

If the approval of the company's flagship product is granted earlier, the company expects to start paying dividends from year 3 instead, also at £4.50 and growing at the same long-term growth rate of 2.5%. If this was announced today, discuss what will be the impact on the share price and if any calculate by how much? [40%]

Intrinsic value in year 2 = $Div3/(r-g)$ - Div3 = £4.50
- r = 9%
- g = 2.5%

Therefore Intrinsic value in year 2 = 4.50/0.065 = 69.23
Present value of the year 2 Intrinsic value = $IV2/(1+r)^2$
Therefore Present value = 69.23/1.188 = 58.27
The share price will increase by £9.23 to £58.27 and the discussion should include the factors that impact share price movements, as covered in the course lecture slides.

Most candidates chose this option. There was a good range in terms of the quality of the scripts but overall the question was well answered. Some of the pitfalls in some answers included not correctly discounting the Intrinsic value in years 4 and 2 respectively. Also, the quality of the qualitative discussion varied greatly.

4 AI Logistics is a technology company using artificial intelligence in international freight. The company is planning to issue a five year zero-coupon bond to fund its new expansion. Assume a par value of £100.

(a) If the bond is issued at £82, calculate the yield-to-maturity (YTM) that the bondholders will receive. [60%]

Bond price = $[Coupon/YTM] * [1 - 1/(1+YTM)^t] + Facevalue/(1+YTM)^t$
- Coupon = 0
- YTM = ?
- t = 5 years
- Face value = £100
- Bond price = £82

Using the above equation and solving for YTM, we get:
$YTM = (100/82)^{0.2} - 1 = 4.05\%$

(b) If the CFO and the investment banks underwriting the bond issue think that the fair return to bond investors should be 3.55%, at what price should they issue the bond instead and discuss why? [40%]

Bond price = $[Coupon/YTM] * [1 - 1/(1+YTM)^t] + Facevalue/(1+YTM)^t$
- Coupon = 0
- YTM = 3.55%
- t = 5 years
- Face value = £100
- Bond price = ?

Using the above equation and solving for Bond price, we get:
Bond price = $100/(1.0355)^5 = 84$
The discussion should include the factors that impact bond price movements, as covered in the course lecture slides.

(cont.

A sizable minority of candidates chose this option. Naturally students tend to avoid questions on bonds and this was evident, even though the calculations for this question were less cumbersome being a zero-coupon bond. There were good answers but some of the qualitative discussion on the dynamics between bond prices and yield-to-maturity was limited.

END OF PAPER

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