Machine Intelligence Assignment 1

(Chapters Questions)

Team 1

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Chapter (13)

1) Using a full joint probability distribution table is an efficient and scalable way to calculate posteriors. (False)
2) [d] Bayes Rule can help doctors calculating P(corona | high_body_temp ^ dry_cough) because …..
   a) calculating Diagnosis probability using Causal probability is reasonable.
   b) calculating Causal probability using Diagnosis probability is reasonable.
   c) conditional independence makes calculations faster and more scalable.
   d) a and c.

Chapter (14)

1) A Bayesian Network's graph can have directed cycles. (False)
2) [c] ….. is the probability distribution that is represented by a Bayesian Network that has a set of {x1, x2, x3, x4} nodes.
   a) $p(x1, x2, x3, x4) = p(x1)p(x2)p(x3)p(x4)$
   b) $p(x1, x2, x3, x4) = p(x1) + p(x2) + p(x3) + p(x4)$
   c) $p(x1, x2, x3, x4) = p(x1|parents(x1))p(x2|parents(x2))p(x3|parents(x3))p(x4|parents(x4))$
   d) $p(x1, x2, x3, x4) = p(x1)p(x2|parents(x2))p(x3|parents(x3))p(x4|parents(x4))$

Chapter (15)

1) Extended Kalman Filter (EKF) is an addition over regular Kalman Filter (KF) to overcome nonlinearities in the system being modeled. (True)
2) [b] ….. is the task of computing the belief state (the posterior distribution over the most recent state) given all evidence to date.
   a) Learning.
   b) Filtering.
   c) Smoothing.
   d) Prediction

Chapter (21)

1) The main difference between passive reinforcement learning and policy evaluation is that the passive learning agent doesn't know the transition model nor the reward function. (True)
2) [c] The task of reinforcement learning is to use ….. rewards to learn an optimal (or nearly optimal) policy from the environment.
    a) scattered.
    b) potential.
    c) observed.
    d) predicted.