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PAST EXAMINATION PAST PAPERS WITH SUGGESTED ANSWERS

Updated With August 2025 Past Paper with Answers

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PAST PAPERS QUESTIONS

TOPIC 1

ADVANCED CAPITAL BUDGETING DECISION

QUESTION 1

August 2025 Question One A and B

(a) Highlight **FOUR** reasons for soft capital rationing in a firm. (4 marks)

(b) Ushindi Ltd. is considering the following projects:

Project	Initial outlay Sh.“million”	Annual revenue Sh.“million”	Annual fixed costs Sh.“million”	Project life (Years)
A	100	200	50	3
B	300	300	100	5
C	150	180	60	4
D	120	170	80	10
E	180	80	20	15

Additional information:

1. Variable costs are 40% of annual revenue.
2. Each project is divisible.
3. Projects D and E are mutually exclusive.
4. Cash flows are confined within the lifetime of each project.
5. Cost of capital is 10%.
6. Ignore taxation and depreciation.
7. The company has a capital limitation of Sh.400 million for investment.
8. All cash flows occur at anniversary dates.

Required:

(i) Optional allocation of the available capital to the projects. (8 marks)

(ii) Maximum resultant Net Present Value (NPV) from the optimal allocation. (4 marks)

QUESTION 2

August 2025 Question Three D

Reno Limited is engaged in plastics manufacture. It is now considering a new investment that would involve diversification into chemical manufacturing, where the business risk is very different from the plastic manufacturing industry.

Research has produced the following information about three companies currently engaged in chemicals manufacturing, in the same part of the industry that Reno Limited is planning to invest.

Company	Equity beta	Financed by:
X	1.33	40% equity capital, 60% debt capital
Y	0.78	75% equity capital, 25% debt capital
Z	0.725	80% equity capital, 20% debt capital

Additional information:

1. Reno Limited is financed by 60% equity capital and 40% debt capital and would intend to maintain this same capital structure if the new capital investment is undertaken.
2. The risk free rate of return is 5% and the return on the market portfolio is 9%.
3. The corporation tax is at the rate of 30%.
4. Assume that the debt capital of Reno Limited and companies X, Y and Z is risk free.

Required:

(i) Calculate a suitable cost of equity for the proposed investment by Reno Limited in chemicals manufacturing. (4 marks)

(ii) Suggest a weighted average cost of capital (WACC) that should be used to carryout an investment appraisal (Net Present Value calculation) of the proposed project. (2 marks)

QUESTION 3

April 2025 Question One B

As the finance manager of Popo Ltd., the Board has approached you to evaluate the proposed acquisition of new machinery. The purchase price of the machinery is Sh.100 million. It will cost another Sh.20 million to modify it for special use. The machine will be sold after 5 years for Sh.40 million and it will require an increase in net operating working capital (NOWC) of Sh.8 million.

Additional information:

1. The purchase of the new machine will not have any effect on revenues but it is expected to save the company Sh.45 million per year before tax operating costs mainly labour.
2. The corporate tax rate is 30%.
3. The company uses the straight line method of depreciation.
4. The project cost of capital is 12%.

Required:

(i) Using the net present value (NPV) method, evaluate whether the machinery should be purchased. (5 marks)

(ii) Assume the Board suggests that you conduct a scenario analysis for this project because of the uncertainties of cost savings, salvage value and net operating working capital. After an extensive analysis, you come up with the following probabilities and the values for the scenario analysis:

Scenario	Probability	Before tax savings Sh.“million”	Salvage value Sh.“million”	Net operating working capital (NOWC) Sh.“million”
Worst case	0.30	36	32	6.4
Base case	0.40	45	40	8.0
Best case	0.30	54	48	9.6

Required:

The project’s expected net present values (ENPV). (6 marks)

(iii) Analyse **THREE** common pitfalls that could arise in estimating cash flows in capital budgeting. (3 marks)

QUESTION 4

December 2024 Question One C

The directors of Jasiri Ltd. wishes to identify the optimum replacement cycle that will minimise the cost of operating its fleet of vehicles.

The relevant data is as follows:

Age of vehicles (years)	0 Sh.“000”	1 Sh.“000”	2 Sh.“000”	3 Sh.“000”	4 Sh.“000”
Replacement cost	7,000	-	-	-	-
Annual operating and maintenance cost		500	750	1,000	2,000
Residual value at the end of the year		4,750	3,500	3,000	2,250

Additional information:

1. The company’s cost of capital is 10%.
2. Ignore taxation.

Required:

Using the annual equivalent cost (AEC) technique, advise Jasiri Ltd. on the best time to replace the vehicles. (11 marks)

QUESTION 5

August 2024 Question One B

A company is considering two mutually exclusive projects namely; project A and project B. The company uses the certainty equivalent approach to evaluate capital projects. The estimated cash flows and certainty equivalents for each project are as follows:

Year	Project A		Project B	
	Cash flows Sh."000"	Certainty equivalents Sh."000"	Cash flows Sh."000"	Certainty equivalents Sh."000"
0	(45,000)	1.00	(60,000)	1.00
1	22,500	0.85	37,500	0.80
2	22,500	0.80	30,000	0.70
3	15,000	0.75	22,500	0.60
4	15,000	0.60	15,000	0.50

The risk free rate is 5%.

Required:

Advise the company on which project to undertake using the certainty equivalent method.

(6 marks)

QUESTION 6

April 2024 Question One A and C

(a) Summarise **FOUR** causes of hard capital rationing as used in capital budgeting.

(4 marks)

(c) Kangaro Youth Sports Ltd. wishes to design a new sports bicycle. The company will have to invest Sh.100 million at the beginning of the first year for the design and model testing of the new bicycle.

The firm's managers believe that there is an 80% probability that this phase will be successful and the project will continue.

If Phase 1 is not successful, the project will be abandoned with zero salvage value.

The next phase, if undertaken, would consist of making the molds and producing twenty prototype bicycles. This would cost Sh.400 million at the end of the first year.

If this phase is successful, the firm would go into full scale production. If the phase is not successful, the molds and prototypes could be sold for Sh.150 million. The managers estimate that the probability that the bicycles will pass the test is 90% and that Phase 3 will be undertaken.

Phase 3 consists of changing over current production line to produce the new design. This would cost Sh.1,100 million in year 2.

If the economy is strong at this point, the net value of cash flows would be Sh.3,500 million, while if the economy is weak the net value of cash inflows would be

PART B:

SUGGESTED

ANSWERS AND SOLUTION

TOPIC 1

ADVANCED CAPITAL BUDGETING DECISION

QUESTION 1

August 2025 Question One A and B

(a) **Reasons for soft capital rationing in a firm.**

- Investment capital maybe limited internally because a company does not want to take on a commitment to increase fixed interest payments, for example, if it expects future profitability to be poor.
- A company may wish to avoid diluting existing earnings per share (EPS) or changing existing patterns of ownership and control by issuing new equity.
- A company may limit investment funds because in wishes to pursue controlled growth rather than rapid growth.
- Given the uncertainty associated with forecasting future cashflows

(b) Ushindi Ltd.

(i) **Optional allocation of the available capital to the projects.**

Optimal allocation of Ksh. 400M available in time 0

The Sh. 400 million in time (0) is not enough to undertake all the projects to the point of completion, therefore we need to evaluate the projects and rank them in the order of importance using profitability index (PI)

Net cashflows = EBDT(1 – t) + DTS (Depr × T)

		Sh. "million"				
	Projects	**A**	**B**	**C**	**D**	**E**
	Annual sales revenue	200	300	180	170	80
	Less Annual variable costs					
	@40% × ASR	(80)	(120)	(72)	(68)	(32)
	Annual contribution	120	180	108	102	48
	Annual fixed costs	(50)	(100)	(60)	(80)	(20)
A	Annual EBDT	70	80	48	22	28

Annual net cashflows

	$PVIFA_{10\%}$	3	5	4	10	15
B	$PVIFA_{10\%n}$	2.4869	3.7908	3.1699	6.1446	7.6061
	PVCIF = A × B	174.083	303.264	152.1552	135.1812	212.9708
	PVCOF = 1_o	(100.00)	(300.000)	(150.000)	(120.000)	(180.000)
	NPV	74.083	3.264	2.1552	15.1812	32.9708

	Project			Rank
PI = $\frac{PVCIF}{PVCOF}$	A =	$\frac{174.083}{100}$	= 1.74083	1
	B =	$\frac{303.264}{300}$	= 1.01088	4
	C =	$\frac{152.1552}{150}$	= 1.014368	3
	D =	$\frac{135.1812}{120}$	= 1.12651	-
	E =	$\frac{212.9708}{180}$	= 1.183171111	2

Optimal allocation of Sh. 400 million

		Outlay	Cumulative
Invest in project A	100%	= 100	100
Invest in project E	100%	= 180	280
Balance 400 – 280 = $\frac{120}{150} \times 100\%$	80%	= 120	400

(ii) Maximum resultant NPV from the optimal allocation.

	NPV
Project A	74.083
Project E	32.9708
Project C = 0.8 × 2.1552	1.72416
Overall resultant NPV	108.77796

QUESTION 2

August 2025 Question Three D

Reno Limited Diversify to chemical

The first step is to use the equity betas of the three chemical manufacturing companies (proxy companies) to estimate an asset beta for the business risk in chemical manufacturing.

Company		Estimated Asset Betas
X	$\beta A = \beta E \times \frac{E}{E+D(1-t)}$ $1.33 \times \frac{40}{40+60 \times 0.7}$	= 0.64879
Y	$\beta A = 0.78 \times \frac{75}{75 +25 \times 0.7}$	= 0.632432
Z	$\beta A = 0.725 \times \frac{80}{80 +20 \times 0.7}$	= 0.61702126

It is assumed that the asset Beta is a simple average of these three values of companies X, Y and Z

$$\beta A = \frac{0.64878 + 0.632432 + 0.61}{3} = \frac{1.898233}{3} = 0.6327$$

$$\text{Recall from } \beta A = \beta E \times \left[\frac{E}{E+D\ (1-t)}\right]$$

$$0.6327 = \beta E \times \frac{60}{60+40\ (1-0.3)}$$

$$0.6327 = \frac{60\beta E}{88}$$

$$\beta E = 0.6327 \times \frac{88}{60} = 0.92796$$

(i) Suitable cost of equity for the proposed investment by Reno Limited in chemicals manufacturing.

If an appropriate equity beta for Reno in chemical manufacturing is 0.92792, the cost of equity (using CAPM) is:

$$K_e = \text{Rf} + (ER_m - R_f)\beta e$$

$$Ke = 5\% + ((9\% - 5\%)\ 0.92796$$

$$= 8.71184\%$$

(ii) Weighted average cost of capital (WACC)

$$\text{WACC} = W_e K_e + W_d K_d\ (1 - t)$$

$$= 0.6 \times 8.71184\% + 0.4 \times 5\% \times (1 - 0.3)$$

$$\text{WACC} = 6.627\%$$

QUESTION 3

April 2025 Question One B

(i) **Evaluating whether the machinery should be purchased using NPV**

Initial outlay	**Sh."million"**
Purchase price	100
Add: incidental costs	20
Increase in NOWC	8
	128

$CB_D Tax$	45
Less Depr: $\frac{120-40}{5} = \frac{80}{5}$	(16)
CBT	29
Less tax @ 30% × 29	(8.7)
CAT	20.3
Add back depreciation	16.0
Annual cashflows	36.3

NPV = PVCIF – PVCOF

= (36.3 × $PVIFA_{12\%5}$) + (48 × $PVIF_{12\%5}$) - 128m

(36.3m × 3.6048) + (48m × 0.5674) – 128m

130.3m × 27.2352 – 128m

NPV = 158.08944m – 128m = Sh. 30,08944

Buy the machine since NPV is positive

(ii) **The project's expected net present values (ENPV).**

Total initial cost **Sh."million"**

	Worst	Best
Price	100	100
Initial cost	20	20
Add NOWC	6.4	9.6
	126.4	129.6

Total terminal cashflows

	Worst	**Best**
NOWC	6.4	9.6
Salvage value	32	48
Total terminal cashflow	38.4	57.6

Annual depreciation

Worst case = $\frac{120-32}{5}$ = 17.6

Best case = $\frac{120-48}{5}$ = 14.4

DTS

Worst case = 17.6 × 0.3 = 5.28

Best case = 14.4 × 0.3 = 4.32

Estimation of NCF	**Sh.“million”**	
	Worst case	**Best case**
EBDT	36	54
Less tax @ 30%	(10.8)	(16.2)
EBDAT	25.2	37.8
Add: DTS	5.28	4.32
NCF	30.48	42.12

NPV

Worst case

= (30.48×3.6048) + (38.4×0.5674)

PVCIF	131.662464
PVCOF	(126.4)
NPV	5.262464

Best case

= (42.12 × 3.6048) + (57.6 × 0.5674)

PVCIF	184.516416
PVCOF	(129.60)
NPV	54.92

Case	P_i	**NPV**	
Worst	0.30	5.26	1.578
Base	0.40	30.09	12.036