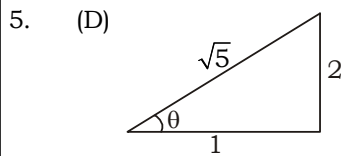


HSSC MOCK TEST - 175 (SOLUTION)

1. (D)
2. (C) $A = \{1, 3, 4, 5\}$, $B = \{2, 3, 4, 6\}$ and $C = \{x, y\}$
 $(A \cap B) = \{3, 4\}$
Now, $(A \cap B) \times C = \{3, 4\} \times \{x, y\}$
No. of elements in $(A \cap B) \times C = 2 \times 2 = 4$

3. (B) The required Probability = $\frac{{}^5C_1 \times {}^8C_2}{{}^{13}C_3}$
 $= \frac{5 \times 28}{13 \times 22}$
 $= \frac{70}{143}$

4. (D) Given that $\vec{a} = 3\hat{i} - \hat{j} - 2\hat{k}$ and $\vec{b} = \hat{i} + \hat{j} - 2\hat{k}$
Now, $(\vec{a} + 2\vec{b}) \times (2\vec{a} - \vec{b})$
 $\Rightarrow 2(\vec{a} \times \vec{a}) + 4(\vec{b} \times \vec{a}) - (\vec{a} \times \vec{b}) - 2(\vec{b} \times \vec{b})$
 $\Rightarrow 0 - 4(\vec{a} \times \vec{b}) - (\vec{a} \times \vec{b}) - 0 = -5(\vec{a} \times \vec{b})$



$$\sin^{-1}\left(\frac{2}{\sqrt{5}}\right) = \theta$$

$$\Rightarrow \sin\theta = \frac{2}{\sqrt{5}}$$

$$\text{Now, } \sec\theta = \sqrt{5}$$

$$\Rightarrow \sec^{-1}(\sqrt{5}) = \theta$$

6. (B) The no. of ways = ${}^{15-1}C_{11-1}$
 $= {}^{14}C_{10} = 1001$

7. (C) $n = 25$

$$\text{No. of diagonals} = \frac{n(n-3)}{2}$$

$$= \frac{25 \times 23}{2} = 275$$

8. (B) zero

9. (D) Given that $P(A) = \frac{2}{5}$, $P(B) = \frac{1}{2}$ and

$$P\left(\frac{A}{B}\right) = \frac{3}{4}$$

$$\text{Now, } P\left(\frac{A}{B}\right) = \frac{P(A \cap B)}{P(B)}$$

$$\Rightarrow \frac{3}{4} = \frac{P(A \cap B)}{1/2}$$

$$\Rightarrow P(A \cap B) = \frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$$

$$\text{and } P\left(\frac{B}{A}\right) = \frac{P(A \cap B)}{P(A)}$$

$$\Rightarrow P\left(\frac{B}{A}\right) = \frac{3/8}{2/5} = \frac{15}{16}$$

10. (B) In the expansion of $\left(2\sqrt{x} + \frac{1}{4x^{3/2}}\right)^6$

$$T_{r+1} = {}^6C_r (2\sqrt{x})^{6-r} \left(\frac{1}{4x^{3/2}}\right)^r$$

$$T_{r+1} = {}^6C_r (2)^{6-3r} x^{\frac{6-4r}{2}}$$

$$\text{Here, } \frac{6-4r}{2} = 1$$

$$\Rightarrow 6-4r = 2 \Rightarrow r = 1$$

$$\text{Coefficient of } x = {}^6C_1 (2)^3$$

$$= 6 \times 8 = 48$$

11. (C) Let $y = \log_{10}(5x^2 - 7)$
On differentiating both side w.r.t.'x'

$$\frac{dy}{dx} = \frac{1}{5x^2 - 7} \times 5 \times 2x$$

$$\frac{dy}{dx} = \frac{10x}{5x^2 - 7}$$

12. (A) **Statement I**
 $n = 12$

$$\text{The required sum} = \frac{n}{6} (n+1)(2n+1)$$

$$= \frac{12}{6} (12+1)(2 \times 12+1)$$

$$= 2 \times 13 \times 25 = 650$$

Statement I is correct.

Statement II

$$n = 7$$

$$\text{The required sum} = \left[\frac{n(n+1)}{2}\right]^2$$

$$= \left[\frac{7(7+1)}{2}\right]^2$$

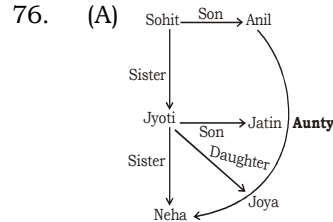
$$= \left(\frac{7 \times 8}{2}\right)^2 = 784$$

Statement II is incorrect.

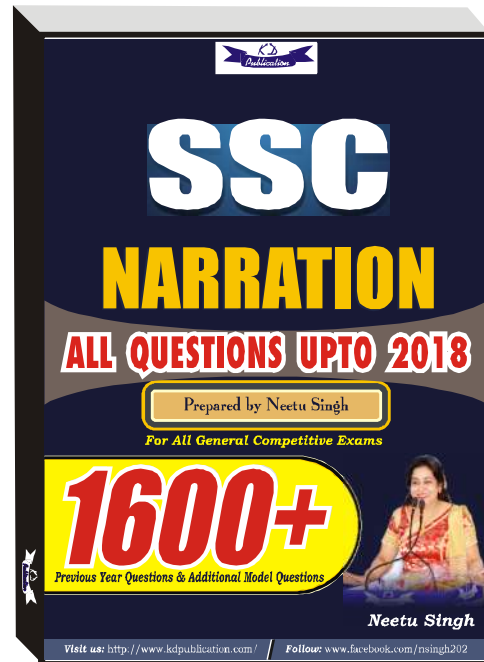
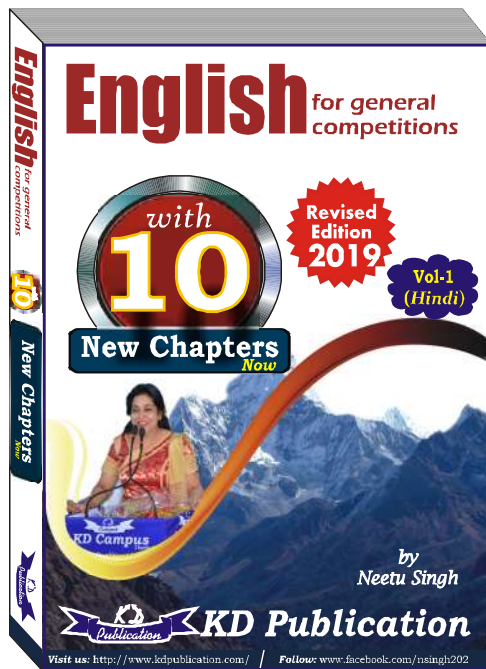
13. (B) $(A \cap B) \cup (B \cap C)$

70. (C) As, Marathon is race. Similarly, Hibernation is long period of sleep.
71. (B) 12 inches in a foot while 36 inches in a yard.
72. (D) Except IMF, the headquarter of all others is at Geneva. While the headquarter of IMF is of Washington dc.
73. (D) Except Russia, all others are contiental countries.
74. (C) $8 + 12 - 11 = 9$
 $10 + 13 - 14 = 9$
 $4 + 11 - 6 = 9$

75. (A) $\sqrt{9}, \sqrt{4} \cdot \sqrt{1} > \sqrt{16}$
 $\sqrt{49}, \sqrt{36} \cdot \sqrt{25} > \sqrt{64}$



77. (B) Total numbers of triangles = **16**



HSSC MOCK TEST – 175 (ANSWER KEY)

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