

$$\begin{aligned}
 1. \quad & (0! + \frac{1}{3!}) \cdot 4! \\
 &= (1 + \frac{1}{6}) \cdot 24 \\
 &= \frac{7}{6} \cdot 24 \\
 &= 28
 \end{aligned}$$

Cevap: A

$$\begin{aligned}
 2. \quad & 8 \cdot 7! - 8! \\
 &= 8! - 8! \\
 &= 0
 \end{aligned}$$

Cevap: A

$$\begin{aligned}
 3. \quad & \frac{\frac{1}{4!} - \frac{1}{5!}}{\frac{24}{6!}} \\
 &= \frac{5 - 1}{5!} \cdot \frac{6!}{24} \\
 &= \frac{4 \cdot 6 \cdot 5!}{5! \cdot 24} = 1
 \end{aligned}$$

Cevap: C

$$\begin{aligned}
 4. \quad & \frac{8!}{6!} + \frac{7!}{6!} - \frac{17!}{16!} \\
 &= \frac{8 \cdot 7 \cdot 6!}{6!} + \frac{7 \cdot 6!}{6!} - \frac{17 \cdot 16!}{16!} \\
 &= 56 + 7 - 17 \\
 &= 46
 \end{aligned}$$

Cevap: B

$$\begin{aligned}
 5. \quad & \frac{8! + 9!}{8!} + \frac{7! + 8!}{7!} \\
 &= \frac{8! + 9 \cdot 8!}{8!} + \frac{7! + 8 \cdot 7!}{7!} \\
 &= \frac{8!(1 + 9)}{8!} + \frac{7!(1 + 8)}{7!} \\
 &= 10 + 9 \\
 &= 19
 \end{aligned}$$

Cevap: C

$$\begin{aligned}
 6. \quad & \frac{(5! - 4!)(4! + 3!)}{(3!)^2} \\
 &= \frac{4! \cdot (5 - 1) \cdot 3!(4 + 1)}{3! \cdot 3!} \\
 &= 4 \cdot 4 \cdot 5 = 80
 \end{aligned}$$

Cevap: D

$$\begin{aligned}
 7. \quad & \frac{9! + 8! + 7!}{9! - 8! - 7!} \\
 &= \frac{7!(72 + 8 + 1)}{7!(72 - 8 - 1)} \\
 &= \frac{81}{63} = \frac{9}{7}
 \end{aligned}$$

Cevap: C

$$\begin{aligned}
 8. \quad & \frac{7! \cdot 8! + 8! \cdot 9!}{8! \cdot 7!} = \frac{7! \cdot 8! + 8 \cdot 7! \cdot 9!}{8! \cdot 7!} \\
 &= \frac{7! \cdot 8!(1 + 8 \cdot 9)}{8! \cdot 7!} \\
 &= 1 + 72 \\
 &= 73
 \end{aligned}$$

Cevap: B

$$9. \quad \frac{\left(\frac{1}{7!} + \frac{1}{8!}\right) \cdot \frac{9}{7!}}{(8)}$$

$$\frac{8+1}{8!} \cdot \frac{9}{7!}$$

$$\frac{9}{8!} \cdot \frac{7!}{9} = \frac{7!}{8 \cdot 7!} = \frac{1}{8}$$

Cevap: A

$$10. \quad \frac{(9!)^2 - (8!)^2}{(9!)^2 + (8!)^2} = \frac{(9! - 8!)(9! + 8!)}{(9 \cdot 8!)^2 + (8!)^2}$$

$$= \frac{8!(9-1) \cdot 8!(9+1)}{(8!)^2(9^2+1)}$$

$$= \frac{(8!)^2 \cdot 8 \cdot 10}{(8!)^2 \cdot 82}$$

$$= \frac{80}{82} = \frac{40}{41}$$

Cevap: B

$$11. \quad \frac{5!}{4!} + \frac{6!}{5!} + \dots + \frac{(n+1)!}{n!}$$

$$\frac{5 \cdot 4!}{4!} + \frac{6 \cdot 5!}{5!} + \dots + \frac{(n+1) \cdot n!}{n!}$$

$$5 + 6 + 7 + \dots + n + 1 \quad (n = 15)$$

$$5 + 6 + 7 + \dots + 16 = (16 - 5 + 1) \cdot \frac{16 + 5}{2}$$

$$= 12 \cdot \frac{21}{2}$$

$$= 126$$

Cevap: C

$$12. \quad \frac{n! + (n-1)!}{(n-1)!} = 11$$

$$\frac{n \cdot (n-1)! + (n-1)!}{(n-1)!} = 11$$

$$\frac{\cancel{(n-1)!} \cdot (n+1)}{\cancel{(n-1)!}} = 11$$

$$n + 1 = 11 \Rightarrow n = 10$$

Cevap: E

$$13. \quad \frac{25 \cdot n!}{1 + 2 + 3 + \dots + 50} = 50!$$

$$\frac{25 \cdot n!}{\frac{50 \cdot 51}{2}} = 50!$$

$$\frac{25 \cdot n!}{25 \cdot 51} = 50!$$

$$n! = 51 \cdot 50! = 51! \Rightarrow n = 51$$

Cevap: B

$$14. \quad \frac{!140! - !138!}{!138!}$$

$$= \frac{2.4 \dots 138 \cdot 140 - 2.4 \dots 138}{2.4 \dots 138}$$

$$= \frac{2.4 \dots 138 \cdot (140 - 1)}{2.4 \dots 138}$$

$$= 140 - 1$$

$$= 139$$

Cevap: B