

**HSSC MOCK TEST - 165 (SOLUTION)**

1. (D)  $f(x) = |2x^2 - 11|$  and  $g(x) = 2x - 1$

Now,  $fog(x) = f[g(x)]$

$\Rightarrow fog(x) = f[2x - 1]$

$\Rightarrow fog(x) = |2(2x - 1)^2 - 11|$

$\Rightarrow fog(x) = |2(4x^2 + 1 - 4x) - 11|$

$\Rightarrow fog(x) = |8x^2 + 2 - 8x - 11|$

$\Rightarrow fog(x) = |8x^2 - 8x - 9|$

Now,  $fog(-1) = |8(-1)^2 - 8(-1) - 9|$

$\Rightarrow fog(-1) = |8 + 8 - 9| = 7$

2. (D) The required no. of ways =  ${}^5C_2 \times {}^{11}C_9$

3. (A)  $(1 + x)^3(1 + x^2)^2$

$\Rightarrow (1 + x^3 + 3x^2 + 3x)(1 + x^4 + 2x^2)$

Coefficient of  $x^5 = 2 + 3 = 5$

4. (B) A.T.Q.,

$\frac{17}{2} [2a + (17-1)d] = 867$

$\Rightarrow \frac{1}{2} [2a + 16d] = 51$

$\Rightarrow a + 8d = 51 \Rightarrow T_9 = 51$

5. (B) The required remainder = 4

6. (D)  $S = 3 + 6 + 9 + \dots + 99$

$S = 3(1 + 2 + 3 + \dots + 33)$

$S = 3 \times \frac{33 \times 34}{2}$

$S = 33 \times 51 = 1683$

7. (B) Total students = 500

Passed students  $n(E \cup H) = 500 - 29 = 471$

$n(E) = 247$  and  $n(H) = 307$

Now,  $n(E \cap H) = n(E) + n(H) - n(E \cup H)$

$\Rightarrow n(E \cap H) = 247 + 307 - 471$

$\Rightarrow n(E \cap H) = 83$

The required no. of students = 83

8. (B) Number of elements in set B = 4

Number of subsets of a set B =  $2^4 = 16$

Number of subsets of set A =  $16 + 48$   
 $= 64 = 2^6$

Hence no. of elements in set A = 6

9. (C) 'PROBABILITY'

No. of permutation =  $\frac{11!}{2!2!} = 9979200$

10. (C) Given that,

$x^4 + \frac{1}{x^4} = 727$

$\Rightarrow x^4 + \frac{1}{x^4} + 2 = 727 + 2$

$\Rightarrow \left(x^2 + \frac{1}{x^2}\right)^2 = 727$

$[\because (a+b)^2 = a^2 + b^2 + 2ab]$

$\Rightarrow x^2 + \frac{1}{x^2} = 27$

and,  $\left(x - \frac{1}{x}\right)^2 = x^2 + \frac{1}{x^2} - 2$

$[\because (a-b)^2 = a^2 + b^2 - 2ab]$

$\Rightarrow \left(x - \frac{1}{x}\right) = \sqrt{27 - 2} = 5$

Now,  $\left(x - \frac{1}{x}\right)^3 = x^3 - \frac{1}{x^3} - 3\left(x - \frac{1}{x}\right)$

$[\because (a-b)^3 = a^3 - b^3 - 3ab(a-b)]$

$\Rightarrow (5)^3 = x^3 - \frac{1}{x^3} - 3(5)$

$\therefore x^3 - \frac{1}{x^3} = 125 + 15 = 140$

11. (D) LCM of 2, 3, 6 and 11 = 66

$66 \overline{)999999} (15151$

$\frac{66}{339}$

$\frac{330}{99}$

$\frac{66}{339}$

$\frac{330}{99}$

$\frac{66}{33}$

Remainder  $\rightarrow 33$

Required number =  $999999 - 33 + 1$   
 $= 999967$

12. (A) A.T.Q.,

$\frac{16 \times 3 + 18x + 21 \times 5 + 42 \times 2}{10 + x} = 21$

$\Rightarrow 237 + 18x = 21(10 + x)$

$\Rightarrow 21x - 18x = 237 - 210$

$\Rightarrow 3x = 27$

$\Rightarrow x = 9$

13. (C) Required H.C.F of fraction

$= \frac{\text{H.C.F of Numerator}}{\text{L.C.M of Denominator}}$

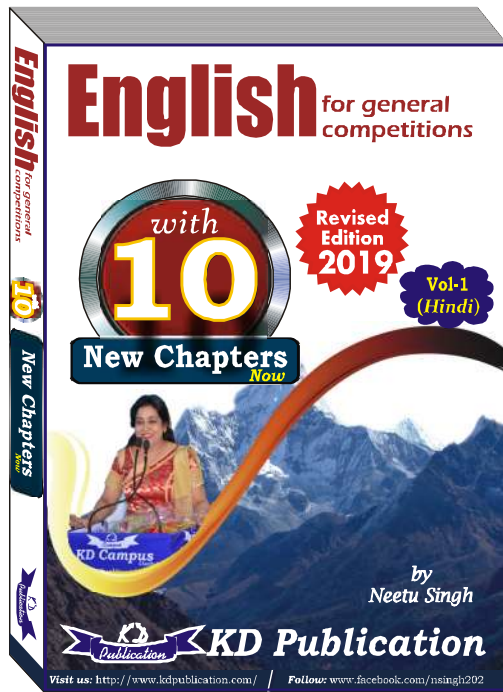
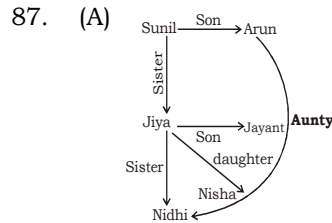
$= \frac{3}{1400}$

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81. (C) Total number of IITs in India is 23 and the total number of NITs in India is **31**.
82. (A)
83. (D) Except **Hydrabad**, all others are the world heritage cities.
84. (D) Number of heritage sites in **Bihar** is 2. While in all others, the total number of heritage site is 3.
85. (C) As,  $9 + 12 - 10 = 11$   
and,  $12 + 16 - 17 = 11$   
Similarly,  
 $6 + 11 - 6 = 11$

86. (A) As,  $\sqrt{9}, \sqrt{16}, \sqrt{4} > \sqrt{25}$   
and,  $\sqrt{9}, \sqrt{4}, \sqrt{1} > \sqrt{16}$   
Similarly,  
 $\sqrt{49}, \sqrt{36}, \sqrt{25} > \sqrt{64}$



**HSSC MOCK TEST – 165 (ANSWER KEY)**

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