NUMBER SYSTEMs

(Ref: FM-QAH2022007)

I) Fundamentals

1. Express the recurring decimal 0.423333……. in the form of a fraction.

2. Which of the following is a prime number.
   a) 307 b) 429 c) 589 d) 851

3. How many prime no's exist between
   i) 1 to 100
   ii) 1 to 200
   iii)1 to 1000

4. If P, P+2, P+4 are prime No's. How many values can P take?

5. Sana typed the first n natural numbers on a keyboard without any spaces. If she had to press the numbered keys 1584 times, find n.

6. Some consecutive positive integers beginning with 1 were written on a board. A student erased one of these integers. The total of the remaining integers is 3190. What was the integer erased by the student?

7. If x ∈ even, y ∈ even, z ∈ odd then which of the following is true.
   a) x(y – z) is odd
   b) (x – y).z is odd
   c) (x+y).(y+z) x is even
   d) (x-z)(x+y) is odd

II) Divisibility & Remainders

8. Find possible values of 'A', if number 5232A4 is divisible by
   a) 2
   b) 3
   c) 4
   d) 6
   e) 8
   f) 9
   g) 11
   h) 12

9. If the seven-digit number 8a2b3c5 is divisible by 99. Find the number of possible values of a+b+c.

10. If x is a positive integer such that $126x + 12$ is perfectly divisible by x, then the number of possible values of x is
    a) 6 b) 2 c) 4 d) 5

11. Let K be a positive integer such that $k + 4$ is divisible by 7. Then the smallest positive integer n, greater than 2, such that $k + 2n$ is divisible by 7 equals.
    a) 13 b) 6 c) 9 d) 8

12. Find remainder when 1234567891011…..8283 is divided by 9.

13. Find the remainder when the 100 digit number formed by writing consecutive natural numbers starting from 1 next to each other is divided by 16.

14. The difference between a two digit number and the sum of its digits is always a multiple of
    a) 6 b) 9 c) 11 d) 1

15. The product of 7 consecutive natural numbers is always divisible by
    a) 5040 b) 10080 c) 3430 d) 6860

16. What should be the least number added to 54365 to make the sum divisible by 24?

17. What should be the least number subtracted from 54365 to make the difference divisible by 36?

Find the remainder when

18. 73 + 75 + 78 + 57 + 197 is divided by 36.
    a) 4 b) 12 c) 6 d) 22

19. 73 × 75 × 78 × 57 × 197 is divided by 34.
    a) 30 b) 18 c) 12 d) 22

20. 56^{123} is divided by 11.
    a) 7 b) 9 c) 3 d) 1

21. 87^{208} is divided by 25.
    a) 12 b) 19 c) 21 d) 11

22. $50^{49^{54}}$ is divided by 3.
    a) 2 b) 1 c) 0 d) 3

23. 1314^{5125} is divided by 8.
    a) 2 b) 6 c) 4 d) 0

24. $315^{19^{41}}$ is divided by 8.
    a) 3 b) 5 c) 1 d) 7

25. 40^{97} is divided by 17.
    a) 6 b) 11 c) 7 d) 13

26. Find the remainder when 3^{5^7} is divided by 41.
    a) 38 b) 27 c) 9 d) 3

27. A natural number N when divided by 12 leaves a remainder 7. Find the remainder when N is divided by
    a) 6
    b) 24
    c) 18

28. In above question, find the remainder when
    a) 2N is divided by 12

b) N^2 is divided by 12
c) $M = 5N^4 + 3N^3 + 2N^2 + N + 9$ is divided by 12.

29. Find the second smallest number which, when divided by 6 leaves a remainder of 2 and when divided by 13 leaves a remainder of 6.

30. A number, when divided by A leaves 5 as the remainder. The number when divided by 3A leaves 25 as the remainder. How many values of a satisfy these conditions?

31. A number when divided by a divisor leaves 7 as the remainder. The number when divided by twice the divisor leaves 47 as the remainder. How many divisors satisfy these conditions and what are these divisors?

32. The remainder obtained, when any prime number greater than 2 is divided by 4 must be
a) Either 1 or 2
b) Either 2 or 3
c) Either 1 or 3
d) Either 1 or 2 or 3

33. Find the remainder when 12! is divided by 13.

34. Find the remainder when 15! is divided by 17.

35. Find the remainder when 10! Is divided by 13.

36. Find the remainder when (14!)55 is divided by 17.

37. Find the remainder when 1! + 2! …… + 100! Is divided by 36.

38. Find the remainder when 212121…. Up to 250 digits is divided by 99.

39. Find the remainder when 321321321…up to 900 digits is divided by 999.

40. Find the remainder when 92879287…. Up to 120 digits is divided by 101.

41. Find the remainder when 324516324516….up to 400 digits is divided by 1001.

Find reminder when –(n= any natural no.)

42. $23^{93} + 10^{93} - 5$ *is* divided *by* 33
a) 5 b) 26 c) 28 d) 17

43. $52^{2n+1} + 19^{2n+1} - 11$ *is* divided *by* 71
a) 64 b) 11 c) 54 d) 60

44. $121^{2n} - 61^{2n} - 27$ *is* divided *by* 30
a) 3 b) 15 c) 27 d) 21

45. $121^{2n} - 61^{2n} - 25$ *is* divided *by* 182
a) 25 b) 157 c) 167 d) CBD

46. $65^{17} + 5^{17} - 8$ *is* divided *by* 35
a) 27 b) 6 c) 8 d) none

47. $5^{6n+3} + 25^{2n+1} - 30$ *is* divided *by* 150
a) 120 b) 80 c) 20 d) 130

48. $3^{8n+4} + 6^{4n+2} + 7$ *is* divided *by* 117
a) 7 b) 80 c) 110 d) CBD

49. $16^n + 17^{2n+1}$ *is* divided *by* 11
a) 2 b) -1 c) 1 d) None

50. Which of the following statements is true about $(43^{2n} + 1)$?
a) It is always divisible by 44.
b) It is never divisible by 44.
c) It is always divisible by 44
d) It is never divisible by 42.

51. Which of the following statements is true about $(22^{2n+1} + 1)$?
a) It is never divisible by 2.
b) It is always divisible by 3
c) It is never divisible by 23.
d) It is always divisible by 21.

52. What is the remainder when $9^1 + 9^2 + 9^3$ …… $+9^{1000}$ is divided by 6?
a) 0 b) 3 c) 2 d) 5

III) Unit & Last two digits

53. Find the last digit of
i) 2^{1430}
ii) 13^{503}
iii) 67^{123}
iv) 19^{1456}

54. Find the last digit of
i) $13^{27} + 27^{13} + 54^{28}$
ii) $113^{39} \times 225^{22} + 29^{29}$
iii) $123^{39} \times 117^{41} \times 125^{48} \times 112^{38} + 709^{111}$

55. Find the last digit of
a) $6^{6^{6^{\cdot^{\cdot^{\cdot^{\infty}}}}}}$ b) $14^{14^{14^{\cdot^{\cdot^{\cdot^{\infty}}}}}}$

56. Find the last digit of
a) $13^{14^{15^{16}}}$ b) $12^{13^{14^{15}}}$

Find Last two digits of the following numbers.

57. $323^{523} + 2^{1002}$
a) 21 b) 79 c)71 d) 29

58. $49^{54^{23}}$
a) 01 b) 43 c) 49 d) 17

59. 343^{444}
a) 01 b) 43 c) 49 d) 07

60. $24^{253} + 76^{258}$
a) 24 b) 00 c) 76 d) 48

61. $24^{99} + 25^{98}$
a) 01 b) 51 c) 49 d) 73

62. Find the last three digits of followings
    a) $(47)^{47}$ b) $(312)^{123}$

IV) Factors

N= $2^3 \times 3^6 \times 10^3$

63. Find the total no. of factors of N
64. Find the no. of factors of N which are prime?
65. Find the no. of factors of N which are even?
66. Find the no. of factors of N are odd?
67. Find the no. of factors of N which are multiples of 12?
68. Find the no. of factors of N which are common multiples of 12 and 18?
69. Find the no. of factors of N which are multiples of 12 but not 18?
70. Find the no. of factors of N which are perfect squares?
71. Find the no. of factors of N which are perfect cubes?

N = $2^3 \times 10^3$

72. Find the sum of factors of N?
73. Find the sum of factors of N which are even?
74. Find the sum of factors of N which are odd?
75. Find the sum of factors of N which are perfect squares?
76. Find the sum of factors of N which are perfect cubes?
77. Find the product of factors of N?
78. Find the smallest number which has exactly 12 factors?
79. A number N^2 has 15 factors. How many factors can N have?
    a) 5 or 7 factors c) 6 or 8 factors
    b) 4 or 6 factors d) 9 or 8 factors
80. By how many ways $2^4 \times 3^6$ can be written as a product of two distinct numbers?
81. By how many ways $2^4 \times 3^6$ can be written as a product of two numbers?
82. By how many ways $2^4 \times 3^6$ can be written as a product of two coprime numbers?
83. In how many ways can 1 billion be written as a product of two numbers such that neither of the numbers is a multiple of 10?
    a) 2 b) 1 c) 3 d) CBD
84. How many of the following statements are true?
    i. Only squares of prime numbers have three factors
    ii. If a number has 4 factors, the number must be a perfect cube
    iii. If a number has 5 factors, the number must be a perfect cube
    a) All three b) Two c) One d) None
85. Find the number of co-prime to 96, that are less than 96.
86. Find the sum of co-prime to 144, that are less than 144.
87. Find the number of numbers between 1 to 100 (both inclusive) which are co-prime to
    a) 15 b) 12
    c) 21 d) 30

V) Index of greatest power & No. of trailing zeros

Find the maximum value of n such that

88. 159! is perfectly divisible by 10^n.
    a) 36 b) 42 c) 39 d) 38
89. 158! is perfectly divisible by 6^n.
    a) 75 b) 77 c) 76 d) 74
90. 77! is perfectly divisible by 720^n.
    a) 18 b) 19 c) 17 d) 20
91. $77 \times 42 \times 37 \times 57 \times 30 \times 90 \times 70 \times 2400 \times 2402 \times 243 \times 343$ is perfectly divisible by 21^n
    a) 6 b) 8 c) 11 d) 12

For questions (36-48): Find the number of consecutive zeroes at the end of the following numbers.

92. 3200 + 1000 + 40000 + 32000 + 15000000
    a) 7 b) 6 c) 2 d) 3
93. 11! × 22! × 33! × 44! × 55! × ……..110!
    a) 121 b) 132 c) 126 d) 136
94. 3200 × 1000 × 40000 × 32000 × 16000000
    a) 17 b) 18 c) 19 d) 2
95. 74!
    a) 17 b) 18 c) 16 d) 15
96. 78! × 43!
    a) 26 b) 27 c) 28 d) 29
97. 101! + 201!
    a) 72 b) 74 c) 23 d) 24
98. 57 × 60 × 30 × 15625 × 4096 × 625 × 875 × 975.
    a) 15 b) 13 c) 11 d) 17
99. 1! × 2! × 3! × 4! × 5! × - - - - - - - × 50!
    a) 200 b) 251 c) 150 d) 262
100. 11 × 22 × 33 × 44 × 55 × 66 × 77 × 88 × 99 × 1010.
    a) 5 b) 6 c) 4 d) 2

101. 150! / 100!

102. N! has 24 trailing zeroes, find smallest and largest value of N?

103. What is the largest power of 10! That can divide 100!?
a) 12 b) 11 c) 10 d) 20

104. If the IGP of 7 in n! is 7, how many values cam 'n' take?

105. If the IGP of 7 in n! is 31, what is the greatest power of 11 in n!?

VI) HCF/LCM

106. A) The LCM and HCF of $\frac{3}{7}, \frac{5}{9}, \frac{4}{10}$ and $\frac{8}{9}$ is _____.
B) Find the HCF and LCM of 72, 108 and 162.

107. The product of the LCM and the HCF of two numbers is 1080. If one of the numbers is 45, the other number is ____.

108. The LCM and HCF of 64, 80 and x are 960 and 16 respectively. Which of the following could be a value of x?
a) 96 b) 112
c) 32 d) 128

109. Six bells ring together at 11 am and after that they ring at intervals of 5, 10, 15, 20, 25, 30 seconds. How many times will they ring together from 11:00 am to 1:00 pm on the same day?

110. Find the smallest number other than 3 which when divided by 6, 8, 12 gives 3 as remainder in each case?

111. Find the smallest number which when divided by 6, 8, 12 gives remainders as 3, 5, 9 respectively?

112. Find the smallest number which when divided by 6, 8, 12 gives remainders as 2, 4, 8 respectively?

113. Find the largest number which leaves a remainder of 2 and 3 when it divides 89 and 148 respectively?

114. Find the largest number which when divides 1444, 1804, 11344 leaving the same remainder in each case?

115. HCF of two numbers is 6 and the product of the numbers is 4320. How many such pairs of numbers exist?

116. LCM of two numbers is 196 and HCF is 7. Difference of the numbers is 21. Find the smaller of the two numbers?

117. When 222, 333 and 444 are divided by a number n, the remainder obtained are 51, 48 and 45 respectively. What is the remainder obtained when (n + 4) × (n + 7) is divided by 17?
a) 0 b) 1 c) 9 d) none

118. A) A number when divided by 15 leaves 5 as the remainder and when divided by 20 leaves 10 as the remainder. When the number is divided by 50, what is the remainder?
B) How many two-digit number when divided by 4 leave a remainder 1 and when divided by 5 leave a remainder 3?

119. A) Find the smallest number which when divided by 6 leaves a remainder 2 and when divided by 13 leaves a remainder 5.
B) How many natural numbers less than 150 leave a remainder 5 when divided by 6 and leave a remainder 1 when divided by 5.

120. Saroj distributed all the marbles with him equally among 8 children and found that 5 marbles were left. Had he distributed the marbles equally among 12 or 18 children, he would have still had 5 marbles left with him. If the number of marbles Saroj distributed was less than 200, how many marbles did he initially have?

121. HCF of three distinct no's is 5 then among the options could be their product.
a) 155 b) 550 c) 200 d) 750

122. $N_1 = x^2y^3$
$N_2 = xy^2$
HCF of $(N_1, N_2, N_3) = xy$
LCM of $(N_1, N_2, N_3) = x^2y^4z$
How many values of N_3 Could be possible?

VII) Base System

Conversion

i) Decimal to other bases

123. $(1234)_{10}$ to
a) Base 2
b) Base 3
c) Base 6
d) Base 5
e) Base 7
f) Base 8

ii) Other bases to Decimal

a) $(2354)_7 \rightarrow (\quad)_{10}$
b) $(435)_8 \rightarrow (\quad)_{10}$
c) $(13A5)_{16} \rightarrow (\quad)_{10}$

124. If $(624)_7 = (470)_k$ then find the value of k.

125. The number of four digit number is septanay (Base 7) system is:

126. Find the sum/difference/multiplication

i) $(1234)_5 + (4321)_5 \rightarrow (\quad)_5$
ii) $(4352)_7 + (1235)_7 \rightarrow (\quad)_7$
iii) $(321)_5 - (123)_5 \rightarrow (\quad)_5$
iv) $(17865)_9 - (1004)_9 \rightarrow (\quad)_9$
v) $(32)_5 \times (12)_5 \rightarrow (\quad)_5$
vi) $(125)_7 \times (521)_7 \rightarrow (\quad)_7$
vii) Square of $(35)_7 = (\quad)_7$

VIII) Mixed

Find no. of integers that are

127. Divisible by 2 or 3 but not by 5 and are less than 200.
a) 58 c) 126
b) 114 d) None

128. Divisible by 3 or 5 but not by 2 and are less than 300.

129. Divisible by 2,3 or 5 but not by 30 and are less than 500.

130. Divisible by 3 but not by 5 and are less than 500.

131. Divisible by 7 or 9 and are less than 400.

132. Divisible by 3,5 or 7 and are lies between 200 – 500.

133. Divisible by 5 or 4 or 6 and are less than 180.

134. Divisible by 12 or 13 and lies between 100 and 600.

135. Divisible by 15 or 20 and are less than 500.

136. Divisible by 6,5 or 7 but not by 12 and are less than 320.

137. Find numbers x & y if their LCM is 120 and sum is 68.

138. Find numbers x & y if their LCM is882 and sum is 420.

139. If LCM of two numbers is 720 and HCF is 36 find their product.

140. The difference between a two-digit number and the number obtained by interchanging the digits is 36. What is the difference between the sum and the difference of the digits of the number if the ratio between the digits of the number is 1 : 2 ?
a) 8 c) 4
b) 16 d) None of these

141. A number when divided by a divisor leaves a remainder of 26.When twice the original number is divided by the same divisor, the remainder is 11. What is the value of the divisor?
a) 43 c) 47
b) 41 d) 61

142. What is the remainder when $9^1 + 9^2 + 9^3 \ldots\ldots + 9^{188}$ is divided by 6?
a) 0 c) 3
b) 2 d) 5

143. The positive integers m and n leave remainders of 2 and 3, respectively, when divided by 6. M>n. What is the remainder when m–n is divided by 6?
a) 5 c) 0
b) 3 d) 1

144. When 242 is divided by a certain divisor the remainder obtained is 8. When 698 is divided by the same divisor the remainder obtained is 9.However, when the sum of the two numbers 242 and 698 is divided by the divisor, the remainder obtained is 4.What is the value of the divisor?
a) 11 c) 17
b) 13 d) 23

145. The sum of the factors of a number is 124. What is the number?
a) Number lies between 40 and 50
b) Number lies between 50 and 60
c) Number lies between 60 and 80
d) More than one such number exists

146. How many factors of 14400 are perfect squares?
a) 4 b) 6 c) 8 d) None

147. If a three digit number 'xyz has 3 factors, how many factors does the 6-digit number 'xyzxyz' have?
a) 16 factors c) 24 factors
b) 16 or 24 factors d) 20 factors

148. How many numbers are there less than 100 that cannot be written as a multiple of a perfect square greater than 1?
a) 61 c) 56
b) 52 d) 65

149. Find the smallest number that has exactly 18 factors.
a) 180 c) 216
b) 240 d) None of these

150. In an office, there are 80 employees. All the employees visited an orphanage having 80 orphans. The first employee donated Rs. 1000 to each orphan. The second employee donated Rs. 1000 to every second orphan starting from the second orphan. The third employee donated Rs. 1000 to every third orphan starting from the third orphan and so on. How many orphans received donations from an odd number of employees?

151. How many odd natural numbers less than 130 can be expressed as a difference of squares of two natural numbers in exactly one way?

152. What is the number of integers between 150 and 750 (both excluded) that are divisible by 7 or 9 but not 13?

153. M = 3(3!) + 4(4!) + … + 15(15!). What is the remainder when M – 15 is divided by 14! – 2?

154. The smallest possible number that can be expressed as the sum of cube of two natural numbers in two different combinations.
a) 1728 b) 1729
c) 1000 d) None of these

155. Total number of factors of a number is 24 and the sum of its 3 prime factors out of four, is 25. The product of all 4 prime factors of this number is 1365. Then such a greatest possible number can be:
a) 17745 b) 28561
c) 4095 d) Can't be determined

156. A six digit number of the abcabc is written where a, b, c ∈ 1, then which statement is true about this number:
a) It is always divisible by 7 and 11
b) It is divisible by 143
c) It is divisible by 1001
d) All of (a), (b) and (c) are correct

157. The digit at the tens place in the sum of the expression: $(1!) + (2!)^2 + (3!)^3 + (4!)^4 + (5!)^5 + \cdots (111!)^{111}$ *is*:
a) 0 b) 1 c) 8 d) 9

158. The expression $2222^{7777} + 7777^{2222}$ is divisible by
a) 99 b) 101 c) 13 d) any two of these

159. The number of digits in the product of $5^{72} \times 4^{54}$ is:
a) 77 b) 75 c) 99 d) none of (a), (b), (c)

160. A student started writing down the counting numbers as 1, 2, 3, 4,… and then he added all those numbers and got the result 500. But when I checked the result I have found that he had missed a number. What is the missing number?
(a) 30 (b) 25
(c) 28 (d) 32

161. If 1 + 2+ 3 + + k = N^2 and N is less than 100 then the value of k can be, where N ∈ Natural Numbers :
(a) 8 (c) 8 and 36
(b) 1 and 49 (d) both (a) and (b)

162. If p = N + 5 when N is the product of any three consecutive positive integer. Then :
(a) p is prime
(b) p is odd
(c) p is divisible by 6
(d) either of (b), (c)

163. A typist while typing the numbers from 600 to 799 mistakenly he typed 6 every time in place of 5. So the total number of times he has typed 4 is :
(a) 300 (b) 230
(c) 180 (d) none of these

164. A nine digit number abcdefghi is such that a is divisible by 1, ab is divisible by 2, abc is divisible by 3 and abcd is divisible by 4 and so on where none of a, b, c, d, ... is same and every digit is a non-zero digit such a number is :
(a) 826435791
(b) 126453789
(c) 381654729
(d) 123456789

165. If $22^3 + 23^3 + 24^3 + ... + 87^3 + 88^3$ is divided by 110 then the remainder will be :
(a) 55 (b) 1 (c) 0 (d) 44 (e) None

166. A certain number 'n' can exactly divide $(3^{24} - 1)$ this number can also divide the number :
(a) $(3^{16} + 1)$ (b) $(3^8 - 1)$
(c) $(3^{70} - 1)$ (d) $(3^{96} - 1)$

Direction for 168 to 172: For any natural number n the sets S_1, S_2 … are defined as below:
S_1 = {1}, S_2 = {2, 3}, S_3 = {4, 5, 6}, S_4 = {7, 8, 9, 10}, S_5 = {11, 12, 13, 14, 15}… etc.

167. The last element in the S_{24} is :
(a) 576 (b) 600
(c) 300 (d) 625

168. The middlemost element of the set S_{15} is :
(a) 196 (b) 169
(c) 131 (d) none of these

169. The sum of the elements of set S_{25} is :
(a) 7825 (b) 3125
(c) 3250 (d) none of these

170. In which set, there are maximum number of prime number elements among S_1, S_2, S_3,…. S_{13} is :
(a) S_{12} (b) S_{13}
(c) S_{12} and S_{13} (d) S_9, S_{12}, S_{13}

171. Of which set the sum of all the elements of the set is even :
(a) S_{39} (b) S_{50}
(c) S_{72} (d) S_{94}

172. Total number of natural numbers being the perfect square whose square root is equal to the sum of the digits of the perfect square is :
(a) 0 (b) 1
(c) 2 (d) 12

173. If n ∈ 1, 3, 5, 7, ... etc., then the value of $19^n - 23^n - 43^n + 47^n$ is necessarily divisible by :
(a) 264 (b) 246
(c) 76 (d) 129

Answer Key

1. 127/300	2. A	3. i) 25 ii) 46 iii) 168	4. 1	5. 564	6. 50	7. C
8. a) 0 to 9 b) 2,5,8 c) 0,2,6,8 d) 2,5,8 e) 2,6 f) 5 g) 0 h) 2,8			9. 1	10. A	11. C	12. 3
13. 9	14. B	15. A	16. 19	17. 5	18. B	19. D
20. D	21. C	22. A	23. D	24. A	25. A	26. A
27. a) 1 b) Either 19 or 7 c) 19 or 13 or 7		28. a) 2 b) 1 c) 8	29. 110	30. 2	31. Only one – 40	32. C
33. 12	34. 1	35. 6	36. 16	37. 9	38. 51	39. 396
40. 52	41. 649	42. C	43. D	44. A	45. B	46. A
47. A	48. A	49.	50. D	51. A	52. A	53. i) 4 ii) 7 iii) 3 iv) 1
54. i) 0 ii) 4 iii) 9	55. a) 6 b) 6	56. a) 1 b) 2	57. c	58. a	59. a	60. b
61. c	62. a) 863 b) 728	63. 196	64. 3	65. 168	66. 28	67. 120
68. 100	69. 20	70. 32	71. 18	72. 19812	73. 19656	74. 156
75. 2210	76. 9198	77. $[2^{84} \times 5^{42}]$	78. 60	79. C	80. 17	81. 18
82. 2	83. A	84. C	85. 32	86. 48	87. i) 53 ii) 33 iii) 57 iv) 14	
88. d	89. a	90. c	91. a	92. c	93. d	94. b
95. c	96. b	97. d	98. d	99. d	100. d	101. 113
102. 100, 104	103. A	104. No Solution	105. 12	106. a) 120 b) (18, 648)	107. 24	108. A
109. 24	110. 27	111. 21	112. 20	113. 29	114. 180	115. 4
116. 28	117. D	118. a) 0 b) 6	119. a) 44 b) 5	120. 77 or 149	121. D	122. 2
123. i) a) 10011010010 b) 1200201 c) 5414 d) 14414 e) 3412 f) 2322	123. ii. a) 872 b) 285 c) 5029	124. 8	125. 2058	126. i) 11110 ii) 5620 iii) 143 iv) 16861 v) 1001 vi) 102355 vii) 1654	127. d	128. 70
129. 349	130. 133	131. 95	132. 162	133. 82	134. 77	135. 49
136. 106	137. 60, 8	138. 126, 294	139. 25920	140. A	141. B	142. A
143. A	144. B	145. D	146. D	147. B	148. A	149. A
150. 8	151. 34	152. 132	153. 459	154. B	155. A	156. D
157. D	158. D	159. D	160. C	161. D	162. B	163. C
164. C	165. A	166. D	167. C	168. D	169. A	170.
171. A	172. C	173. A				