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# PURE MATH

## ALGEBRA AND FUNCTION

Level & Board	EDEXCEL (A-LEVEL)
TOPIC:	FACTOR THEOREM
PAPER TYPE:	QUESTION PAPER - 4
TOTAL QUESTIONS	8
TOTAL MARKS	44

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**Questions****Q1.**

$$f(x) = 2x^3 - 7x^2 - 10x + 24$$

- (a) Show that  $(x + 2)$  is a factor of  $f(x)$ .

**(3)**

- (b) Factorize  $f(x)$  completely.

**(4)****(Total for question = 7 marks)****Q2.**

**Given that  $(x^2 - x - 6)$  is a factor of the expression  $3x^4 + hx^3 - 11x^2 + kx - 12$ . Find the value of h and k. Hence, factorize the expression completely.**

**(6)****(Total for question = 5 marks)**

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**Q3.**

Find the roots of the equation  $4x^3 - 8x^2 - 3x + 9 = 0$

**(4)**

**Q4.**

Find the value of  $k$ , if  $x - 1$  is a factor of  $p(x)$ , if  
 $p(x) = 2x^2 + kx + \sqrt{2}$ .

**(4)**

**(Total for question = 4 marks)**

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**Q5.**

Let  $P(x) = 3x^3 - 5x^2 + 3x - 10$ . Show that

- (i)  $P(2)=0$
- (ii)  $(x-2)$  is a factor of  $P(x)$ .

**(4)**

**(Total for question = 4 marks)**

**Q6.**

Use the factor theorem to determine whether  $g(x)$  is a factor of  $p(x)$ ,

If  $p(x) = 2x^3 + x^2 - 2x - 1$ ,  $g(x) = x + 1$

**(4)**

**(Total for question = 4 marks)**

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**Q7.**Determine which of the polynomials as has  $(x+1)$  a factor:

if  $x^4 + x^3 + x^2 + x + 1$ .

**(5)****(Total for question = 5 marks)****Q8.**

$$f(x) = x^3 + 4x^2 + x - 6$$

- (a) use the factor theorem to show that
- $(x+2)$
- is a factor of
- $f(x)$
- .

**(4)**

- (b) Factorize
- $f(x)$
- completely.

**(2)**

- (c) Write down all the solutions to the equation

$$x^3 + 4x^2 + x - 6 = 0$$

**(3)****(Total for question = 9 marks)**

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**DR. ASHAR RANA**



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