

AGA KHAN UNIVERSITY EXAMINATION BOARD

HIGHER SECONDARY SCHOOL CERTIFICATE

CLASS XI EXAMINATION

APRIL/ MAY 2018

Business Mathematics Paper II

Time: 1 hour 30 minutes Marks: 30

INSTRUCTIONS

Please read the following instructions carefully.

1. Check your name and school information. Sign if it is accurate.

**I agree that this is my name and school.
Candidate's signature**

2. RUBRIC. There are SIX questions. Answer ALL questions. Choices are specified inside the paper.
3. When answering the questions:

Read each question carefully.
Use a black pointer to write your answers. DO NOT write your answers in pencil.
Use a black pencil for diagrams. DO NOT use coloured pencils.
DO NOT use staples, paper clips, glue, correcting fluid or ink erasers.
Complete your answer in the allocated space only. DO NOT write outside the answer box.
4. The marks for the questions are shown in brackets ().
5. You may use a scientific calculator if you wish.

Q.1. (Total 5 Marks)

A man bought two trucks for Rs 8,000,000 each. He sells one of these trucks at a loss of 20% and the other truck at a profit of 25%.

Find the

a. selling price of each truck. (3 Marks)

b. total profit he made from selling the two trucks. (1 Mark)

c. percentage profit he made from selling the two trucks. (1 Mark)

(ATTEMPT EITHER PART a OR PART b OF Q.2.)

Q.2.

(Total 5 Marks)

a.

- i. Neha obtained a loan of Rs 700,000 from a financial institute at a simple interest rate of $Z\%$ per annum. After five years, she made a payment of Rs 980,000 to repay the loan, including the interest. Find the value of Z . **(3 Marks)**

- ii. Tabinda deposited Rs 500,000 in a saving scheme at a simple interest rate of 9.5% per annum. Find the accumulated amount Tabinda will get after 10 years. **(2 Marks)**

- b. Saad deposits Rs 400,000 in his savings account at a bank. The account earns 4% interest per year, compounded semi-annually. What will be the accumulated amount in his account after 8 years? **(5 Marks)**

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(ATTEMPT EITHER PART a OR PART b OF Q.3.)

Q.3. (Total 5 Marks)

a.

- i. Convert the decimal number 28,789 into an octonary number. Show your working. (3 Marks)

- ii. Multiply the binary numbers 1011 and 10. Show your working. (2 Marks)

(ATTEMPT EITHER PART a OR PART b OF Q.3.)

b.

i. Add $(1324)_5$ to $(4414)_5$.

(2 Marks)

ii. Convert $(232)_5$ into a binary number.

(3 Marks)

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(ATTEMPT EITHER PART a OR PART b OF Q.4.)

Q.4. (Total 5 Marks)

a.

- i. For a set $A = \{10, 20, 30\}$, determine whether the following are a binary relation or a function from A to A .

I. $\{(10, 10), (10, 20), (10, 30)\}$ (1 Mark)

II. $\{(10, 20), (20, 10), (30, 30)\}$ (1 Mark)

- ii. For the parabola $y = (x - 3)^2 + 1$, find the

I. y-intercept. (1 Mark)

II. vertex. (1 Mark)

III. direction (concavity). (1 Mark)

(ATTEMPT EITHER PART a OR PART b OF Q.4.)

b.

- i. Find the equation of a line that passes through the points (3, 5) and (4, 1). Express your answer in the form $ax + by + c = 0$. (3 Marks)

- ii. The end points of the diameter of a circle lie on the points (5, 2) and (– 5, 2). Find the centre and radius of the circle. (2 Marks)

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Q.5. (Total 5 Marks)

The area of a rectangle is 50 cm^2 . Its length is 5 cm more than its breadth. Find the length and breadth of the rectangle.

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Q.6.

(Total 5 Marks)

- a. Find the values of p and q from the given matrix equation.

$$3 \begin{bmatrix} 2 & p \\ 1 & 5 \end{bmatrix} + \begin{bmatrix} 1 & 2 \\ 3 & 0 \end{bmatrix} = \begin{bmatrix} 7 & 2 \\ q & 15 \end{bmatrix} \quad (3 \text{ Marks})$$

- b. Without using calculator, find $\begin{bmatrix} 1 & 3 & 2 \\ 5 & 1 & 0 \end{bmatrix} \times \begin{bmatrix} 0 & 5 \\ 1 & 2 \\ 5 & 0 \end{bmatrix}$. Also state the reason why these two matrices are conformable for multiplication. (2 Marks)

END OF PAPER

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