Answers

Section A

1   C

2   B

3   B

High–low method:

$$\text{Variable production costs per unit} = \frac{£254,554 - 230,485}{14,870 - 12,610 \text{ units}} = \frac{£24,069}{2,260 \text{ units}}$$
$$= \underline{£10·65} \text{ per unit}$$

4   A

5   D

6   C

Average stock = 1,200 + (2,000 ÷ 2) = 2,200 kg
                         x £1·20 per kg = £2,640 annual stockholding cost

7   B

Wages of distribution staff and sales personnel salaries are not production costs. Productive time of direct operatives is a direct cost.

8   B

Time allowed = 1,065 units x (2·4 ÷ 60) = 42·6 hours
Bonus = (42·6 – 37·5 hours) x (£8·50 ÷ 3) = £14·45
Basic pay = 37·5 hours at £8·50 = £318·75
Total earnings = £333·20 (£318·75 + 14·45)

9   C

10   D

Absorbed – actual = over/(under) absorbed
£125,200 – 126,740 = £1,540 under-absorbed

11   D

12   B

Decrease in stock = 33,300 – 33,950 units = 650 units
                         x £27·90 per unit = £18,135 change in finished goods stock value

13   A

Increase in stock = 97,000 – 96,000 units = 1,000 units
                         x £1·40 per unit = £1,400 less profit using marginal costing

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14 B

Actual loss = 16% (20 − 4)
Material input = 6,500 kg ÷ (1 − 0·16)
              = <u>7,738 kg</u>

15 D

16 D

Sales value of putput:
     Product A 2,000 kg at £12 =   £24,000
     Product B 4,000 kg at £18 =   <u>£72,000</u>

                                           <u>£96,000</u>

Share of joint process cost − Product B = £30,000 x (72,000 ÷ 96,000)
                                        = <u>£22,500</u>

17 B

18 B

Break-even (units) = Fixed cost ÷ contribution per unit
24,600 = 123,000 ÷ contribution per unit

Contribution per unit = £123,000 ÷ 24,600 units
                           = <u>£5·00</u> per unit

19 C

The consequence of using Material X in the special order is that more of the material will have to be bought, than would otherwise be the case, for its normal business.

20 B

Section B

1 (a) Re-order level:

Re-order level = safety stock + (average usage x lead time)
= 500 kg + (400 kg x 2 weeks)
= <u>1,300 kg</u>

(b) Cost of issues (using weighted average):

Opening balance = £12·00 per kg (£10,800 ÷ 900 kg)
Cost of issue on Day 3, Week 1 = £4,800 (400 x £12·00)
New weighted average after receipt on Day 5, Week 1
= £12·40 per kg [(500 kg x £12·00) + £12,600] ÷ [(900 kg − 400 kg) + 1,000 kg]
Cost of issues on Day 2 & Day 4, Week 2 and Day 3 Week 3
= £9,920 [(260 + 170 + 370) x £12·40]
Total cost of four issues = <u>£14,720</u> (4,800 + 9,920)

<u>or</u> using a tabular format:

Time	Receipts		Issues			Balance		
	kg	£	kg	£/kg	£	kg	£/kg	£
Balance b/f						900	12·00	10,800
Week 1:								
Day 3			400	12·00	4,800	500	12·00	6,000
Day 5	1,000	12,600				1,500	12·40	18,600
Week 2:								
Day 2			260	12·40	3,224	1,240	12·40	15,376
Day 4			170	12·40	2,108	1,070	12·40	13,268
Week 3:								
Day 3			370	12·40	<u>4,588</u>	700	12·40	8,680
					14,720			

(c) Cost of closing stock (using LIFO):

Closing stock = [(900 + 1,000) − (400 + 260 + 170 + 370)] = 700 kg
500 kg remaining of opening balance x £12·00/kg = £6,000
+ 200 kg remaining of receipt (Day 5, Week 1) x (£12,600 ÷ 1,000 kg) = £2,520
Total = <u>£8,520</u>

2 (a) & (b) Overhead re-apportionment and absorption:

	Production Cost Centre			Service Cost Centre		Total
	A	B	C	X	Y	
Allocated & apportioned (£)	47,566	84,331	43,031	8,435	11,880	195,243
Re-apportioned:						
Service cost centre Y	2,970	4,455	2,970	1,485	(11,880)	
Service cost centre X	1,984	4,464	3,472	(9,920)		
	£52,520	£93,250	£49,473			£195,243
Absorption rates:						
÷ direct labour hours	5,200	7,460	4,780			
= rate per hour	£10·10	£12·50	£10·35			

(c) Job 57 – total production cost:

		£	£
Direct material			1,678·0
Direct labour	(288 + 425 + 304)		1,017·0
Overhead:			
Production cost centre A	(36 hrs at £10·10)	363·6	
Production cost centre B	(50 hrs at £12·50)	625·0	
Production cost centre C	(32 hrs at £10·35)	331·2	1,319·8
Total			£4,014·8

3 **(a)** **(i)** Job costing:

Job costing may be applied, for example, by a builder or by a repair and maintenance business.

Job costing is a form of specific order costing which is applied where work is undertaken to customer's specific requirements and where the work is of comparatively short duration. Each job is a separate cost unit.

(ii) Process costing:

Process costing may be applied, for example, in chemical manufacture or in oil refining.

Process costing is applied where homogeneous goods or services result from a sequence of continuous operations. The cost unit will be a unit of the product/service and unit costs will be averaged over a period from cumulative costs and output.

(b) Process 2 costs:

(i) Production cost per equivalent unit:

	Process 1 costs	Materials added	Conversion costs
Equivalent units:			
Transfers to finished goods (units)	1,950	1,950	1,950
+ Closing work-in-progress (equiv units)	210	168	84
	2,160	2,118	2,034
Costs	£22,032	£5,295	£8,136
Cost per equivalent unit	£10·20 +	£2·50 +	£4·00 = £16·70

(ii) Transfer to finished goods:

1,950 units at £16·70 = £32,565

(iii) Closing work-in-progress:

			£
Process 1 costs	210 units at £10·20	=	2,142
Materials added	168 equiv units at £2·50	=	420
Conversion costs	84 equiv units at £4·00	=	336
			£2,898

Tutorial Note:
Total costs £35,463 (22,032 + 5,295 + 8,136) = Finished goods £32,565 + WIP £2,898

4 **(a)** NPV – Project 1:

Present value of a perpetuity = annual cash flow ÷ cost of capital expressed as a decimal

Thus, present value of a net cash inflow perpetuity of £13,500 per annum at a cost of capital of 10% per annum = £13,500 ÷ 0·1 = £135,000

NPV = £135,000 – £119,000
    = £16,000

(b) IRR – Project 2:

Net present value at 14%:

Year	Cash flow (£000)	Discount factor	Net present value (£000)
0	(241)	1·000	(241·0)
1	60	0·877	52·6
2	65	0·769	50·0
3	70	0·675	47·3
4	100	0·592	59·2
5	85	0·519	44·1
			12·2

Internal rate of return (IRR) $= 14\% + \left[(20\% - 14\%) \times \left(\dfrac{12·2}{12·2 + 23·0} \right) \right]$

$= 16\%$

(Alternatively the NPV at 10% could have been calculated and used.)

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(c) Annual net cash flow – Project 3:

Investment sum ÷ cumulative discount factor over five years at 14%
= £186,000 ÷ 3·432 = £54,195 net cash inflow per annum.

(d) If the cost of capital increased to 15% Project 2 would still be justified as the IRR is 16% (i.e. IRR > cost of capital). Project 3, with an IRR of 14%, would not be justified (i.e. IRR < cost of capital).

Section A

1 – 20   2 marks per question

				Marks	
1	**(a)**	safety stock		1	
		average usage x average lead time		1	
		re-order level		1	3
	(b)	weighted av prices – opening balance		$^1/_2$	
		after receipt		2	
		application – opening balance		$^1/_2$	
		after receipt		2	5
	(c)	500 kg		2	
		200 kg		2	4
					12
2	**(a)**	service cost centre Y		3	
		service cost centre X		2	
		totals		2	7
	(b)	absorption rates (1 for each)			3
	(c)	direct costs		1	
		overheads		2	
		total		1	4
					14
3	**(a)**	**(i)**	Example 1; features 3		4
		(ii)	Example 1; features 3		4
	(b)	**(i)**	units transferred	$1^1/_2$	
			closing WIP	$2^1/_2$	
			cost per unit	2	6
		(ii)	transfer value		2
		(iii)	closing WIP value:		
			process 1	$^1/_2$	
			material added	1	
			conversion costs	1	
			total	$^1/_2$	3
					19
4	**(a)**	perpetuity		2	
		NPV		1	3
	(b)	NPV at 10%/14%		2	
		IRR		4	6
	(c)	net cash inflow			3
	(d)	Project 2		$1^1/_2$	
		Project 3		$1^1/_2$	3
					15