

ALGEBRA

1964

100 Marks. Time—An hour and a half.

All questions to be answered.

1. (a) Simplify: $[6x(x-1) + (x-6)] \div (3x+2)$.
(b) If $a^2 = b^2 + 1$, show that the product of these four expressions: $a+b$, $b-a$, $a-b$, $a+b$, is equal to -1 .

[16 marks.]

2. (a) By how much does $5x^2 - 2(x+3)$ exceed $3(x^2 - 2) + 2$?
(b) What must be added to $3x^3 - 8x^2 + 10x$ to make it divisible by $3x - 2$?

[16 marks.]

3. (a) A motor-car travels at x miles per hour. How many feet does it do in y seconds?
(b) If b is the average of a and c , find the value of c in terms of a , b .
(c) If 1 gram = 0.0352 ounces, how many pounds in m kilograms?

[17 marks.]

4. A fish is divided in three portions, the head, the middle, and the tail. The head weighs $\frac{2}{9}$ of the middle piece, the tail is $\frac{1}{2}$ lb. less than the head, and 4 lbs. less than the middle. What is the weight of the fish?

[17 marks.]

5. (a) Factorize $9bc - 4ad + 6ac - 6bd$.

- (b) What value of x will make

$$\frac{x^2 - x - 2}{x - 2} + \frac{2x^2 - x - 1}{x - 1} \text{ equal to } \frac{16x^2 - 9}{4x + 3} ?$$

[17 marks.]

6. (a) The length of a rectangular plot exceeds its breadth by 10 feet. If the length is increased by 2 feet and the breadth decreased by 2 feet, what is the change in the area of the plot?

(b) The perimeter of a rectangular plot is 29 feet. If its length is $2(x+1)$ feet and its breadth is $\frac{x-1}{2}$ feet, find the area.

[17 marks]