Question 1

A multiple choice test contains 10 questions. There are 4 possible answers for each question. In how many ways can a student answer the questions on the test if the student answers every question?

A) 10

B) 4^{10}

C) 40

D) 10^4

Question 2

How many bit strings of length n both begin and end with a 1 ?

A) n

B) $n^2 - 2$

C) 2^{n-2}

D) 2(n-2)

Question 3

How many strings of 8 English lowercase letters are there that contain at least one vowel, if letters can be repeated? In English, there are 26 letters and 5 vowels.

A) $26^8 - 21^8$

B) $21^8 + 5$

C) $21^7 + 8(5)$

D) 8!

Question 4

What is the minimum number of students, each of whom comes from one of the 50 states, who must be enrolled in the university to guarantee that there are at least 11 who come from the same state?

A) 11

B) 551

C) 500

D) 501

Question 5

Only freshman, sophomores and juniors are registered in our class. What is the minimum number of students in our class to guarantee that there are at least 5 freshman, or 5 sophomores, or 5 juniors?

A) 13

B) 15

C) 12

D) 6

Question 6

With a group of 4 men and 4 women, how many ways can they be arranged in a row if the men and women alternate ?

A) 16

B) 4! 4!

C) 2^4

D) 4! 4! 2

Question 7

How many 2-permutations of a set of 4 things are there?

A) 4! / 2!

B) 4! / (2! 2!)

C) 4! 2!

D) 2^4

Question 8

Is C(10,5) > P(10,5) ?

A) Yes

B) No