Special Practice Problems

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~[JEE (Mains & Advanced)]~

Topic: Binomial Theorem

** परिस्थितियां चाहे कैसी भी हो, यदि व्यक्ति मन में ठान ले तो कोई भी कार्य मुश्किल नहीं। **

Objective Questions Type I [Only one correct answer]

In each of the questions below, four choices are given of which only one is correct. You have to select the correct answer which is the most appropriate.

1. If the number of terms in $\left(x+1+\frac{1}{x}\right)^n$ $(n \in N)$ is 301, then n is greater than

(a) 152 (b) 151
(c) 150 (d) 149

2. If $x+\frac{1}{x}=1$ and $\lambda = x^{4000}+\frac{1}{x^{4000}}$ and μ be the digit at unit place in the number $2^{2^n}+1$, $n \in N$ and $n>1$, then $\lambda+\mu$ is equal to

(a) 8 (b) 7
(c) 6 (d) 5

3. If $\sum_{r=0}^{n}\left(\frac{r+2}{r+1}\right){}^nC_r = \frac{2^8-1}{6}$, then n is equal to

(a) 6 (b) 3
(c) 8 (d) 5

4. If $a^3+b^6=2$, then the maximum value of the term independent of x in the expansion of $(ax^{1/3}+bx^{-1/6})^9$ is $(a>0, b>0)$

(a) 42 (b) 68
(c) 84 (d) 148

5. Number of terms in the expansion of $\left(\frac{x^3+1+x^6}{x^3}\right)^{\Sigma n}$ (where $n \in N$) is

(a) $\Sigma n+1$ (b) ${}^{\Sigma n+2}C_2$
(c) $2n+1$ (d) n^2+n+1

6. $(115)^{96}-(96)^{115}$ is divisible by

(a) 15 (b) 17
(c) 19 (d) 21

7. If 5^{40} is divided by 11, then remainder is α and when 2^{2003} is divided by 17, then remainder is β, then the value of $\beta-\alpha$ is

(a) 3 (b) 5
(c) 7 (d) 8

8. If the sum of the coefficients in the expansion of $(1+2x)^m$ and $(2+x)^n$ are respectively 6561 and 243, then the position of the point (m, n) with respect to the circle $x^2+y^2-4x-6y-32=0$

(a) is inside the circle (b) is outside the circle
(c) is on the circle (d) cannot be fixed

9. The range of the values of the term independent of x in the expansion of $\left(x\sin^{-1}\alpha+\frac{\cos^{-1}\alpha}{x}\right)^{10}$, $\alpha \in [-1, 1]$ is

(a) $\left[\frac{{}^{10}C_5\cdot\pi^{10}}{2^5}, -\frac{{}^{10}C_5\pi^{10}}{2^{20}}\right]$ (b) $\left[-\frac{{}^{10}C_5\cdot\pi^{10}}{2^5}, \frac{{}^{10}C_5\cdot\pi^{10}}{2^{20}}\right]$

(c) $\left[\frac{{}^{10}C_5\cdot\pi^5}{2^5}, \frac{{}^{10}C_5\cdot\pi^5}{2^{20}}\right]$ (d) $\left[-\frac{{}^{10}C_5\cdot\pi^5}{2^5}, \frac{{}^{10}C_5\cdot\pi^5}{2^{20}}\right]$

10. The sum $\sum_{i=0}^{m}\binom{10}{i}\binom{20}{m-i}$, $\left(\text{where, } \binom{p}{q}=0 \text{ if } p<q\right)$ is maximum, when m is

(a) 5 (b) 10
(c) 15 (d) 20

11. If ${}^{n-1}C_r=(k^2-3)\cdot{}^nC_{r+1}$, then k belongs to

(a) $(-\infty, -2]$ (b) $[2, \infty)$
(c) $[-\sqrt{3}, \sqrt{3}]$ (d) $(\sqrt{3}, 2]$

12. The value of

$$\binom{30}{0}\binom{30}{10}-\binom{30}{1}\binom{30}{11}+\binom{30}{2}\binom{30}{12}-\ldots+\binom{30}{20}\binom{30}{30},$$

where $\binom{n}{r}={}^nC_r$, is

(a) $\binom{30}{10}$ (b) $\binom{30}{15}$

(c) $\binom{60}{30}$ (d) $\binom{31}{10}$

13. The coefficient of x^{20} in the expansion of $(1+x^2)^{40}.\left(x^2+2+\frac{1}{x^2}\right)^{-5}$ is

(a) ${}^{30}C_{10}$ (b) ${}^{30}C_{25}$

(c) 1 (d) 0

14. If S be the sum of coefficients in the expansion of $(\alpha x+\beta y-\gamma z)^n$, where $(\alpha, \beta, \gamma > 0)$, then the value of $\lim_{n\to\infty} \frac{S}{\left\{S^{\frac{1}{n}}+1\right\}^n}$ is

(a) $e^{\left(\frac{\alpha\beta}{\gamma}\right)}$ (b) $e^{\left(\frac{\alpha+\beta-\gamma}{\alpha+\beta-\gamma+1}\right)}$

(c) $\frac{\alpha\beta}{\gamma}$ (d) 0

15. If $(5+2\sqrt{6})^n = I+f$; $n, I \in N$; and $0 \le f < 1$, then I equals

(a) $\frac{1}{f}-f$ (b) $\frac{1}{1+f}-f$

(c) $\frac{1}{1+f}+f$ (d) $\frac{1}{1-f}-f$

16. If $(1+x)^n = \sum_{r=0}^{n} a_r x^r$ and $b_r = 1+\frac{a_r}{a_{r-1}}$ and $\prod_{r=1}^{n} b_r = \frac{(101)^{100}}{100!}$, then n is

(a) 99 (b) 100

(c) 101 (d) 102

17. If a, b, c, d be four consecutive coefficients in the binomial expansion of $(1+x)^n$, then the value of the expression $\left\{\left(\frac{b}{b+c}\right)^2-\frac{ac}{(a+b)(c+d)}\right\}$ (where $x>0$) is

(a) <0 (b) >0

(c) $=0$ (d) 2

18. If a, b, c are in AP, then the sum of the coefficients of $\{1+(ax^2-2bx+c)^2\}^{1973}$ is

(a) -2 (b) -1

(c) 0 (d) 1

19. The coefficients of x^2y^2, yzt^2 and $xyzt$ in the expansion of $(x+y+z+t)^4$ are in the ratio

(a) 4 : 2 : 1 (b) 1 : 2 : 4

(c) 2 : 4 : 1 (d) 1 : 4 : 2

20. The total number of terms in the expansion of $(x+a)^{100}+(x-a)^{100}$ after simplification, is

(a) 50 (b) 51

(c) 154 (d) 202

21. If the coefficient of x^3 in the expansion of $(1+ax)^4$ is 32, then a equals

(a) 2 (b) 3

(c) 4 (d) 6

22. In the expansion of $(1+x)^{43}$, the coefficients of the $(2r+1)$th and the $(r+2)$th terms are equal, then the value of r, is

(a) 14 (b) 15

(c) 16 (d) 17

23. If the three successive coefficients in the binomial expansion of $(1+x)^n$ are 28, 56 and 70 respectively, then n equals

(a) 4 (b) 6

(c) 8 (d) 10

24. If m and n are any two odd positive integers with $n < m$, then the largest positive integer which divides all numbers of the form (m^2-n^2), is

(a) 4 (b) 6

(c) 8 (d) 9

25. The number $5^{25}-3^{25}$ is divisible by

(a) 2 (b) 3

(c) 5 (d) 7

26. For a positive integer n, if the expansion of $(2x^{-1}+x^2)^n$ has a term independent of x, then a possible value for n is

(a) 10 (b) 16

(c) 18 (d) 22

27. The term independent of x in the expansion of $\left(\sqrt{\left(\frac{x}{3}\right)}+\sqrt{\left(\frac{3}{2x^2}\right)}\right)^{10}$ is

(a) 5/12 (b) 1

(c) ${}^{10}C_1$ (d) none of these

28. The term independent of x in the expansion of $[(t^{-1}-1)x+(t^{-1}+1)^{-1}x^{-1}]^8$ is

(a) $56\left(\frac{1-t}{1+t}\right)^3$ (b) $56\left(\frac{1+t}{1-t}\right)^3$

(c) $70\left(\frac{1-t}{1+t}\right)^4$ (d) $70\left(\frac{1+t}{1-t}\right)^4$

29. If $(1-x+x^2)^n = a_0+a_1x+a_2x^2+\ldots+a_{2n}x^{2n}$, then $a_0+a_2+a_4+\ldots+a_{2n}$ equals

(a) $\frac{1}{2}(3^n+1)$ (b) $\frac{1}{2}(3^n-1)$

(c) $\frac{1}{2}(1-3^n)$ (d) $\frac{1}{2}+3^n$

30. If the sum of the binomial coefficients in the expansion of $\left(x+\frac{1}{x}\right)^n$ is 64, then the term independent of x is equal to

(a) 10 (b) 20

(c) 40 (d) 60

31. The sum of coefficients of the two middle terms in the expansion of $(1+x)^{2n-1}$ is equal to

(a) ${}^{(2n-1)}C_n$ (b) ${}^{(2n-1)}C_{n+1}$

(c) ${}^{2n}C_{n-1}$ (d) ${}^{2n}C_n$

32. If C_r stands for ${}^nC_r$, then the sum of first $(n+1)$ terms of the series $aC_0 + (a+d)C_1 + (a+2d)C_2 + \dots$, is

(a) 0 (b) $[a+nd]\,2^n$

(c) $[2a+(n-1)d]\,2^{n-1}$ (d) $[2a+nd]\,2^{n-1}$

33. The number of rational terms in $(\sqrt{2} + \sqrt[3]{3} + \sqrt[6]{5})^{10}$ is

(a) 6 (b) 4

(c) 3 (d) 1

34. If the number of terms in the expansion of $(1+2x-3x^2)^n$ is 36, then n equals

(a) 7 (b) 8

(c) 9 (d) none of these

35. If the sum of the coefficients in the expansion of $(2+3cx+c^2x^2)^{12}$ vanishes, then c equals

(a) $-1, 2$ (b) $1, 2$

(c) $1, -2$ (d) $-1, -2$

36. If the sum of odd numbered terms and the sum of even numbered terms in the expansion of $(x+a)^n$ are A and B respectively, then the value of $(x^2-a^2)^n$ is

(a) $4AB$ (b) A^2-B^2

(c) A^2+B^2 (d) none of these

37. The largest term in the expansion of $(2+3x)^{25}$, where $x=2$, is its

(a) 13th term (b) 19th term

(c) 20th term (d) 26th term

38. The sum of the series

$$\frac{1}{0!(n-1)!} + \frac{1}{3!(n-3)!} + \frac{1}{5!(n-5)!} + \dots + \frac{1}{(n-1)!1!}$$

is

(a) $\frac{2^{n-1}}{(n-1)!}$ (b) $\frac{2^n}{(n-1)!}$

(c) $\frac{2^{n-1}}{n!}$ (d) $\frac{2^n}{n!}$

39. The greatest coefficient in the expansion of $(1+x)^{2n+2}$ is

(a) $\frac{(2n)!}{(n!)^2}$ (b) $\frac{(2n+2)!}{\{(n+1)!\}^2}$

(c) $\frac{(2n+2)!}{n!(n+1)!}$ (d) $\frac{(2n)!}{n!(n+1)!}$

40. For integer $n>1$, the digit at unit place in the number $\sum_{r=0}^{100} r! + 2^{2^n}$ is

(a) 4 (b) 3

(c) 1 (d) 0

41. If $C_0, C_1, C_2, \dots, C_n$ are the binomial coefficients in the expansion of $(1+x)^n$, n being even, then $C_0 + (C_0+C_1) + (C_0+C_1+C_2) + \dots + (C_0+C_1+C_2+\dots+C_{n-1})$ is equal to

(a) $n\cdot 2^n$ (b) $n\cdot 2^{n-1}$

(c) $n\cdot 2^{n-2}$ (d) $n\cdot 2^{n-3}$

42. If $(1+x)^n = C_0 + C_1x + C_2x^2 + \dots + C_nx^n$, then the value of $C_0 + \frac{1}{2}C_1 + \frac{1}{3}C_2 + \dots + \frac{1}{(n+1)}C_n$ is

(a) $\frac{2^{n-1}}{(n+1)}$ (b) $\frac{2^{n+1}}{(n+1)}$

(c) $\frac{2^{n-1}-1}{(n+1)}$ (d) $\frac{2^{n+1}-1}{(n+1)}$

43. If the seventh terms from the beginning and the end in the expansion of $\left(\sqrt[3]{2} + \frac{1}{\sqrt[3]{3}}\right)^n$ are equal, then n equals

(a) 9 (b) 12

(c) 15 (d) 18

44. The expression $({}^{10}C_0)^2 - ({}^{10}C_1)^2 + \dots - ({}^{10}C_9)^2 + ({}^{10}C_{10})^2$ equals

(a) ${}^{10}C_5$ (b) $-{}^{10}C_5$

(c) $({}^{10}C_5)^2$ (d) $(10!)^2$

45. The number of terms in the expansion of $(\sqrt{3} + \sqrt[4]{5})^{124}$ which are integers, is equal to

(a) nil (b) 30

(c) 31 (d) 32

46. The expression ${}^nC_0 + 4\cdot{}^nC_1 + 4^2\cdot{}^nC_2 + \dots + 4^n\cdot{}^nC_n$, equals

(a) 2^{2n} (b) 2^{3n}

(c) 5^n (d) none of these

47. The first integral term in the expansion of $(\sqrt{3} + \sqrt[3]{2})^9$, is its

(a) 2nd term (b) 3rd term

(c) 4th term (d) 5th term

48. The number of rational terms in the expansion of $(1+\sqrt{2}+\sqrt[3]{3})^6$ is

(a) 6 (b) 7

(c) 5 (d) 8

49. The coefficient of a^3b^4c in the expansion of $(1+a+b-c)^9$ is

(a) $2\cdot{}^9C_7\cdot{}^7C_4$ (b) $-2\cdot{}^9C_2\cdot{}^7C_3$

(c) ${}^9C_7\cdot{}^7C_4$ (d) none of these

50. The greatest value of the term independent of x in the expansion of $(x\sin\alpha + x^{-1}\cos\alpha)^{10}$, $\alpha \in R$ is

(a) 2^5 (b) $\frac{10!}{(5!)^2}$

(c) $\frac{1}{2^5}\cdot\frac{10!}{(5!)^2}$ (d) none of these

51. If $(1+x+2x^2)^{20} = a_0 + a_1x + a_2x^2 + \dots + a_{40}x^{40}$, then $a_0 + a_2 + a_4 + \dots + a_{38}$ equals

(a) $2^{19}(2^{20}+1)$ (b) $2^{19}(2^{20}-1)$

(c) $2^{20}(2^{19}-1)$ (d) none of these

52. If 7 divides $32^{32^{32}}$, the remainder is

(a) 1 (b) 0

(c) 4 (d) 6

53. $\sum_{r=0}^{n-1} \frac{^nC_r}{^nC_r + {}^nC_{r+1}}$ is equal to

(a) $\frac{n}{2}$ (b) $\frac{n+1}{2}$

(c) $\frac{n(n+1)}{2}$ (d) $\frac{n(n-1)}{2(n+1)}$

54. The largest term in the expansion of $\left(\frac{b}{2}+\frac{b}{2}\right)^{100}$ is

(a) b^{100} (b) $\left(\frac{b}{2}\right)^{100}$

(c) $^{100}C_{50} \cdot \left(\frac{b}{2}\right)^{100}$ (d) none of these

55. The coefficient of x^n in the polynomial $(x + {}^{2n+1}C_0)(x + {}^{2n+1}C_1)(x + {}^{2n+1}C_2)\ldots(x + {}^{2n+1}C_n)$ is

(a) 2^{n+1} (b) $2^{2n+1} - 1$

(c) 2^{2n} (d) none of these

56. If the fourth term of $\left(\sqrt{x^{\left(\frac{1}{1+\log_{10} x}\right)}} + {}^{12}\sqrt{x}\right)^6$ is equal to 200 and $x > 1$, then x is equal to

(a) $10\sqrt{2}$ (b) 10

(c) 10^4 (d) none of these

57. If $(1+x)^n = C_0 + C_1x + C_2x^2 + \ldots + C_nx^n$, then the value of $\sum_{k=0}^{n} (k+1)^2 \cdot C_k$ is

(a) $2^{n-3}(n^2+5n+4)$ (b) $2^{n-2}(n^2+5n+4)$

(c) $2^{n-2}(5n+4)$ (d) none of these

58. If $\{x\}$ denotes the fractional part of x, then $\left\{\frac{3^{2n}}{8}\right\}$, $n \in N$ is

(a) 3/8 (b) 7/8

(c) 1/8 (d) none of these

59. The sum of the last ten coefficients in the expansion of $(1+x)^{19}$, when expanded in ascending powers of x is

(a) 2^{18} (b) 2^{19}

(c) $2^{18} - {}^{19}C_{10}$ (d) none of these

60. If $a_n = \sum_{r=0}^{n} \frac{1}{^nC_r}$, then $\sum_{r=0}^{n} \frac{r}{^nC_r}$ equals

(a) $(n-1)\,a_n$ (b) $n\,a_n$

(c) $\frac{1}{2} n\,a_n$ (d) none of these

61. The coefficient of x^m in $(1+x)^m + (1+x)^{m+1} + \ldots + (1+x)^n$, $m \le n$ is

(a) $^{n+1}C_{m+1}$ (b) $^{n-1}C_{m-1}$

(c) ^nC_m (d) $^nC_{m+1}$

62. The last two digits of the number 3^{400} are

(a) 39 (b) 29

(c) 01 (d) 43

63. The unit digit of $17^{1983} + 11^{1983} - 7^{1983}$ is

(a) 1 (b) 2

(c) 3 (d) 0

64. If $(1+2x+3x^2)^{10} = a_0 + a_1x + a_2x^2 + \ldots + a_{20}x^{20}$, then a_1 equals

(a) 10 (b) 20

(c) 210 (d) 420

65. In the expansion of $(1+x)^n(1+y)^n(1+z)^n$, the sum of the coefficients of the terms of degree r is

(a) $(^nC_r)^3$ (b) $3 \cdot {}^nC_r$

(c) $^{3n}C_r$ (d) $^nC_{3r}$

66. If the second term in the expansion $\left({}^{13}\sqrt{a} + \frac{a}{\sqrt{a^{-1}}}\right)^n$ is $14a^{5/2}$, then the value of $^nC_3/{}^nC_2$ is

(a) 4 (b) 3

(c) 12 (d) 6

67. Which of the following expansion will have term containing x^2

(a) $(x^{-1/5} + 2x^{3/5})^{25}$ (b) $(x^{3/5} + 2x^{-1/5})^{24}$

(c) $(x^{3/5} - 2x^{-1/5})^{23}$ (d) $(x^{3/5} + 2x^{-1/5})^{22}$

68. Coefficient of $1/x$ in the expansion of $(1+x)^n(1+1/x)^n$ is

(a) $\frac{n!}{(n-1)!(n+1)!}$ (b) $\frac{2n!}{(n-1)!(n+1)!}$

(c) $\frac{n!}{(2n-1)!(2n+1)!}$ (d) $\frac{2n!}{(2n-1)!(2n+1)!}$

69. The coefficient of x^{53} in the expansion of $\sum_{m=0}^{100} {}^{100}C_m(x-3)^{100-m} \cdot 2^m$ is

(a) $^{100}C_{47}$ (b) $^{100}C_{53}$

(c) $-{}^{100}C_{53}$ (d) $-{}^{100}C_{100}$

70. The value of x, for which the 6th term in the expansion of $\left\{2^{\log_2 \sqrt{(9^{x-1}+7)}} + \frac{1}{2^{(1/5)\log_2(3^{x-1}+1)}}\right\}^7$ is 84, is equal to

(a) 4 (b) 3

(c) 2 (d) 5

71. $\sum_{r=1}^{n}\left(\sum_{p=0}^{r-1} {}^nC_r {}^rC_p 2^p\right)$ is equal to

(a) $4^n - 3^n + 1$ (b) $4^n - 3^n - 1$

(c) $4^n - 3^n + 2$ (d) $4^n - 3^n$

72. If $(1+x)^n = C_0 + C_1x + C_2x^2 + \ldots + C_nx^n$, then $\sum_{0 \le i} \sum_{< j \le n} C_iC_j$ is

(a) $2^{2n-1} - \frac{2n!}{n!n!}$ (b) $2^{2n-1} - \frac{2 \cdot 2n!}{n!n!}$

(c) $2^{2n+1} - \frac{2n!}{2 \cdot n!}$ (d) $2^{2n-1} - \frac{^{2n}C_n}{2}$

73. The value of $99^{50} - 99 \cdot 98^{50} + \frac{99 \cdot 98}{1 \cdot 2}(97)^{50} + \ldots + 99$ is

(a) -1 (b) -2
(c) -3 (d) 0

74. If $x = (\sqrt{3}+1)^n$, then $[x]$ is (where $[x]$ denotes the greatest integer less than or equal to x)

(a) $2k$, where $k \in I$ (b) $2k+1$, where $k \in I$
(c) 4^n (d) 8^n

75. The number of irrational terms in the expansion of $(2^{1/5} + 3^{1/10})^{55}$ is

(a) 47 (b) 56
(c) 50 (d) 48

76. If C_r stands for ${}^nC_r$ and $\frac{C_0}{1} - \frac{C_1}{3} + \frac{C_2}{5} - \ldots + \frac{(-1)^n C_n}{2n+1}$ $= k\int_0^1 x(1-x^2)^{n-1}dx$, then k is equal to

(a) $\frac{2^{2n+1} \cdot n \cdot n!}{(2n+1)!}$ (b) $2^{2n} \cdot \frac{n!}{(2n+1)!}$
(c) ${}^{2n+1}C_n$ (d) $\frac{2^{2n+1} \cdot n \cdot (n!)^2}{(2n+1)!}$

77. The value of the expression ${}^{n+1}C_2 + 2[{}^2C_2 + {}^3C_2 + {}^4C_2 + \ldots + {}^nC_2]$ is

(a) Σn (b) Σn^2
(c) Σn^3 (d) $\frac{(n+1)}{2}$

78. If $n > 3$ and C_r stands for ${}^nC_r$, then $\sum_{r=0}^{n}(-1)^r(n-r)(n-r+1)(n-r+2)C_r$ is equal to

(a) 4 (b) 3
(c) 0 (d) 1

79. The coefficient of x^n in the polynomial $(x + {}^nC_0)(x + 3 \cdot {}^nC_1)(x + 5 \cdot {}^nC_2) \ldots (x + (2n-1) \cdot {}^nC_n)$ is

(a) $n \cdot 2^n$ (b) $n \cdot 2^{n+1}$
(c) $(n+1) \cdot 2^n$ (d) $n \cdot 2^n + 1$

80. If C_r stands for ${}^nC_r$, then the coefficient of $\lambda^n \mu^n$ in the expansion of $[(1+\lambda)(1+\mu)(\lambda+\mu)]^n$ is

(a) $\sum_{r=0}^{n} C_r^2$ (b) $\sum_{r=0}^{n} C_{r+2}^2$
(c) $\sum_{r=0}^{n} C_{r+3}^2$ (d) $\sum_{r=0}^{n} C_r^3$

81. If n is even positive integer, then the condition that the greatest term in the expansion of $(1+x)^n$ may have the greatest coefficient also is

(a) $\frac{n}{n+2} < x < \frac{n+2}{n}$ (b) $\frac{n+1}{n} < x < \frac{n}{n+1}$
(c) $\frac{n}{n+4} < x < \frac{n+4}{n}$ (d) none of these

82. For $1 \le r \le n$, the value of ${}^nC_r + {}^{n-1}C_r + {}^{n-2}C_r + \ldots + {}^rC_r$ is

(a) ${}^nC_{r+1}$ (b) ${}^{n+1}C_r$
(c) ${}^{n+1}C_{r+1}$ (d) none of these

83. The remainder of 7^{103}, when divided by 25 is

(a) 7 (b) 25
(c) 18 (d) 9

84. If a_1, a_2, a_3, a_4 are the coefficients of any four consecutive terms in the expansion of $(1+x)^n$, then $\frac{a_1}{a_1+a_2} + \frac{a_3}{a_3+a_4}$ is equal to

(a) $\frac{a_2}{a_2+a_3}$ (b) $\frac{1}{2} \cdot \frac{a_2}{a_2+a_3}$
(c) $\frac{2a_2}{a_2+a_3}$ (d) $\frac{2a_3}{a_2+a_3}$

85. The coefficient of x^r $\{0 \le r \le (n-1)\}$ in the expansion of $(x+3)^{n-1} + (x+3)^{n-2}(x+2) + (x+3)^{n-3}(x+2)^2 + \ldots + (x+2)^{n-1}$ is

(a) ${}^nC_r(3^r - 2^n)$ (b) ${}^nC_r(3^{n-r} - 2^{n-r})$
(c) ${}^nC_r(3^r + 2^{n-r})$ (d) none of these

86. If there is a term containing x^{2r} in $\left(x + \frac{1}{x^2}\right)^{n-3}$, then

(a) $n - 2r$ is a positive integral multiple of 3
(b) $n - 2r$ is even
(c) $n - 2r$ is odd
(d) none of the abvoe

87. The value of the sum of the series $3 \cdot {}^nC_0 - 8 \cdot {}^nC_1 + 13 \cdot {}^nC_2 - 18 \cdot {}^nC_3 + \ldots$ upto $(n+1)$ terms is

(a) 0 (b) 3^n
(c) 5^n (d) none of these

88. If $a + b = 1$, then $\sum_{r=0}^{n} r\, {}^nC_r a^r b^{n-r}$ equals

(a) 1 (b) n
(c) na (d) nb

89. If n is a positive integer and $C_k = {}^nC_k$, then $\sum_{k=1}^{n} k^3 \left(\frac{C_k}{C_{k-1}}\right)^2$ equals

(a) $\frac{n(n+1)(n+2)}{12}$ (b) $\frac{n(n+1)^2(n+2)}{12}$
(c) $\frac{n(n+1)(n+2)^2}{12}$ (d) $\frac{n^2(n+1)^2(n+2)^2}{144}$

90. The coefficient of x^{50} in the expansion of $(1+x)^{1000} + 2x(1+x)^{999} + 3x^2(1+x)^{998} + \ldots + \ldots + 1001x^{1000}$ is

(a) ${}^{1000}C_{50}$ (b) ${}^{1001}C_{50}$
(c) ${}^{1002}C_{50}$ (d) ${}^{1000}C_{51}$

91. If $(6\sqrt{6}+14)^{n+1} = m$ and if f is the fractional part of m, then mf is equal to

(a) 15^{n+1} (b) 20^{n+1}
(c) 25^n (d) none of these

92. The number of terms in the expansion of $[(a+3b)^2(3a-b)^2]^3$ is

(a) 14 (b) 28
(c) 32 (d) 56

93. If the sum of the coefficients in the expansion of $(x-2y+3z)^n = 128$, then the greatest coefficient in the expansion of $(1+x)^n$ is

(a) 35 (b) 20
(c) 10 (d) 5

94. If $n > 3$ and $a, b \in R$, then the value of $ab - n(a-1)(b-1) + \frac{n(n-1)}{1\cdot 2} \times (a-2)(b-2) - \ldots + (-1)^n (a-n)(b-n)$ is

(a) $a^n + b^n$ (b) $\frac{a^n - b^n}{a-b}$
(c) $(ab)^n$ (d) 0

95. The value of $\sum_{i=0}^{n} \sum_{j=1}^{n} {}^nC_j \, {}^jC_i, i \le j$ is

(a) $3^n - 1$ (b) 0
(c) 2^n (d) none of these

96. The coefficient of $a^{10}b^7c^3$ in the expansion of $(bc + ca + ab)^{10}$ is

(a) 30 (b) 60
(c) 120 (d) 240

97. If $(1+x+2x^2)^{20} = a_0 + a_1x + a_2x^2 + \ldots + a_{40}x^{40}$, then $a_1 + a_3 + a_5 + \ldots + a_{37}$ equals

(a) $2^{19}(2^{20} - 21)$ (b) $2^{20}(2^{19} - 19)$
(c) $2^{19}(2^{20} + 21)$ (d) none of these

98. The coefficient of x^{50} in $(1+x)^{41}(1-x+x^2)^{40}$ is

(a) 1 (b) 2
(c) 3 (d) 0

99. The number of terms in the expansion of $(\sqrt[4]{9} + \sqrt[6]{8})^{500}$, which are integers is given by

(a) 501 (b) 251
(c) 601 (d) 451

100. If n is an even integer and a, b, c are distinct, the number of distinct terms in the expansion of $(a+b+c)^n + (a+b-c)^n$ is

(a) $\left(\frac{n}{2}\right)^2$ (b) $\left(\frac{n+1}{2}\right)^2$
(c) $\left(\frac{n+2}{2}\right)^2$ (d) $\left(\frac{n+3}{2}\right)^2$

101. Let $a_0, a_1, a_2, \ldots$ be the coefficients in the expansion of $(1+x+x^2)^n$ arranged order of x. The value of $a_r - {}^nC_1 a_{r-1} + {}^nC_2 a_{r-2} - \ldots + (-1)^r \, {}^nC_r a_0$, where r is not divisible by 3, is

(a) 5 (b) 3
(c) 1 (d) 0

102. In the expansion of $(3^{-x/4} + 3^{5x/4})^n$ the sum of the binomial coefficient is 64 and the term with the greatest binomial coefficients exceeds the third by $(n-1)$ the value of x must be

(a) 0 (b) 1
(c) 2 (d) 3

103. If $\frac{1}{1!11!} + \frac{1}{3!9!} + \frac{1}{5!7!} = \frac{2^n}{m!}$ and $f(x+y) = f(x)\cdot f(y) \; \forall \; x, y$, $f(1) = 1$, $f'(0) = 10$, then

(a) $f'(n) = m$ (b) $f'(m) = n$
(c) $f'(n) \ne f'(m)$ (d) none of these

Objective Questions Type II [One or more than one correct answer(s)]

In each of the questions below four choices of which one or more than one are correct. You have to select the correct answer(s) accordingly.

1. If $(1+x+x^2)^n = a_0 + a_1x + a_2x^2 + \ldots + a_{2n}x^{2n}$, then

(a) $a_0 - a_2 + a_4 - a_6 + \ldots = 0$, if n is odd
(b) $a_1 - a_3 + a_5 - a_7 + \ldots = 0$, if n is even
(c) $a_0 - a_2 + a_4 - a_6 + \ldots = 0$, if $n = 4p$, $p \in I^+$
(d) $a_1 - a_3 + a_5 - a_7 + \ldots = 0$, if $n = 4p+1$, $p \in I^+$

2. The value of $C_0^2 + 3C_1^2 + 5C_2^2 + \ldots$ to $(n+1)$ terms, (given that $C_r \equiv {}^nC_r$) is

(a) ${}^{2n-1}C_{n-1}$
(b) $(2n+1)\cdot {}^{2n-1}C_n$
(c) $2(n+1)\cdot {}^{2n-1}C_n$
(d) ${}^{2n-1}C_n + (2n+1)\cdot {}^{2n-1}C_{n-1}$

3. The number of distinct terms in the expansion of $(x+2y-3z+5w-7u)^n$ is

(a) $n+1$
(b) ${}^{n+4}C_4$
(c) ${}^{n+4}C_n$
(d) $\frac{(n+1)(n+2)(n+3)(n+4)}{24}$

4. If n is a positive integer and $(3\sqrt{3}+5)^{2n+1} = \alpha + \beta$, where α is an integer and $0 < \beta < 1$, then

(a) α is an even integer
(b) $(\alpha + \beta)^2$ is divisible by 2^{2n+1}
(c) the integer just below $(3\sqrt{3}+5)^{2n+1}$ divisible by 3
(d) α is divisible by 10

5. If $(8+3\sqrt{7})^n = P + F$, where P is an integer and F is a proper fraction, then
(a) P is an odd integer
(b) P is an even integer
(c) $F \cdot (P+F) = 1$
(d) $(1-F)(P+F) = 1$

6. In the expansion of $\left(\sqrt[3]{4} + \frac{1}{\sqrt[4]{6}}\right)^{20}$
(a) the number of rational terms = 4
(b) the number of irrational terms = 19
(c) the middle term is irrational
(d) the number of irrational terms = 17

7. Let $a_n = \frac{(1000)^n}{n!}$ for $n \in N$. Then a_n is greatest, when
(a) $n = 998$
(b) $n = 999$
(c) $n = 1000$
(d) $n = 1001$

8. If $C_0, C_1, C_2, \ldots, C_n$ are coefficients in the binomial expansion of $(1+x)^n$, then $C_0C_2 + C_1C_3 + C_2C_4 + \ldots + C_{n-2}C_n$ is equal to
(a) $\frac{2n!}{(n-2)!(n+2)!}$
(b) $\frac{2n!}{\{(n-2)!\}^2}$
(c) $\frac{2n!}{\{(n+2)!\}^2}$
(d) ${}^{2n}C_{n-2}$

9. The expression $\{x + \sqrt{(x^3-1)}\}^5 + \{x - \sqrt{(x^3-1)}\}^5$ is a polynomial of degree
(a) ${}^9C_2$
(b) ${}^7C_6$
(c) 7
(d) ${}^8C_1$

10. In the expansion of $(x+y+z)^{25}$
(a) every term is of the form ${}^{25}C_r \cdot {}^rC_k \cdot x^{25-r} \cdot y^{r-k} \cdot z^k$
(b) the coefficient of $x^8y^9z^9$ is 0
(c) the number of terms is 351
(d) none of the above

11. If $(1+2x+3x^2)^{10} = a_0 + a_1x + a_2x^2 + \ldots + a_{20}x^{20}$, then
(a) $a_1 = 20$
(b) $a_2 = 210$
(c) $a_4 = 8085$
(d) $a_{20} = 2^2 \cdot 3^7 \cdot 7$

12. The coefficient of the middle term in the expansion of $(1+x)^{2n}$ is
(a) ${}^{2n}C_n$
(b) $\frac{1 \cdot 3 \cdot 5 \ldots\ldots (2n-1)}{n!} 2^n$
(c) $2 \cdot 6 \ldots\ldots (4n-2)$
(d) none of the above

13. If maximum and minimum values of the determinant
$$\begin{vmatrix} 1+\sin^2 x & \cos^2 x & \sin 2x \\ \sin^2 x & 1+\cos^2 x & \sin 2x \\ \sin^2 x & \cos^2 x & 1+\sin 2x \end{vmatrix}$$
are α and β, then
(a) $\alpha^3 - \beta^{17} = 26$
(b) $\alpha + \beta^{97} = 4$
(c) $(\alpha^{2n} - \beta^{2n})$ is always an even integer for $n \in N$
(d) a triangle can be constructed having its sides as α, β and $\alpha - \beta$

14. The last digit of $3^{3^{4n}} + 1, n \in N$, is
(a) ${}^4C_3$
(b) ${}^8C_7$
(c) 8
(d) 4

15. The number $101^{100} - 1$ is divisible by
(a) 100
(b) 1000
(c) 10000
(d) 100000

16. Which of the following is/are correct
(a) $101^{50} - 99^{50} > 100^{50}$
(b) $101^{50} - 100^{50} > 99^{50}$
(c) $(1000)^{1000} > (1001)^{999}$
(d) $(1001)^{999} > (1000)^{1000}$

17. In the expansion of $(2-2x+x^2)^9$
(a) number of distinct terms is 10
(b) coefficient of x^4 is 97
(c) sum of coefficients is 1
(d) number of distinct terms is 55

18. If n is a positive integer and if $(1+x+x^2)^n = \sum_{r=0}^{2n} a_r x^r$, then
(a) $a_r = a_{2n-r}$ for $0 \le r \le 2n$
(b) $a_0 + a_1 + \ldots + a_{n-1} = \frac{1}{2}(3^n - a_n)$
(c) $a_0^2 - a_1^2 + a_2^2 - a_3^2 + \ldots + a_{2n}^2 = a_n$
(d) $a_0 + a_2 + \ldots + a_{2n} = \frac{1}{2}(3^n + 1)$

19. If the term independent of x in the expansion of $(\sqrt{x} - \lambda/x^2)^{10}$ is 405, then value of λ is
(a) −3
(b) 9
(c) −9
(d) 3

20. In the expansion of $(x^2+2x+2)^n$, (where n is a positive integer), then coefficient of
(a) x is $2^n \cdot n$
(b) x^2 is $n^2 \cdot 2^{n-1}$
(c) x^3 is $2^n \cdot {}^{n+1}C_3$
(d) none of these

Linked-Comprehension Type

In these questions, a passage (paragraph) has been given followed by questions based on each of the passages. You have to answer the questions based on the passage given.

PASSAGE 1

If n is positive integer and if $(1+4x+4x^2)^n = \sum_{r=0}^{2n} a_r x^r$, where a_i's/ are $(i = 0, 1, 2, 3, \ldots, 2n)$ real numbers.

On the basis of above information, answer the following questions :

1. The value of $2\sum_{r=0}^{n} a_{2r}$ is

(a) $9^n - 1$ (b) $9^n + 1$
(c) $9^n - 2$ (d) $9^n + 2$

2. The value of $2\sum_{r=1}^{n} a_{2r-1}$ is

(a) $9^n - 1$ (b) $9^n + 1$
(c) $9^n - 2$ (d) $9^n + 2$

3. The value of a_{2n-1} is

(a) 2^{2n} (b) $(n-1)\cdot 2^{2n}$
(c) $n\cdot 2^{2n}$ (d) $(n+1)\cdot 2^{2n}$

4. The value of a_2 is

(a) $8n$ (b) $8n^2 - 4$
(c) $8n^2 - 4n$ (d) $8n - 4$

5. The correct statement is

(a) $a_r = a_{n-r}, 0 \le r \le n$ (b) $a_{n-r} = a_{n+r}, 0 \le r \le n$
(c) $a_r = a_{2n-r}, 0 \le r \le 2n$ (d) none of these

PASSAGE 2

If

$$S_1 = \sum_{i=1}^{n} a_i = a_1 + a_2 + a_3 + \ldots\ldots + a_n$$

$$S_2 = \sum_{1\le i< j\le n}\sum a_i a_j = a_1a_2 + a_1a_3 + \ldots\ldots + a_{n-1}a_n$$

$$S_3 = \sum_{1\le i< j< k\le n}\sum\sum a_i a_j a_k = a_1a_2a_3 + a_1a_2a_4 + \ldots\ldots + a_{n-2}a_{n-1}a_n$$

....

$$S_n = a_1 a_2 a_3 \ldots\ldots a_n$$

Then, $(x+a_1)(x+a_2)(x+a_3)\ldots\ldots(x+a_n)$ can be written as

$$x^n + S_1 x^{n-1} + S_2 x^{n-2} + \ldots\ldots + S_n$$

On the basis of above information, answer the following questions :

1. If $(1+x)^n = C_0 + C_1 x + C_2 x^2 + C_3 x^3 + \ldots\ldots + C_n x^n$, then the coefficient of x^{n-1} in the expression $(x+C_0)(x+C_1)(x+C_2)(x+C_3)\ldots\ldots(x+C_n)$ is

(a) $2^{2n} - \dfrac{2n!}{2(n!)^2}$ (b) $2^{2n-1} - \dfrac{2n!}{2(n!)^2}$
(c) $2^{2n+1} - \dfrac{2n!}{2(n!)^2}$ (d) $2^{2n-2} - \dfrac{2n!}{2(n!)^2}$

2. If $(1+x)^n = C_0 + C_1 x + C_2 x^2 + C_3 x^3 + \ldots\ldots + C_n x^n$, then the value of $\sum_{0\le i< j\le n}\sum (i+j) C_i C_j$ is

(a) $n \sum_{0\le i< j\le n}\sum C_i C_j$ (b) $(n+1) \sum_{0\le i< j\le n}\sum C_i C_j$
(c) $(n-1) \sum_{0\le i< j\le n}\sum C_i C_j$ (d) $2 \sum_{0\le i< j\le n}\sum C_i C_j$

3. If $(1+x)^n = C_0 + C_1 x + C_2 x^2 + C_3 x^3 + \ldots\ldots + C_n x^n$, then the value of $\sum_{0\le i< j\le n}\sum (i+j)(C_i + C_j + C_i C_j)$ is (where $\lambda = \sum_{0\le i< j\le n}\sum C_i C_j$)

(a) $n(2^n + \lambda)$ (b) $n^2 \cdot 2^n + \lambda$
(c) $n(n\cdot 2^n + \lambda)$ (d) none of these

4. If $(1+x)^n = C_0 + C_1 x + C_2 x^2 + C_3 x^3 + \ldots\ldots + C_n x^n$ and $\sum_{r=0}^{n} \dfrac{1}{{}^nC_r} = a$, then the value of $\sum_{0\le i< j\le n}\sum \left(\dfrac{i}{{}^nC_i} + \dfrac{j}{{}^nC_j}\right)$ in terms of a and n is

(a) $\dfrac{na}{2}$ (b) $\dfrac{n^2 a}{2}$
(c) $\dfrac{na^2}{2}$ (d) $\dfrac{n^2a^2}{2}$

5. The coefficient of x^6 in the expression $(2+x)^3(3+x)^2(5+x)^3$ is
(a) 78
(b) 156
(c) 312
(d) 624

PASSAGE 3

Consider $(1+x+x^2)^{2n} = \sum_{r=0}^{4n} a_r x^r$, where $a_0, a_1, a_2, \ldots, a_{4n}$ are real numbers and n is a positive integer.

On the basis of above information, answer the following questions :

1. The value of $\sum_{r=0}^{n-1} a_{2r}$ is
(a) $\frac{9^n - 2a_{2n} - 1}{4}$
(b) $\frac{9^n + 2a_{2n} + 1}{4}$
(c) $\frac{9^n - 2a_{2n} + 1}{4}$
(d) $\frac{9^n + 2a_{2n} - 1}{4}$

2. The value of $\sum_{r=1}^{n} a_{2r-1}$ is
(a) $\left(\frac{9^n - 1}{2}\right)$
(b) $\left(\frac{3^{2n} - 1}{4}\right)$
(c) $\left(\frac{3^{2n} + 1}{4}\right)$
(d) $\left(\frac{9^n + 1}{2}\right)$

3. The value of a_2 is
(a) ${}^{4n+1}C_2$
(b) ${}^{3n+1}C_2$
(c) ${}^{2n+1}C_2$
(d) ${}^{n+1}C_2$

4. The value of a_{4n-1} is
(a) $2n$
(b) $2n^2 + 4n$
(c) $2n + 3$
(d) $2n^2 + 3n$

5. The correct statement is
(a) $a_r = a_{n-r}, 0 \le r \le n$
(b) $a_{n-r} = a_{n+r}, 0 \le r \le n$
(c) $a_r = a_{2n-r}, 0 \le r \le 2n$
(d) $a_r = a_{4n-r}, 0 \le r \le 4n$

PASSAGE 4

If m, n, r are positive integers and if $r < m, r < n$, then

$${}^mC_r + {}^mC_{r-1} \cdot {}^nC_1 + {}^mC_{r-2} \cdot {}^nC_2 + \ldots + {}^nC_r = \text{Coefficient of } x^r \text{ in } (1+x)^m (1+x)^n$$
$$= \text{Coefficient of } x^r \text{ in } (1+x)^{m+n}$$
$$= {}^{m+n}C_r$$

On the basis of above information, answer the following questions :

1. The value of ${}^nC_0 \cdot {}^nC_n + {}^nC_1 \cdot {}^nC_{n-1} + \ldots + {}^nC_n \cdot {}^nC_0$ is
(a) ${}^{2n}C_{n-1}$
(b) ${}^{2n}C_n$
(c) ${}^{2n}C_{n+1}$
(d) ${}^{2n}C_2$

2. The value of r for which ${}^{30}C_r \cdot {}^{20}C_0 + {}^{30}C_{r-1} \cdot {}^{20}C_1 + \ldots + {}^{30}C_0 \cdot {}^{20}C_r$ is maximum, is
(a) 10
(b) 15
(c) 20
(d) 25

3. The value of $r (0 \le r \le 30)$ for which ${}^{20}C_r \cdot {}^{10}C_0 + {}^{20}C_{r-1} \cdot {}^{10}C_1 + \ldots + {}^{20}C_0 \cdot {}^{10}C_r$ is minimum, is
(a) 0
(b) 1
(c) 5
(d) 15

4. If $S_n = {}^nC_0 \cdot {}^nC_1 + {}^nC_1 \cdot {}^nC_2 + \ldots + {}^nC_{n-1} \cdot {}^nC_n$ and if $\frac{S_{n+1}}{S_n} = \frac{15}{4}$, then n equals
(a) 2, 4
(b) 4, 6
(c) 6, 8
(d) 8, 10

5. If $(1+x)^n = C_0 + C_1 x + C_2 x^2 + \ldots + C_n x^n$ and n is odd, then the value of $C_0^2 - C_1^2 + C_2^2 - C_3^2 + \ldots + (-1)^n C_n^2$ is
(a) 0
(b) ${}^{2n}C_n$
(c) $(-1)^n \, {}^{2n}C_{n-1}$
(d) ${}^{2n}C_{n-2}$

PASSAGE 5

If $a, b \in$ prime numbers and $n \in N$, then free from radical terms or rational terms in the expansion of $(a^{1/p} + b^{1/q})^n$ are the terms in which indices of a and b are integers.

On the basis of above information, answer the following questions :

1. In the expansion of $(7^{1/3} + 11^{1/9})^{6561}$, the number of terms free from radicals is
(a) 715
(b) 725
(c) 730
(d) 745

2. In the expansion of $(\sqrt{2} + 3^{1/11})^{110}$, the number of irrational terms is
(a) 85
(b) 95
(c) 105
(d) 115

3. In the expansion of $(2^{1/5}+\sqrt{3})^{20}$, the sum of rational terms is

(a) 21 (b) 84

(c) 97 (d) none of these

4. The number of integral terms in the expansion of $(\sqrt{3}+\sqrt[8]{5})^{256}$ is

(a) 32 (b) 33

(c) 34 (d) 35

5. The number of terms with integral coefficient in the expansion of $(\sqrt[4]{9}+\sqrt[6]{8}x)^{500}$ is

(a) 501 (b) 250

(c) 253 (d) 251

PASSAGE 6

If n is a positive integer and $a_1, a_2, a_3, \ldots, a_m \in C$, then

$$(a_1+a_2+a_3+\ldots+a_m)^n=\sum \frac{n!}{n_1!\,n_2!\,n_3!\ldots n_m!}\cdot a_1^{n_1}\cdot a_2^{n_2}\cdot a_3^{n_3}\ldots a_m^{n_m}$$

where $n_1, n_2, n_3, \ldots, n_m$ are all non negative integers subject to the condition $n_1+n_2+n_3+\ldots+n_m=n$

On the basis of above information, answer the following questions :

1. The number of distinct terms in the expansion of $(x_1+x_2+x_3+\ldots+x_n)^4$ is

(a) ${}^{n+1}C_4$ (b) ${}^{n+2}C_4$

(c) ${}^{n+3}C_4$ (d) ${}^{n+4}C_4$

2. The coefficient of x^3y^4z in the expansion of $(1+x-y+z)^9$ is

(a) 2320 (b) 2420

(c) 2520 (d) 2620

3. The coefficient of $a^3b^4c^5$ in the expansion of $(bc+ca+ab)^6$ is

(a) 40 (b) 60

(c) 80 (d) 100

4. The coefficient of x^{39} in the expansion of $(1+x+2x^2)^{20}$ is

(a) $5\cdot 2^{19}$ (b) $5\cdot 2^{20}$

(c) $5\cdot 2^{21}$ (d) $5\cdot 2^{23}$

5. If coefficient of x^{20} in $(1-x+x^2)^{20}$ and in $(1+x-x^2)^{20}$ are respectively a and b, then

(a) $a=b$ (b) $a>b$

(c) $a<b$ (d) $a+b=0$

PASSAGE 7

Suppose m divided by n, then quotient q and remainder r.

ie,

$$n\overline{)m(}\,q \quad \text{remainder } r$$

or we can say that,

$$m=nq+r\ \forall\ m, n, q, r\in I \text{ and } n\neq 0$$

On the basis of above information, answer the following questions :

1. 5^{97} is divided by 52, then the remainder is

(a) 3 (b) 4

(c) 5 (d) 0

2. $13^{99}-19^{93}$ is divided by 162, then the remainder is

(a) 3 (b) 4

(c) 5 (d) 0

3. $27^{10}+7^{51}$ is divided by 10, then the remainder is

(a) 0 (b) 2

(c) 4 (d) 5

4. $(106)^{85}-(85)^{106}$ is divided by 7, then the remainder is

(a) 0 (b) 1

(c) 2 (d) 3

5. $53^{53}-33^3$ is divided by 10, then the remainder is

(a) 0 (b) 2

(c) 4 (d) 6

Answers

Objective Questions Type I [Only one correct answer]

1. (d)	2. (c)	3. (d)	4. (c)	5. (d)	6. (c)	7. (c)	8. (a)	9. (b)	10. (c)
11. (d)	12. (a)	13. (b)	14. (d)	15. (d)	16. (b)	17. (b)	18. (d)	19. (b)	20. (b)
21. (a)	22. (a)	23. (c)	24. (c)	25. (a)	26. (c)	27. (d)	28. (c)	29. (a)	30. (b)
31. (d)	32. (d)	33. (c)	34. (a)	35. (d)	36. (b)	37. (c)	38. (c)	39. (b)	40. (d)
41. (b)	42. (d)	43. (b)	44. (b)	45. (d)	46. (c)	47. (c)	48. (b)	49. (b)	50. (c)
51. (b)	52. (c)	53. (a)	54. (c)	55. (c)	56. (b)	57. (b)	58. (c)	59. (a)	60. (c)
61. (a)	62. (c)	63. (a)	64. (b)	65. (c)	66. (a)	67. (d)	68. (b)	69. (c)	70. (c)
71. (d)	72. (d)	73. (d)	74. (a)	75. (c)	76. (d)	77. (b)	78. (c)	79. (c)	80. (d)
81. (a)	82. (c)	83. (c)	84. (c)	85. (b)	86. (a)	87. (a)	88. (c)	89. (b)	90. (c)
91. (b)	92. (b)	93. (a)	94. (d)	95. (a)	96. (c)	97. (a)	98. (d)	99. (b)	100. (c)
101. (d)	102. (a)	103. (b)							

Objective Questions Type II [One or more than one correct answer(s)]

1. (a, b)	2. (c, d)	3. (b, c, d)	4. (a, d)	5. (a, d)
6. (b, c)	7. (b, c)	8. (a, d)	9. (b, c)	10. (a, b, c)
11. (a, b, c)	12. (a, b)	13. (a, b, c)	14. (a, d)	15. (a, b, c)
16. (a, b, c)	17. (c, d)	18. (a, b, c, d)	19. (a, d)	20. (a, b, c)

Linked-Comprehension Type

Passage 1	1. (b)	2. (a)	3. (c)	4. (c)	5. (d)
Passage 2	1. (b)	2. (a)	3. (c)	4. (b)	5. (c)
Passage 3	1. (c)	2. (b)	3. (c)	4. (a)	5. (d)
Passage 4	1. (b)	2. (d)	3. (a)	4. (a)	5. (a)
Passage 5	1. (c)	2. (c)	3. (d)	4. (b)	5. (d)
Passage 6	1. (c)	2. (c)	3. (b)	4. (c)	5. (b)
Passage 7	1. (c)	2. (d)	3. (b)	4. (a)	5. (d)