ACCOUNTING, FINANCE AND CONTROL

MULTIPLE CHOICE TEST

1^{st} Call January 18^{th}, 2023

SOLUTIONS

EXERCISE 1 – PART A – (4 points)

Alpha Ltd is a start-up founded on January 1^{st}, 2022, which assembles and sells artificial intelligence-based companions for elderly people. You are a financial analyst interested to evaluate the profitability of this start-up. You have the availability of the following data about the financial statements of the fiscal year 2022 (data are in thousands of Euros, K€). Alpha produces the Income Statement by nature.

- Personnel cost = 50
- D&A = 13
- Equity = 129
- Financial incomes = 1
- Other operating costs = 15
- Other revenues = 10
- Revenues = 130
- Total Assets = 325
- Variation of finished goods inventory (final – initial) = + 8
- Variation of raw materials inventory (final – initial) = + 5

You also know that:

- DSO = 3 months (months are used for the computation of the ratio rather than days)
- DPO = 6 months (months are used for the computation of the ratio rather than days; trade payables are related to the purchases of raw materials only; there are no other purchases of operating goods)
- ICR = 6.25
- Final Net Operating Working Capital = + 33,000 €
- Being Alpha Ltd a start-up funded 12 months ago, the initial value of inventories of finished goods and raw materials was zero

Based on the available data and knowing that trade payables are the only non-financial liabilities, what is the value of ROI (i.e., EBIT over Invested Capital) for Alpha Ltd for the fiscal year 2022?

A. **About 16%**
B. About 15%
C. About 13%
D. None of the other answers

SOLUTION

The question requires drafting the Income Statement of Alpha Ltd for the fiscal year 2022. As it is written in the text, the IS needs to be prepared by nature and it will result as follows:

Revenues	+130
Other revenues	+10
Inventory variation of finished goods (f - i)	+8
Purchase of raw materials	**Missing**
Inventory variation of raw materials (f - i)	+5
Personnel costs	-50
Other operating costs	-15
EBITDA	**Missing**
D&A	-13
EBIT	**Missing**
financial incomes	+1
financial costs	**Missing**
EBT	**Missing**
Taxes	**Missing**
Net Income	**Missing**

Since the question requires to determine ROI = EBIT / Invested Capital, this implies the computation of EBIT. The only information that is missing is the Purchase of raw materials. This information is also included in the calculation of DPO = Trade Payables / Purchases = 6 months.

The value of Trade Payables is missing, but it is included in the calculation of the Net Operating Working Capital (NOWC) = Trade Receivables + Inventories (finished goods + raw materials) – Trade Payables = + 33 k€.

Inventories (finished goods + raw materials) = + 8 + 5 = + 13 k€. This is because Alpha Ltd is a start-up founded at the beginning of the fiscal year 2022 and this means that the initial value of the inventories (on January, 1st, 2022) was zero.

Trade receivables can be calculated using the DSO = Trade Receivables / Revenues= 3 months. Being Revenues = + 130 k€, Trade Receivables = 32.5 k€

This means that Trade Payables = 12.5 k€. Knowing this, the Purchase of raw materials = 25 k€.

Now, we know the Income Statement till the EBIT:

Revenues	+ 130
Other revenues	+ 10
Inventory variation of finished goods (f - i)	+ 8
Purchase of raw materials	- 25k
Inventory variation of raw materials (f - i)	+ 5
Cost of personnel	- 50
Other operating costs	- 15
EBITDA	+ 63
D&A	- 13
EBIT	+ 50

The calculation of ROI requires knowing the Invested Capital = Total Assets – Non-financial liabilities = 325 – 12.5 = 312.5 k€.

This means **ROI = 50 / 312.5 = 16%**

- B is wrong since ROA has been computed rather than ROI
- C is wrong since NOWC has been computed without including inventories of raw materials

EXERCISE 1 – PART B – (2 points)

Consider all the data made available in the previous exercise for Alpha Ltd. Additionally, you know that the value of the Non-Current Assets refers to a patent about artificial intelligence only. No other (Non-Current) Assets are present in 2022 financial statements. The patent was purchased on January 1st, 2022, from Politecnico di Milano and it will be completely depreciated over ten fiscal years on a linear (i.e., flat rate) scheme. Politecnico di Milano agreed to be paid in two instalments: 40% on December 31st, 2022, and the remaining 60% on December 31st, 2023.

What is the value of this patent in the 2022 Balance Sheet and what is the value of the Capital Expenditures in the 2022 Cash Flow Statement?

A. Value of patent = 130 k€ AND capital expenditures (2022) = 52 k€
B. Value of patent = 130 k€ AND capital expenditures (2022) = 0 k€
C. Value of patent = 13 k€ AND capital expenditures (2022) = 52 k€
D. None of the other answers

SOLUTION

The total value of the patent can be calculated considering the value of D&A in the 2022 Income Statement = 13 k€. This value refers to the depreciation of a single year. Since this asset will be completely depreciated in 10 years following a linear scheme, the total value of this patent = D&A (single year) * 10 years = 130 k€.

The value of the patent in the 2022 Balance Sheet can be calculated as the purchasing value adjusted by the depreciation of one single year (i.e., the year 2022). **Value (December 31st, 2022) = 130 – 13 = 117 k€**

The Capital Expenditures shown in the 2022 Cash Flow Statement refer to the cash outflows incurred in 2022 for paying the 2022 instalment (40% of the total).

Capital expenditures (2022) = 130 * 40%= 52 k€.

The correct answer is D

EXERCISE 2 – PART A – (3 points)

The following data have been extracted from **2021** financial statements of Company PPP (data are in millions Euro - M€):

- Accounts Receivable (final) 100
- Inventories (final) 84
- Accounts Payable (final) 90
- Revenues 420
- EBIT + 95
- Total Assets (final) 580
- Total Financial Liabilities (final) 240
- Total Current Assets (final) 220
- Equity (final) 210

The following data about year **2022** are also available for Company PPP (financial data are in M€):

- EBITDA + 120
- Depreciation & Amortization 32
- FCFF + 42.6
- Revenues 440
- Inventory Turnover Ratio (computed on Revenues) 5
- Accounts Payable (final) 100
- DSO (months are used for the computation of the ratio rather than days) 3 months
- Financial Liabilities 230
- Total Assets 480
- Disposal of assets 0

You also know that the tax-rate is equal to 30%

Based on the available data, what was the value of the Capital Expenditures in 2022?

A. + 47 M€
B. + 55 M€
C. + 27 M€
D. None of the other answers

SOLUTION:

From data provided in the text, it is possible to derive the following further data, which are needed in order to draft the FCFF schema and derive the value of CapEx:

Inventories (2022), final	88
Accounts Receivable (2022), final	110

Then, applying the FCFF framework (year 2022):

EBIT	88
- t*EBIT	- 26.4
+ D&A	32
+ Change in NOWC (final - initial):	
* Accounts Receivable (final - initial)	- 10
* Inventories (final-initial)	- 4
* Accounts Payable (final - initial)	10
- Net Cap.Ex.	missing
FCFF	42.6

and then:

CapEX = - 42,6 + (88 - 26.4 + 32 – 10 - 4 + 10) = + 47 M€

- B is wrong since the computations are based on the wrong sign of NOWC.
- C is wrong since the computations are based on the wrong sign of Change in Accounts Payable.
- D is wrong since there is a correct answer.

EXERCISE 2 – PART B – (3 points)

Still concerning company PPP, the estimations of FCFF for years 2023-2026 are the following (data are in millions of Euros (M€)):

FCFF (2023)	+ 45.6
FCFF (2024)	+ 48.8
FCFF (2025)	+ 50.2
FCFF (2026)	+ 54.4

You also know that:

- The expected growth rate of FCFF from year 2027 onwards is 3%.
- The cost of shareholder capital (net of taxes) is 12%.
- The average cost of (financial) debt for a company like PPP is 8%.
- D/E = 0.52 and E/(E+D) = 0.48

Based on this information, what is the Enterprise Value (EV) of the company?

In computing the Terminal Value (TV) consider the following:

- start your computation from FCFF (2023) and take 2023 as year 1 (as if you were proceeding to the estimation of company value at the end of 2022);
- for the computation of TV assume an infinite time horizon;
- use the 2022 data for the computation of WACC;
- consider 2 digits in the calculation.

A. Around 870 M€
B. Around 715 M€
C. Around 1,461 M€
D. Around 946 M€

SOLUTION:

D/(D+E)	0.52
E/(D+E)	0.48
k_E	12%
k_D	8%
WACC (considering 2 digits in the calculation)	8.67%
TV (considering 2 digits in the calculation)	987.87
EV (considering 2 digits in the calculation)	869.72

- B is wrong since the WACC has been computed without considering the tax shield.
- C is wrong since the TV has been computed considering a growth rate = 0.
- D is wrong since the discounted cash flows has been computed considering (2023 = year 0 → not discounted).

EXERCISE 3 – PART A – (3 points)

Asterion is a not listed company competing in the maintenance sector. Its Enterprise Value (EV) has been estimated equal to 580.5 million of Euros (M€) through relative valuation.

The following table reports the information used by the analyst for assessing the value of Asterion. These data refer to three comparable companies (A, B and C).

Company	Financial Debts	Cash	Equity	EV	Revenues	EBIT	Net Earnings
A	300	80	380	600	800	60	29.31
B	400	200	350	550	900	50	20.3
C	300	250	400	450	700	40	30

Knowing that for Asterion, Revenues = 850 M€; EBIT = 54 M€; and Net Earnings = 40 M€, which of the following answers is CORRECT? Please consider 2 digits in the calculation.

A. The value of Asterion has been estimated using the E/EBIT multiple
B. P/E and EV/EBIT give the same valuation in terms of EV
C. The value of Asterion has been estimated using the EV/Revenues multiple
D. None of the other answers

SOLUTION:

- A is WRONG because the EV has been estimated using the EV/EBIT multiple, whilst the structure of the proposed multiple is not correct as it mixes an asset side numerator – EBIT – with an equity side denominator – E.
- B is WRONG since E and EV provides different types of value and their difference is given by the NFP (EV = E+ NFP). Therefore, P/E and EV/EBIT do not lead to the same estimation of EV. Using P/E the Equity Value of Asterion is 580.4 M€ and using EV/ EBIT the EV of Asterion is 580.5 M€.
- C is WRONG because the multiple EV/Revenues is used in particular conditions (such as when the company object of evaluation is a start-up or when EBIT or EBITDA data are negative). Moreover, the EV estimated based on EV/Revenues ise 569.5 M€ (which is different from 580.5 M€)
- D is CORRECT, as the EV of Asterion has been actually estimated based on EV/EBIT. In fact:
  - EV/EBIT (A) = 10
  - EV/EBIT (B) = 11
  - EV/EBIT (C) = 11.25

  The average is 10.75. EV (Asterion) = 10.75 * 54 = 580.5 M€

EXERCISE 3 – PART B – (2 points)

Considering again the case of Asterion, you also know that the initial panel of companies potentially comparable included two further companies, whose data are reported in the following table.

Company	Financial Debts	Cash	Equity	EV	Revenues	EBIT	Net Earnings
D	500	50	300	750	850	70	30
E	450	100	200	550	900	60	-20

Which of the following answers is CORRECT?

A. The two companies have a risk profile similar to the comparable companies.

B. If D and E were included in the panel of comparable companies, P/E could not be used to estimate the value of Asterion.

C. If D and E were included in the panel of comparable companies, only EV/Revenues could be used to estimate the value of Asterion.

D. None the other answers.

SOLUTION:

- A is WRONG as the two companies have a risk profile that is NOT similar to the comparable companies. Based on the available information, a proxy of the risk profile is D/E which is significantly different for D and E compared to A, B and C.
- B is CORRECT because if D and E were included in the panel of comparable companies, P/E could not be used to estimate the value of Asterion, because the Net Earnings of E is negative. Moreover, the company operates in the maintenance sector, which assumes a heavily usage of assets and, when assets are heavily used in the business, an asset side computation of value is preferred.
- C is WRONG because if D and E were included in the panel of comparable companies, both EV/Revenues and EV/EBIT could be used to estimate the value of Asterion. Moreover, EV/Revenues is used only in particular situation, such as start-ups or companies with a negative value of EBIT or EBITDS
- D is WRONG because B is CORRECT

EXERCISE 4 – (3 points)

Alpha Motor Company has two operating divisions: an Auto Division and a Truck Division. The company has a cafeteria that serves the employees of both Divisions. The fixed costs for operating the cafeteria are budgeted at € 75,000 per month plus € 0.60 of variable costs per meal served.
The fixed costs of the cafeteria are determined by the requirements in the “peak-period”, i.e., the maximum number of meals that the cafeteria is required to satisfy during the year. Considering the “peak period”, while the Auto Division is responsible for the 61% of the whole demand, the Truck Division is responsible for the remaining 39%.
Considering December 2022, the Auto Division estimated it would need 89,000 meals served, and the Truck Division estimated it would need 59,000 meals served. However, during the month, as result of unexpected absences of employees from the Auto Division, only 66,000 meals were served to this Division. 59,000 meals were served to the Truck Division as planned.

Cost records in the cafeteria show that actual fixed costs for December 2022 totaled € 80,000. There were no variations in the variable cost per meal.
You are interested in understanding how much cafeteria costs (both fixed and variable) should be charged to each Division. Concerning the allocation of the fixed costs, you have two options: an allocation based on the "peak-period requirements" OR an allocation based on the number of meals served.
Based on the information available, which of the following sentences is CORRECT?

A. The adoption of a corporate costs allocation based on the number of meals served would results into lower fixed costs for the Truck division compared with a corporate costs allocation based on peak period requirements.
B. **If the corporate fixed costs are allocated using the number of meals served, then the total costs (fixed + variable) charged to the Auto divisions are equal to € 81,840.**
C. The adoption of a corporate costs allocation based on the number of meals served would result into € 35,400 of fixed costs allocated to the Truck division.
D. If the corporate fixed costs are allocated using the peak-period requirements, then the total costs (fixed + variable) charged to the Auto division are equal to € 48,800.

SOLUTION

To identify the correct answer, both the drivers (peak-periods and number of meals served) need to be applied to corporate costs allocation.

Fixed costs allocation based on peak-period requirements

- Auto division = 80,000 € * 0,61 = 48,800 €
- Truck division = 80,000 € * 0,39 = 31,200 €

Fixed costs allocation based on the number of meals served

- Auto division = (80,000/125,000) * 66,000 = 42,240 €
- Truck division = (80,000/125,000) * 59,000= 37,760 €
- Total costs charged to the Auto division = fixed + variable costs = 42,240 € + (0.6 * 66,000) = 81,840 €
- A is wrong since the allocated corporate costs for the Truck divisions are equal to 37,760 € using meals as driver, while they are equal to 31,200 € using peak-period requirements as driver.
- B is correct.
- C is wrong since the budget value of fixed corporate costs is used in the computation.
- D is wrong since the computation considers the fixed costs only. The total costs charged to the divisions are (allocated fixed costs + variable costs per meal) = 48,800 + (0.60*66,000) = 88,400 €

EXERCISE 5 – (2 points)

Consider the design of a reporting system for an enterprise. Which of the following sentences is CORRECT?

A. Residual Income (RI) should be the preferred indicator for a commercial unit.
B. Quality-based indicators are the preferred indicators at the corporate level.
C. EBIT is the preferred indicator at every level (i.e., corporate, business unit, and responsibility center) to promote the alignment of in the strategy execution.
D. None of the other answers.

SOLUTION

- A is wrong since the commercial department is a revenue center and its reference indicators are supposed to be value drivers. Also accounting based indicators can be used, but RI is not appropriate to quantify the ability to sell products/services.
- B is wrong since value drivers, such as quality-based indicators, can be used even at the corporate levels, although they are not the preferred indicators.
- C is wrong because the main goal of reporting is providing managers at the different level relevant information to understand what has been achieved and whether it is necessary to implement corrective actions. Based on the specific responsibilities requirement of the reporting system, EBIT is the reference indicator at the business unit level (assuming BU as profit centers). On the contrary, while corporate level is challenged more on value creation and Net Profit, responsibility centers are more challenged on single components of the EBIT (e.g., revenues, costs, expenses).
- D is correct since all the others are wrong.

EXERCISE 6 – (2 POINTS)

Peace is an Italian company composed of two Business Units (BUs): A and B. Peace, after a careful valuation of the different transfer pricing alternatives, has opted for a dual transfer pricing policy. For the month of December 2022, you are evaluating a transaction of 150 units between A (the selling units) and B (the buying unit). You have the following information available:

- The full manufacturing cost of a single unit produced by A is 2,100 €;
- The market price for 150 units is equal to 2,000 € per unit;
- With the dual transfer pricing mechanism, A receives the 120% of its full manufacturing costs, and B pays 98% of the market price;
- B would finally sell the finished product at a price of 2,600 €/unit and it will sell all the products in the month of December 2022;
- Other non-manufacturing costs are equal to 0.

Considering this specific transaction of 150 units and based on the previous information, which of the following answers related to the month of December 2022 is CORRECT?

A. While Gross Profit of A is equal to € 63,000, Gross Profit of B is equal to € 81,300.
B. The corporate cost generated by the application of the dual transfer price for the month of December 2022 is € 69,300.
C. While Gross Profit of A is equal to € 63,000, Gross Profit of B is equal to € 96,000.
D. While Gross Profit of A is equal to € 60,000, Gross Profit of B is equal to € 81,300.

SOLUTION

The exercise requires the computation of Gross Profit in a context of application of transfer prices.

Business Unit A

- Revenue = 2,520 €/u * 150u = 378,000 €, where 2,520 is the 120% of the full manufacturing costs (2,100).
- Cost of goods sold = 2,100 €/u * 150u = 315,000 €, where 2,100 is the full manufacturing cost given by the text.
- Gross Profit = 378,000 - 315,000 = 63,000 €

Business Unit B

- Revenue = 2,600 €/u * 150u = € 390,000, where 2,600 is given by the text.
- Cost of goods sold = 1,960 €/u * 150u = € 294,000, where 1,960 is the full manufacturing cost given by the text.
- Gross Profit = 390,000 - 294,000 = 96,000 €.

- A is wrong in the calculation of the dual price to be assigned to B; in fact, the full manufacturing cost of A is taken as the reference, instead of the market price.
- B is wrong in the calculation of the dual price to be assigned to B and, in turn, in the computation of the corporate costs; in fact, the full manufacturing cost of A is assumed as the reference, instead of the market price. The proper computation of the cost allocated at the corporate level would be (€ 2,520 - € 1,960)* 150u = € 84,000.
- C is correct.
- D is wrong in the calculation of the dual price to be assigned to both B and A; in fact, the full manufacturing cost of A is assumed as the reference in both cases.

EXERCISE 7 – (2 POINTS)

The controller of the company QualTop is evaluating the diverse performance indicators to be used as value drivers for their top-level product: waterproof running shoes. The company has a Zero-Defect policy, which means that it maximizes internal quality controls to avoid defected products delivered to the final customer. Sample controls are performed during the production process as well as on the final products before they are delivered.

The company is now interested in market expansion and consolidation, and the controller is required to introduce quality-related indicators as possible revenue drivers. Waterproof running shoes is a growing niche market. In this view, monitoring the growth of sales compared to competitors is crucial.

Considering the selection of a new set of quality indicators, which of the following sentences is WRONG?

A. Measuring *defective product rates* is still useful for Qualtop even if they adopt a Zero-Defect policy.
B. Measuring the *quality of watertightness* is an important factor to be measured to assess customer satisfaction, but also to take into consideration future development, as it is a distinctive element of the market niche.
C. *A customer survey* asking open questions to current clients about their satisfaction on the delivery time of shoes purchased online could provide useful insights into QualTop's capability to reach and acquire new customers in markets not penetrated yet.
D. The *market share of competitors* in the niche market of waterproof running shoes is a key indicator for monitoring the overall growth of the total market

SOLUTION

- A is true since a product quality driver, as the defective product rates, is useful to monitor the quality of the product for the final customer.
- B is true since *quality of watertightness* supports the assessment of the satisfaction of customers as well as the ability to grow (which in an objective of the company).
- C is true since the satisfaction on online delivery can support the assessment of current customers satisfaction as well as the potentialities for future expansions on the market.
- D is wrong since the market share does not provide insights on the market growth, but on the as is situation of the market.

EXERCISE 8 – 2 POINTS

The Group Beta is composed of two subsidiaries: Gamma and Teta. You are the group-controller and you are now in charge of preparing the consolidated annual report of the Group.

You have the following information available:

- Gamma is a European subsidiary that prepares its annual report in Euros using IAS/IFRS. Its fiscal year covers the January-December period.
- Teta is an American subsidiary that prepares its annual report in Dollars using US GAAP. Its fiscal year covers the March-February period.

Which of the following sentences is CORRECT?

A. The consolidated annual report cannot be prepared since the two subsidiaries operate over two different fiscal years.
B. The consolidated annual report cannot be prepared since the two subsidiaries adopt different accounting principles.
C. The consolidated annual report cannot be prepared since the two subsidiaries adopt different currencies.
D. None of the answers.

SOLUTION

A is wrong since the consolidated annual report can be prepared even when the fiscal year is not the same; a three-month period of gap is acceptable.

B is wrong since the consolidated annual report can be prepared even when the accounting principles adopted by the subsidiaries are different. This is achieved by applying in the subsidiaries' individual accounts the accounting policies adopted by the group.

C is wrong since the consolidated annual report can be prepared even when the subsidiaries adopt different currencies. The approach used to convert euros in dollars (or viceversa) will be clarified in the notes of the financial reports.

D is the correct answer because all the previous are wrong.

EXERCISE 9 – 2 POINTS

Consider Corporate bonds and in particular coupon bonds with fixed rate.

Which of the following sentences is correct?

A. **In case of bullet repayment, the money the bondholder receives at maturity is always equal to the purchase price plus the interest calculated with the fixed rate at the terms of the payment.**
B. The money the bondholder receives at maturity is equal to the purchase price plus the interested calculated with the fixed rate adjusted for any change in the company's rating.
C. The money that the bondholder receives at maturity is equal to the purchase price plus the interested calculated with the fixed rate adjusted for changes in inflation.
D. None of the previous ones.

SOLUTION

Answer A is correct

Answer B is wrong both for the reasons given in answer A and because the rating does not change the fixed rate once the bond is issued.

Answer C is wrong both for the reasons given in answer A and because an inflation adjustment does not change the bond value/rate once the bond is issued.

Answer D is wrong because answer A is correct.