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 $(m+n)^{th}$ and $(m-n)^{th}$ 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) $\vec{a}.\vec{b} = |\vec{a}||\vec{b}|\cos\theta$
$\Rightarrow 12 = 3 \times 8\cos\theta$
$\Rightarrow \frac{1}{2} = \cos\theta \Rightarrow \theta = 60°$
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) $\lim_{x\to 0} \frac{6^x - 1}{x}$ $\left[\frac{0}{0}\right]$ form
by L-Hospital's Rule
$\Rightarrow \lim_{x\to 0} \frac{6^x . \log_e 6}{1}$
$\Rightarrow 6^0 . \log_e 6 = \log_e 6$

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 ${}^nC_r = \frac{n!}{r!(n-r)!}$
then
${}^nC_r + {}^nC_{r+1} = \frac{n!}{r!(n-r)!} + \frac{n!}{(r+1)!(n-r-1)!}$
$= \frac{n!(r+1)}{(r+1)r!(n-r)!} + \frac{n!(n-r)}{(r+1)!(n-r)(n-r-1)!}$
$= \frac{n!(r+1)}{(r+1)!(n-r)!} + \frac{n!(n-r)}{(r+1)!(n-r)!}$
$= \frac{n!(r+1+n-r)}{(r+1)!(n-r)!}$
$= \frac{(n+1)n!}{(r+1)!(n-r)!}$
$= \frac{(n+1)!}{(r+1)!(n-r)!} = {}^{n+1}C_{r+1}$

70. (C) As, Snake is specie of reptiles.
Similarly, Salamander is the specie of **Amphibian**.

71. (B) D H G S H P N L
×2 ×2 ×2 ×2

Similarly,

I G N U **R N B P**
×2 ×2 ×2 ×2

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)