Mansoura University **Faculty of Engineering** **Math. & Eng. Phy. Dept.** **Spring Semester** **Saturday 30/3/2019** **Dr. Ayman Gomaa**		**Course title: Probability & Statistics** **Course code: MTH103** **Midterm,** **BME Level 100 Students** **Total Mark: 20** **Time allowed: 1 hour**

Name (in Arabic): **Group:** **Number:**

Answer the following questions

(1) A telephone number is a **7** digit sequence, but the first digit has to be different from **0** or **1**. VIP number has equal last 4 digits. **How many** VIP telephone numbers? [3 marks]

(2) A committee of **4** persons is to be selected randomly from a group of **6** men and **9** women. **Find** the probability that the committee consists of at least one man. [4 marks]

(3) You enter a chess tournament where your probability of winning a game is **0.5** against half the players (type I), **0.6** against quarter of the players (type II) and **0.7** against the remaining quarter of the players (type III). You play a game against a random opponent.
(i) **What** is the probability of not winning?
(ii) Suppose that you lose. **What** is the probability that you had an opponent of type III.
[4 marks]

(4) Two designers work independent, the probability that the first solve a problem is **0.5** and the second solve a problem is **0.7**. **What** is the probability that the problem will be solved?
[3 marks]

(5) A box contains **12** items of which **2** are defective. A man selects **3** items from the box. **Compute** the expected number of defective items. [4 marks]

(6) An electronic product contains **30** integrated circuits (**ICs**) that work independent. The mean number of defective **ICs** in the product is **3**. The product operates only if there is at most **3** defective **ICs**. **What** is the probability that the product operates? [4 marks]