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CS/IS F214 - Logic in Computer Science

Quiz-1

15 Marks **Duration- 20 Min** **22/Aug/2013**

Note: Evaluation will be binary, i.e., No partial marking will be done.

Question-1:

Following are the symbols for the proposition used in the premises.

C- It is cloudy today
D- It is colder than yesterday
S- It is sunny today
M- We swim
T-We take a canoe trip
H- We will be home by sunset

Represent the following premises in the logic notation **(5 x 1 = 5M)**

Premise#	Premise	In Logic notations
1	It is cloudy today and colder than yesterday.	
2	If it is cloudy today, then it is not sunny today	
3	If we swim, then it is sunny.	
4	If we don't take a canoe trip, then we swim.	
5	If we take a canoe trip, then we will be home by sunset.	

Let us suppose that you have to prove the conclusion, 'We will be home by sunset' from the above premises. Fill the missing steps (including explanations) in the following proof. **(2 x 2 = 4M)**

#	Deductions	Explanation
6	**C**	**&e on (1)**
7	**!S**	**→e on (2, 6)**
8	**!M**	**MT on (3, 7)**
9		
10		

Question-2:

Complete the proof below (including explanations) for the sequent: P, Q ⊢ (R&S) → (P & R) **(3 x 2 = 6M)**

#	Deductions	Explanation
1	**P**	**Premise**
2	**Q**	**Premise**
3	**R&S**	**Assume**
4		
5		
6		

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