

FOUNDATION DIPLOMA/CERTIFICATE
Assignment I (02/03)

Module Title : Foundation Mathematics
Module Code : CMV6111
Hand out : Week 14
Hand in : Week 16

Section A Multiple Choice (20 marks)

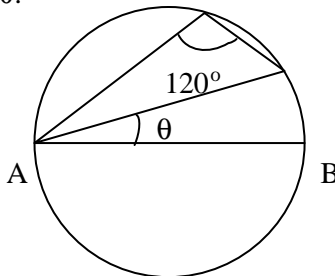
Answer ALL questions in this section.. Each question carries 4 marks.

1. If $\frac{5x+2y}{x+2y} = 3$, express x in terms of y .

- a. $x = 2y$
- b. $x = -2y$
- c. $x = 3y$
- d. $x = -3y$

2. In the figure, AB is a diameter. Find θ .

- A. 20°
- B. 30°
- C. 40°
- D. 60°



3. $a^4 - y^4 =$

- A. $(a+y)(a-y)(a^2 - y^2)$
- B. $(a-y)(a+y)(a^2 + y^2)$
- C. $(a+2y)(a-2y)(a^2 - y^2)$
- D. $(a^2 + y^2)(a^2 - 2ay - y^2)$

4. $x^2 - 3x - 18$ equals

- A. $(x+2)(x-9)$
- B. $(x-2)(x+9)$
- C. $(x+3)(x-6)$
- D. $(x-3)(x+6)$

5. If $a : b = 2 : 3$ and $c : a = 3 : 1$, then $a : b : c$ equals

- A. 2:3:1
- B. 3:3:1
- C. 6:3:2
- D. 2:3:6

Section B Short Questions

(40 marks)

Answer ALL questions in this section. Each question carries 10 marks.

6. (a) Factorize $x^2 - 9x - 36$. (4 marks)
(b) Hence, factorize $y^4 - 9y^2 - 36$. (6 marks)

7. Solve the simultaneous equations:

$$\begin{cases} 2x - y = 5 \\ x^2 + xy = 2 \end{cases}$$

(10 marks)

8. In figure 1, AB is a diameter of the circle and A, B, C, D and E are points on the circumference of the circle.

Given $\angle CAB = 33^\circ$,

- (a) find $\angle ABC$ (4 marks)
(b) find $\angle ADC$ (4 marks)
(c) find $\angle AEC$ (2 marks)

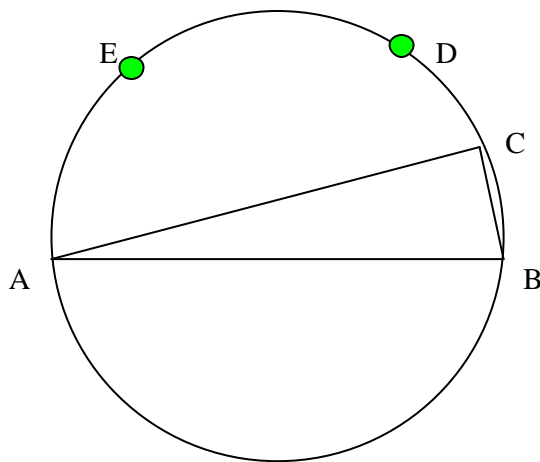


figure 1

9. Solve the following inequalities:

(a) $\frac{2x+1}{3} > 1-x$ (4 marks)

(b) $2x^2 - 7x > -6$ (6 marks)

Section C

Long Questions

(40 marks)

Answer All questions in this section. Each question carries 20 marks.

10. Given $10x^2 + 4x + 1 = 2ax(2-x)$

- (a) Find the range of values of a for which the equation has real roots. (10 marks)
- (b) Find the values of a for which the equation has repeated (equal) roots. (5 marks)
- (c) Find the range of values of a for which the equation has no real roots. (5 marks)

11. The unit cost of a lunch box is partly constant and partly varies inversely as the number of people buying lunch boxes. The unit cost is \$15 when 100 people buy lunch boxes and the unit cost is \$25.50 when the number of people becomes 50.

- (a) Find a mathematical formula connecting the unit cost of a lunch box and the number of people buying lunch boxes. (10 marks)
- (b) Calculate the unit cost of a lunch box when the number of people become 200. (4 marks)
- (c) Calculate the minimum number of people buying lunch boxes when the unit cost is \$13. (6 marks)

END OF ASSIGNMENT I