**Four Investment Appraisal Questions - Mark Scheme**

**Delrose**

1. Expected net cash flow is the money received due to the investment project, less estimated future running costs. In this case A= $6000 per year after deducting running costs.
2. A= 4yrs, B= 4yrs and 6 mths C= 3 yrs. Project C would be selected as it has the shortest payback period.
3. Advantages of using pay back are:
	1. It is a very simple calculation to make.
	2. The early obsolescence of ICT equipment means that the business may need to upgrade their systems in the short-term, hence payback period becomes an important factor.

**Hastings**

a) i.

| **Project** | **(A) Total net return** | (B) Average annual return(A / 6 yrs) | (C) ARR(B / cost of project x 100) |
| --- | --- | --- | --- |
| R&D | 8000 | 1333 | 13.9% |
| Marketing | 7000 | 1167 | 13% |
| Machinery | 4200 | 700 | 9% |

ii. The ARR selects the R&D project (but it is a marginal decision).

1. Advantages of using ARR:

* Shows the profitability of projects.
* Allows different projects to be compared.
* Allows for a comparison with other investment opportunities (eg deposit rates of interest at banks). If bank rates were comparable, then the business might choose not to go ahead with any of the projects.

**Bernard’s Bugs**

1.

| **New Shop** | **Net c/f ($)** | **Cumulative net c/f ($)** |
| --- | --- | --- |
| 0 | -200,000 | -200,000 |
| 1 | -30,000 | -230,000 |
| 2 | -2,000 | -232,000 |
| 3 | 76,000 | -156,000 |
| 4 | 96,000 | -60,000 |
| 5 | 150,000 | 90,000 |

a) Pay back period = 4 yrs 5 mths.

Calculation for months - In Yr 5 the firm needs $60,000. During that year the net inflow is estimated at $150,000.

$60,000 / $150,000 x 12 = 4.8months

Round up to nearest month = 5 months.

1. ARR = 9%

Calculation -

$90,000 total return (note, does not include cost of initial investment) / 5 yrs = $18,000 per year.

ARR = $18,000 / $200,000 (the cost of the initial investment).

ARR = 9%

Take-over Colin’s Camera’s

| **Take over Colin’s Camera’s** | **Net c/f ($)** | **Cumulative net c/f ($)** |
| --- | --- | --- |
| 0 | -70,000 | -70,000 |
| 1 | 15,000 | -55,000 |
| 2 | 18,000 | -37,000 |
| 3 | 21,000 | -16,000 |
| 4 | 24,000 | 8,000 |
| 5 | 30,000 | 38,000 |

**Pay back period = 3yrs 8mths.**

Calculation - Repayment is made in 4th year when $16,000 is needed out of $24,000 net cash flow. So calc is $16,000 / $24,000 x 12. This equals 8 months.

**ARR = 30.8%**

Calculation - Total net return = $38,000. This is divided by 5 yrs to give an annual return of $7,600.

ARR is the average annual return divided by the cost of the project (ie $70,000).

$7,600 / $70,000 x100 = 10.9%.

1. Factors influencing investment decision
2. **Quantitative factors -**

|  | **PBP** | **ARR** | **Total Return** |
| --- | --- | --- | --- |
| New Shop | 4 yrs 5 mths | 9% | $90,000 |
| Colin’s Camera’s | 3 yrs 8 mths | 10.9% | $38,000 |

**New shop.**

Negative factors - Longest PBP & Lowest ARR (marginal) of the two projects. Also cash flow deficit for first two years (could be an issue if the firm has financial problems).

Positive factors - Gives highest return after five years (almost three times as much).

**Buying Colin’s Camera’s.**

Positive factors - Shortest PBP and highest ARR (marginal). Steady flow of cash into the business throughout the period being considered.

Negative factors - Total return is less than half that expected from the new shop.

**b) Qualitative factors to consider -**

1. Colins Camera’s is already established so will have a lot of goodwill (loyal customers, reputation, experience, know-how etc).
2. Building anew shop from scratch is a major undertaking. There is a lot that could go wrong and the cost estimate may not reflect the true costs involved. Also a new shop will not have any goodwill.
3. How easy id it for Mr Jones to secure the financing required? The costs of the two projects are very different. If financing is easy, then new shop may be attractive.
4. How optimistic is Mr Jones about the future? What are his attitudes to risk? If he is very optimistic and likes to take chances, in the long run, he may favour the new shop and its large cash inflows in the later years.
5. What are the expected lifespans of the two businesses? Probably long-term, so may be PBP is less important (esp when considering huge inflows expected in later years.)
6. How accurate are the forecasts likely to be? Can Mr Jones be sure of the large inflows he estimates for the shops in Years 3-5?

**Bobby’s Milk Bar**

**Payback Period = 1 yr & 7 mths.**

Calculation - Need $1050 in year 2. Year 2 has a net revenue of $1950.

$1050 / 1950 x 12 (mths) = 6.46 mths. Round up to 7 mths.

**ARR = 32.5%.**

ARR = total net revenues ie, $3250 / 5 yrs

 = $650 per yr.

To calculate ARR, $650 / initial investment of $2000 then x100 (to get a %) = 32.5%

**Should he invest?**

**Arguments for yes -**

Short payback and what appears to be a high ARR (more than 3 times that offered by banks for money on deposit).

Durable machine, so long lifespan - the new machine might last twice as long as expected. This would continue to bring extra profits for many years after the initial investment has been paid off.

Mr Angelo likes taking risks, so a relatively small investment like this should be no obstacle to him.

The business has no financial worries, so finding the relatively small sum of $2000 should not be too difficult.

Investing in latest equipment may be good for the image of the cafe. Allows high standards to continue and indicates that the business is successful.

A good decision if there is a growing demand for high quality coffee.

**Arguments for no -**

Mr Angelo may not have the $2000 investment capital required. Banks may be reluctant to lend if he is a sole trader who has not been in the business very long (no info given for this in question).

15% interest at the bank is guaranteed. This might be attractive if inflation rates are much lower as there is no risk to the capital.

Mr Angelo might have another project coming up that might make better use of the $2000.

External factors might make the investment less attractive eg a medical report that shows a link between drinking coffee and hair loss!