HSSC MOCK TEST – 163 (SOLUTION)

1. (B) Plane $3x - 2y + 6z = 48$

$\Rightarrow \frac{3x}{48} - \frac{2y}{48} + \frac{6z}{48} = 1$

$\Rightarrow \frac{x}{16} + \frac{y}{-24} + \frac{z}{8} = 1$

Intercept of the plane = $\langle 16, -24, 8 \rangle$

2. (A) Given that $f(x)$ $|4x - 5|$ and $g(x) = x^2 + 1$
Now, $fog(x) = f[g(x)]$
$\Rightarrow fog(x) = f[x^2 + 1]$
$\Rightarrow fog(x) = |4(x^2 + 1) - 5|$
$\Rightarrow fog(-1) = |4[(-1)^2 + 1] - 5|$
$\Rightarrow fog(-1) = |4 \times 2 - 5| = 3$

3. (C)

4. (C) $\sin^{-1}\frac{4}{5} + 2\tan^{-1}\frac{1}{3}$

$\Rightarrow \tan^{-1}\frac{4}{3} + \tan^{-1}\left(\frac{2 \times \frac{1}{3}}{1 - \frac{1}{9}}\right)$

$\Rightarrow \tan^{-1}\frac{4}{3} + \tan^{-1}\frac{3}{4}$

$\Rightarrow \tan^{-1}\frac{4}{3} + \cot^{-1}\frac{4}{3} = \frac{\pi}{2}$

5. (C) Area of triangle $= \frac{1}{2}\begin{vmatrix} 3 & 1 & 1 \\ a & -3 & 1 \\ 6 & 10 & 1 \end{vmatrix}$

$\Rightarrow 24 = \frac{1}{2}[3(-3 - 10) - 1(a - 6) + 1(10a + 18)]$

$\Rightarrow 48 = -39 - a + 6 + 10a + 18$
$\Rightarrow 48 = 9a - 15 \Rightarrow a = 7$

6. (D) In the expansion of $\left(3x - \frac{1}{6x}\right)^{11}$

$T_{r+1} = {}^{11}C_r (3x)^{11-r}\left(\frac{-1}{6x}\right)^r$

$T_{r+1} = {}^{11}C_r \, 3^{11-2r} x^{11-2r} (-2)^{-r}$

here $11 - 2r = 3 \Rightarrow r = 4$
Coefficient of $x^3 = {}^{11}C_4 \, 3^3 (-2)^{-4}$

$= \frac{11!}{4!7!} \times \frac{27}{16}$

$= 110 \times 3 \times \frac{27}{16}$

$= \frac{55 \times 81}{8} = \frac{4455}{8}$

7. (C) A' = co-factor A
$|A'|$ = |co-factor of A|
$|A'| = (A)^5 - 1$ [$\because$ Order = 5]
$|A'| = A^4$

8. (C) Marks 54, 56, 71, 72, 84, 86, 91, 92, 63, 69, 70, 75, 84, 88, 85

Mean $= \frac{1140}{15} = 76$

The required number of students = 7

9. (D) We know that
$T_p = q$, $T_q = p$, then $T_{p+q} = 0$
Similarly
$T_{56} = 321$, $T_{321} = 56$, then $T_{(56+321)} = 0$
The required term = 56 + 321 = 377

10. (B)

4	3	2	1	4	5
T	R	E	A	T	Y
$\frac{3}{2!}$	$\frac{2}{1!}$	$\frac{1}{1!}$	$\frac{0}{1!}$	$\frac{0}{1!}$	$\frac{0}{1!}$
5!	4!	3!	2!	1!	0! +1

$5! \times \frac{3}{2!} + 4! \times \frac{2}{1!} + 3! \times \frac{1}{1!} + 2! \times \frac{0}{1!} + 1! \times \frac{0}{1!} + 0! \times \frac{0}{1!} + 1$

$\Rightarrow 180 + 48 + 6 + 0 + 0 + 0 + 1 \Rightarrow 235$
The required position = 235

11. (A) A.T.Q.,

$\frac{a+b}{2} = 4 \times \sqrt{ab}$

$\Rightarrow a + b = 8\sqrt{ab}$ ...(i)

Now, $(a - b)^2 = (a + b)^2 - 4ab$

$\Rightarrow (a - b)^2 = (8\sqrt{ab})^2 - 4ab$

$\Rightarrow (a - b)^2 = 64ab - 4\,ab$
$\Rightarrow (a - b)^2 = 60ab$
$\Rightarrow a - b = 2\sqrt{15}\sqrt{ab}$ ...(ii)

from eq(i) and eq(ii)

$$\frac{a+b}{a-b} = \frac{8\sqrt{ab}}{2\sqrt{15}\sqrt{ab}}$$

$$\Rightarrow \frac{a+b}{a-b} = \frac{4}{\sqrt{15}}$$

12. (C) $9! \times C(17,9) = k \times P(18, 9)$

$$\Rightarrow 9! \times \frac{17!}{9!8!} = k \times \frac{18!}{9!}$$

$$\Rightarrow \frac{17!}{8!} = k \times \frac{18 \times 17!}{9 \times 8!}$$

$$\Rightarrow 1 = k \times \frac{18}{9} \Rightarrow k = \frac{1}{2}$$

12. (A) The required number of elementary events = ${}^9C_2 \times 2! = 72$

13. (B) Given that $A = B \cap C$

Now, $(U - (U - (U - (U - A))))$

$\Rightarrow (U - (U - (U - A')))$

$\Rightarrow (U - (U - A))$

$\Rightarrow (U - A') = A = B \cap C$

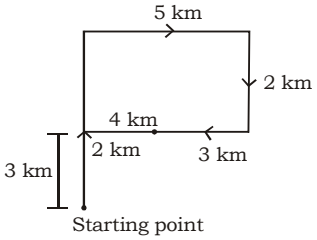
14. (D) The required Probability = $\frac{1}{7}$

82. (C) H G D C (−1 −3 −1) X W T S (−1 −3 −1)

B A Z Y (**−1 −1 −1**) P O L K (−1 −3 −1)

84. (B) 8, 24, 12, **36**, 18, 54 (×3 ÷2 ×3 ÷2 ×3)

85. (D)



86. (C) As, I I M E / M I T E

Similarly, M A I E / **T A M E**

87. (B) BATVW → Opposite → YZGED; EFGHNM → Opposite → **VUTSMN**

YXSUV → Opposite → BCHFE; SRPNO → Opposite → HIKML

Except option (B) opposite of all others have one vowel.

88. (B) 464, 232, 116, 58, **29** (÷2 ÷2 ÷2 ÷2)

HSSC MOCK TEST – 163 (ANSWER KEY)

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