Short Questions

Write the short answers of the following

Expand by Bi-nomial theorem Q.No. 1 to 4

Q.1 $(2x - 3y)^4$ Q.2 $\left(\frac{x}{y} + \frac{y}{x}\right)^4$

Q.3 $\left(\frac{x}{2} - \frac{2}{y}\right)^4$ **Q.4** $\left(x + \frac{1}{x}\right)^4$

Q5 State Bi-nomial Theorem for positive integer n

Q.6 State Bi-nomial Theorem for n negative and rational.

Calculate the following by Binomial Theorem up to two decimal places.

Q.7 $(1.02)^{10}$ **Q.8** $(1.04)^5$

Q.9 Find the 7^{th} term in the expansion of $\left(x - \frac{1}{x}\right)^9$

Q.10 Find the 6^{th} term in the expansion of $(x + 3y)^{10}$

Q.11 Find 5^{th} term in the expansion of $(2x - \frac{x^2}{4})^7$

Expand to three term

Q.12 $(1 + 2x)^{-2}$ **Q.13** $\frac{1}{(1+x)^2}$

Q.14 $\frac{1}{\sqrt{1+x}}$ **Q.15** $(4 - 3x)^{1/2}$

Q.16 Using the Binomial series calculate $\sqrt[3]{65}$ to the nearest hundredth.

Which will be the middle term/terms in the expansion of

Q.17 $(2x+3)^{12}$ **Q. 18** $(x+\frac{3}{x})^{15}$?

Q19 Which term is the middle term or terms in the Binomial expansion of $(a+b)^n$

(i) When n is even (ii) When n is odd

Answers

Q1. $16x^4 - 96x^3y + 216x^2y^2 - 216xy^3 + 81y^4$

Q.2 $\frac{x^4}{y^4} + 4\frac{x^2}{y^2} + 6 + 4\frac{y^2}{x^2} + 4\frac{y^4}{x^4}$ **Q.3** $\frac{x^4}{16} - \frac{x^3}{y} + \frac{6x^2}{y^2} - \frac{16x}{y^3} + \frac{16}{y^4}$

Q.4 $(x)^4 + 4x^2 + 6 + \frac{4}{x^2} + \frac{1}{x^4}$ **Q.7** 1.22 **Q.** 8 1.22

Q.9 $\frac{84}{x^3}$ Q.10 $61236\,x^5y^5$ **Q.11** $\frac{35}{32}x^{11}$

Q.12 $1 - 4x + 12x^2 + \ldots\ldots\ldots$ **Q.13** $1 - 2x + 3x^2 + \ldots\ldots\ldots$

Q.14 $1 - \frac{x}{2} + \frac{3}{8}x^2 + \ldots\ldots\ldots$ **Q.15** $2 - \frac{3x}{4} - \frac{9x^2}{64} + \ldots\ldots\ldots$

Q.16 4.02 **Q.17** $T_7 = \binom{12}{6}(2x)^6(3)^6$

Q.18 $T_8 = \binom{15}{7}(3)^7x$ and $T_9 = \binom{15}{8}\frac{(3)^8}{x}$

Q.19 (i) $\left(\frac{n}{2}+1\right)$ (ii) $\left(\frac{n+1}{2}\right)$ and $\left(\frac{n+1}{2}+1\right)$