

44 Jan 13

21 When a photograph is taken, the exposure time,  $t$ , is directly proportional to the square of the size,  $f$ , of the opening in the camera lens.

$$t = 0.02 \text{ when } f = 8$$

(a) Find a formula for  $t$  in terms of  $f$ .

.....  
(3)

(b) Calculate the value of  $f$  when  $t = 0.0098$

$$f = \text{.....}$$

(2)

(Total for Question 21 is 5 marks)

**Do NOT write in this space.**



31 May 11

19  $P$  is directly proportional to the cube of  $Q$ .  
When  $Q = 15$ ,  $P = 1350$

(a) Find a formula for  $P$  in terms of  $Q$ .

$$P = \dots\dots\dots$$

(3)

(b) Calculate the value of  $P$  when  $Q = 20$

$$P = \dots\dots\dots$$

(1)

(Total for Question 19 is 4 marks)

20  $x = a \times 10^n$  where  $n$  is an integer and  $\sqrt{10} \leq a < 10$

Find, in standard form, an expression for  $x^2$ .  
Give your expression as simply as possible.

(Total for Question 20 is 3 marks)



4H Nov 10

16.  $P$  is inversely proportional to  $V$ .  
 $P = 18$  when  $V = 24$

(a) Express  $P$  in terms of  $V$ .

.....  
(3)

(b) Find the positive value of  $V$  when  $P = 3V$

$V =$  .....  
(2)

(Total 5 marks)

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Q16



3H Jan 12.

- 15 Two small magnets attract each other with a force,  $F$  newtons.  
 $F$  is inversely proportional to the square of the distance,  $d$  cm, between them.

When  $d = 2$ ,  $F = 12$

- (a) Express  $F$  in terms of  $d$ .

.....  
(3)

- (b) Calculate the value of  $F$  when  $d = 5$

$F =$  .....  
(1)

- (c) Calculate the value of  $d$  when  $F = 3$

$d =$  .....  
(2)

(Total for Question 15 is 6 marks)

