

## PERMUTATION, COMBINATION AND PROBABILITY

Form 6

Vol 8

### Part 1A – Permutation and Combination

1. B	2. C	3. C	4. D	5. A	6. A	7. D
8. C	9. D	10. B	11. D	12. D	13. B	14. A
15. C	16. B	17. C	18. D	19. C		

1. The required number of queues

$$= 8! \times P_5^9$$

$$= 609\,638\,400$$

2. The required number of queues

$$= 7! \times 6!$$

$$= 3\,628\,800$$

3. The required number of queues

$$= 4! \times P_3^5 \times P_2^4$$

$$= 17\,280$$

4. The required number of queues

$$= 5! \times P_3^7 \times P_5^6$$

$$= 18\,144\,000$$

5. The required number of numbers

$$= 6 \times 7 \times 7 \times 2$$

$$= 588$$

6. The required number of numbers

$$= 7^4 - 7$$

$$= 2394$$

7. The required number of numbers

$$= 3^3 \times 4 \times 4$$

$$= 432$$

8. The required number of passwords

$$= P_2^3 \times 4 \times 10^4 \times 4$$

$$= 960\,000$$

9. The required number of ways

$$= C_3^5 + C_2^5 \times C_1^3$$

$$= 40$$

10. The required number of combinations

$$= C_3^3 + C_2^3 \times (C_1^7 + C_1^5) + C_1^3 \times C_2^7$$

$$= 100$$

11. The required number of ways

$$= C_1^{11} \times C_1^9 \times C_1^8 \times C_1^5$$

$$= 3\,960$$

12. The required number of ways

$$= C_2^{33} - (C_2^{11} + C_2^9 + C_2^8 + C_2^5)$$

$$= 399$$

13. The required number of arrangements

$$= \frac{12!}{3!4!5!}$$

$$= 27\,720$$

14. The required number of arrangements

$$= \frac{10!}{4!5!}$$

$$= 1\,260$$

15. The required number of arrangements

$$= P_3^4 \times 6 \times 5! + P_3^5 \times P_2^6 \times 4!$$

$$= 60\,480$$

16. The required number of combinations

$$= C_3^6 \times (C_2^3 + C_2^7 + C_1^3 \times C_1^7)$$

$$= 900$$

17. The required number of combinations

$$= C_3^6 \times (C_2^3 + C_2^7 + C_1^3 \times C_1^7) + C_4^6 \times (C_1^3 + C_1^7) + C_5^6$$

$$= 900 + C_4^6 \times (C_1^3 + C_1^7) + C_5^6$$

$$= 1\ 056$$

18. The required number of arrangements

$$= C_6^{15} \times C_3^6 + C_7^{15} \times C_2^6 + C_8^{15} \times C_1^6 + C_9^{15}$$

$$= 240\ 240$$

19. The required number of arrangements

$$= C_6^{30} \times \frac{6!}{3!}$$

$$= 71\ 253\ 000$$