KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

DEPARTMENT OF MATHEMATICS & STATISTICS

MATH 105: Finite Mathematics

Semester 181

Major Exam Three

Wednesday, November 28, 2018

Allowed time 75 minutes

Name: ID#: Serial#:

Directions:

- You are allowed to use electronic calculators and other reasonable writing accessories that help write the exam.
- Do not keep your mobile with you during the exam, turn off your mobile and leave it aside.

Question No	Full Marks	Marks Obtained
1	2	
2	2	
3	2	
4	2	
5	2	
6	3	
7	3	
8	5	
9	4	
10	3	
11	5+2	
12	5	
Total	40	

1. At a restaurant a complete dinner consists of a salad, an entree, a dessert, and a beverage. For the salad, the choices are tossed green salad, gelatin salad, or cottage cheese; for the entree, the choices are chicken, roast beef, or flounder; for the dessert, the choices are pudding, pie, cake, or ice cream; for the beverage, the choices are coffee, tea, or milk. How many complete dinners are possible?

2. A building contractor can order lumber from 5 suppliers, bricks from 6 suppliers, and hardware from 8 suppliers. If the contractor chooses one supplier for each item, how many choices are available for the three items?

3. A club has eleven members. In how many ways can the offices of president, vice president, secretary, and treasurer be filled if no member can serve in two offices?

4. Find the value of the product ${}^{7}C_{3}.{}^{3}P_{3}$

5. From a group of ten graduate students, five are assigned to supervisor *A* and two to supervisor *B*. In how many ways can the assignment be made?

6. If the probability that a certain horse wins a race is $\frac{3}{5}$, find the odds that this event occurs.

7. If the odds in favor of an event *E* are 2:7, find *P* (*E*').

8. In a survey of newspaper readers, it was found that 40% like the *Gazette*, 55% liked the *Bulletin*, and 10% did not like any of these two. If a person in the survey is randomly selected, find the probability that the person did not like the *Bulletin*, given that he or she did not like the *Gazette*.

9. A manufacturer of widgets has three assembly lines: A, B, and C. The percentages of total daily output that are produced by the lines are 25%, 35%, and 40%, respectively. The percentages of defective units produced by the lines are estimated to be 1%, 2%, and 3%, respectively. If a widget is randomly selected from a day's production, what is the probability that it is not defective?

10. If events E and F are independent with $P(E) = 0.45$ and $P(F) = 0.35$, find $P(E' \cap F)$.

11. If $P(E|F) = \frac{1}{2}$, $P(E \cup F) = \frac{7}{10}$, and $P(E \cap F) = \frac{2}{5}$,

a. Find the probability of E.

b. Determine if E and F are independent or dependent. Why?

12. An aptitude test is believed to have 73% accuracy. Find the probability that the test will be accurate for at least one of the next two persons who take the test.