Riara School of Business

Nurturing business innovators

SEPTEMBER – DECEMBER 2022 TRIMESTER

EXAMINATION FOR BACHELOR OF BUSINESS ADMINISTRATION

DAY PROGRAMME

RPM 001 & RCM 003: PRE-CALCULUS MATHEMATICS & BASIC BUSINESS MATHEMATICS

DATE: **3RD DECEMBER 2022** **TIME:** **2 HOURS**

SPECIAL INSTRUCTIONS

1. Write your REGISTRATION NO. Clearly on the answer booklet(s).
2. Answer Question One and ANY other TWO questions.
3. Questions in all sections should be answered in answer booklet(s).
4. PLEASE start the answer to EACH question on a NEW PAGE.
5. For the questions, write the number of the question on the answer booklet(s) in the order you answered.
6. Write on both sides of each leaf and indicate number of each question at the top of each page.
7. Write the answers in paragraph form unless stated otherwise.
8. Marks allocated to each question are shown at the end of the question.
9. All rough work must be done on the answer booklet and crossed through!
10. Use supplementary pages only when you have exhausted those in this booklet.

11. Fasten the supplementary pages to the inside back cover of this booklet.

12. are only allowed to leave the examination room 30minutes to the end of the Examination.

QUESTION ONE: COMPULSORY (30 MARKS)

a) Simplify: **(6 Marks)**

$$i). \quad \frac{x}{2} - \frac{2y}{10} + \frac{z}{4}$$

$$ii). \quad \frac{24x+6}{3(4x+1)}$$

b) Solve the equations: **(8 Marks)**

i). $5(x - 3) = 2(x + 6)$

$ii). \quad \frac{1}{2}(3m + 5) + 1\frac{1}{2}(2m - 1) = 5\frac{1}{2}$

c) Miriam and Saloma are twins and their sister Rohana is 2 years older than them. The total of their ages is 32 years.

i). Write this information in the form of an equation for r, Rohana's age in years. **(3 Marks)**

ii). What are the ages of the three girls? **(2 Marks)**

d) Yash can buy three pencils and have 49c change, or he can buy five pencils and have 15c change.

i). Write this information as an equation for x, the cost in cents of one pencil. **(4 Marks)**

ii). How much money did Yash have to start with? **(3 Marks)**

e) Make h the subject in $A = 2\pi rh + 2\pi r^2$. **(4 Marks)**

QUESTION TWO

a) Solve the following equations: **(6 Marks)**

i). $x^4 - 5x^2 + 4 = 0$

ii). $4x^4 - 25x^2 + 36 = 0$

b) The length of a rectangular field is 30 m greater than its width, w metres.

i). Write down an expression for the area A m^2 of the field, in terms of w. **(3 Marks)**

ii). The area of the field is 8800 m^2. Find its width and perimeter. **(5 Marks)**

c) Solve the following pair of simultaneous equations: **(6 Marks)**

$x + 4y = 16$

$3x + 5y = 20$

QUESTION THREE

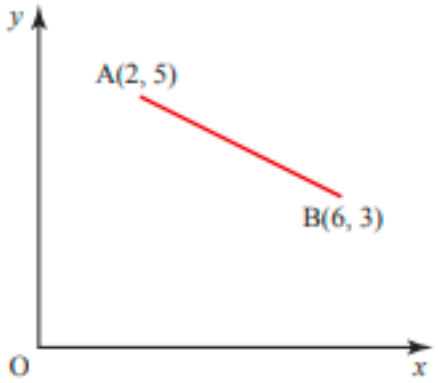
a) A student wishes to spend exactly Kshs. 100 at a second-hand bookshop. All the paperbacks are one price, all the hardbacks another. She can buy five paperbacks and eight hardbacks. Alternatively she can buy ten paperbacks and six hardbacks.

(8 Marks)

i). Write this information as a pair of simultaneous equations.

ii). Solve your equations to find the cost of each type of book.

b) In the given figure, A and B are the points (2, 5) and (6, 3) respectively.



Find:

i). the gradient of AB

ii). the length of AB

iii). the mid-point of AB

iv). the gradient of a line perpendicular to AB

(8 Marks)

c) The line joining the point P(3, −4) to Q(q, 0) has a gradient of 2. Find the value of q.

(4 Marks)

QUESTION FOUR

a) Find the equation of the line with gradient 3 which passes through the point $(2, -4)$.

(4 Marks)

b) Find the equation of the line joining (2, 4) to (5, 3). **(4 Marks)**

c) A median of a triangle is a line joining one of the vertices to the mid-point of the opposite side. In a triangle OAB, O is at the origin, A is the point (0, 6) and B is the point (6, 0).

i). Sketch the triangle. **(4 Marks)**

ii). Find the equations of the three medians of the triangle. **(4 Marks)**

iii). Show that the point (2, 2) lies on all three medians. **(4 Marks)**

END