



**TECHNICAL UNIVERSITY OF MOMBASA  
SCHOOL OF BUSINESS**

DEPARTMENT OF MANAGEMENT SCIENCE

UNIVERSITY EXAMINATIONS 2016/2017

FIRST YEAR FIRST SEMESTER EXAMINATIONS FOR BACHELOR OF  
SCIENCE IN MARITIME MANAGEMENT

**BMS 4103: MANAGEMENT MATHEMATICS**

END OF SEMESTER EXAMINATIONS

**SERIES: DECEMBER 2016**

**TIME: 2 HOURS**

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**INSTRUCTIONS:**

1. Answer Question **ONE (Compulsory)** and any other **TWO** questions.
2. Question one carries 30 marks
3. Other questions carry 20 marks each.
4. Marks will be awarded to students who demonstrate accuracy and clarity of presentation.
5. Calculators are allowed in the examination room.

### QUESTION 1 (COMPULSORY)

- a) State the meaning of the following terms. (6 marks)
- Proportion
  - Hire purchase
  - Time rate
- b) Solve  $145.785482 \times 0.12368$  (2 decimal places) by contracted multiplication. (9 marks)
- c) Find the cost of 480 items at Sh.267.50 per item by compound practice (3 marks)
- d) A banker pays Sh.12, 000 for a bill of Sh.13, 500 which has 60 days to run. Calculate;
- Banker's discount rate (3 marks)
  - True rate of discount (3 marks)
- e) Using the short cuts solve the following;
- $585674 \times 11$  (2 marks)
  - $68 \times 62$  (2 marks)
  - $2250 \div 75$  (2 marks)

### QUESTION 2

- a) Solve  $5^{2x} = 3^{x+1}$  (5 marks)
- b) A wholesaler allows 25% trade discount to his retailers and  $7\frac{1}{2}\%$  cash discount for prompt payment. If a retailer pays Sh. 11,100 having taken advantage of trade and cash discounts, what was the original value of goods bought? (5 marks)
- c) John bought furniture worth Sh. 12,000 on hire purchase terms. He paid initial deposit of 20%. An interest of  $12\frac{1}{2}\%$  per annum was charged on the outstanding balance for the period of repayment. The balance plus interest was to be paid in 12 equal monthly installments.
- Calculate John's monthly payment (4 marks)
  - If John paid initial deposit of 45% with the rate of interest being 10% and the repayment period remaining the same, how much would he have saved in total and per month in (i) above (6 marks)

### QUESTION 3

- a) The assets of a bankrupt person were realized for Sh. 25,000 and his liabilities were Sh. 375,000. Calculate;
- Dividend (3 marks)
  - How much will a creditor for Sh. 50,000 receive? (3 marks)
- b) A lump sum of money is invested at a rate of 10% per year compounded quarterly. How long will it take the investment to double? (6 marks)
- c) Mary borrowed a sum of money at 12% simple interest per annum. After 5 years she repaid Sh. 128,000. Calculate the sum of money borrowed. (6 marks)
- d) Distinguish between an integral number and an abstract number (2 marks)

### QUESTION 4

- a) A man deposited sh. 20,000 in a savings account for 3 years at a simple interest rate of 12.5% per annum. How much money would he have lost if he had deposited the same amount for 2 years in a fixed deposit account where the money was compounded at 16% per annum? (9 marks)
- b) A company issues debentures at  $97\frac{1}{2}$ . Find nominal value of debentures bought for Sh. 39,000 (5 marks)
- c) Provide an explanation for the various methods of calculating wages (6 marks)

### QUESTION 5

- a) Determine the present value of a series of 8 annual payments of Sh. 30,000 each, the first of which begins one year from today. Assume an interest rate of 6% compounded annually (6 marks)
- b) Find  $\sqrt{41,209}$  using the division method (6 marks)
- c) Write short notes on the following
- i. Types of fractions (4 marks)
  - ii. Types of discounts (4 marks)