HSSC MOCK TEST – 176 (SOLUTION)

1. (C) Given that $f(x) = ax + c$ and $g(x) = bx + d$
Now, $fog(x) = gof(x)$
$\Rightarrow f[g(x)] = g[f(x)]$
$\Rightarrow f[bx + d] = g[ax + c]$
$\Rightarrow a(bx + d) + c = b(ac + c) + d$
$\Rightarrow abx + ad + c + abx + bc + d$
$\Rightarrow ad + c = bc + d$
$\Rightarrow f(d) = g(c)$

2. (C) $\vec{a} = -4\hat{i} + \lambda\hat{j} - 2\hat{k}$ and $\vec{b} = 3\hat{i} - 6\hat{j} + 9\hat{k}$
Now, $\vec{a}.\vec{b} = |\vec{a}||\vec{b}|\cos\theta$
$\Rightarrow -4 \times 3 + \lambda \times (-6) + (-2) \times 9$
$= \sqrt{(-4)^2+\lambda^2+(-2)^2}\sqrt{3^2+(-6)^2+9^2}.\cos\frac{\theta}{2}$
$\Rightarrow -6\lambda - 30 = 0 \Rightarrow \lambda = -5$

3. (C) A.M. $= \frac{1^2, 2^2, 3^2 \ldots\ldots, n^2}{n}$
$= \frac{n}{6}(n+1)(2n+1) \times \frac{1}{n} = \frac{1}{6}(n+1)(2n+1)$

4. (D) Determinant $\begin{vmatrix} 1 & 0 & 4 & 6 \\ 2 & 3 & 1 & 0 \\ 5 & 6 & 2 & 2 \\ 6 & 1 & 7 & 2 \end{vmatrix}$
Co-factor of $4 = (-1)^{1+3}\begin{vmatrix} 2 & 3 & 0 \\ 5 & 6 & 2 \\ 6 & 1 & 2 \end{vmatrix}$
$= 2(12 - 2) + 3(-10 - 12)$
$= 20 - 66 = -46$

5. (B) We know that
$(1 + x)^n = C_0 + C_1x + C_2x^2 + \ldots\ldots + C_nx^n$
On putting $x = 1$
$(1 + 1)^n = C_0 + C_1 + C_2 + \ldots\ldots + C_n$
$\Rightarrow C_0 + C_1 + C_2 + \ldots\ldots + C_n = 2^n$

6. (C) 7, 8, 18, 21, 22, 23, 25, 27, 29
Mean $(\bar{x}) = \frac{7+8+18+21+22+23+25+27+29}{9}$
$\bar{x} = \frac{180}{9} = 20$
$\Sigma(x - \bar{x})^2 = (7-20)^2 + (8-20)^2 + (18-20)^2 + (21-20)^2 + (22-20)^2 + (23-20)^2 + (25-20)^2 + (27-20)^2 + (29-20)^2$
$\Sigma(x - \bar{x})^2 = 169 + 144 + 4 + 1 + 4 + 9 + 25 + 49 + 81 = 486$
Standard Deviation $= \sqrt{\frac{\Sigma(x-\bar{x})^2}{n}}$
$= \sqrt{\frac{486}{9}} = \sqrt{54} = 3\sqrt{6}$

7. (B) The required Probability
$= \frac{1}{2}\left[\frac{3}{5}\times\frac{2}{6} + \frac{2}{5}\times\frac{4}{6} + \frac{3}{5}\times\frac{4}{6}\right]$
$= \frac{1}{2}\left[\frac{6}{30} + \frac{8}{30} + \frac{12}{30}\right]$
$= \frac{1}{2}\times\frac{26}{30} = \frac{13}{30}$

8. (A) a, b, c are in G.P., then
$b^2 = ac$ ...(i)
p, q, r are in G.P., then
$q^2 = pr$ ...(ii)
from eq(i) and eq(ii)
$b^2q^2 = ac \times pr$
$(bq)^2 = ap \times cr$
Hence ap, bq, cr are in G.P.

9. (D) $\frac{\sin 330°.\tan 150°.\cot 135°}{\sec 240°.\operatorname{cosec} 120°.\cos 225°}$
$\Rightarrow \frac{\sin(360° - 30°).\tan(180° - 30°).\cot(180° - 45°)}{\sec(180° + 60°).\operatorname{cosec}(180° - 60°).\cos(180° + 45°)}$
$\Rightarrow \frac{(-\sin 30)(-\tan 30)(-\cot 45)}{(-\sec 60)(\operatorname{cosec} 60)(-\cos 45)}$
$\Rightarrow \frac{-\frac{1}{2}\times\frac{1}{\sqrt{3}}\times 1}{2\times\frac{2}{\sqrt{3}}\times\frac{1}{\sqrt{2}}} = -\frac{1}{4\sqrt{2}}$

10. (C) Given that $X = \{9(n-1) : n \in N\}$
$n = 1, 2, 3, 4, \ldots\ldots$
$X = \{0, 9, 18, 27, \ldots\ldots\}$
$Y = \{4^n - 3n - 1 : n \in N\}$
$n = 1, 2, 3, 4, \ldots\ldots$
$Y = \{0, 9, 54, 243, \ldots\ldots\}$
$(X \cap Y) = \{0, 9, 54, 243\} = Y$

11. (B) The required no. of triangles $= {}^{11}C_3 - {}^4C_3$
$= 165 - 4$
$= 161$

12. (C) Let $y = \sqrt{6 + 5\sqrt{6 + 5\sqrt{6 + ...\infty}}}$

$\Rightarrow y = \sqrt{6 + 5y}$

On squaring

$\Rightarrow y^2 = 6 + 5y$

$\Rightarrow y^2 - 5y - 6 = 0$

$\Rightarrow (y - 6)(y + 1) = 0$

$\Rightarrow y = 6, -1$

Hence $\sqrt{6 + 5\sqrt{6 + 5\sqrt{6 + ...\infty}}} = 6$

13. (D) Number can be formed y(0, 1, 2, 3) or (0, 2, 3, 4)
The required numbers = $3 \times 3! + 2 \times 3!$
$= 18 \times 12 = 30$

70. (A) Information about Mughals is present in History and Information about Rivers is present in **Geography**.

71. (D) As, $7 \times 8 = 56$
$8 \times 9 = 72$
Similarly, $9 \times 10 = 90$
$10 \times 11 = \mathbf{110}$

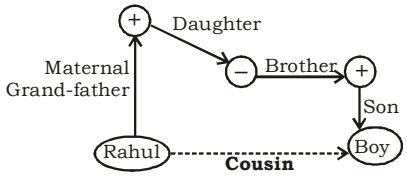
72. (D) Except **clash**, others are synonym of one-another.

73. (D) Except **Bhilai**, others are the nuclear power station.

74. (D) As, $13 \Rightarrow 13^2 = 169$ and $31^2 = 961$
and, $15 \Rightarrow 15^2 = \mathbf{225}$ and $51^2 = 2601$
Similarly, $12 \Rightarrow 12^2 = 144$ and $21^2 = 441$

75. (C) As, $7^3 - 7 = 336$
and, $11^2 - 11 = 110$
Similarly, $8^3 - 8 = \mathbf{504}$

76. (C)



77. (D) As,

D	I	G	I	T
↓	↓	↓	↓	↓
@	#	^	#	*

and,

E	A	R
↓	↓	↓
?	!	<

Similarly,

T	**I**	**G**	**E**	**R**
↓	↓	↓	↓	↓
*	#	^	**?**	<

HSSC MOCK TEST – 176 (ANSWER KEY)

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

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