

HSSC MOCK TEST - 162 (SOLUTION)

1. (A)
2. (D) Given that no. of diagonals = 90

$$\Rightarrow \frac{n(n-3)}{2} = 90$$

$$\Rightarrow n^2 - 3n = 180$$

$$\Rightarrow n^2 - 3n - 180 = 0$$

$$\Rightarrow (n-15)(n+12) = 0$$

$$\Rightarrow n = 15, -12$$
 Hence no. of sides = 15
3. (C)
4. (D) $A = \{1, 3, 5, 7, 9, 11, 13\}; n = 7$
 Number of proper subsets = $2^n - 1$
 $= 2^7 - 1 = 127$
5. (C) $P(A) = \frac{1}{3}, P(B) = \frac{1}{2}$ and $P\left(\frac{B}{A}\right) = \frac{3}{8}$

 We know that $P\left(\frac{B}{A}\right) = \frac{P(A \cap B)}{P(A)}$

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

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

$$\Rightarrow P\left(\frac{A}{B}\right) = \frac{1/8}{1/2} = \frac{1}{4}$$
6. (B) word 'STATUS'

 Total arrangement = $\frac{6!}{2!2!} = 180$
 Arrangement when T's appear together
 $= \frac{5!}{2!} = 60$
 The required arrangement = $180 - 60 = 120$
7. (C) Total students = 8
 The table is round. One student is fixed.
 Hence the no. of ways = $(8-1)!$
 $= 7! = 5040$
8. (C) Let Probability of success $(p) = \frac{1}{3}$

 and Probability of unsuccess $(q) = 1 - \frac{1}{3} = \frac{2}{3}$

 x - binomial distribution $\left(5, \frac{1}{3}\right)$

$$P(x) = {}^5C_x \left(\frac{1}{3}\right)^x \left(\frac{2}{3}\right)^{5-x}$$

(where $x = 0, 1, \dots, 5$)

Required probability
 $P(x \geq 3) = 1 - [P(x=0) + P(x=1) + P(x=2)]$
 $= 1 - \dots$

$$\left[{}^5C_0 \left(\frac{1}{3}\right)^0 \left(\frac{2}{3}\right)^5 + {}^5C_1 \left(\frac{1}{3}\right)^1 \left(\frac{2}{3}\right)^4 + {}^5C_2 \left(\frac{1}{3}\right)^2 \left(\frac{2}{3}\right)^3 \right]$$

$$= 1 - \left[\frac{32}{243} + \frac{5 \times 16}{243} + \frac{10 \times 8}{243} \right]$$

$$= 1 - \frac{192}{243}$$

$$= \frac{51}{243} = \frac{17}{81}$$

9. (B)
10. (B) Data 3, 4, 6, 8, 10, 12, 14, 16, 18; $n = 9$

$$\sum_{i=0}^n x_i = 2 + 4 + 6 + 8 + 10 + 12 + 14 + 16 + 18 = 90$$

$$\sum_{i=0}^n x_i^2 = 2^2 + 4^2 + 6^2 + 8^2 + 10^2 + 12^2 + 14^2 + 16^2 + 18^2 = 1140$$

$$\text{S.D. } (\sigma) = \sqrt{\frac{\sum_{i=0}^n x_i^2}{n} - \left(\frac{\sum_{i=0}^n x_i}{n}\right)^2}$$

$$\text{S.D. } (\sigma) = \sqrt{\frac{1140}{9} - \left(\frac{90}{9}\right)^2}$$

$$\text{S.D. } (\sigma) = \sqrt{\frac{10260 - 8100}{9^2}}$$

$$\text{S.D. } (\sigma) = \sqrt{\frac{2160}{81}}$$

Now, variance = $(\text{S.D.})^2$

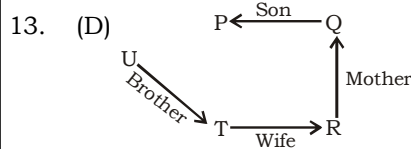
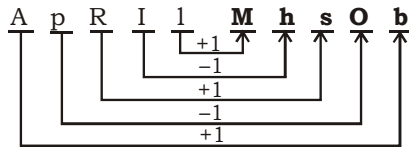
$$\Rightarrow \text{variance} = \left(\sqrt{\frac{2160}{81}}\right)^2 = \frac{2160}{81} =$$

$$\frac{80}{3} = 26\frac{2}{3}$$

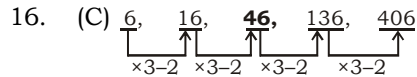
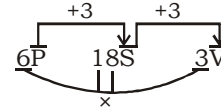
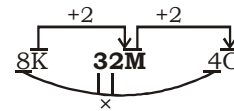
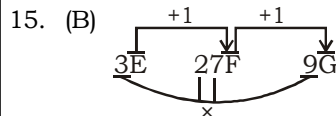
11. (A)



Similarly,



14. (A) **Parliament** is composed of all other three.



17. (D) As, $2895 \Rightarrow (17)^2 5$

$3245 \Rightarrow (18)^2 5$

and, $3615 \Rightarrow (19)^2 5$

Similarly, $5295 \Rightarrow (23)^2 5$

18. (C) $5 \div 3 - 25 \div 20 = 20 \times 30$

After changing the signs,

$5 \times 3 + 25 - 20 \div 20 = 39$

$\Rightarrow 15 + 25 - 1 = 39$

$\Rightarrow \mathbf{39 = 39}$

HSSC MOCK TEST – 162 (ANSWER KEY)

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

