

KISII UNIVERSITY
SCHOOL OF PURE AND APPLIED SCIENCES
DEPARTMENT OF MATHEMATICS AND ACTUARIAL SCIENCES
BACHELOR OF ACTUARIAL SCIENCE
COURSE CODE: BACS 402: PRINCIPLES OF FINACIAL MANAGEMENT
FINAL EXAM SEPTEMBER 2020

***INSTRUCTIONS:* Answer question one and any other 2 questions in section B**

SECTION A (30 MARKS)

QUESTION ONE (30 MARKS)

- a) S is a holding company that has two subsidiaries, T and U. During the year, S made sales of £1.0m, including sales of £0.2m to T. T made sales of £2.0m, including sales of £0.3m to U. U made sales of £4.0m including sales of £0.6m to S.
- i) Calculate the group sales for the income statement (2mks)
- b) Explain three different types of agency conflicts which can arise between stakeholders of a company. (6mks)
- c) The following information is from XYZ limited:
- current assets: 19,000
 - current liabilities: 17,000
 - inventories :11,000
 - inventories last year: 12,000
 - long-term debt :9,000

- revenue :25,000
- cost of sales :7,000
- distribution costs: 3,000
- administrative expenses: 2,500
- net asset value :80,000

Use the information to calculate:

- i) The current ratio (2mks)
 - ii) The capital gearing ratio (2mks)
 - iii) The quick ratio (2mks)
 - iv) The stock turnover period using average levels of inventory over the year (2mks)
 - v) The operating profit margin (2mks)
 - vi) The return on capital employed (2mks)
- d) A market consists of three securities *A*, *B* and *C* with capitalizations of £22bn, £33bn and £22bn respectively. Annual returns on the three shares (*RA*, *RB* and *RC*) have the following characteristics:

Asset	Standard <i>deviation</i>
A	40%
B	20%
C	10%

The expected rate of return on the market portfolio is 22.86% p.a. The correlation between the returns on each pair of distinct securities is 0.5. The risk-free rate of return is 3.077% p.a. No adjustments to an investor's portfolio are possible within the year.

- i. Prove that the expected returns on *A*, *B* and *C* are 40%, 20% and 10% respectively if the CAPM is assumed to hold. (10mks)

SECTION B

QUESTION TWO (20 MARKS)

- a) Define different types of capital project appraisal (4mks)
- b) The following details were acquired from ABC limited:
 - Sales :200
 - Inventories at the beginning of the year :30
 - Inventories at the end of the year :20
 - Purchases :130
 - Administrative expenses :15
 - Trade receivables :40
 - Prepayments :3
 - Cash :17
 - Bank overdraft :12
 - Accruals:2

- i) The average stock turnover period of ABC Ltd in days (2mks)
- ii) ABC Ltd's current ratio (2mks)
- iii) Assume that company ABC Ltd has in issue 200,000 ordinary shares of 50p each. During the year, it paid a dividend of 4.5p. Calculate ABC Ltd's dividend cover. (Ignore taxation.) (2mks)
- c) Discuss different methods of financing benefits provided in a contract (4mks)
- d) The external auditor's report for company Z Ltd consists of a disclaimer of opinion.
 - i) Explain what is meant by such an audit report. (3mks)
 - ii) Describe the circumstances for which it might be appropriate. (3mks)

QUESTION THREE (20 MARKS)

- a) Differentiate between pension schemes and investment schemes (4mks)
- b) An investor deposits £2,000 and then withdraws level annual payments starting one year after the deposit was made. Immediately after the 11th annual drawing, the investor has £400 left in the account. Calculate the amount of each withdrawal, given that the annual rate of interest is 8%. (4mks)
- c) Calculate the present value of an annuity payable annually in advance for a term of 20 years such that the payment is £500 in year 1, £550 in year 2, £600 in year 3 etc. Assume a rate of interest of 5% *pa* for the first twelve years and 7% *pa* thereafter. (4mks)
- d) A market consists of three assets A, B and C. Annual returns on the three assets (R_A, R_B and R_C) have the following characteristics:

Asset	Expected return %	Standard deviation %
A	9	20
B	6	20
C	3	10

The correlation between the returns are as follows: $Corr (R_A, R_B) = -1/4, Corr (R_B, R_C) = -1/2$ and $Corr (R_A, R_C) = -1/2$.

- (i) Calculate the variance of the returns of each asset and the covariance's between the returns of each pair of assets. (8mks)

QUESTION FOUR (20 MARKS)

State	A	B	C	D	Probability of state
1	5%	5%	5%	2%	0.3
2	4%	7%	5%	6%	0.2
3	7%	3%	5%	9%	0.5
Value of assets	10000	20000	n/a	10000	

- a) The table above gives the returns on all four assets in an investment market under the three possible states of the world.
 - (i) Calculate the market price of risk using CAPM (5mks)

- b) Calculate the combined present value of an immediate annuity payable monthly in arrears such that payments are £1,000 *pa* for the first 6 years and £400 *pa* for the next 4 years, together with a lump sum of £2,000 at the end of the 10 years. (5mks)
- c) Explain 5 different types of dividend policies (5mks)
- d) Securities with the properties in the table below are available to an investor. The statistics in the table refer to the next year.

Assets	A	B
Expected return	4%	3%
Variance of return	16% %	4% %
Correlation coefficient	$\rho_{AB} = 1$	

The investor combines the securities to form a portfolio.

- (i) Calculate the relative amount which should be invested in each security to give a portfolio with the minimum possible variance. (5mks)

QUESTION FIVE (20 MARKS)

- a) Assuming a rate of interest of 6% *pa*, calculate the present value as at 1 January 2008 of the following annuities, each with a term of 25 years:
- (i) An annuity payable annually in advance from 1 January 2009, initially of £3,000 *pa*, and increasing by £500 *pa* on each subsequent 1 January (3mks)
- (ii) An annuity as in (i), but only 10 increases are to be made, the annuity then remaining level for the remainder of the term. (3mks)
- b) An investor is to receive a special annual annuity for a term of 10 years in which payments are increased by 5% compound each year to allow for inflation. The first payment is to be £1,000 on 1 November 2009. Calculate the accumulated value of the annuity payments as at 31 October 2026 if the investor achieves an effective rate of return of 4% per half year. (4mks)
- c) Coca cola company Ltd makes cash payments of Sh.100,000 per week. The interest rate on marketable securities is 6% and every time the company sells marketable securities, it incurs a cost of Sh.450. It has set the minimum cash balance to be equal to Sh.250,000 and the standard deviation of daily cash flows is Sh.25,000. The transaction cost for each sale or purchase of securities is Sh.2,500. Use either Baumol's model or Miller-Orr model where necessary to calculate:
- (i) Determine the optimal cash amount of securities to be converted into cash every time the company makes a transfer. (2mks)
- (ii) Determine the number of transfers from marketable securities to cash per year. (2mks)
- (iii) Determine the total cost of maintaining the cash balance per year. (2mks)
- (iv) Calculate the target cash balance and calculate the spread. (2mks)
- (v) Calculate the upper limit and average cash balance. (2mks)