1 (a) Write $5^{17} \times 5^{2}$ as a single power of 5

.....

(1)

(b) Write 800 as a product of its prime factors.
Show your working clearly.

.....

(2)

(Total for Question 1 is 3 marks)

2 Write 880 as a product of powers of its prime factors.
Show your working clearly.

.....

(Total for Question 2 is 3 marks)

3 Write 600 as a product of powers of its prime factors.
Show your working clearly.

.....

(Total for Question 3 is 3 marks)

4 Write 1200 as a product of powers of its prime factors.
Show your working clearly.

.....

(Total for Question 4 is 3 marks)

5 Find the lowest common multiple (LCM) of 28 and 105

.....

(Total for Question 5 is 2 marks)

6 Write 3.6×10^3 as a product of powers of its prime factors.
Show your working clearly.

.....

(Total for Question 6 is 3 marks)

7 (a) Write 720 as a product of its prime factors.
Show your working clearly.

.....

(3)

(b) Find the smallest whole number that 720 can be multiplied by to give a square number.

.....

(1)

(Total for Question 7 is 4 marks)

8 (a) Find the highest common factor (HCF) of 56 and 84
Show your working clearly.

.....

(2)

(b) Find the lowest common multiple (LCM) of 60 and 72
Show your working clearly.

.....

(2)

(Total for Question 8 is 4 marks)

9

$$A = 2^3 \times 3^2 \times 5^2 \times 11$$
$$B = 2^4 \times 3 \times 5^4 \times 13$$

Find the lowest common multiple (LCM) of A and B.
Give your answer as a product of powers of prime numbers.

.....

(Total for Question 9 is 2 marks)

10 (a) Find the highest common factor (HCF) of 96 and 120

(2)

$A = 2^3 \times 5 \times 7^2 \times 11$
$B = 2^4 \times 7 \times 11$
$C = 3 \times 5^2$

(b) Find the lowest common multiple (LCM) of A, B and C.

(2)

(Total for Question 10 is 4 marks)

11 $A = 3^2 \times 5^4 \times 7$ $B = 3^4 \times 5^3 \times 7 \times 11$

(a) Find the highest common factor (HCF) of A and B.

.....

(2)

(b) Find the lowest common multiple (LCM) of A and B.

.....

(2)

(Total for Question 11 is 4 marks)

12 Find the lowest common multiple (LCM) of 28, 42 and 63
Show your working clearly.

.....

(Total for Question 12 is 3 marks)

13 $A = 2^n \times 3 \times 5^m$

Write $8A$ as a product of powers of its prime factors.

.....

(Total for Question 13 is 2 marks)

14 $A = 2 \times 3^{43}$
$B = 16 \times 3^{37}$

(a) Find the highest common factor (HCF) of A and B.

.....

(1)

(b) Express the number $A \times B$ as a product of powers of its prime factors.
Give your answer in its simplest form.

.....

(2)

(Total for Question 14 is 3 marks)

15 $A = 2^8 \times 3^5 \times 11^4$ $B = 2^6 \times 3 \times 11^8$

(a) Find the highest common factor (HCF) of A and B.

.....

(2)

(b) Find the lowest common multiple (LCM) of $2A$ and $3B$.
Give the LCM as a product of powers of its prime factors.

.....

(2)

(Total for Question 15 is 4 marks)

16 $N = 480 \times 10^9$

(a) Write N as a number in standard form.

(1)

(b) Write N as a product of powers of its prime factors.
Show your working clearly.

(3)

(c) Find the largest factor of N that is an odd number.

(1)

(Total for Question16 is 5 marks)

17 (a) Work out the lowest common multiple (LCM) of 36 and 120

.....

(2)

$A = 5^2 \times 7^4 \times 11^p$
$B = 5^m \times 7^{n-5} \times 11$

m, n and p are integers such that
$m > 2$
$n > 10$
$p > 1$

(b) Find the highest common factor (HCF) of A and B
Give your answer as a product of powers of its prime factors.

.....

(2)

(Total for Question 17 is 4 marks)

18 $A = 3^5 \times 5 \times 7^3$
$B = 2^3 \times 3 \times 7^4$

(a) (i) Find the Highest Common Factor (HCF) of A and B.

.....

(ii) Find the Lowest Common Multiple (LCM) of A and B.

.....

(2)

$A = 3^5 \times 5 \times 7^3$
$B = 2^3 \times 3 \times 7^4$
$C = 2^p \times 5^q \times 7^r$

Given that
the HCF of B and C is $2^3 \times 7$
the LCM of A and C is $2^4 \times 3^5 \times 5^2 \times 7^3$

(b) find the value of p, the value of q and the value of r.

$p =$ .....

$q =$ .....

$r =$ .....

(2)

(Total for Question 18 is 4 marks)

19 $P = 3^3 \times 5^2 \times 7$
$Q = 3^2 \times 5 \times 7^2$

(a) Write down the highest common factor (HCF) of P and Q

.....

(1)

$P = 3^3 \times 5^2 \times 7$
$Q = 3^2 \times 5 \times 7^2$

(b) Work out the value of $P^3 \times Q$
Give your answer in the form $3^x \times 5^y \times 7^z$ where x, y and z are positive integers.

.....

(2)

(Total for Question 19 is 3 marks)