Cambridge A Level 9706 Syllabus

ACCOUNTING

TOPICAL PAPER 4

for Cambridge 2021 and onwards Exams

Questions with Mark Scheme

2016-2021 | All variants

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Content

Topic 1

Investment Appraisal

Accounting 9706
Topical Paper 4

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1 9706/03/SP/16/Q5

Harko runs a successful retail business. His typical annual results have been as follows:

	$
Revenue	210 000
Cost of sales	115 500
Gross profit	94 500
Variable selling and administrative expenses	48 000
Fixed expenses	19 500
Profit for the year	27 000

Harko is now considering building an extension to his premises.

The following information is available:

1 The building cost would be $265 000.
2 Because of the increase in floor space he anticipates that sales volume would increase by 40%.
3 The gross profit margin would be maintained.
4 The inventory level would need to be increased by $10 000 in year 1 only.
5 The existing variable expenses would increase by 30%.
6 The business would in future have to rent garage space for the delivery vehicle at a cost of $2000 a year.
7 Harko intends to retire at the end of year 4 and sell the business as a going concern. He expects the purchase consideration for the business (including inventory) to be $600 000 without the extension or $910 000 if he proceeds with the extension.

REQUIRED

(a) Calculate the annual cash flows arising from the building of the extension.
Use the column headings:

Year 0	Year 1	Year 2	Year 3	Year 4
$	$	$	$	$

[8]

Additional information

Harko's cost of capital is 10%. Discount factors are as follows.

Year	Discount factor
0	1.000
1	0.909
2	0.826
3	0.751
4	0.683

REQUIRED

(b) Calculate the net present value (NPV) of building the extension. Round calculations to the nearest dollar ($) [8]

(c) Advise Harko whether he should proceed with the extension, based on your figures from **(b)**. [2]

(d) Outline why Harko might have doubts about proceeding with the extension, based on the NPV. [3]

(e) Explain why Harko chose to use net present value as a basis for his decision rather than the payback method. [4]

[Total: 25]

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2 9706/33/M/J/16/Q6

One of the assembly machines at Artem Limited needs to be replaced.

A replacement machine will cost $300 000, which will be paid on purchase. The replacement machine is expected to last for three years. It will need complete maintenance check-up in year 2 at a cost of $75 000.

The existing machine assembles 4000 units per year.

The number of units assembled by the replacement machine is expected to be 35% lower in year 1 than the existing machine due to the time lost during installation and testing.

In year 2 it is expected that 4500 units will be assembled and this will increase by 20% each year compared to the previous year.

The replacement machine will produce units at a cost of $24 each. From year 2 this will increase by 25% each year compared to the previous year.

The selling price will be $45 per unit. This will increase by 30% each year compared to the previous year.

The cost of capital is 14%.

The following is an extract from the present value tables for $1.

	14%
Year 1	0.877
Year 2	0.769
Year 3	0.675

It is assumed that all production will be sold.

REQUIRED

(a) Distinguish between the payback method of investment appraisal and the net present value method. [4]

(b) Calculate the expected net cash flows for **each** year for the replacement machine. [8]

(c) Calculate the payback period for the replacement machine. [2]

(d) Calculate the net present value for the replacement machine. Assume that revenues are received and costs are paid at the end of each year. [6]

(e) (i) Analyse the benefits to the business of purchasing the replacement machine. [3]

(ii) Recommend whether or not the managers of Artem Limited should purchase the replacement machine. Justify your answer. [2]

[Total: 25]

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3 9706/31/O/N/16/Q6

Alexander intends to start a new project producing either Product X or Product Y. Each product will require an additional capital cost of $50 000. Both products are expected to last 4 years.

The following information is available on Product X:

1 Sales volume in year 1 would be 10 000 units with a selling price of $7.

2 The volume would rise by 5% in year 2 and by another 5% in year 3.

3 Popularity is then expected to fall in year 4 and there would be a 20% fall in volume.

4 The selling price would not change.

5 The variable costs will be $3 per unit in year 1, will rise to $4 in year 2 and will then remain unchanged.

6 Annual fixed costs payable will be $11 000 and will remain unchanged.

REQUIRED

(a) Calculate the net cash flows for **each** year and in **total** for Product X. [8]

Additional information

Alexander's cost of capital is 10% and the discount factors are:

Year 1 0.909
Year 2 0.826
Year 3 0.751
Year 4 0.683

REQUIRED

(b) Calculate the net present value of Product X. [7]

Additional information

Alexander has carried out the same calculations for Product Y. He has calculated the net present value of Product Y as $30 400.

REQUIRED

(c) Advise Alexander which product he should make based solely on the net present value. Justify your answer. [2]

(d) State **one** advantage and **one** disadvantage of using net present value for investment appraisal. [2]

(e) Explain why Alexander may or may not use the payback method of investment appraisal. [3]

(f) State **three** non-financial factors Alexander should consider when choosing between Product X and Product Y. [3]

[Total: 25]

4 9706/33/O/N/16/Q5

N Limited is planning a new project, which has an initial cost of $225 000. If the project runs for four years the marginal revenues and costs will be as follows:

Year	Revenues	Costs
	$	$
1	100 000	31 000
2	110 000	40 000
3	125 000	59 000
4	90 000	48 000

The directors have two options.

Option 1 To stop the project at the end of year 2 when the scrap value of the project's assets will amount to $175 000.

Option 2 To continue with the project until the end of year 4 when the scrap value of the assets will be $75 000.

The company's cost of capital is 10%. Discount factors for this cost of capital are as follows:

Year	Discount factor
1	0.909
2	0.826
3	0.751
4	0.683

REQUIRED

(a) Calculate the net present value (NPV) of **each** option. [10]

(b) Advise the directors which option they should choose. Justify your answer. [2]

Additional information

Before the directors make a decision, the finance director wishes to have further data on the project.

REQUIRED

(c) Calculate, to **two** decimal places, the sensitivity of the option selected in your answer to **(b)** to changes in the initial cost of the project. [3]

(d) Calculate, to **two** decimal places, the accounting rate of return (ARR) of the option selected in your answer to **(b)**. (Add scrap value to cost when calculating average investment.) [6]

(e) Explain to the directors which is the more valid method of investment appraisal. Give reasons. [4]

[Total: 25]

5 9706/32/F/M/17/Q6

The main cutting machine of LH Limited needs to be replaced. A replacement machine will cost $260 000.

The current machine cuts 40 000 units a year. The number of units is expected to be reduced by 10% in year 1 due to the time taken to install the new machine. The number of units is expected to increase to 42 000 units a year for both year 2 and year 3.

The following information is available.

1 The cost of capital is 14%.
2 It is assumed that revenues are received and costs are paid at the end of the year.
3 Each unit of production costs $26 to manufacture. This will increase to $27.80 in year 2 and $28.50 in year 3.
4 Each unit is expected to sell for $30 in years 1 and 2, increasing by 5% in year 3.
5 It is assumed that all production is sold.

The following is an extract from the present value table for $1.

	12%	14%	16%	18%	20%
Year 1	0.893	0.877	0.863	0.847	0.833
Year 2	0.797	0.769	0.743	0.718	0.694
Year 3	0.712	0.675	0.641	0.609	0.579

REQUIRED

(a) Distinguish between the net present value method of investment appraisal and the internal rate of return. [4]

(b) Calculate the expected net present value for the replacement machine. [9]

(c) Calculate the expected internal rate of return of the replacement machine. [7]

(d) Analyse the benefits to LH Limited of purchasing the replacement machine. [5]

[Total: 25]

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6 9706/32/M/J/17/Q6

Tisha is considering buying a new machine for her factory. The machine will cost $125 000. At the end of Year 5 the machine will be sold for $65 000. The machine will be used to manufacture one of Tisha's existing products.

The following information is available:

1 The current annual sales volume of the existing product is 10 000 units. This will remain constant over the 5-year period.
2 The selling price per unit is currently $12. Tisha plans to increase this to $13 per unit to help cover her costs of the new machine.
3 The variable cost is currently $5 per unit. This is expected to fall to $3 per unit by using the new machine.
4 The maintenance cost for the new machine will increase the **annual** fixed costs by $5000.
5 At the end of Year 1, Tisha will have to pay a one-off service fee of $1000.

REQUIRED

(a) Prepare **one** table which shows the change in cash flows for **each** of the Years 0 to 5 that arise as a result of the purchase of the machine. [5]

(b) Calculate the payback period for the machine. [2]

(c) State **three** reasons why payback may be a useful investment appraisal technique. [3]

Additional information

Tisha's cost of capital is 10%. Discount factors are as follows:

Year	Discount factor
0	1.000
1	0.909
2	0.826
3	0.751
4	0.683
5	0.621

REQUIRED

(d) Calculate the Net Present Value (NPV) of buying the machine. [3]

Additional information

When using a discount factor of 20%, the machine had a **negative** NPV of $24 953.

REQUIRED

(e) Calculate the Internal Rate of Return (IRR) of the machine to **three** decimal places. [4]

Additional information

Tisha has recently discovered an alternative machine that would also be suitable for producing the same product. This also has an expected life of 5 years. Tisha has a limited amount of capital available and only needs one machine.

The following information has been calculated for the alternative machine:

Capital outlay	NPV	IRR	Payback period
$	$	%	
135 000	10 350	9.597	4 years 6 months

REQUIRED

(f) Recommend, with reasons, which machine Tisha should buy. [4]

(g) Discuss which factors, other than those you have considered in **(f)**, Tisha should consider when making her decision. [4]

[Total: 25]

7 9706/32/O/N/17/Q5

Wong Ho owns a small factory. A machine has started to break down regularly and needs to be replaced.

A replacement machine is expected to cost $55 000. It is expected to last 5 years and will be depreciated using the straight-line method of depreciation. At the end of the period the machine will be scrapped with no residual value.

The following information is available for the replacement machine:

1 The selling price for each unit produced by the machine is expected to be $40 for years 1 and 2.
This is expected to increase by 25% for year 3.
There is no expected change for year 4.
However, the selling price is expected to increase by a further 10% for year 5.

2 The cost of production for each unit produced is expected to be $20 for years 1 and 2. This will increase by 25% for year 3 and then remain unchanged.

3 The present value for the net cash flows for the years 1 to 5 have been calculated as follows:

Year	Discount factor 14%	Present value $
1	0.877	3 683.40
2	0.769	6 536.50
3	0.675	9 483.75
4	0.592	14 977.60
5	0.519	21 019.50

REQUIRED

(a) Distinguish between the payback method of investment appraisal and the net present value method. [4]

(b) Calculate the expected net present value for the replacement machine. [1]

(c) (i) Calculate the annual net cash flows for years 1 to 5 for the replacement machine. [5]

(ii) Calculate the payback period for the replacement machine. [2]

(iii) Calculate the number of units for **each** year that Wong Ho expects to produce with the replacement machine. [8]

(d) Recommend whether or not Wong Ho should purchase the replacement machine. Justify your answer. [5]

[Total: 25]

8 9706/32/IN/F/M/18/Q6

Daniyar has run a successful manufacturing business for several years.

He currently has $140 000 in the business bank account.

Daniyar is considering replacing one of his current machines with either Machine A or Machine B.

The following information is available:

	Machine A	Machine B
Cost	$210 000	$161 500
Expected life	5 years	4 years
Annual net cash inflows	?	$51 000
Payback period	2 years and 11 months	?
Net present value	?	$7412
Average rate of return	?	?

All revenue and expenditure is expected to accrue evenly throughout the life of each machine.

Annual net cash flows for each machine stay the same every year.

The cost of capital is 8%.

The discount factors are:

Year 1	0.926
Year 2	0.857
Year 3	0.794
Year 4	0.735
Year 5	0.681

The company policy is to depreciate all non-current assets over their expected life using the straight-line method. Neither machine will have any residual value.

Answer the following questions in the Question Paper. Questions are printed here for reference only.

(a) Explain the difference between the net present value and payback methods of investment appraisal. [4]

(b) Calculate:

(i) the payback period for Machine B [2]

(ii) the net present value for Machine A [8]

(iii) the average rate of return for both machines. [6]

(c) Advise Daniyar which machine he should purchase. Justify your decision. [5]

[Total: 25]

9 9706/32/IN/M/J/18/Q5

Jason is considering investing in building a property in order to receive rental income.

He could buy the land now (year 0) for $100 000. Construction costs of $180 000 would be paid in year 1.

The building would have ten flats and **each** would have an annual rental of $5000. Jason thinks that he could rent out flats as follows:

Year	Number of flats rented out
1	Nil
2	7
3	8
4	10

Total annual maintenance and management charges for the flats would cost $12 000 plus 10% of the rent received.

At the end of the year 4 he would sell the building. Jason has consulted two different property dealers, Alan and Bob. Alan estimates the building could be sold for $290 000. Bob estimates it could be sold for $315 000.

Jason's cost of capital is 10%. The discount factors to be used to account for this are as follows.

Year 1	0.909
2	0.826
3	0.751
4	0.683

All cash flows are assumed to take place on the last day of the year.

Answer the following questions in the Question Paper. Questions are printed here for reference only.

(a) (i) Calculate the net present value (NPV) of investing in the building, using Alan's estimation of the sale proceeds. [12]

(ii) Calculate the net present value (NPV) of investing in the building, using Bob's estimation of the sale proceeds. [3]

(b) Calculate the sales proceeds at the end of year 4 which would result in a net present value (NPV) of zero. [3]

(c) Advise Jason whether or not he should proceed with investing in the building. Justify your answer. [5]

(d) State **two** reasons why the calculation of the payback period is a less useful investment appraisal technique than the calculation of net present value (NPV). [2]

[Total: 25]

10 9706/31/IN/O/N/18/Q5

Marie is considering a project to produce a new product. To make it she will need to buy a new machine at a cost of $250 000 with a useful life of 4 years.

The following information is available.

1 Sales volume in units is expected to be:

Year	Units
1	20 000
2	22 000
3	23 000
4	18 000

2 The selling price will be $30 per unit and will remain unchanged.

3 The labour costs are $15 per unit. These are expected to increase by 2% in Year 3. There are no further expected changes in labour costs per unit in Year 4.

4 The material needed for each unit is 3 kilos at $2.75 per kilo. Material cost per kilo will remain unchanged.

5 The annual fixed costs are $107 500. This includes the depreciation charge for the new machine.

6 The new machine will have no residual value.

Answer the following questions in the Question Paper. Questions are printed here for reference only.

(a) Prepare a table to show the expected annual net cash flows arising from the project. [7]

Additional information

Marie's cost of capital is 10%. Discount factors are as follows.

Year	Discount factor
0	1.000
1	0.909
2	0.826
3	0.751
4	0.683

(b) Calculate the Net Present Value (NPV) of the project. [4]

(c) Calculate the Accounting Rate of Return (ARR) for the project. [3]

Additional information

Marie expects an ARR of 20% on all projects.

(d) Recommend whether or not Marie should proceed with the project. Justify your answer. [3]

(e) Calculate for Year 1 the sensitivity of the project profit:

(i) to the selling price [2]

(ii) to the material cost. [2]

(f) Explain the significance of the figures calculated in **(e)(i)** and **(ii)**. [4]

[Total: 25]