1. Consider a propositional language with three proposition constants - *mushroom*, *purple*, and *poisonous* - each indicating the property suggested by its spelling. Using these proposition constants, encode the following English sentences as Propositional Logic sentences. 4

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|  | (*a*) | *All purple mushrooms are poisonous.* |
|  | (*b*) | *A mushroom is poisonous only if it is purple.* |
|  | (*c*) | *A mushroom is not poisonous unless it is purple.* |
|  | (*d*) | *No purple mushroom is poisonous.* |

1. Convert the following sentences to FOL sentences and then answer the question from the knowledge base. Mention which inference procedure you apply to answer the question. 8+3

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|  | *(a)* | *Lucy is a professor* |
|  | *(b)* | *All professors are people* |
|  | *(c)* | *John is the Dean* |
|  | *(d)* | *Deans are professors* |
|  | *(e)* | *All Professors consider the Dean a friend or do not know him* |
|  | *(f)* | *Everyone is friend of someone* |
|  | *(g)* | *People only criticize people that are not their friend* |
|  | *(h)* | *Lucy criticized John* |
|  |  | *Question: Is John no friend of Lucy* |