CONSOLATA INSTITUTE OF PHILOSOPHY

THIRD YEAR EXAMINATIONS JANUARY- MAY 2023

CPH 162: LOGIC II

DATE: APRIL 28, 2023 TIME: 2.00 PM – 4.00 PM

**Instructions**

Answer **ANY THREE** questions

1. a) Use truth tree method to determine if the following propositions are tautology, contradiction or contingent.
2. (p → q) ∨ (q → p)
3. [(p → q) → q] → p

 b) Use truth table to determine of the following pairs of propositions are truth functional equivalent, consistent or consistent

1. (E → F) → G and E → (F → G)
2. G ↔ ~H and (H ⋅ G) ∨ (~G ⋅ ~H)
3. By use of the short truth table method, prove the validity or invalidity of the following arguments.

 a) (P ⋅ ~Q) → R b) A ∨ B c) J → (K → L)

~(Q v R) ~A ⋅ C K → (J → L)

 .·. ~P ∴ ~C ∨ B ∴ (J ∨ K) → L

1. Use the truth tree method to determine the validity or invalidity of the following arguments.
2. (T v ~R) ↔ C b) Q → R c) B → (P · R)

R · C H ↔ Q P → (R →S)

.·. T v S ~R v Q ∴ S → B

 .·. H ↔ R

1. Use a direct mathematical method to prove the validity of the following arguments.
2. A → B b) (~F ˅ X) → (P ˅ T) c) ~H → (~T → R)

 C v ~I F→ P H ∨ (E → F)

 ~B ∙ I ~P ~ T ∨ E

 .·. ~A · C .·. T H ⋅ D

 ∴ R ∨ F

1. Using the indirect mathematical proof method, prove the validity of the following arguments.
2. (L ∨ P) → U b) A → B c) B v ~C

 (M → U) → I C → D ~A · ~B

 P (B v D) →E ~ (~ C · D)

.·. I ~E ∴ ~ (A v D)

 .·. ~(A ∨ C)