

HSSC MOCK TEST - 179 (SOLUTION)

1. (C) Let $f(x) = \log x$ and $f(y) = \log y$
Now, $f(xy) = \log(xy)$

$$\Rightarrow f(xy) = \log x + \log y$$

$$\Rightarrow f(xy) = f(x) + f(y)$$

2. (C) $A = \{x \in \mathbb{R}, x^2 + 5x - 6 < 0\}$
 $x^2 + 5x - 6 < 0$

$$\Rightarrow (x+6)(x-1) < 0$$

$$\Rightarrow A = (-6, 1)$$

and, $B = \{x \in \mathbb{R} : x^2 + 8x + 12 > 0\}$

$$\Rightarrow x^2 + 8x + 12 > 0$$

$$\Rightarrow (x+6)(x+2) > 0$$

$$x \in (-\infty, -6) \cup (-2, \infty)$$

Statement I

$$(A \cap B) = (-2, 1)$$

Statement I is correct.

Statement II

$$A - B = (-6, -2)$$

Statement II is correct.

Hence both statements are correct.

3. (B) $I = \int_{-1}^1 x^2 |x| dx$

$$I = \int_{-1}^0 x^2(-x) dx + \int_0^1 x^2 \cdot x dx$$

$$I = -\int_{-1}^0 x^3 dx + \int_0^1 x^3 dx$$

$$I = -\left[\frac{x^4}{4}\right]_{-1}^0 + \left[\frac{x^4}{4}\right]_0^1$$

$$I = -\left[0 - \frac{(-1)^4}{4}\right] + \left[\frac{1}{4} - 0\right]$$

$$I = \frac{1}{4} + \frac{1}{4} = \frac{1}{2}$$

4. (C) $n(S) = {}^9C_2 = 36$

$$E = \{(1, 2), (1, 4), (1, 6), (2, 3), (2, 5), (2, 9), (3, 4), (3, 8), (4, 7), (4, 9), (5, 6), (5, 8), (6, 7), (8, 9)\}$$

$$n(E) = 14$$

$$\text{The required Probability} = \frac{14}{36} = \frac{7}{18}$$

5. (C) $\lim_{x \rightarrow \infty} \left(\frac{x+5}{x+3}\right)^{x+2}$

$$\Rightarrow \lim_{x \rightarrow \infty} \left(1 + \frac{2}{x+3}\right)^{x+2}$$

$$\Rightarrow \lim_{x \rightarrow \infty} \left(1 + \frac{2}{x+3}\right)^{\frac{x+3}{2} \times \frac{2(x+2)}{x+3}}$$

$$\Rightarrow e^{\lim_{x \rightarrow \infty} \frac{2(x+2)}{x+3}} \quad \left[\because \lim_{x \rightarrow \infty} \left(1 + \frac{1}{x}\right)^x = e \right]$$

$$\lim_{x \rightarrow \infty} \frac{2x \left(1 + \frac{2}{x}\right)}{x \left(1 + \frac{3}{x}\right)}$$

$$\Rightarrow e$$

$$\Rightarrow e^{2 \left(\frac{1+0}{1+0}\right)} = e^2$$

6. (D) $\vec{a} = \hat{i} - 3x\hat{j} - 4y\hat{k}$ and $\vec{b} = \hat{i} + 4x\hat{j} + 3y\hat{k}$
are orthogonal to each other,

$$\text{then } \vec{a} \cdot \vec{b} = 0$$

$$\Rightarrow 1 \times 1 - 3x \times 4x - 4y \times 3y = 0$$

$$\Rightarrow 1 - 12x^2 - 12y^2 = 0$$

$$\Rightarrow 12x^2 + 12y^2 = 1 \Rightarrow x^2 + y^2 = \frac{1}{12}$$

Hence it is circle.

7. (C) Given that $A = \{1, 2, 3, 5, 7\}$

$$n(A) = 5$$

$$P(A) = 2^5 = 32$$

8. (C) In the expansion of $\left(x^3 - \frac{1}{x^5}\right)^9$

$$T_{r+1} = {}^9C_r (x^3)^{9-r} \left(\frac{-1}{x^5}\right)^r$$

$$T_{r+1} = {}^9C_r x^{27-8r} (-1)^r$$

$$\text{Here } 27 - 8r = 3$$

$$\Rightarrow 8r = 24 \Rightarrow r = 3$$

9. (C) $T_n = (n+2)(n+3)$

$$T_n = n^2 + 5n + 6$$

$$\text{Now, } S_n = \Sigma(T_n)$$

$$\Rightarrow S_n = \Sigma(n^2 + 5n + 6)$$

$$\Rightarrow S_n = \Sigma n^2 + 5\Sigma n + 6\Sigma 1$$

$$\Rightarrow S_n = \frac{n}{6} (n+1)(2n+1) + 5 \times \frac{n(n+1)}{2} + 6n$$

$$\Rightarrow S_n = \frac{n}{6} [2n^2 + 3n + 1 + 15n^2 + 15n + 36n]$$

$$\Rightarrow S_n = \frac{n}{6} [17n^2 + 54n + 1]$$

$$S_5 = \frac{5}{6} [17 \times 25 + 54 \times 25 + 1]$$

$$S_5 = \frac{5}{6} \times 1776 = 1480$$

10. (A) Equation $8x - 6y = 7$
and $6x + 8y = 8$

$$\frac{8}{6} \neq \frac{-6}{8} \neq \frac{7}{8}$$

Equations have a unique solutions.

11. (B) Given that $f(x) = bx + c$, $g(x) = ax + d$
Now, $f \circ g(x) = g \circ f(x)$
 $\Rightarrow f[g(x)] = g[f(x)]$
 $\Rightarrow f[ax + d] = g[bx + c]$
 $\Rightarrow b(ax + d) + c = a(bx + c) + d$
 $\Rightarrow abx + bd + c = abx + ac + d$
 $\Rightarrow bd + c = ac + d$
 $\Rightarrow f(d) = g(c)$

12. (B) 5

13. (B) Word "OFFICER"

$$\begin{aligned} \text{The number of Permutations} &= \frac{7!}{2!} \\ &= 2520 \end{aligned}$$

70. (B) An optimist is a person whose perspective is cheerful while **pessimist** is the person whose perspective is **Gloomy**.

71. (C) As, Umbrella protect from rain.
Similarly, **Dam** checks **flood**.

72. (C) Except **ENVELOPE**, all other contains all vowels.

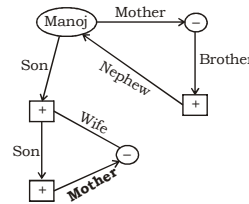
73. (A) Only '64' is the number whose square root and cube root can be found.

74. (A) $5 \times 3 + 1 = 16$
 $16 \times 3 + 1 = 49$
 $8 \times 3 + 2 = 26$
 $26 \times 3 + 2 = \mathbf{80}$
 $9 \times 3 + 3 = 30$
 $30 \times 3 + 3 = 93$

75. (B) $(6 \times 7) + (5 + 4) = 51$
 $(8 \times 9) + (16 + 6) = 94$
 $(12 \times 4) + (14 + 6) = \mathbf{68}$

76. (C)

77. (A)



HSSC MOCK TEST - 179 (ANSWER KEY)

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

Note:- If your opinion differs regarding any answer, please message the mock test and question number to 8860330003

Note:- Whatsapp with Mock Test No. and Question No. at 7053606571 for any of the doubts. Join the group and you may also share your suggestions and experience of Sunday Mock Test.

Note:- If you face any problem regarding result or marks scored, please contact 9313111777