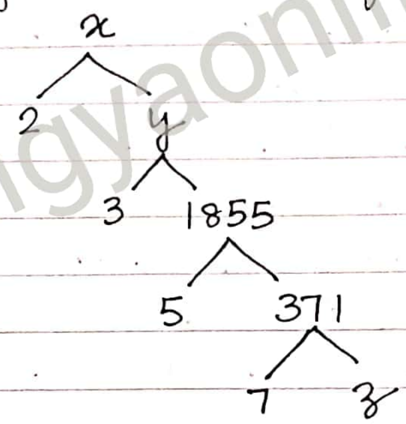
X Test-3 [1 mark each]

Time: 20min

1) For some integer m, every even integer is of the form: (a) m (b) m+1 (c) 2m (d) 2m+1.
2) For some integer q, every odd integer is of the form: (a) q (b) q+1 (c) 2q (d) 2q+1.
3) The largest number which divides 125 and 70 leaving remainders 8 and 5 respectively is (a) 65 (b) 13 (c) 875 (d) 1750.
4) If two positive integers a and b are written as $a = x^3y^2$ and $b = xy^3$; x, y are prime numbers, then HCF (a, b) is (a) xy (b) xy^2 (c) x^3y^3 (d) x^2y^2.
5) a and b are two positive integers such that the least prime factor of a is 3 and the least prime factor of b is 5. Then, calculate the least prime factor of (a+b)
6) Complete the factor tree and find the composite number x.



7) On dividing a polynomial p(x) by a nonzero polynomial g(x), let q(x) be the quotient and r(x) be the remainder then $p(x) = q(x) \cdot g(x) + r(x)$ where (a) $r(x) = 0$ always (b) $d(r(x)) < d(g(x))$ always (c) either $r(x) = 0$ or $d(r(x)) < d(g(x))$ (d) $r(x) = g(x)$
8) If α, β be the zeroes of $2x^2+5x+k$ such that $\alpha^2+\beta^2+\alpha\beta = \frac{21}{4}$, then k = (a) 3 (b) −3 (c) −2 (d) 2
9) If α, β are the zeroes of the polynomial x^2+6x+2, then $\left(\frac{1}{\alpha}+\frac{1}{\beta}\right) =$ (a) 3 (b) −3 (c) 12 (d) −12.
10) If two zeroes of ax^3+bx^2+cx+d are 0, then the third zero is (a) $-b/a$ (b) b/a (c) c/a (d) $-d/a$.

Scanned with CamScanner

X Test-3 (Answers)

1) $2m$ (c)

2) $2q+1$ (d)

3) $125-8 = 117$

$70-5 = 65$.

$HCF(117, 65) = 13$ (b)

$65\overline{)117}(1$
65
$52\overline{)65}(1$
52
$13\overline{)52}(4$
52
0

4) $a = x^3y^2$

$b = xy^3$

$HCF(a, b) = xy^2$ (b)

5) least prime factor of $a+b$ = least prime factor of $3+5$

ie least prime factor of $8 = \underline{\underline{2}}$

Thus a and b are odd numbers and sum of two odd numbers is even. So least prime factor is 2.

6)
x ($5565 \times 2 = 11130$)
2   y ($3 \times 1855 = 5565$)
3   1855
5   371
7   z ($371 \div 7 = 53$)

$\therefore x = \underline{\underline{11130}}$

7) either $r(x) = 0$ or degree $(r(x)) <$ degree $(g(x))$ (c)

8) $\alpha + \beta = -\frac{b}{a} = -\frac{5}{2}$

$\alpha\beta = \frac{c}{a} = \frac{k}{2}$

$\therefore \alpha^2 + \beta^2 + \alpha\beta = (\alpha+\beta)^2 - 2\alpha\beta + \alpha\beta$

$\frac{21}{4} = (\alpha+\beta)^2 - \alpha\beta$

$\frac{21}{4} = \frac{25}{4} - \frac{k \times 2}{2 \times 2}$

$\frac{21}{\cancel{4}_1} = \frac{25-2k}{\cancel{4}_1}$

$2k = 25 - 21 = 4$

$k = \underline{\underline{2}}$ (d)

9) $\alpha+\beta = -\frac{b}{a} = -6$

$\alpha\beta = \frac{c}{a} = 2$

$\therefore \frac{1}{\alpha}+\frac{1}{\beta} = \frac{\beta+\alpha}{\alpha\beta} = -\frac{6}{2} = -3$ (b)

10) $\alpha+\beta+\gamma = -\frac{b}{a}$

$0+0+\gamma = -\frac{b}{a}$

$\therefore$ third zero, $\gamma = -\frac{b}{a}$ (a)