National University of Computer and Emerging Sciences, Lahore Campus				
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	Program:	BS- Computer Science	Semester:	Fall 21
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	Paper Date:	[illegible]-10-2021	Weightage	15
	Section:		Page(s):	1
	Exam:	Sessional 1	Roll No:	
Instruction/Notes:	Attempt All Questions			

1- (5) If I get my Eid bonus AND my friends are free, I will take a road trip with my friends. If my friends don't find a job after Eid, then they will be free. I got my Eid bonus and my friends did NOT find a job after Eid. Can we conclude, I will take a road trip with my friends?

2- (5)Determine if the statements A and B are equivalent. Give a good reason to support your answer.

A: Maria will find a good job unless she does not learn discrete mathematics

B: Maria will not find a good job only if she does not learn discrete mathematics

3- (6) Let F (x; y)be the statement "x can fool y," where the Universe of discourse consists of all people in the world. Use quantifiers to express each of these statements. Do not forget to mention universe of discourses properly.

{ a) Everybody can fool Fred.

{ b) Evelyn can fool everybody.

{ c)Everybody can fool somebody.

{ d) There is no one who can fool everybody.

{ e)Everyone can be fooled by somebody.

{ f) No one can fool both Fred and Jerry.

4- (5)Translate in two ways each of these statements into logical expressions using predicates, quantifiers, and logical connectives. First, let the domain consist of the students in your class and second, let it consist of all people.

{ A) Someone in your class can speak Arabic.

{ B) Not each student in your class is friendly.

{ C) There is a person in your class who was not born in Calcutta.

{ D) A student in your class has been in a movie.

{ E) No student in your class has taken a course in logic programming.

5- (4) Without using truth table, determine whether the following is a tautology or not.

$$(p \rightarrow q) \rightarrow \neg(p \wedge \neg q)$$

6- (5)Let c:" It is cold", s : "It is snowing", and h : "I'm staying home". Then translate the following propositions into English sentences.

a) $(c \wedge s) \rightarrow h$

b) $(c \vee s) \rightarrow h$

c) $\neg(h \rightarrow c)$

p	q	$p \rightarrow q$	$\neg(p \wedge \neg q)$	$(p \rightarrow q) \rightarrow \neg(p \wedge \neg q)$
T	T	T	T	T
T	F	F	F	T
F	T	T	T	T
F	F	T	T	T