

Objective Questions

Question (6):-

The answer is c, because the statement 'there's no person who is both rich and unhappy' negates the existence of any person ($\exists x$) who is both rich and ($\text{Rich}(x) \wedge \text{unhappy}(x)$) which translates to $\sim \exists x (\text{Rich}(x) \wedge \text{happy}(x))$

Question (7):-

The answer is d, because the statement 'for every person is represented by ($\forall x$), there's some other person (represented by $\exists y$) which is represented by $\forall x \exists y (\text{person}(x) \wedge \text{Trusts}(x, y))$

Question (8):-

The answer is a, because De Morgan's law states that:
 $\sim (p \wedge q) \equiv \sim p \vee \sim q$

Question (9):-

The answer is c, Because Modus ponens states that

- if $(p \rightarrow q)$
- if p true
- then q is true

which indicates that c is the correct answer.

Question (10): -

The answer is a

Justification:

1) Apply the universal elimination to premise 1
 $\text{Student}(\text{Alice}) \rightarrow \exists y (\text{EnrolledIn}(\text{Alice}, y))$

2) Apply Modus Ponens using premise 2
 $\exists y (\text{EnrolledIn}(\text{Alice}, y))$
Alice is enrolled in at least one course

3) Apply universal elimination to premise 3
 $\exists y (\text{EnrolledIn}(\text{Alice}, y)) \rightarrow \text{Has Access To Course Materials}(\text{Alice})$

we can apply modus ponens to conclude
 $\text{Has Access To Course Materials}(\text{Alice})$