



Program: BS ( CS & SE )  
Semester: Spring-2022  
Course: MT2005-Probability & Statistics

Examination: Assignment # 02  
Total Marks: 10, Weightage: 2.5  
Date of Submission: 15 / 04 / 2022

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**NOTE: ATTEMPT ALL PROBLEMS.**

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## Problem # 01

Suppose that after 10 years of service, 40% of computers have problems with motherboards (MB), 30% have problems with hard drives (HD), and 15% have problems with both MB and HD. What is the probability that a 10-year old computer still has fully functioning MB and HD?

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## Problem # 02

A computer program is tested by 3 *independent* tests. When there is an error, these tests will discover it with probabilities 0.2, 0.3, and 0.5, respectively. Suppose that the program contains an error. What is the probability that it will be found by at least one test?

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## Problem # 03

Under good weather conditions, 80% of flights arrive on time. During bad weather, only 30% of flights arrive on time. Tomorrow, the chance of good weather is 60%. What is the probability that your flight will arrive on time?

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## Problem # 04

A system may become infected by some spyware through the internet or e-mail. Seventy percent of the time the spyware arrives via the internet, thirty percent of the time via email. If it enters via the internet, the system detects it immediately with probability 0.6. If via e-mail, it is detected with probability 0.8. What percentage of times is this spyware detected?

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## Problem # 05

If  $A$  and  $B$  are independent events, then show that each of the following pair of events are also independent:

- (i)  $A^c$  and  $B$
  - (ii)  $A^c$  and  $B^c$
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**The End**