

1. Determine the coefficient of  $(a^2 b^4 d)$  in the polynomial expansion  $(3a+5b-2c+d)^7$ .
2. a) How many distinct terms exist in the expansion of  $(x+y+z+t)^{10}$ ?  
b) How many terms are in the expansion of  $(3a+5b-2c+d)^7$ ?
3. Find the coefficient of  $a^3 b^2 c^4 d$  in the expansion of  $(a-b-c+d)^{10}$ .
4. What is the coefficient of the  $a^3 b^2$  in the expansion of  $(a+2b+3c)^5$
5. a) Find the third term in the expansion of  $(3 + y)^6$   
b) Find the co-efficient of  $z^4$  in the expansion of  $(5 + z)^8$ .  
c) The term containing  $x^3$  in the expansion of  $(x-2y)^7$  is?
6. In the expansion of  $(a + 2a^3)^n$  is the coefficient of the 3rd expansion member greater by 44 than the 2nd member's coefficient. Find out a positive integer meeting these conditions.
7. For which  $x$  the 5th expansion member equals  $M_5 = 105$ ?

$$\left( \frac{1}{2\sqrt{x}} - \frac{1}{2} \right)^{10}$$

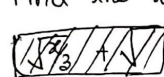
8. If the coefficient of  $x^7$  and  $x^8$  in the expansion of  $(2+x/3)^n$  are equal, then find the value of  $n$ .

9. If the co-efficient of  $x^7$  in  $(ax^2 + \frac{1}{bx})^{11}$  is equal to the co-efficient of  $x^{-7}$  in  $(ax - \frac{1}{bx^2})^{11}$ , then find relation between  $a$  and  $b$ .

10. Find the co-efficient of  $x^5$  in  $(1+x^2)^5 (1+x)^4$ .

11. a) Find the term independent of  $x$  in the expansion of the following question:  $(\frac{3}{2}x^2 - \frac{1}{2x})^6$

b) Find the term independent of  $x$  in the expansion of

  $(\sqrt{\frac{x}{3}} + \frac{\sqrt{3}}{2x^2})^{10}$

12. Find the co-efficient of the  $x^7$  term in the expansion of  $(1-2x+x^2)^6$ .

13. The output of a machine is graded excellent 60% of the time, good 25% of the time, and defective 15% of the time. What is the probability that a sample size 15 has 10 excellent, 3 good and 2 defective items?

14. The co-efficient of the 3rd term of the expansion  $(5x+2)^n$  is 70312500. Find the value of  $n$ .

15. Out of a Group of ten residents in a certain country, 3 are Republicans, 5 are Democrats, and 2 are Independents. How many unique ~~part~~ partitions of this group of residents are there by political party?

