INTERNATIONAL INSTITUTE OF INFORMATION TECHNOLOGY
HYDERABAD

Monsoon Semester (Aug-Nov), 2019
Discrete Structures (DS)

Tutorial VI
September 12, 2019

Due: 09.09.19

Instructor: Dr. P. Kumar

INSTRUCTIONS:

Problems to be discussed in Tutorial in the week of Monday 9th Sep 2019.

1. **(Sets Basic concepts: True or False.)** Given $S = \{2, a, \{3\}\}$ and $R = \{\{a\}, 3, 4, 1\}$, indicate whether the following are true or false.

   (a) $\{a\} \in S$
   (b) $\{a\} \in R$
   (c) $\{a, 4, \{3\}\} \subseteq S$
   (d) $\{\{a\}, 1, 3, 4\} \subset R$
   (e) $R = S$
   (f) $\{a\} \subseteq S$
   (g) $\{a\} \subseteq R$
   (h) $\phi \subset R$
   (i) $\phi \subseteq \{\{a\}\} \subseteq R \subseteq E$
   (j) $\{\phi\} \subseteq S$
   (k) $\phi \in R$
   (l) $\phi \subseteq \{\{3\}, 4\}$

2. **(Implication)** Show that

$$(R \subseteq S) \wedge (S \subset Q) \implies R \subset Q$$

   Is it correct to replace $R \subset Q$ by $R \subseteq Q$? Explain your answer.

3. **(Power Sets)** Give the power sets of the following.

   1. $\{a, \{b\}\}$
   2. $\{1, \phi\}$
   3. $\{X, Y, Z\}$

Student's name:

End of Tutorial