CS 340 Artificial Intelligence
Quiz # 4 Solution (CLO 3)
2 June, 2025
Total Marks :10

Name: _____ No:_____

Q. **PL and FOL**

(a) Consider *KB* = ($B_{1,1} \Leftrightarrow (P_{1,2} \vee P_{2,1})$) $\wedge \neg B_{1,1}$ and $\alpha = \neg P_{1,2}$, find by Resolution whether KB |= α. Show all steps of proof to get any credit. (5 marks)

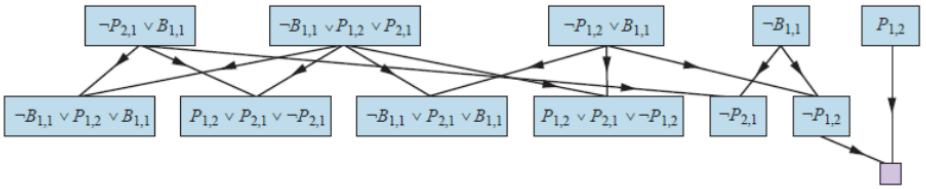
(b) Forward chaining and backward chaining is applied to And-Or graphs. Generate the And-Or graph corresponding to following clauses:-

(b ∧ c) ⇒ a
d ⇒ a
e ⇒ b
f ⇒ c
(g ∧ h) ⇒ d
e
f (5 marks)

Solution

(a)

- *KB* = $(B_{1,1} \Leftrightarrow (P_{1,2} \vee P_{2,1})) \wedge \neg B_{1,1}$
- *CNF* = $(\neg B_{1,1} \vee P_{1,2} \vee P_{2,1}) \wedge (\neg B_{1,1}) \wedge (\neg P_{1,2} \vee B_{1,1}) \wedge (\neg P_{2,1} \vee B_{1,1})$
- $\alpha = \neg P_{1.2}$ **We show that (KB∧ ¬α) is unsatisfiable**



(b)