EXAMINATION NO._____

THE INSTITUTE OF CHARTERED ACCOUNTANTS IN MALAWI

2015 EXAMINATIONS

ACCOUNTING TECHNICIAN PROGRAMME

PAPER TC9: COSTING AND BUDGETARY CONTROL

FRIDAY 5 JUNE 2015

TIME ALLOWED : 3 HOURS
9.00 AM - 12.00 NOON

INSTRUCTIONS

1. You are allowed **15 minutes** reading **time before the examination begins** during which you should read the question paper and, if you wish, make annotations on the question paper. However, you are not allowed, **under any circumstances**, to open the answer book and start writing or use your calculator during this reading time.

2. Number of questions on paper – 5.

3. **Answer ALL** questions.

4. Each question carries 20 marks.

5. Show all your workings in order to gain full marks.

6. Marks will be awarded for clarity, correctness and logical presentation.

7. Use of non-programmable calculators is allowed.

8. Begin each answer on a fresh page.

9. **DO NOT OPEN THIS PAPER UNTIL YOU ARE INSTRUCTED BY THE INVIGILATOR**

This question paper contains 5 pages.

1. EX Limited is an established supplier of precision parts to a major aircraft manufacturer. It has been offered the choice of making either Part A or Part B for the next period, but not both.

Both parts use the same metal, of which 13,000 kg only are available, at K12.50 per kg. The parts are made by passing each one through two machine lines, S and T, whose capacities are limited. Target prices have been set and the following data are available for the period:

Part details

	Part A	**Part B**
Maximum call-off (units)	7,000	9,000
Target price per unit	K145	K115
Metal usage	1.6 kg	1.6 kg
Machine times		
Line S	0.6 hours	0.25 hours
Line T	0.5 hours	0.55 hours

Machine details

	Line S	**Line T**
Hours available	4,000	4,500
Variable overhead per hour	K80	K100

Required:

(a) Define "limiting factor of production" **2 Marks**

(b) Supported with calculations, justify which part should be made during the next period to maximize contribution **8 Marks**

(c) As an alternative to the target price shown above, the aircraft manufacturer has offered the following alternative arrangement:

Target prices less 10% plus K60 per hour for each unused machine hour.

Required:
Decide whether your recommendation in (b) above will be altered and, if so, calculate the new contribution. **10 Marks**

(TOTAL: 20 MARKS)

Continued/……

2. The following details have been extracted from the standard cost card for product X:

	(K/unit)
Variable overheads	
4 machine hours at K8.00/hour	32.00
2 labour hours at K4.00/hour	8.00
Fixed overhead	20.00

In October, 5,450 units of the product were made compared to a budgeted production target of 5,500 units. The actual overhead costs incurred were:

	K
Machine-related variable overhead	176,000
Labour-related variable overhead	42,000
Fixed overhead	109,000

The actual number of machine hours was 22,000 and the actual number of labour hours was 10,800.

Required:

(a) State any **two** disadvantages of a standard costing system **2 Marks**

(b) Calculate the following variances:

(i) Machine-related variable overhead efficiency **2 Marks**

(ii) Labour related variable overhead efficiency **2 Marks**

(iii) Machine related variable overhead expenditure **2 Marks**

(iv) Labour-related variable overhead expenditure **2 Marks**

(v) Fixed overhead expenditure variance **2 Marks**

(vi) Fixed overhead volume **2 Marks**

(c) Explain the meaning of, and give possible causes for, the following variances as calculated in (b) above:

(i) Machine-related variable overhead efficiency variance **2 Marks**

(ii) Labour related variable overhead efficiency variance **2 Marks**

(iii) Labour-related variable overhead expenditure variance **2 Marks**

(TOTAL: 20 MARKS)

Continued/……

3. Lather Ltd operates a single process to manufacture soap.

The following figures relate to a recent period:

Input	Material	20,000 kg at K5 per kg
	Labour	16,000 hours at K6.25 per hour
	Overhead	16,000 hours at K3 per hour

There is an expected loss of 5% of input weight, which can be sold for K1.20 per kg.

The actual output for the period was 18,800 kg and the closing work in progress was 1,000 kg, which was complete as to material and 50% complete as to labour and overhead.

Required:

(a) In the context of process costing, state:

(i) the costing treatment of normal loss **1 Marks**

(ii) the **four** costing treatments of by-products **4 Marks**

(b) Prepare the following accounts:

(i) The main process account **8 Marks**

(ii) The normal loss account **1 Mark**

(iii) The abnormal gain account **1 Mark**

(c) The finished output is divided in the ratio 3:2 to produce the "Domestic" and the "Fragrant" brands. Perfume is added to the Fragrant brand at a cost of K0.5 per kg. Packaging costs are K0.2 per kg for the Domestic brand, and K0.4 per kg for the Fragrant brand. Each kg of finished output yields twenty bars of soap.

Required:

Calculate the cost of one bar of soap of the Domestic and of the Fragrant brand.

5 Marks

Continued/……

4. Shannon Ltd has two production departments A and B, and two service departments X and Y. Budgeted activity levels and costs for April 2015 were as follows:

A	1,000 hours	K25,000
B	3,000 hours	K30,000

Service department costs are apportioned to the production departments on the following bases:

X	50% A
	20% B
	30% Y
Y	40% A
	40% B
	20% X

The overheads of the production departments are absorbed into product costs using a rate per hour.

During the month of April 2015, the actual activity levels and costs were as follows:

A	1,100 hours	K24,000
B	3,400 hours	K29,000
X		K6,000
Y		K4,000

Required:

(a) Define the following terms:

(i) Cost allocation **1 Mark**

(ii) Cost apportionment **1 Mark**

(iii) Cost absorption **1 Mark**

(b) For each of the production departments, calculate the following for the month of April 2015:

(i) Capacity ratio **4 Marks**

(ii) Budgeted absorption rate **4 Marks**

(c) Calculate the overhead to be charged to each of the production departments for the month of April 2015 using the repeated distribution method. **6 Marks**

(d) Calculate the amount of under or over absorption for each of the production departments for the month of April 2015. **3 Marks**

(TOTAL: 20 MARKS)

Continued/…

5. (a) In the context of inventory control and valuation,

(i) State any **four** advantages of a just-in-time (JIT) system. **4 Marks**

(ii) Mention any **four** methods of inventory valuation. **4 Marks**

(b) Define the following terms:

(i) Direct costs **1 Mark**

(ii) Prime cost **1 Mark**

(iii) Conversion cost **1 Mark**

(c) Mention and explain **two** methods used to separate fixed costs and variable costs in a semi-fixed cost. **4 Marks**

(d) (i) Other than the sales value method, mention any **two** other methods that are commonly used to apportion joint processing costs to joint products that emerge from a single process. **2 Marks**

(ii) Other than the repeated distribution method, mention **three** other ways of apportioning service department costs to production cost centers. **3 Marks**

(TOTAL: 20 MARKS)

END

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SUGGESTED SOLUTIONS & MARKING SCHEME

1 (a) A limiting factor of production is anything that limits the activity of a business. It may be sales demand, or shortage of a resource such as material or labour.

If a business is seeking to maximise profit, the scarce resource should be allocated to the products according to the contribution that each product makes per unit of scarce resource.

2 Marks

(b) The constraints on producing Part A are:

Line S = 6,666 units (4,000/0.6 hrs)	**½ Mark**
Line T = 9,000 units (4,500/0.5 hrs)	**½ Mark**
Material restriction =8,125 units (13,000/1.6 kg)	**½ Mark**
Maximum production of Part A is 6,666 units	**½ Mark**

The constraints on producing Part B are:

Line S = 16,000 units (4,000/0.25 hrs)	**½ Mark**
Line T = 8,182 units (4,500/0.55 hrs)	**½ Mark**
Material restriction = 8,125 units (13,000/1.6 kg)	**½ Mark**
Maximum production of Part B is 8,125 units	**½ Mark**

Maximum contributions for Parts A and B are:

	Part A K	Part B K	
Line S machine time	48 (0.6 hrs x K80)	20 (0.25 hrs x K80)	**½ Mark**
Line T machine time	50 (0.5 hrs x K100)	55 (0.55 hrs xK100)	**½ Mark**
Materials	20 (1.6 kg x K12.50)	20 1.6 kg x K12.50)	**½ Mark**
Variable cost	118	95	
Selling price	145	115	**½ Mark**
Unit contribution	27	20	
Maximum output	6,666 units	8,125 units	
Maximum contribution	K179,982	K162,500	**1 Mark**

Therefore Part A should be produced since it yields the largest contribution. **1 Mark**

(c)

	Part A	Part B	
Original selling price	145	115	
10% reduction	14.50	11.50	**1 Mark**
Revised unit contribution	12.50 (K27 - K14.50)	8.50 (K20 - K11.50)	**1 Mark**
Output	6,666 units	8,125 units	
Total contribution	K83, 325	K69,062	**1 Mark**
Payment for unused machine hours(W)	K70,020	K120,000	**6 Marks**
Revised contribution	K153,345	K189,062	

With the alternative pricing arrangement the company should produce Part B. **1 Mark**

Working

Calculation for the payment for unused machine hours:

	Part A (K)		
Line S at K60 per hour	—	(Fully used)	
Line T at K60 per hour	70,020	(4,500 - [6,666 x0.5 hrs] x 60)	**2 Marks**
	70,020		

	Part B (K)		
Line S at K60 per hour	118,125	(4000 - [8,125 x 0.25 hrs] x 60)	**2 Marks**
Line T at K60 per hour	1,875	(4500 - [8,125 x 0.55 hrs] x 60)	**2 Marks**
	120,000		**6 Marks**

(TOTAL: 20 MARKS)

2. (a) Disadvantages of a standard costing system

(i) It may be expensive to install and maintain **1 Mark**

(ii) In times of inflation standard costs may soon become out-dated **1 Mark**

(iii) Responsibility for variances may not always be easy to identify **1 Mark**

Any two, 1 Mark each = 2 Marks

(b) (i) Machine-related variable overhead efficiency variance:

= (Standard hours - Actual hours) x Standard rate

= [(5,450 x 4 hours) – 22,000)] x K8

= K1,600A **2 Marks**

(ii) Labour related variable overhead efficiency variance

= (Standard hours - Actual hours) x Standard rate

=[(5,450 x 2 hours) – 10,800)] xK4

= K400F **2 Marks**

(iii) Machine-related variable overhead expenditure variance:

=(Actual hours x Standard rate) - Actual variable overheads incurred

= [(22,000 xK8)] - K176,000

= 0 (Nil) **2 Marks**

(iv) Labour related variable overhead expenditure variance

=(Actual hours x Standard rate) - Actual variable overheads incurred

= [(10,800 x K4)] - K42,000

= K1,200F **2 Marks**

(v) Fixed overhead expenditure variance

= Budgeted cost - Actual cost

= (5,500 units x K20) - K109,000

= K1,000F **2 Marks**

(vi) Fixed overhead volume

= (Actual production - Budgeted production) x Standard rate
= (5,450 – 5,500) x K20
= K1,000A **2 Marks**

c) (i) The variable overhead machine-related efficiency variance arises because machine Hours exceeded target (standard) hours that should have been used for the actual output. Because it is assumed that some variable overheads vary with machine hours the excess usage has resulted in additional spending on variable overheads. Failure to maintain machinery may have resulted in the use of hours in excess of standard.
2 Marks

(ii) The variable overhead labour-related variance arises because actual direct labour hours were less than the hours that should have been used for the actual output. This has resulted in reduced expenditure on those variable overheads that vary with direct labour hours. An improvement in the efficiency of direct labour has resulted in the favourable variance. **2 Marks**

(iii) The variable overhead labour-related expenditure variance arises because actual spending was less than budgeted spending flexed to the actual level of activity. Prices paid for variable overhead items (e.g. indirect materials) may have been lower than the figures used to derive the budgeted expenditure. **2 Marks**

(TOTAL: 20 MARKS)

3. (a) (i) Since normal loss is expected, it is not given a cost except where the normal loss has a scrap value in which case the scrap value is deducted from the cost of materials.
1 Mark

(ii) Since the by-product has a commercial value, the income earned from the sale of the by-product can be recognized in different ways as follows:

1. It may be added to the sales from the main product **1 Mark**
2. It may be treated as a separate incidental source of income **1 Mark**
3. It may be deducted from the production cost of sales of the main product **1 Mark**
4. Deducting the net realizable value of the by-product from the production cost of the main product. **1 Mark**

4 Marks

(b) (i)

Process Account

	Kg	K		Kg	K
Material	20,000	100,000[1/2]	Normal loss	1,000	1,200[1/2]
Labour		100,000[1/2]	Output	18,800	248,160[4]
Overhead		48,000[1/2]			
Abnormal Gain	800	10,560[1]	Closing WIP	1,000	9,200[1]
	20,800	258,560		20,800	258,560

(ii)

Normal Loss Account

	K		K
		Cash	240[1/2]
Process Account	1,200	Abnormal Gain	960[1/2]
	1,200		1,200

(iii) Abnormal Gain Account

	K		K
Normal Loss	960		
P and L Account	9,600	Process Account	10,560
	10,560		10,560 **1 Mark**

Workings

Equivalent units	Material	Labour/Overhead
Output	18,800	18,800
Add: Closing WIP	1,000 ½	500
Less: Abnormal Gain	800 ½	800
	19,000	18,500
Costs	100,000	148,000
Less: scrap sale	1,200 **1**	
	98,800	
Cost per unit	98,800/19,000 = K5.2 **1**	148,000/18,500 = K8 **1**

Valuation	Output	Abnormal Gain	Closing WIP
Material	(18,800 x 5.2) 97,760	(800x 5.2) 4,160	(1,000 x 5.2) 5,200
Labour/ Oh	(18,800 x 8) 150,400	(800x 8) 6,400	(500 x 8) 4,000
	248,160	10,560	9,200

(c) Separation

	Domestic		Fragrant	
	11,280 kilos$^{1/2}$		7,520 kilos$^{1/2}$	
	K		K	
Costs	148,896$^{1/2}$			99,264$^{1/2}$
Perfume			(7,520 x 0.5)	3,760$^{1/2}$
Packaging	(11,280x 0.2)	2,256$^{1/2}$	(7,520x 0.4)	3,008$^{1/2}$
		151,152		106,032
Bars of soap	(11,280x 20)	225,600$^{1/2}$	(7,520x 20)	150,400$^{1/2}$
Cost per bar	K151,152/225,600 = K0.67$^{1/4}$		K106,032/150,400 = K0.705$^{1/4}$	

4(a) (i) Cost allocation is the charging of discrete identifiable items of cost to cost centres or cost units. **1 Mark**

(ii) Cost apportionment is the re-allocation of costs amongst two or more cost centres in proportion to the estimated benefit received, using a proxy, e.g. square feet. **1 Mark**

(iii) Cost absorption is the charging of overhead to cost units by means of rates separately calculated for each cost centre. **1 Mark**

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(a) (i) Capacity ratio = $\frac{\text{actual hours}}{\text{Budgeted hours}}$

	A	B
Actual hours	1,100 × 100 = 110% **2 Marks**	3,400 × 100 = 113.3% **2 Marks**
Budgeted hours	1,000	3,000

(ii) Budgeted absorption rates = $\frac{\text{Budgeted overhead}}{\text{Budgeted hours}}$

	A	B
Overhead	K25,000	K30,000

Hours	1,000		3,000		
	=K25/hr	**2 Marks**	K10/hr	**2 Marks**	

(c)

	A	B	X	Y	Total	
Initial cost K	24,000	29,000	6,000	4,000	63,000	
Department X	3,000	1,200	(6,000)	1,800		¾ **Mark**
Department Y	2,320	2,320	1,160	(5,800)		¾ **Mark**
Department X	580	232	(1,160)	348		¾ **Mark**
Department Y	139	139	70	(348)		¾ **Mark**
Department X	35	14	(70)	21		¾ **Mark**
Department Y	8	8	5	(21)		¾ **Mark**
Department X	3	2	(5)			½ **Mark**
Overhead	30,085	32,915				**1 Mark**
						6 Marks

(d)

Overhead absorbed	1,100 x K25 = K27,500	3,400xK10 = K34,000	**2 Marks**
Actual overhead	K30,085	K32,915	
	K2,585 under	K1,085 over	**1 Mark**
			3 Marks

5. (a)(i) Advantages of a JIT system

- Lower stock holding means a reduction in storage space which saves rent and insurance costs **1 Mark**
- As stock is only obtained when it is needed, less working capital is tied up in stock **1 Mark**
- There is less likelihood of stock becoming obsolete or out of date **1 Mark**
- Avoids the build-up of unsold finished product that can occur with sudden changes in demand **1 Mark**
- Less time is spent on checking and re-working the product of others as the emphasis is on getting the work right first time **1 Mark**

Any four, 1 Mark each = 4 Marks

(ii) Inventory valuation methods:

- First-in, First-out (FIFO) **1 Mark**
- Last-in, First-out (LIFO) **1 Mark**
- Weighted average cost **1 Mark**
- Replacement cost (Next in, First out) **1 Mark**
- Standard cost **1 Mark**

Any four, 1 Mark each = 4 Marks

(b) (i) Direct cost: An item of cost that is directly attributable to a particular cost unit. **1 Mark**

(ii) Prime cost: The total of direct materials cost, direct labour cost and direct expenses. **1 Mark**

(iii) Conversion cost: The additional direct materials, direct wages, direct overheads and absorbed production overhead incurred in converting material input into semi-finished or finished product. **1 Mark**

(c) **(i) High-Low method** **1 Mark**

This involves the examination of historical data and comparing the changes in activity levels with the changes in costs. The variable cost per unit of activity may be found by dividing the increase in costs by the increase in activity. **1 Mark**

(ii) Regression method **1 Mark**

This involves the plotting of activity levels against corresponding cost levels on a graph. The 'line of best fit' can then be drawn to show the fixed and variable elements of the cost. **1Mark**

(d) (i) Methods of apportioning joint costs

- Weight of output (physical measures) method **1 Mark**
- Net realizable value method **1 Mark**
- Gross profit percentage method **1 Mark**

Any two, 1 Mark each = 2 Marks

(ii) Methods of apportioning overheads

- Simultaneous equation (Algebraic) method **1 Mark**
- Direct allocation method **1 Mark**
- Specific order of closing **1 Mark**
- Step down method **1 Mark**

Any three, 1 Mark each = 3 Marks

(TOTAL: 20 MARKS)

END