HSSC MOCK TEST – 186 (SOLUTION)

1. (C) $(1+x^2)^4(1+x)^6$

$\Rightarrow [{}^4C_0 + {}^4C_1(x^2)^1 + {}^4C_2(x^2)^2 + {}^4C_3(x^2)^3 + {}^4C_4(x^2)^4] [{}^6C_0 + {}^6C_1 x + {}^6C_2 x^2 + {}^6C_3 x^3 + {}^6C_4 x^4 + {}^6C_5 x^5 + {}^6C_6 x^6]$

Coefficient of x^4 = ${}^4C_0.{}^6C_4 + {}^4C_1.{}^6C_2 + {}^4C_2.{}^6C_0$

$= 1\times\dfrac{6!}{4!2!} + 4\times\dfrac{6!}{2!4!} + \dfrac{4!}{2!2!}\times 1$

$= 1\times15 + 4\times15 + 6\times1 = 81$

2. (A) Possibilities of getting sum of the dice is divisible by 3{(1, 2), (1, 5), (2, 1), (2, 4), (3, 3), (3, 6), (4, 2), (4, 5), (5, 1), (5, 4), (6, 3), (6, 6)} = 12

Possibilities of getting sum of the dice is divisible by 4{(1, 3),(2, 2), (2, 6), (3,1), (3, 5), (4, 4), (5, 3), (6, 2), (6, 6) = 9

The required difference $= \dfrac{12}{36} - \dfrac{9}{36}$

$= \dfrac{3}{36} = \dfrac{1}{12}$

3. (D) $\lim\limits_{x\to0}\dfrac{\cos 2x - 1}{\sin 2x}$ $\left[\dfrac{0}{0}\right]$ form

By L-Hospital's Rule

$\Rightarrow \lim\limits_{x\to0}\dfrac{-2\sin 2x}{2\cos 2x} = \lim\limits_{x\to0}(-\tan 2x) = 0$

4. (C) The required no. $= 2^4 - 2 = 16 - 2 = 14$

5. (C) Given that

$\left|z - \dfrac{2}{z}\right| = 1$

We know that

$|a + b| \le |a| + |b|$

Now, $|z| = \left|\left(z - \dfrac{2}{z}\right) + \dfrac{2}{z}\right| \le \left|z - \dfrac{2}{z}\right| + \left|\dfrac{2}{z}\right|$

$\Rightarrow |z| \le 1 + \dfrac{2}{|z|} \Rightarrow |z|^2 \le |z| + 2$

$\Rightarrow |z|^2 - |z| - 2 \le 0$

$\Rightarrow [|z| - 2][|z| + 1] \le 0$

$\Rightarrow -1 \le |z| \le 2$

Hence maximum value of $|z|$ = 2

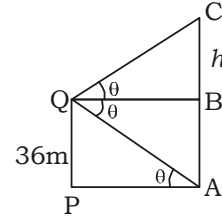6. (B) In the expansion of $\left(\dfrac{x^2}{4} - \dfrac{3}{x}\right)^9$

$T_r = T_{(r-1)+1} = {}^9C_{r-1}\left(\dfrac{x^2}{4}\right)^{9-(r-1)}\left(\dfrac{-3}{x}\right)^{r-1}$

$T_r = {}^9C_{r-1}\left(\dfrac{1}{4}\right)^{10-r}(-3)^{r-1}x^{21-3r}$

Now, $21 - 3r = 3$

$\Rightarrow 3r = 18 \Rightarrow r = 6$

7. (C)

Let BC = h

and $\angle BQC = \angle BQA = \theta$

In $\triangle$ PQA :-

$\tan\theta = \dfrac{36}{PA}$ …(i)

In $\triangle$ BQC:-

$\tan\theta = \dfrac{BC}{QB}$

$\Rightarrow \tan\theta = \dfrac{h}{PA}$ …(ii)

from eq(i) and eq(ii)

$\dfrac{36}{PA} = \dfrac{h}{PA} \Rightarrow h = 36$

Height of the tower = 36 + 36 = 72 m

8. (C) $\left[\vec{a}\times\vec{b} \quad \vec{b}\times\vec{c} \quad \vec{c}\times\vec{a}\right] = \lambda\left[\vec{a} \quad \vec{b} \quad \vec{c}\right]^2$

$\Rightarrow (\vec{a}\times\vec{b}).\left[(\vec{b}\times\vec{c})\times(\vec{c}\times\vec{a})\right] = \lambda\left[\vec{a} \quad \vec{b} \quad \vec{c}\right]^2$

$\Rightarrow (\vec{a}\times\vec{b})\left[\{(\vec{b}\times\vec{c}).\vec{a}\}\vec{c} - \{(\vec{b}\times\vec{c}).\vec{c}\}.\vec{a}\right] = \lambda\left[\vec{a} \quad \vec{b} \quad \vec{c}\right]^2$

$\left[\because (\vec{a}\times\vec{b})\times\vec{c} = (\vec{a}.\vec{c})\vec{b} - (\vec{a}.\vec{b})\vec{c}\right]$

$\Rightarrow (\vec{a}\times\vec{b})\left[\left[\vec{a} \quad \vec{b} \quad \vec{c}\right]\vec{c} - 0\right] = \lambda\left[\vec{a} \quad \vec{b} \quad \vec{c}\right]^2$

$$\Rightarrow \begin{bmatrix} \vec{a} & \vec{b} & \vec{c} \end{bmatrix}\begin{bmatrix} (\vec{a}\times\vec{b}).\vec{c} \end{bmatrix} = \lambda \begin{bmatrix} \vec{a} & \vec{b} & \vec{c} \end{bmatrix}^2$$

$$\Rightarrow \begin{bmatrix} \vec{a} & \vec{b} & \vec{c} \end{bmatrix}\begin{bmatrix} \vec{a} & \vec{b} & \vec{c} \end{bmatrix} = \lambda \begin{bmatrix} \vec{a} & \vec{b} & \vec{c} \end{bmatrix}^2$$

$$\Rightarrow \lambda = 1$$

9. (C)

10. (C) The equation of the circle passing through (0, 0), (1, 0) and (0, 1) is
$x^2 + y^2 - x - y = 0$
If it passes through the point (t, t), then
$t^2 + t^2 - t - t = 0$
$\Rightarrow 2t^2 - 2t = 0 \Rightarrow 2t(t-1) = 0$
$\Rightarrow t = 1$

11. (A) Total Balls = 18

Required probability = $\dfrac{^4C_3}{^{18}C_3} = \dfrac{1}{204}$

12. (A) A is the transpose of B.

13. (C) The required no. of terms = $^{n+2}C_2$

$= \dfrac{(n+2)!}{2!n!} = \dfrac{(n+2)(n+1)n!}{2 \times n!}$

$= \dfrac{(n+1)(n+2)}{2}$

14. (B) Word "STATEMENT"

The total no. of arrangement $= \dfrac{9!}{3!2!} = \dfrac{9!}{12}$

No. of arrangement when T's come together $= \dfrac{7!}{2!} = \dfrac{7!}{2}$

No. of arrangement when T's don't come together $= \dfrac{9!}{12} - \dfrac{7!}{2} = 6 \times 7! - \dfrac{7!}{2} = \dfrac{11 \times 7!}{2}$

70. (C) The largest India is 7th largest area country. while **Australia** is the **6th** largest area.

71. (D) Sanitation keeps illness away whill care keps **accident** away.

72. (B) Except **'Brinjal'**, all others are root vegitables

73. (D) 644 $\Rightarrow (4)^3 = 64$
1255 $\Rightarrow (5)^3 = 125$
6216 $\Rightarrow (6)^3 = 216$
5228 $\Rightarrow (8)^3 = \mathbf{512} \ne \mathbf{522}$

74. (A) $\dfrac{12+13+17}{3} = 14$

$\dfrac{19+11+18}{3} = 16$

$\dfrac{16+15+11}{3} = \mathbf{14}$

75. (B) 12 × 4 + 9 = 57
16 × 4 + 6 = 70
19 × 4 + 7 = **83**

76. (D)

77. (A) 54 Q 9 P 6 R 3 S 4
After changing the sings,
= 54 ÷ 9 – 6 + 3 × 4
= 6 – 6 + 12 = **12**

HSSC MOCK TEST – 186 (ANSWER KEY)

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