

PERMUTATION AND COMBINATION

Form 5

Vol 09

Part 1 – Simple counting

1. C	2. D	3. B	4. B	5. D	6. B	7. D
8. D	9. D	10. D	11. D	12. C	13. C	14. D
15. C	16. D	17. B				

- The required number
 $= 12 \times 3 \times 2 \times 1$
 $= 72$
- The required number
 $= 7 \times 3 \times 2 \times 10$
 $= 420$
- The required number of choices
 $= 6 \times 3 + 8 \times 2$
 $= 34$
- The required number
 $= 6 + 8$
 $= 14$
- The required number
 $= 9 \times 8 \times 11 \times 6$
 $= 4\,752$
- The required number
 $= 9 + 8 + 11 + 6$
 $= 34$
- The required number
 $= 9 \times 8 \times 11 + 9 \times 8 \times 6 + 9 \times 11 \times 6 + 8 \times 11 \times 6$
 $= 2\,346$

8. The required number
 $= 26 \times 26 \times 10 \times 10 \times 10 \times 10$
 $= 6\,760\,000$
9. The required number
 $= 10 \times 10 \times 10 \times 10$
 $= 10\,000$
10. The required number
 $= 5 \times 5 \times 10 \times 10$
 $= 2\,500$
11. The required number of ways
 $= 3 \times 4$
 $= 12$
12. Number of ways of choosing 2 daughters = 3
The required number of ways
 $= 3 \times 4 + 3$
 $= 15$
13. The required number of ways
 $= 5$
14. The required number
 $= 3 \times 2$
 $= 6$
15. The required number
 $= 2 \times 2$
 $= 4$
16. The required number
 $= 4 \times 4 \times 4 \times 4 \times 4 \times 4$
 $= 4\,096$
17. The required number
 $= 1 \times 1 \times 1 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$
 $= 128$

Part 2A – Permutation

1. D	2. C	3. B	4. A	5. B	6. C	7. C
8. B	9. A	10. C	11. B	12. C	13. B	

1. The required number
 $= 26 \times 26 \times 10 \times 10 \times 10 \times 10 \times 10$
 $= 67\,600\,000$

2. The required number
 $= 26 \times 25 \times 10 \times 10 \times 10 \times 10 \times 5$
 $= 32\,500\,000$

3. The required number
 $= 2! \times 8!$
 $= 80\,640$

4. The required number
 $= 4 \times 4 \times 3 \times 1 \times 2 \times 1$
 $= 96$

5. The required number
 $= 5! \times 5! \times 2$
 $= 28\,800$

6. The required number
 $= 7! \times P_4^8$
 $= 8\,467\,200$

7. The required number of arrangements
 $= P_3^7 \times 2! \times 5!$
 $= 50\,400$

8. The required number of arrangements
 $= P_2^6 \times 8!$
 $= 1\,209\,600$

9. The required number of arrangements
 $= 2 \times 5 \times 5!$
 $= 1\,200$

10. Number of arrangements that a man sits on the leftmost chair and a woman sits on the rightmost chair

$$= 9 \times 3 \times 10! = 97\,977\,600$$

The required number of arrangements

$$= 9 \times 11! + 3 \times 11! - 97\,977\,600$$

$$= 381\,024\,000$$

11. The required number

$$= P_2^3 \times 5! \times P_3^6$$

$$= 86\,400$$

12. The required number

$$= P_7^{11}$$

$$= 1\,663\,200$$

13. The required number

$$= 12 \times 9! \times 2$$

$$= 8\,709\,120$$