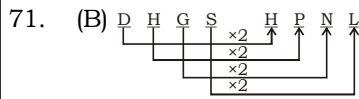


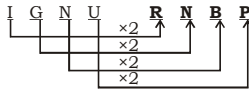
HSSC MOCK TEST - 182 (SOLUTION)

1. (D) $T_{m+n} = a + (m+n-1)d$
 $T_{m-n} = a + (m-n-1)d$
 Now, $T_{m+n} + T_{m-n} = 2a + 2(2m-2)d$
 $\Rightarrow T_{m+n} + T_{m-n} = 2(a + (m-1)d)$
 $\Rightarrow T_{m+n} + T_{m-n} = 2T_m$
 Hence the sum of $(m+n)^{\text{th}}$ and $(m-n)^{\text{th}}$ terms of an A.P. will be equal to twice the m^{th} term.
2. (A) $C(27, 2r) = C(27, 2r-1)$
 $\Rightarrow 2r + 2r - 1 = 27$
 $\Rightarrow 4r = 28 \Rightarrow r = 7$
3. (C) Conic $6x^2 + 8y^2 = 48$
 $\Rightarrow \frac{x^2}{8} + \frac{y^2}{6} = 1$
 $a^2 = 8, b^2 = 6$
 Now, $e = \sqrt{1 - \frac{b^2}{a^2}}$
 $e = \sqrt{1 - \frac{6}{8}}$
 $e = \sqrt{\frac{2}{8}} = \frac{1}{2}$
4. (C) $\vec{a} \cdot \vec{b} = |\vec{a}| |\vec{b}| \cos\theta$
 $\Rightarrow 12 = 3 \times 8 \cos\theta$
 $\Rightarrow \frac{1}{2} = \cos\theta \Rightarrow \theta = 60^\circ$
 Now, $|\vec{a} \times \vec{b}| = |\vec{a}| |\vec{b}| \sin\theta$
 $\Rightarrow |\vec{a} \times \vec{b}| = 3 \times 8 \times \sin 60$
 $\Rightarrow |\vec{a} \times \vec{b}| = 24 \times \frac{\sqrt{3}}{2} = 12\sqrt{3}$
5. (A)
6. (B) $A \subseteq (R \times R)$
7. (C) $\lim_{x \rightarrow 0} \frac{6^x - 1}{x}$ $\left[\frac{0}{0} \right]$ form
 by L-Hospital's Rule
 $\Rightarrow \lim_{x \rightarrow 0} \frac{6^x \cdot \log_e 6}{1}$
 $\Rightarrow 6^0 \cdot \log_e 6 = \log_e 6$
8. (C) $x^2 - 4x + 6 = 0$
 $D = b^2 - 4ac$
 $D = (-4)^2 - 4 \times 1 \times 6$
 $D = 16 - 24 = -8 < 0$
 Hence roots are imaginary.

9. (C) The required Probability = $\frac{7+3}{16} = \frac{5}{8}$
10. (A) The required Probability = $\frac{6! \times 2!}{7!}$
 $= \frac{6! \times 2}{7 \times 6!} = \frac{2}{7}$
11. (C) $A = \{1, 2, 3\}, B = \{1, 4, 5\}$ and $C = \{2, 5, 6\}$
 $A - B = \{1, 2, 3\} - \{1, 4, 5\} = \{2, 3\}$
 $(A \cap C) = \{1, 2, 3\} \cap \{2, 5, 6\} = \{2\}$
 Now, $(A - B) \times (A \cap C) = \{2, 3\} \times \{2\}$
 $= \{(2, 2), (3, 2)\}$
12. (D) Given that
 Mean = 42 and Mode = 57
 We know that
 Mode = 3Median - 2Mean
 $\Rightarrow 57 = 3\text{Median} - 2 \times 42$
 $\Rightarrow 3\text{Median} = 57 + 84$
 $\Rightarrow 3\text{Median} = 141 \Rightarrow \text{Median} = 47$
13. (C) Given that ${}^n C_r = \frac{n!}{r!(n-r)!}$
 then
 ${}^n C_r + {}^n C_{r+1} = \frac{n!}{r!(n-r)!} + \frac{n!}{(r+1)!(n-r-1)!}$
 $= \frac{n!(r+1)}{(r+1)r!(n-r)!} + \frac{n!(n-r)}{(r+1)!(n-r)(n-r-1)!}$
 $= \frac{n!(r+1)}{(r+1)!(n-r)!} + \frac{n!(n-r)}{(r+1)!(n-r)!}$
 $= \frac{n!(r+1+n-r)}{(r+1)!(n-r)!}$
 $= \frac{(n+1)n!}{(r+1)!(n-r)!}$
 $= \frac{(n+1)!}{(r+1)!(n-r)!} = {}^{n+1} C_{r+1}$
70. (C) As, Snake is specie of reptiles.
 Similarly, Salamander is the specie of **Amphibian**.



Similarly,



72. (D) Except **97**, the sum of digits of all others is prime number.

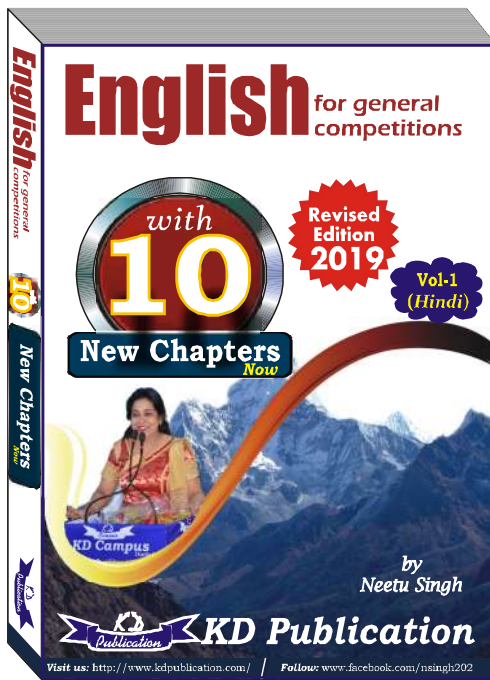
73. (D) Except **P.V. Sindhu**, all others were the gold medalists in commonwealth 2018. While P.V. Sindhu was the silver medalist.

74. (A) As, $6 \times 4 \times 2 - (6 + 4 + 2) = 36$
and, $2 \times 4 \times 5 - (2 + 4 + 5) = 29$
Similarly, $8 \times 6 \times 3 - (8 + 6 + 3) = 127$

75. (B) $7 \times 6 = 42 \Rightarrow 24$
 $9 \times 6 = 54 \Rightarrow 45$
 $6 \times 2 = 12 \Rightarrow 21$

76. (B)

77. (B) **Book 1** > book 4 > book 2 > book 3



HSSC MOCK TEST – 182 (ANSWER KEY)

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