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Question 1
Question 2
Question 3
Question 4
Question 5

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Qtext:-

Consider the below Bayesian Network and answer the following questions:

[3+2+3=8 Marks]

a. Extract & construct the Bayesian network diagram to depict the exact pattern observed from below historical guest faculty records in BITS WILP program. Show the completely filled conditional probability table along with the diagram and list any one correct linearization of the variables from the net. **Note**: Use the bolded variables for solution and the complementary state for variables can be represented with ~ propositional symbol. eg., Not a Variable-X **(X)** can be represented as ~**X**.

Observation:

*Its observed that 80% of the doctorate registration**(D)** in BITS do not belong to alumnus**(A)** of BITS WILP and only 50% of the doctorate registrations are from alumnus. In order to approve a guest faculty**(G)** applicant, a process is in place checks if the applicant has doctorate registration and/or in collaboration with software industry**(F)**. Observation is that there is 80% chance in approval if the person is associated with both and only 10% chance if not associated in any. With 0.95 probability a member of government research comes from BITS alumnus. Among the guest faculty historical records 40% of person-records are not BITS alumnus.*

*Its observed that 95% of the software industry collaborators are from a pool comprising of both a BITS alumni network as well as member of research **(R)** in government initiatives. 90 % of collaborators who are alumnus is not a research member. 30% of the collaborators is a research member in government initiative but not a part of alumnus. Only 10% of collaborators are neither alumnus not a research member.*

Other unobserved dependency from above is any (both conditional or posterior) can be assumed to be equally likely to occur.

b. What is the chance that a person is an alumnus of BITS WILP approved for guest faculty role and not a member of government research, neither is collaborating with software industry nor registered for doctorate in BITS?

c. In order to approve an alumnus for the guest faculty role is it necessary to do a background verification to check if the person is a research member in government initiatives? Justify your answer with appropriate algorithm as discussed in class.