Maths

Section-A

Ans-1.) $(x^2+1)(x+2)$

$= x^3 + 2x^2 + x + 2$

Degree = 3

Ans = 3

(1)

Ans-2.) $(5^\circ + 6^\circ + 7^\circ + 8^\circ)^{\frac{1}{2}}$

$= (1+1+1+1)^{\frac{1}{2}}$ $\quad (\because (x)^\circ = 1)$

$= 4^{1/2}$

$= [(2)^2]^{1/2}$ (1)

$= 2^{2 \times \frac{1}{2}}$ $\quad (\because (x^m)^n = x^{m \times n})$

$= 2$

Ans = 2

Ans-3.) Circle has unlimited lines of symmetry (1)

Ans-4.) Letters 'H' and 'S' show rotational symmetry of order 4 (1)

Section-B

Ans-5.) $\left[\left(\frac{1}{3}\right)^{-5} \times \left(\frac{1}{3}\right)^{7} = \left(\frac{1}{3}\right)^{2x-1}\right]$

$= \left[\left(\frac{1}{3}\right)^{-5+7} = \left(\frac{1}{3}\right)^{2x-1}\right]$ $\quad (\because x^m \times x^n = x^{m+n})$

Since bases are same, we equate the exponents

$\therefore 2x-1 = -5+7$

$2x-1 = 2$

$2x = 2+1$

$2x = 3$

$\therefore x = \frac{3}{2}$

Ans→ $x = \frac{3}{2}$

Ans-6.) $(0.01024)^{\frac{+2}{5}}$

$= \left[\frac{1024}{100000}\right]^{\frac{+2}{5}}$

$= \left[\left[\frac{4}{10}\right]^{5}\right]^{\frac{+2}{5}}$

Rough Work

2
1
64
X64
256
3840
8
1024
4096
4

2
64
X16
384
640
1024

64×16

$4^3 \times 4^2$

$= \left[\frac{4}{10}\right]^{\frac{8x+2}{5}}$ $\quad (\because (x^m)^n = x^{mxn})$

$= \left[\frac{4}{16}\right]^{+2}$

$= \left[\frac{10}{4}\right]^{2} = \frac{16}{100} = 0.16$

$= \frac{100}{16}$

Ans = $\frac{100}{16}$ $\frac{16}{100}$ or 0.16

2

Ans-7.) $\frac{2\sqrt{2}x^4 + 6\sqrt{2}x^3 + x^2}{2\sqrt{2}x^2}$

$= \frac{2\sqrt{2}x^4}{2\sqrt{2}x^2} + \frac{6\sqrt{2}x^3}{2\sqrt{2}x^2} + \frac{x^2}{2\sqrt{2}x^2}$

$= \frac{x^4}{x^2} + \frac{3x^3}{x^2} + \frac{1}{2\sqrt{2}}$

$= x^{4-2} + 3x^{3-2} + \frac{1}{2\sqrt{2}}$ $\quad (\because x^m \div x^n = x^{m-n})$

$= x^2 + 3x + \frac{1}{2\sqrt{2}}$

Ans = $x^2 + 3x + \frac{1}{2\sqrt{2}}$

8

Ans-8.) $(y^2 - y - 42)$ by $(y-7)$

$$= \frac{y^2 - 7y + 6y - 42}{(y-7)}$$

$$= \frac{y(y-7) + 6(y-7)}{(y-7)}$$

$$= \frac{\cancel{(y-7)}(y+6)}{\cancel{(y-7)}}$$

$$= y + 6$$

Ans = $y + 6$

Ans-9.) Sum of integers = 120

∴ Let one integer = x

other integer = $120 - x$

ATQ

$$\frac{x}{120-x} = \frac{2}{3}$$

$$= 3(x) = 2(120 - x) \quad \text{(by cross-multiplication)}$$

$$= 3x = 240 - 2x$$