PHIL 1 WEEK 7

EXERCISES

A.Identify the main operator in the following propositions
$\sim(A \vee M) \bullet \sim(C \supset E)$
$\sim(K \sim O) \equiv \sim(R \vee \sim B)$
$\sim[(S \vee L) M] \supset (C \vee N)$
$\sim[(X \vee T) (N \vee F)] \vee (K \supset L)$

ANSWERS: DOT, TRIPLE BAR, HORSESHOE, WEDGE

More of the same

2. $(G \bullet \sim P) \supset \sim(H \vee \sim W)$
3. $\sim[P \bullet (S \equiv K)]$

ANSWERS: HORSESHOE, NEGATION

B.Determine the truth values of the following symbolized statements. Let *A, B*, and *C* be true and *X, Y*, and *Z* be false. Circle your answer.

1. $A \bullet X$

4. $\sim C \vee Z$
7. $\sim X \supset Z$
10. $\sim(A \bullet \sim Z)$
13. $(A \bullet Y) \vee (\sim Z \bullet C)$
★16. $(C \equiv \sim A) \vee (Y \equiv Z)$
★19. $\sim[\sim(X \supset C) \equiv \sim(B \supset Z)]$
★22. $\sim[(A \equiv X) \vee (Z \equiv Y)] \vee [(\sim Y \supset B) (Z \supset C)]$
★25. $(Z \supset C) \supset \{[(\sim X \supset B) \supset (C \supset Y)] \equiv [(Z \supset X) \supset (\sim Y \supset Z)]\}$

1. $A \cdot X$
   T Ⓕ F
4. $\sim C \vee Z$
   F T Ⓕ F
7. $\sim X \supset Z$
   T F Ⓕ F
10. $\sim (A \cdot \sim Z)$
    Ⓕ T T T F
13. $(A \cdot Y) \vee (\sim Z \cdot C)$
    T F F Ⓣ T F T T
16. $(C \equiv \sim A) \vee (Y \equiv Z)$
    T F F T Ⓣ F T F
19. $\sim [\sim (X \supset C) \equiv \sim (B \supset Z)]$
    Ⓣ F F T T F T T F F
22. $\sim [(A \equiv X) \vee (Z \equiv Y)] \vee [(\sim Y \supset B) \cdot (Z \supset C)]$
    F T F F T F T F Ⓣ T F T T T F T T
25. $(Z \supset C) \supset \{[(\sim X \supset B) \supset (C \supset Y)] \equiv$
    F T T Ⓣ T F T T F T F F T
    $[(Z \supset X) \supset (\sim Y \supset Z)]\}$
    F T F F T F F F

C. If A, B, and C are true statements and X, Y, and Z are false statements, which of the following are true?

*10. $\sim(X \cdot \sim Y) \vee (B \cdot \sim C)$

*15. $\sim(X \vee Z) \cdot (\sim X \vee Z)$

*20. $\sim[(A \cdot B) \vee \sim(B \cdot A)]$

*25. $\sim\{\sim[(B \cdot \sim C) \vee (Y \cdot \sim Z)] \cdot [(\sim B \vee X) \vee (B \vee \sim Y)]\}$

ANSWER: True, True, False, False.

D. COMPUTE

$$p \supset \sim(p \cdot q)$$

E. COMPUTE

$$(p \vee \sim q) \equiv r$$

1.

p	q	p · q	∼ p · q	p ⊃ ∼ (p·q)
T	T	T	F	F
T	F	F	T	T
F	T	F	T	T
F	F	F	T	T

2.

p	q	r	~q	p v ~q	(p v ~q) ≡ r
T	T	T	F	T	T
T	T	F	F	T	F
T	F	T	T	T	T
T	F	F	T	T	F
F	T	T	F	F	F
F	T	F	F	F	T
F	F	T	T	T	T
F	F	F	T	T	F

F. TRANSLATE THE FOLLOWING STATEMENTS INTO PROPOSITIONAL LOGIC

1. In order to become a PHYSICIAN, it is necessary to RECEIVE an M.D. and do an INTERNSHIP.
2. In order to PASS, it is both necessary and sufficient to average at least FIFTY.
3. Getting a HUNDRED on every exam is sufficient, but not necessary, for ACING intro logic.

4. TAKING all the exams is necessary, but not sufficient, for ACING intro logic.

5. In order to get into MEDICAL school, it is necessary but not sufficient to have GOOD grades and take the ADMISSIONS exam.

6. In order to be a BACHELOR it is both necessary and sufficient to be ELIGIBLE but not MARRIED.

7. In order to be ARRESTED, it is sufficient but not necessary to COMMIT a crime and GET caught.

8. If it is RAINING, I will play BASKETBALL; otherwise, I will go JOGGING.

9. If both JAY and KAY are home this weekend, we will go to the BEACH; otherwise, we will STAY home.

10. JONES will win the championship unless he gets INJURED, in which case SMITH will win

ANSWERS:

$$\sim(R \cdot I) \supset \sim P$$

$$(\sim F \supset \sim P) \cdot (F \supset P)$$

$$(H \supset A) \cdot \sim(\sim H \supset \sim A)$$

$$(\sim T \supset \sim A) \cdot \sim(T \supset A)$$

$$[\sim(G \cdot A) \supset \sim M] \cdot \sim[((G \cdot A) \supset M]$$

$$[\sim(E \cdot \sim M) \supset \sim B] \cdot [(E \cdot \sim M) \supset B]$$

$$[(C \cdot G) \supset A] \cdot \sim[\sim(C \cdot G) \supset \sim A]$$

$$(R \supset B) \cdot (\sim R \supset J)$$

$$[(J \cdot K) \supset B] \cdot [\sim(J \cdot K) \supset S]$$

$$(\sim I \supset J) \cdot (I \supset S)$$