

REV-PAC-2223-ASM-SET 1-MATH**Suggested solutions****Multiple Choice Questions**

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|-------|-------|-------|-------|-------|
| 1. C | 2. C | 3. D | 4. D | 5. B |
| 6. B | 7. C | 8. A | 9. B | 10. A |
| 11. C | 12. A | 13. D | 14. B | 15. B |
| 16. A | 17. C | 18. A | 19. B | 20. A |
| 21. B | 22. D | 23. C | 24. C | 25. A |
| 26. D | 27. B | 28. D | 29. D | 30. B |

1. ☐ C

$$\begin{aligned}\text{Required probability} &= \frac{C_1^4 C_2^6}{C_3^{10}} \\ &= \frac{1}{2}\end{aligned}$$

2. ☐ C

$$\begin{aligned}\text{Required number} &= C_3^5 C_3^6 - C_2^4 C_2^5 \\ &= 140\end{aligned}$$

3. ☐ DLet the exterior angle be θ .

$$\theta + 7\theta = 180^\circ$$

$$\theta = 22.5^\circ$$

$$\text{I. } \checkmark. n = \frac{360^\circ}{22.5^\circ} = 16$$

$$\text{II. } \times. \text{ Number of diagonals} = C_2^{16} - 16 = 104$$

III. $\checkmark$.4. ☐ D

$$\begin{aligned}\text{Required number} &= C_8^{12} + C_7^{12} + C_6^{12} + C_5^{12} + C_4^{12} \\ &= 3498\end{aligned}$$

5. ☐ B

$$\begin{aligned}\text{Required number} &= C_3^{18} \times C_4^{22} \\ &= 5\,969\,040\end{aligned}$$

6. ☐ B

$$\text{Required number} = C_6^{17} - C_6^9 - C_6^8 = 12\,264$$

7. C

$$\begin{aligned}\text{Required number} &= \frac{12!}{6!4!2!} \\ &= 13\,860\end{aligned}$$

8. A

$$\begin{aligned}\text{Required number} &= C_3^6 \\ &= 20\end{aligned}$$

9. B

$$\begin{aligned}\text{Required number} &= \frac{10!}{5!5!} \\ &= 252\end{aligned}$$

10. A

$$\text{Required number} = C_3^{18} C_3^{12} + C_4^{18} C_2^{12} + C_5^{18} C_1^{12} + C_6^{18} = 502\,860$$

11. C

$$\begin{aligned}\text{Required number} &= C_2^4 + C_2^2 \\ &= 15\end{aligned}$$

12. A

$$\begin{aligned}\text{Required number} &= C_5^{25} - C_5^{15} - C_5^{10} \\ &= 49\,875\end{aligned}$$

13. D

$$\begin{aligned}\text{Required probability} &= \frac{C_4^4 C_1^7 + C_3^4 C_2^7}{C_5^{11}} \\ &= \frac{13}{66}\end{aligned}$$

14. B

$$\begin{aligned}\text{Required number} &= \frac{6!}{4!2!} + \frac{6!}{3!3!} + \frac{6!}{2!4!} \\ &= 50\end{aligned}$$

15. B

$$\text{Required number} = C_5^{15} - C_5^8 - C_5^7 = 2926$$

16. A

Only the unit digit matters. 3 out of the 4 digits will give an even number.
Required probability = $\frac{3}{4}$

17. ☐ C

$$\begin{aligned}\text{Required number} &= \frac{3!(2!)^3}{6!} \\ &= \frac{1}{15}\end{aligned}$$

18. ☐ A

$$\text{Required probability} = \frac{C_4^5 \times 4! \times 4!}{8!} = \frac{1}{14}$$

19. ☐ B

$$\begin{aligned}\text{Required number} &= 4!(2!)^4 \\ &= 384\end{aligned}$$

20. ☐ A

$$\begin{aligned}\text{Required probability} &= \frac{7!3!}{9!} \\ &= \frac{1}{12}\end{aligned}$$

21. ☐ B

$$\begin{aligned}\text{Required number} &= C_2^{26} \times 2! \times 10^3 \\ &= 650\,000\end{aligned}$$

22. ☐ D

$$\begin{aligned}\text{Required number} &= 2!3!4! \\ &= 288\end{aligned}$$

23. ☐ C

$$\begin{aligned}\text{Required number} &= 7!2! \\ &= 10\,080\end{aligned}$$

24. ☐ C

$$\begin{aligned}\text{Required number} &= C_5^8 5! \\ &= 6720\end{aligned}$$

25. ☐ A

$$\text{Required probability} = \frac{C_3^{11} 3! 10!}{13!} = \frac{15}{26}$$

26. ☐ D

$$\begin{aligned}\text{Required number} &= 8! \\ &= 40\,320\end{aligned}$$

27. ☐ B

$$\text{Number of arrangements} = C_2^4 2! \times C_4^5 4! = 1440$$

28. D

$$\begin{aligned}\text{Required number} &= \frac{5!}{2!} \\ &= 60\end{aligned}$$

29. D

$$\begin{aligned}\text{Required number} &= {}^5C_4 4!4! \\ &= 2880\end{aligned}$$

30. B

$$\text{Number of ways} = 10! - (8 \cdot 2!)8! = 2\,983\,680$$