

**HSSC MOCK TEST - 161 (SOLUTION)**

1. (C) An angles of a triangle are in 3 : 2 : 1

Let Angles = 3x, 2x, x

$$3x + 2x + x = 180$$

$$\Rightarrow 6x = 180 \Rightarrow x = 30$$

Angles = 90, 60, 30

Sine Rule

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\Rightarrow \frac{a}{\sin 90} = \frac{b}{\sin 60} = \frac{c}{\sin 30}$$

$$\Rightarrow \frac{a}{1} = \frac{b \times 2}{\sqrt{3}} = \frac{c \times 2}{1}$$

$$\frac{a}{2} = \frac{b}{\sqrt{3}} = \frac{c}{1}$$

Hence  $a : b : c = 2 : \sqrt{3} : 1$

2. (B) The required no. of triangles =  ${}^{14}C_3 - {}^8C_3$   
 $= 364 - 56$   
 $= 308$

3. (C)  $\sqrt{3+2\sqrt{2}} = \sqrt{(\sqrt{2})^2 + 1^2 + 2 \times \sqrt{2} \times 1}$   
 $= \sqrt{(\sqrt{2} + 1)^2} = \sqrt{2} + 1$

4. (D) 13-sided regular polygon

$$\text{The no. of diagonals} = \frac{n(n-3)}{2}$$

$$= \frac{13 \times 10}{2}$$

$$= 65$$

5. (B) The required no. of ways =  $(9 - 1)!$   
 $= 8!$

6. (A) The total Possible ways =  $8 \times 7$   
 $= 56$

7. (C) 7

8. (C) Variance of 35 observations  $\text{var}(x) = 3$   
 We know that

$$\text{var}(\lambda x) = \lambda^2 \text{var}(x)$$

If each observation multiplied by 3, then variance of new observations

$$\text{var}(3x) = 3^2 \times \text{var}(x)$$

$$= 9 \times 3 = 27$$

9. (A)  $\tan^{-1}\left(\cot \frac{31\pi}{4}\right) = \tan^{-1}\left[\cot(4 \times 2\pi) - \frac{\pi}{4}\right]$   
 $= \tan^{-1}\left[-\cot \frac{\pi}{4}\right]$   
 $= \tan^{-1}\left[\tan^{-1}\left(-\frac{\pi}{4}\right)\right]$   
 $= -\frac{\pi}{4}$

10. (B) Given that  $P(A) = 0.6$  and  $P(B) = 0.5$   
 We know that

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

for minimum value of  $P(A \cap B)$ ,  $P(A \cup B) = 1$

$$1 = 0.6 + 0.5 - P(A \cap B)$$

$$\Rightarrow P(A \cap B) = 1.1 - 1 = 0.1$$

11. (A)  $p, q, r$  are in A.P.,  
 then  $2q = p + r$  ... (i)

and  $a, b, c$  are in A.P.,

$$\text{then } 2b = a + c \quad \dots \text{(ii)}$$

$$\text{Now, } 2(q + b) = (p + a) + (c + r)$$

Hence  $(b + a)$ ,  $(q + b)$ ,  $(c + r)$  also are in A.P.

12. (B) When  $\theta = 180^\circ$

$$M = \frac{60}{11} (H \pm 6) \quad \text{when } - \rightarrow H > 6$$

$$+ \rightarrow H < 6$$

$H = 3$  (between 3 and 4 O'clock)

$$\Rightarrow M = \frac{60}{11} (3 + 6)$$

$$\Rightarrow M = \frac{60}{11} \times 9 = 49 \frac{1}{11} \text{ minute}$$

$$\text{Time} = 3 : 49 \frac{1}{11}$$

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**HSSC MOCK TEST – 161 (ANSWER KEY)**

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

