Exam in Fundamentals of Management Accounting

**Time allowed: 3 hours**

**ALL the questions are compulsory and MUST be attempted.**

**Open-ended questions**

**Question 1**

Nanostar LLC has two processes – extrusion and thermo-assembly. Consider the June 2017 data for physical units in the thermo-assembly process of Nanostar LLC: opening work in progress, 15 000 units; transferred in from the Extruding Department during September, 9000; closing work in progress, 5000. Direct materials are added when the process in the Thermo-assembly Department is 80% complete. Conversion costs are added evenly during the process. Nanostar LLC uses the weighted-average process costing method. The following information is available.

 Transferred-in Direct Conversion

 costs materials costs

Opening work in progress at cost GEL 90000 – GEL 45000

Cost per eq. unit of opening WIP GEL 6 - GEL 5

Cost per eq. unit of work

done in current period GEL 6.5 GEL 3 GEL 5.2

*Required*

*1 For each cost element, calculate equivalent units of (a) opening work in progress and (b) work done in the current period (10 marks).*

*2 For each cost element, calculate the equivalent units in closing work in progress (10 marks).*

*3 (a) For each cost element, calculate the percentage of completion of opening work-in progress stock and (b) for each cost element, calculate the percentage of completion of closing work-in-progress stock (5 marks).*

*(Total 25 marks)*

**Question 2**

Air Kakheti owns a single jet aircraft and operates between Cantazaro and Venice. Flights leave

Telavi on Mondays and Thursdays and depart from Istanbul on Wednesdays and Saturdays.

Air Kakheti cannot offer any more flights between Telavi and Istanbul . Only tourist-class seats are available on its planes. An analyst has collected the following information:

Seating capacity per plane 360 passengers

Average number of passengers per flight 200 passengers

Flights per week 4 flights

Flights per year 208 flights

Average one-way fare GEL 500

Variable fuel costs GEL 14000 per flight

Food and beverage service cost (no charge to passenger) GEL 20 per passenger

Commission to travel agents paid by Air Kakheti

(all tickets are booked by travel agents) 8% of fare

Fixed annual lease costs allocated to each flight GEL 53 000 per flight

Fixed ground services (maintenance, check in,

baggage handling) cost allocated to each flight GEL 7000 per flight

Fixed flight crew salaries allocated to each flight GEL 4000 per flight

*Required*

*1 What is the operating profit that Air Kakheti makes on each one-way flight between Telavi and Istanbul? (10 Marks)*

*2 The Market Research Department of Air Kakheti indicates that lowering the average one-way fare to €480 will increase the average number of passengers per flight to 212. Should Air Kakheti lower its fare? (5 Marks)*

*3 Ntour, a tour operator, approaches Air Kakheti on the possibility of chartering (renting out) its jet aircraft twice each month, first to take Ntour’s tourists from Telavi to Istanbul and then to bring the tourists back from Istanbul to Telavi . If Air Kakheti accepts Ntour’s offer, Air Kakheti will be able to offer only 184 (208 – 24) of its own flights each year. The terms of the charter are as follows: (a) For each one-way flight, Ntour will pay Air Kakheti GEL 75 000 to charter the plane and to use its flight crew and ground service staff; (b) Ntour will pay for fuel costs; and (c) Ntour will pay for all food costs. On purely financial considerations, should Air Kakheti accept Ntour’s offer? What other factors should Air Kakheti consider in deciding whether or not to charter its plane to Ntour? (10 Marks)*

*(Total 25 marks)*

**Question 3**

Sigma Agro processes potatoes into chips at its highly automated Saki plant.

For many years, it processed potatoes for only the retail consumer market where it had a superb reputation for quality. Recently, it started selling chips to the institutional market that includes hospitals, cafeterias and university halls of residence. Its penetration into the institutional market has been slower than predicted. Sigma’s existing costing system has a single direct-cost category (direct materials, which are the raw potatoes) and a single indirect-cost pool (production support). Support costs are allocated on the basis of kilograms of chips processed. Support costs include packaging material. This year’s total actual costs for producing 1 000 000 kg of chips (900 000 for the retail market and 100 000 for the institutional market) are:

Direct materials used €150000

Production support €983000

The existing costing system does not distinguish between chips produced for the retail or the institutional markets.

At the end of the year, Sigma unsuccessfully bid for a large institutional contract. Its bid was reported to be 30% above the winning bid. This came as a shock as Sigma included only a minimum profit margin on its bid. Moreover, the Saki plant was widely acknowledged as the most efficient in the industry.

As part of its lost contract bid review process, Sigma decided to explore several ways of refining its costing system. First, it identified that GEL 188 000 of the GEL 983 000 pertains to packaging materials that could be traced to individual jobs (GEL 180 000 for retail and GEL 8000 for institutional). These will now be classified as a direct material. The GEL 150 000 of direct materials used were classified as GEL 135 000 for retail and GEL 15 000 for institutional. Second, it used activity-based costing (ABC) to examine how the two products (retail chips and institutional chips) used the support area differently. The finding was that three activity areas could be distinguished and that different usage occurred in two of these three areas. The indirect cost per kilogram of finished product at each activity area is as follows:

Activity area Retail chips Institutional chips

 Cleaning GEL 0.120 GEL 0.120

 Cutting 0.240 0.150

 Packaging 0.480 0.120

There was no opening or closing amount of any stock (materials, work in progress or finished goods).

*Required*

*1 Using the current costing system, what is the cost per kilogram of chips produced by Sigma? (5 marks)*

*2 Using the refined costing system, what is the cost per kilogram of (a) retail market chips, and (b) institutional market chips? (10 marks)*

*3 Comment on the cost differences shown between the two costing systems in requirements 1 and 2. How might Sigma use the information in requirement 2 to make better decisions? (10 marks)*

*(Total 25 marks)*

**Question 4**

On 1 December 2007, Neco, SNC, is attempting to project cash receipts and disbursements to 31 January 2023. On this latter date, a note will be payable in the amount of €100 000. This amount was borrowed in September to carry the company through the seasonal peak in November and December.

The trial balance on 1 December shows in part the following information:

Cash €10000

Debtors 280000

Allowance for bad debts €15800

Stock 87500

Creditors 92000

Sales terms call for a 2% discount if payment is made within the first 10 days of the month after purchase, with the balance due by the end of the month after purchase. Experience has shown that 70% of the billings will be collected within the discount period, 20% by the end of the month after purchase, 8% in the following month, and that 2% will be uncollectable. There are no cash sales.

The average selling price of the company’s products is GEL 100 per unit. Actual and projected sales are:

 October actual GEL 180000

 November actual 250000

 December estimated 300000

 January estimated 150000

 February estimated 120 000

Total estimated for year ending 30 June 2008 1500000

All purchases are payable within 15 days. Thus approximately 50% of the purchases in a month are due and payable in the next month. The average unit purchase cost is GEL 70. Target closing stocks are 500 units plus 25% of the next month’s unit sales. Total budgeted marketing, distribution and customer-service costs for the year are GEL 400 000. Of this amount, GEL 150 000 is considered fixed (and includes depreciation of GEL 30 000). The remainder varies with sales. Both fixed and variable marketing, distribution and customer service costs are paid as incurred.

*Required*

*Prepare a cash budget for December and January. Supply supporting workings for collections of debtors due payments for raw materials, and marketing, distribution and customer-service costs. (25 marks)*

**Answer 1**

a) Transferred-in Direct Conversion

 costs materials costs

a.*Eq. unit costs of opening WIP*

Opening work in progress (given) GEL 90000 – GEL 45000

Divide by cost per eq. unit

of opening WIP ÷ 6 – ÷ 5

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Equivalent units of opening WIP

 15000 – 9000

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b. *Eq. unit costs of work done in*

*current period only*

Costs added in current period (given) GEL 58500 GEL 57000 GEL 57200

Divide by cost per eq unit of

work done in current period ÷ 6.50 ÷ 3 ÷5.20

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Eq. units of work done in

current period only 9000 19000 11000

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b) Physical Transferred- Direct Conversion

Flow of production units in costs materials costs

Completed and transferred

out during current period 19000 19000 19000 19000

Add closing work in progress, 5,000

(5000 × 100%; 5000 × 0%;

5000 × 20%) 5000 0 1000

Total accounted for **24000 24000 19000 20000**

Deduct opening work in progress 15000

(15 000 × 100%; 15 000 × 0%;

15000 × 60%) 15000 0 9000

Transferred in during current period 9 000

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Work done in current period only 9000 19000 11000

Physical units Physical units Physical units Physical units

completed and = in opening + transferred-in – in closing

transferred out work in progress during period work in progress

= 15 000 + 9000 – 5000

 = 19 000

 Equivalent units

 Eq. units Eq. units Eq. units completed and

 in closing work = in opening + of work done in – transferred out

 in progress work in progress current period during current

 period

Equivalent units of transferred-in

cost in closing work in progress = 15 000 + 9000 – 19 000 = 5000 units

Equivalent units of direct materials in

closing work in progress = 0 + 19 000 – 19 000 = 0 units

Equivalent units of conversion

costs in closing work in progress = 9000 + 11 000 – 19 000 = 1000 units

3a. Percentage of completion of opening work-in-progress stock:

Transferred-in costs: 15 000 equivalent units ÷ 15 000 physical units = 100%

Direct materials: 0 equivalent units ÷ 15 000 physical units = 0%

Conversion costs: 9000 equivalent units ÷ 15 000 physical units = 60%

3b.

Transferred-in costs: 5000 equivalent units ÷ 5000 physical units = 100%

Direct materials: 0 equivalent units ÷ 5000 physical units = 0%

Conversion costs: 1000 equivalent units ÷ 5000 physical units = 20%

**Answer 2**

1. Average one-way fare per passenger GEL 500

 Commission at 8% of GEL 500 40

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Net cash to Air Kakheti per ticket GEL 460

Average number of passengers per flight 200

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Revenues per flight (GEL 460 × 200) GEL 92000

Food & beverage cost per flight (GEL 20 × 200) 4000

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Total contribution from passengers 88000

Fuel costs per flight 14000

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Contribution per flight 74000

Fixed costs allocated to each flight:

Lease costs GEL 53000

Baggage handling 7000

Flight crew 4000 64000

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Operating income per flight GEL 10000

2. If fare is GEL 480.00

Commission at 8% of GEL 480 38.40

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Net cash per ticket 441.60

Food and beverage cost per ticket 20.00

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Contribution per passenger GEL 421.60

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Total contribution margin from passengers

(GEL 421.60 × 212) GEL 89379.20

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All other costs are irrelevant

On the basis of quantitative factors alone, Air Kakheti should decrease its fare to GEL 480 because reducing the fare gives Air Kakheti a higher contribution margin from passengers (GEL 89379.20 versus GEL 88000).

3 In evaluating whether Air Kakheti should charter its plane to Ntour, we compare the charter alternative to the solution in requirement (2) because requirement (2) is preferred to requirement (1).

Under requirement (2), Air Kakheti gets GEL 89379.20

Deduct fuel costs 1 4000.00

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Total contribution per flight GEL 75379.20

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Air Kakheti gets GEL 75 000 per flight from chartering the plane to Ntour. On the basis of quantitative financial factors Air Kakheti is better off not chartering the plane and instead lowering its own fares.

Students who compare the GEL 75 000 that Air Kakheti earns from chartering its plane to the contribution from passengers in requirement (1) (GEL 74 000) will conclude that Air Kakheti should charter the plane to Ntour. Strictly speaking, though, the correct answer must

compare the charter fee of GEL 75 000 to the GEL 75 379.20 passenger contribution in requirement

(2) since lowering the fare is certainly an alternative available to Air Kakheti .

Other qualitative factors that Air Kakheti should consider in coming to a decision are:

a The lower risk from chartering its plane relative to the uncertainties regarding the number of passengers it might get on its scheduled flights.

b Chartering to Ntour means that Air Kakheti would not have a regular schedule of flights each week. This arrangement could cause inconvenience to some of its passengers.

c The stability of the relationship between Air Kakheti and Ntour. If this is not a long-term arrangement, Air Kakheti may lose current market share and not benefit from sustained charter revenues.

**Answer 3**

1 Direct costs

 Direct materials GEL 150 000 GEL 150 000

 Indirect costs

 Product support 983 000 983 000

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 Total costs GEL 1 133 000

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 Cost per kilogram of chips = GEL 1.133

2 Retail chips Institutional chips

 Direct costs

 Direct materials GEL 135 000 GEL 15 000

 Packaging 180 000 8 000

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 Indirect costs 315 000 23 000

 Cleaning

 GEL 0.120 × 900 000 108 000

 GEL 0.120 × 100 000 12 000

 Cutting

 GEL 0.24 × 900 000 216 000

 GEL 0.15 × 100 000 15 000

 Packaging

 GEL 0.48 × 900 000 432 000

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 GEL 0.12 × 100 000 12 000

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 756 000 39 000

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 Total costs GEL 1 071 000 GEL 62 000

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 Units produced 900 000 100 000

 Cost per unit GEL 1.19 GEL 0.62

3 There is much evidence of product-cost cross-subsidisation.

 Retail Institutional

 Current system GEL 1.133 GEL 1.133

 ABC system GEL 1.190 GEL 0.620

Assuming the ABC numbers are more accurate, retail is undercosted by approximately 5% (GEL 1.133 ÷ GEL 1.19 = 0.95) while institutional is overcosted by 83% (GEL 1.133 ÷ GEL 0.620 = 1.83).

The current system assumes that each product uses all the activity areas in a homogeneous way. This is not the case. Institutional sales use far fewer resources in the cutting area and the packaging area. The percentage of total costs for each cost category is:

 Retail Institutional Total

Direct costs

Direct materials 90.0% 10.0% 100.0%

 Packaging 95.7 4.3 100.0

Indirect costs

 Cleaning 90.0 10.0 100.0

 Cutting 93.5 6.5 100.0

 Packaging 97.3 2.7 100.0

Units produced 90.0% 10.0% 100.0%

Sigma Agro can use the revised cost information for a variety of purposes:

* Pricing/product emphasis decisions. The sizable drop in the reported cost of institutional potatoes makes it possible that Sigma Agro was overpricing potato products in this market. It lost the bid for a large institutional contract with a bid 30% above the winning bid. With its revised product cost dropping from GEL 1.133 to GEL 0.620, Sigma Agro could have bid much lower and still made a profit. An increased emphasis on the institutional market appears warranted.
* Product design decisions. ABC provides a roadmap as to how to reduce the costs of individual products. The relative components of costs are:

 Retail Institutional

Direct costs

 Direct materials 12.6% 24.2%

 Packaging 16.8 12.9

Indirect costs

 Cleaning 10.1 19.3

 Cutting 20.2 24.2

 Packaging 40.3 19.3

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Total costs 100.0% 100.0%

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Packaging-related costs constitute 57.1% (16.8% + 40.3%) of total costs of the retail product line. Design efforts that reduce packaging costs can have a big impact on reducing total unit costs for retail.

* Process improvements. Each activity area is now highlighted as a separate cost. The three indirect cost areas are over 60% of total costs for each product, indicating the upside from improvements in the efficiency of processes in these activity areas.

**Answer 4**

Statement of budgeted cash receipts and disbursements

for the months of December 2022 and January 2023

 December 2022 January 2023

 Cash balance, opening GEL 10 000 GEL 2 025

 Add receipts:

 Collections of receivables (w1) 235 900 285 800

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(a) Total cash available for needs 245 900 287 825

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Deduct disbursements:

For merchandise purchase(w2) 183 875 141 750

For variable costs (w3) 50 000 25 000

For fixed costs (w3) 10 000 10 000

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(b) Total disbursements 243 875 176 750

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Cash balance, end of month (a – b) GEL 2 025 111 075

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Enough cash should be available for repayment of the note on 31 January 2023.

W 1: Collections of receivables

December: 14 400[a] + 50 000[b] + 171 500[c] = GEL 235 900

January: 20 000[d] + 60 000[e] + 205 800[f] = GEL 285 800

[a] 0.08 × GEL 180 000 [b] 0.20 × GEL 250 000 [c] 0.70 × GEL 250 000 × 0.98

[d] 0.08 × GEL 250 000 [e] 0.20 × GEL 300 000 [f] 0.70 × GEL 300 000 × 0.98

W 2: Payments for merchandise

 December January

Target closing stock (in units) 875 [a] 800 [c]

Add units sold (Sales ÷ GEL 100) 3 000 1 500

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Total requirements 3 875 2 300

Deduct opening stock (in units) 1 250[b] 875

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Purchases (in units) 2 625 1 425

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Purchases in francs (units × GEL 70) GEL 183 750 GEL 99 750

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[a] 500 units + 0.25(150 000 ÷ 100) [b] 87 500 ÷ 70

[c] 500 units + 0.25(120 000 ÷ 100)

 December January

Cash disbursements:

For previous month’s purchases at 50% GEL 92 000 GEL 91 875

For current month’s purchases at 50% 91 875 49 875

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 GEL 183 875 GEL 141 750

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W 3: Marketing, distribution and customer service costs

Total annual fixed costs, GEL 150 000, minus GEL 30 000 depreciation = GEL 120 000

Monthly fixed cost requiring cash outlay = GEL 10 000

Variable cost ratio to sales = 1/6

December variable costs: 1/6 × GEL 300 000 sales = GEL 50 000

January variable costs: 1/6 × GEL 150 000 sales = GEL 25 000