

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's both rich and $(\text{Rich}(x) \wedge \text{unhappy}(x))$ which translates to $\neg \exists x (\text{Rich}(x) \wedge \text{unhappy}(x))$

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 state that:

$$\neg (p \wedge q_r) \equiv \neg p \vee \neg q_r$$

Question (9).:-

The answer is C, Because Modus ponens states that
• if $(p \rightarrow q_r)$
• if p true
• then q_r 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 atleast one course

3) Apply Universal elimination to premise 3

$\exists y (\text{EnrolledIn}(\text{Alice}, y)) \rightarrow \text{HasAccessToCourseMaterials}(\text{Alice})$

we can apply modus ponens to conclude

$\text{HasAccessToCourseMaterials}(\text{Alice})$