10 A geometric series has first term a and common ratio r $(r > 0)$
The nth term of the series is U_n

Given that $U_1 + 3U_2 = 8$ and that $U_2 \times U_3 = 4U_5$

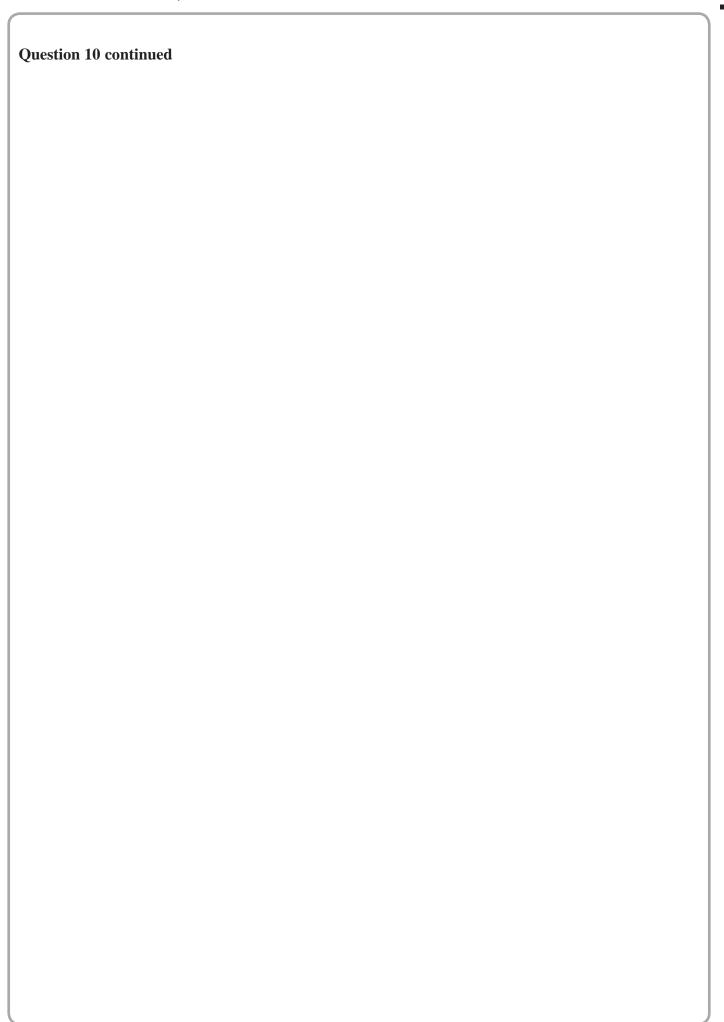(a) find

   (i) the value of r

   (ii) the value of a

(5)

(b) Hence show that $U_n = \dfrac{2^{n+2}}{3^n}$

(2)

(c) Find the least value of n such that $U_n < 0.05$

(3)

Question 10 continued

P 5 5 8 8 5 A 0 2 9 3 6

Question 10 continued

Question 10 continued

(Total for Question 10 is 10 marks)