Binomial Theorem Ex 18.1 Q2(iii)

$$\left(1+2\sqrt{x}\right)^5+\left(1-2\sqrt{x}\right)^5$$

$$=2\left[{}^5C_0+{}^5C_2\left(2\sqrt{x}\right)^2+{}^5C_4\left(2\sqrt{x}\right)^4\right]$$

$$=2\left[1+10\times4\times x+16\times x^2\times5\right]$$

$$=2+80x+160x^2$$

Binomial Theorem Ex 18.1 Q2(iv)

$$\left(\sqrt{2}+1\right)^6+\left(\sqrt{2}-1\right)^6$$

$$={}^6C_0\left(\sqrt{2}\right)^6+{}^6C_1\left(\sqrt{2}\right)^5+{}^6C_2\left(\sqrt{2}\right)^4+{}^6C_3\left(\sqrt{2}\right)^3+{}^6C_4\left(\sqrt{2}\right)^2+{}^6C_5\left(\sqrt{2}\right)+{}^6C_6+{}^6C_0\left(\sqrt{2}\right)^6-{}^6C_1\left(\sqrt{2}\right)^5+{}^6C_2\left(\sqrt{2}\right)^4-{}^6C_3\left(\sqrt{2}\right)^3+{}^6C_4\left(\sqrt{2}\right)^2-{}^6C_5\left(\sqrt{2}\right)+{}^6C_6\left(\sqrt{2}\right)^0$$

$$=2\left[2^3+15\times2^2+15\times2+1\right]$$

$$=2\left[8+60+30+1\right]=2(99)=198$$

Binomial Theorem Ex 18.1 Q2(v)

$$\left(3+\sqrt{2}\right)^5-\left(3-\sqrt{2}\right)^5$$

$$=2\left[{}^5C_1(3)^4\left(\sqrt{2}\right)^1+{}^5C_3(3)^2\left(\sqrt{2}\right)^3+{}^5C_5\left(\sqrt{2}\right)^5\right]$$

$$=2\left[5\times81\times\sqrt{2}+10\times9\times2\sqrt{2}+4\sqrt{2}\right]$$

$$=2\left[405\sqrt{2}+180\sqrt{2}+4\sqrt{2}\right]$$

$$=2\left[589\sqrt{2}\right]$$

$$=1178\sqrt{2}$$

Binomial Theorem Ex 18.1 Q2(vi)

$$\left(2+\sqrt{3}\right)^7+\left(2-\sqrt{3}\right)^7$$

$$=2\left[{}^7C_0 2^7+{}^7C_2 2^5\left(\sqrt{3}\right)^2+{}^7C_4(2)^4\left(\sqrt{3}\right)^4+{}^7C_6 2\left(\sqrt{3}\right)^6\right]$$

$$=2\left[128+21\times32\times3+35\times8\times9+7\times2\times27\right]$$

$$=2\left[128+2016+2520+378\right]$$

$$=2\left[5042\right]$$

$$=10084$$

********** END **********