Assignment – Mathematics – W/S – I
TOPIC: Real Numbers

1. 3.24636363...
(d) Both b and c

2. HCF(8, 9, 25) = 1 (d)

3. HCF(85, 153) = 17. Now, given:
$17 = 85m - 153$. Then,
$\Rightarrow 170 = 85m$.
$\Rightarrow 85m = 170$
$\Rightarrow m = 2$ (d) (Ans).

4. Given: $a = x^3y^2$, and $b = xy^4$; x and y are prime numbers. Then,
$\therefore$ HCF$(a, b) = x^1y^2 = xy^2$ (d) (Ans).

5. Given: Least prime factor of a = 3, and
least prime factor of b = 7.
Then, the least prime factor of (a+b) is always 2 (a) (Ans).
Because, the no. having its least prime factor as 3 needs to be an odd number and same with the case of 7. Now, we also know that [Odd no. + Odd No. = Even no.]. And the least prime factor of all even nos. is 2.

6. Given: $HCF(x,y) = 24$ and $LCM(x,y) = 7290$.
To find: whether it is possible or not.
∴ It is observed that when we divide 7290 by 24, we tend to get numbers in a decimal form.
But in case of every HCF and LCM of 2 numbers, the LCM is always completely divided by the HCF.
∴ So, this is not possible.

7. Given: In school, duration of a period in junior section is 40 mins and the duration of a period in senior section is 1 hr = 60 mins. Both the bells ring at 9:00 am.
To find: The time when they will meet together.
Now, $40 = 2 \times 2 \times 2 \times 5$ and,
$60 = 3 \times 2 \times 2 \times 5$
Then, $LCM(40, 60) = (2)^3 \times (5)^1 \times (3)^1$
$= 8 \times 5 \times 3 = 40 \times 3 = 120$.
∴ Now, we know that 120 mins = 2 hrs.
∴ Thus, both the bells will again ring at $(9+2) = 11:00$ am. (Ans).

8. $7 \times 11 \times 13 + 13$
$= 13(7 \times 11 + 1)$
$= 13(77 + 1)$
$= 13 \times 78$
$= 13 \times 13 \times 3 \times 2$

And, $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$
$= 5(7 \times 6 \times 4 \times 3 \times 2 \times 1 + 1)$
$= 5(42 \times 12 \times 2 + 1)$
$= 5(42 \times 24 + 1)$
$= 5(1008 + 1)$
$= 5(1009)$
$= 5 \times 1009$.

$\therefore$ In both cases, the numbers can be expressed as a product of smaller natural numbers, meeting the definition of composite numbers.
$\therefore$ Hence, they both are composite nos.
(Proved) (Ans).

9. Given: Let the nos. be x and y. Then,
$HCF(x, y) \times 14 = LCM(x, y)$, — (i)
And,
$HCF(x, y) + LCM(x, y) = 600$. — (ii)
And, $x = 280$ — (iii)

$14(HCF) + (HCF) = 600$
$\Rightarrow (HCF) = \frac{600}{15} = 40$

Now
$(LCM) = 14(HCF) = 14 \times 40 = 560$. Now we know
$\because$ [Product of two nos. $= HCF \times LCM$]
$280 \times y = 560 \times 40$
$\Rightarrow y = \frac{560 \times 40}{280} = 80$ (Ans).

∴ Hence, the other no. is 80. (Ans).

10. iii) p and q are positive integers such that p = a and q = b, where a and b are prime nos. Then,
∴ $LCM(p, q) = p \times q = a \times b = ab$ (Ans).

ii) If product of two positive integers is equal to the product of their HCF and LCM. Then,

∴ $HCF(32, 36) =$ [∵ By prime factorization]

$$\begin{array}{r|l} 2 & 32, 36 \\ \hline 2 & 16, 18 \\ \hline & 8, 9 \end{array} = 4 \text{ (Ans)}.$$

Or,

HCF × LCM = Product of the 2 nos.

∴ $HCF = \frac{32 \times 36}{LCM} = \frac{1152}{288} = 4$ (Ans).

i) To find: Minimum no. of books reqd. for equally distributing betn sec-A with 32 students and sec-B with 36 students.

∴ $LCM(36, 32) = ?$

$36 = 2 \times 2 \times 3 \times 3$ and $32 = 2 \times 2 \times 2 \times 2 \times 2$

∴ $LCM(36, 32) = (2)^5 \times (3)^2 = 32 \times 9 = 288$ (Ans).

∴ Total min. books reqd. are 288.