MATH M118 Practice Test Chapter 3

1. Evaluate: $\frac{86!}{83!}$

2. How many distinguishable arrangements of the letters in the word ***REVERSE*** are there?

3. In how many ways can 12 people be seated around a circular table?

4. How many 4-digit radio and television call letters can be formed using the letters of the alphabet, if ***W*** or ***K*** must be the first letter? Note that letters can be repeated.

5. A gym class has 10 boys and 12 girls. In how many ways can a team of 6 be selected if the team must have the same number of boys and girls?

6. A man has a penny, a nickel, a dime, a quarter, and a half-dollar coin in his pocket. He reaches into his pocket and randomly selects 3 coins. How many different sums can the 3 coins form?

(a) 1,000
(b) 720
(c) 10
(d) 5
(e) None of the above

7. A gym class has 10 boys and 12 girls. In how many ways can a team of 6 be selected if there must be at least 1 boy and at least 1 girl on the team?

8. How many handshakes will occur at a party with 12 people if everyone shakes with everyone else?

9. How many even numbers between 300 and 800 can be formed using the elements from the set {1, 3, 4, 5, 6, 9} if no element can be used more than once?

10. How many even numbers between 300 and 800 can be formed using the elements from the set {1, 3, 4, 5, 6, 9} if elements can be repeated?

11. In how many ways can a teacher put her 20 students into pairs? Note that this is an unordered partition with the pairs being treated the same.

12. An experiment consists of flipping a coin 4 times and noting heads or tails on each flip. How many outcomes exist for this experiment?

13. Five cards are selected from a deck of 52 cards. In how many ways can 4 aces and 1 king be selected?

14. Five cards are drawn from a deck of 52 cards. How many different 5-card hands contain all the same suit?

(a) C(52, 5)
(b) P(4, 1) P(13, 5)
(c) C(4, 1) C(13, 5)
(d) C(13, 5)
(e) P(13, 5)
(f) 4

15. There are 10 choices of toppings for a pizza. If a pizza must have at least 1 topping, in how many ways can a pizza be ordered?

16. 20 people have entered a lottery to give away 4 television sets. In how many ways can the televisions be awarded? Assume that the televisions are identical and you cannot be a repeat winner?

17. A committee of 4 is selected from 8 men and 6 women. If at least 3 women must be on the committee, in how many ways can the committee be formed?

18. In how many ways can 12 subjects be divided in to 4 equal sized groups for a medical study, where each group receives a different treatment?

19. If each post office has its own 5-digit zip code that cannot start with a 9, and must end with a 0, then how many such numbers can be formed?

20. An experiment consists of flipping a coin repeatedly and the sample space consists of the sequence of heads/tails on the flips. You stop when you get tails once or when you get heads for the third time. How many outcomes are in the sample space for this experiment?

21. In how many ways can a president, secretary and treasurer be selected from a group of 15 people?

22. In how many ways can 5 men and 4 women be seated in a row of 9 seats?

23. In how many ways can 5 men and 4 women be seated in a row of 9 seats if a man can never sit next to another man?

24. A set contains 7 elements. How many subsets exist?

25. An urn contains 1 red, 1 white, and 2 blue balls. Balls are selected without replacement and the color is noted until the red ball is selected. How many outcomes are in the sample space for this experiment?

26. In how many different ways can a student answer 10 true-false questions on a test?

(a) 1,024
(b) 100
(c) 10
(d) 2
(e) 1

27. An urn contains 6 red, 3 white and 2 blue marbles. In how many ways can 3 marbles be selected so that at least one is blue?

(a) P(2, 1) + P(2, 2)
(b) C(2, 1) + C(2, 2)
(c) C(2,1) C(10,2)
(d) 2
(e) P(2, 1) P(9, 2) + P(2, 2) P(9, 1)
(f) C(2, 1) C(9, 2) + C(2, 2) C(9, 1)