

**HSSC MOCK TEST - 185 (SOLUTION)**

1. (C)  $u = e^{ax} \cos bx$   
 $\Rightarrow \frac{du}{dx} = e^{ax}(-b \sin bx) + a.e^{ax} \cos bx$   
 $\Rightarrow \frac{du}{dx} = -be^{ax} \sin bx + a.e^{ax} \cos bx$   
 and  $v = e^{ax} \sin bx$   
 $\Rightarrow \frac{dv}{dx} = b.e^{ax} \cos bx + a.e^{ax} \sin bx$   
 Now,  $u \frac{du}{dx} + v \frac{dv}{dx}$   
 $\Rightarrow e^{ax} \cos bx [-be^{ax} \sin bx + a.e^{ax} \cos bx] + e^{ax} \sin bx [be^{ax} \cos bx + a.e^{ax} \sin bx]$   
 $\Rightarrow -be^{2ax} \sin bx \cos bx + a.e^{2ax} \cos^2 bx + b.e^{2ax} \sin bx \cos bx + a.e^{2ax} \sin^2 bx$   
 $\Rightarrow a.e^{2ax} (\cos^2 bx + \sin^2 bx) = a.e^{2ax}$
2. (B) In the expansion of  $(3+x)^6$   
 Total terms = 6 + 1 = 7  
 Middle term =  $T_4 = {}^6C_3 (3)^3 (x)^6 = 20 \times 27x^6$
3. (B)  $(AB)^{-1} = B^{-1}A^{-1}$
4. (D) Point C divides the line joining the points A and B in ratio =  $m : 1$   
 A.T.Q.  
 $\frac{m \times 1 + 1 \times (-2)}{m+1} = \frac{-1}{5}$   
 $\Rightarrow 5m - 10 = -m - 1$   
 $\Rightarrow 6m = 9 \Rightarrow m = \frac{3}{2}$   
 The required ratio = 3 : 2
5. (D)
6. (C) A.T.Q,  
 $\frac{4+3+y}{3} = 2 \Rightarrow y = -1$   
 and  $\frac{x-6-5}{3} = 3 \Rightarrow x = 20$   
 $\therefore x = 20, y = -1$
7. (B)  $\lim_{x \rightarrow \infty} \frac{\sin x}{x} = 0$  [ $\because -1 \leq \sin \theta \leq 1$ ]
8. (A) We know that  
 $(1+x)^n = C_0 + C_1x + C_2x^2 + C_3x^3 + \dots + C_nx^n$   
 On differentiating both sides w.r.t. 'x'  
 $n(1+x)^{n-1} = 0 + C_1 + 2C_2x + 3C_3x^2 + \dots + nC_nx^{n-1}$   
 On putting  $x = -1$

- $n(1-1)^{n-1} = C_1 - 2C_2 + 3C_3 + \dots + (-1)^{n-1} nC_n$   
 $0 = C_1 + 2C_2 + 3C_3 - \dots + (-1)^{n-1} nC_n$   
 Hence  $C_1 - 2C_2 + 3C_3 - \dots + (-1)^{n-1} nC_n = 0$
9. (A)  $A^2 - B^2 = (A-B)(A+B)$   
 $\Rightarrow A^2 - B^2 = A^2 - BA + AB - B^2$   
 $\Rightarrow AB = BA$
10. (C) Order = 2, Degree = 2
11. (D) Given that  $\bar{a} + 3\bar{b} + 2\bar{c} = 0$   
 Now,  $\bar{a} \times \bar{b} + \bar{b} \times \bar{c} + \bar{c} \times \bar{a} = \lambda(\bar{a} \times \bar{c})$   
 $\Rightarrow \bar{a} \times \frac{1}{3}(-\bar{a} - 2\bar{c}) + \frac{1}{3}(-\bar{a} - 2\bar{c}) \times \bar{c} - \bar{a} \times \bar{c}$   
 $= \lambda(\bar{a} \times \bar{c})$   
 $\Rightarrow -\frac{1}{3}(\bar{a} \times \bar{a}) - \frac{2}{3}(\bar{a} \times \bar{c}) - \frac{1}{3}(\bar{a} \times \bar{c}) - \frac{2}{3}(\bar{c} \times \bar{c}) - \bar{a} \times \bar{c} = \lambda(\bar{a} \times \bar{c})$   
 $\Rightarrow 0 - \frac{2}{3}(\bar{a} \times \bar{c}) - \frac{1}{3}(\bar{a} \times \bar{c}) - 0 - (\bar{a} \times \bar{c}) = \lambda(\bar{a} \times \bar{c})$   
 $\Rightarrow -2(\bar{a} \times \bar{c}) = \lambda(\bar{a} \times \bar{c}) \Rightarrow \lambda = -2$
12. (A) 5.3, 9.3, 0, -4.7, 7.6, 3.9, -3.2, 6.1, -4.2  
 On arranging in ascending order  
 -4.7, -4.2, -3.2, 0, 3.9, 5.3, 6.1, 7.6, 9.3  
 Median = 5<sup>th</sup> term = 3.9
13. (B) Let  $x - iy = \sqrt{46 - 14\sqrt{3}i}$   
 On squaring both sides  
 $\Rightarrow (x^2 - y^2) - 2xyi = 46 - 14\sqrt{3}i$   
 On comparing  
 $x^2 - y^2 = 46$  and  $2xy = 14\sqrt{3}$  ... (i)  
 Now,  $(x^2 + y^2) = (x^2 - y^2) + (2xy)^2$   
 $\Rightarrow (x^2 + y^2)^2 = (46)^2 + (14\sqrt{3})^2$   
 $\Rightarrow (x^2 + y^2)^2 = 2116 + 588$   
 $\Rightarrow (x^2 + y^2)^2 = 2704 \Rightarrow x^2 + y^2 = 52$  ... (ii)  
 from eq(i) and eq(ii)  
 $x = \pm 7, y = \pm\sqrt{3}$   
 $\therefore \sqrt{46 - 14\sqrt{3}i} = \pm(7 - \sqrt{3}i)$
14. (C) In the expansion of  $\left(y^2 + \frac{2}{y}\right)^5$   
 $T_{r+1} = {}^5C_r (y^2)^{5-r} \left(\frac{2}{y}\right)^r$   
 $= {}^5C_r 2^r y^{10-3r}$   
 Now,  $10 - 3r = 1$

$\Rightarrow 3r = 9 \Rightarrow r = 3$

Coefficient of  $y = {}^5C_3 \times 2^3$   
 $= 10 \times 8 = 80$

15. (A) "COCHIN"

Total words starting with CC =  $4! = 24$

Total words starting with CH =  $4! = 24$

Total words starting with CI =  $4! = 24$

Total words starting with CN =  $4! = 24$

Now, start word will be "COCHIN"

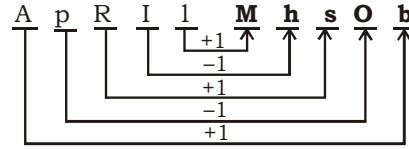
$= 24 \times 4 = 96$

70. (C) As, Daggles is poor writing.

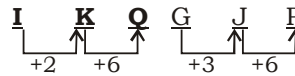
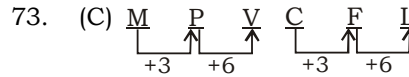
Similarly, **Stammering** is speech defect.



Similarly,



72. (D) Except **Rangoon**, all others are the cities of India.



74. (A) As,  $3 + 6 + 1 + 8 + 3 + 7 = 28$

and,  $4 + 2 + 2 + 1 + 6 + 5 = 20$

Similarly,  $8 + 1 + 2 + 9 + 7 + 2 = 29$

75. (A) As,  $16 \times 3 - 4 = 44$

and,  $41 \times 3 - 6 = 117$

Similarly,  $37 \times 3 - 5 = 106$

76. (C)

77. (D)

**HSSC MOCK TEST - 185 (ANSWER KEY)**

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