**Logic Exercises 5: Translation**

**Part A. For each of the following sentences create a scheme of abbreviation and translate the sentences into formulas of propositional logic.**

1. Juan will not go to the party.

2. It is not the case that Maria will not go to the party.

3. Either Juan will go to the party or Maria will not go to the party.

4. Both Lisa and Eric will attend the party.

5. It is not the case that both Lisa and Eric will attend the party.

6. Neither Jasvir nor Zuleica will attend the party.

7. Jasvir and Carlos will attend the party or Zuleica and Carlos will attend the party.

8. If Carlos does not attend the party, then Zuleica and Jasvir will attend the party.

9. It is not the case that if Lisa and Juan attend the party, Zuleica and Carlos will not attend the party.

10. It is not the case that both Lisa and Eric will attend the party.

11. Juan and Carlos will attend the party, if Marisa and Jane do not.

12. Bianca and Cassie will attend the party only if Raj and Mohammed go.

13. If Raj goes to the party, then either Bianca will go or Cassie will go.

14. If Mohammed goes to the party, then Bianca will go to the party, but Cassie will not.

15. Neither Juan nor Carlos will go to the party, if either Bianca or Jasvir go to the party.

**Part B: Using the following scheme of abbreviation, translate the following sentences into propositional logic. Scheme of Abbreviation:**

**P: Vanessa will close the deal.**

**Q: Jasmine will do the marketing.**

**R: Asha will present the analytics.**

**S: Maria will do the sales.**

**T: Tessa will do the financial statements.**

**U: Centronix will get the contract.**

16. Asha will present the analytics only if Jasmine will do the marketing.

17. Tessa will do the financial statements only if Centronix gets the contract.

18. Centronix will not get the contract, if Vanessa does not close the deal.

19. If Asha presents the analytics and Jasmine does the marketing, then Maria will not do the sales.

20. If Maria does not do the sales, then Vanessa won’t close the deal, and then Centronix will not get the contract.

21. If neither Jasmine does the marketing nor Tessa does the financial statements, then Centronix will not get the contract.

22. If Centronix gets the contract, then both Asha will present the analytics and Maria will do the sales.

23. A sufficient condition for Centronix getting the contract is that Tessa does the financial statements.

24. A necessary condition for Centronix not getting the contract is that Asha does not present the analytics.

25. A sufficient condition for Centronix not getting the contract is that Maria does not do the sales.

26. A necessary and sufficient condition for Maria to do the sales is that Asha presents the analytics and Tessa does the financial statements.

27. Either Vanessa will close the deal, or Asha will present the analytics and Tessa will not do the financial statements.

28. If either Asha present the analytics or Maria does the sales, then Tessa will do the financial statements and Vanessa will close the deal.

29. Either Asha will present the analytics only if Tessa does the financial statements, or Maria will do the sales only if Jasmine will do the marketing.

30. Jasmine will do the marketing only if Vanessa closes the deal and Centronix gets the contract.

**Part C: Using the following scheme of abbreviation, translate the following sentences into propositional logic. Scheme of Abbreviation:**

**P: Anita passes to Renu. W: Simone heads the ball to Anita.**

**Q: Stephanie slips by her defender. X: The Panthers score a goal.**

**R: Renu outruns the midfield.**

**S: The goalie catches the kick.**

**T: Janet passes the ball to Sandy.**

**U: Chloe blocks her defender.**

**V: Sandy kicks on goal.**

31. If Anita passes to Renu and Stephanie slips by her defender, then Renu will outrun the midfield and Sandy will kick on goal.

32. Either Simone will head the ball to Anita or Stephanie will slip by her defender, if Chloe blocks her defender.

33. Janet will pass the ball to Sandy and the Panthers will score, only if Sandy kicks on goal and the goalie does not catch the ball.

34. If Anita passes to Renu and Renu outruns the midfield, then the Panthers will score only if the goalie does not catch the ball.

35. If Chloe blocks her defender and Stephanie slips by her defender, then either Anita will pass to Renu or Janet will pass to Sandy.

36. The Panthers will score only if Stephanie does not slip by her defender and Chloe does block her defender.

37. Either Simone will not head the ball to Anita or Janet will pass the ball to Sandy, if the Panthers want to score.

38. If Sandy kicks on goal, then if the goalie does not catch the ball, the Panthers will score.

39. If Chloe blocks her defender and Stephanie does not slip by her defender, then Janet will pass the ball to Sandy and Sandy will kick on goal.

40. It is not the case that Janet will pass to Sandy and Sandy will not kick on goal.

41. A necessary condition for the Panthers to score is that Sandy kicks on goal.

42. A sufficient condition of the Panthers not scoring is that the goalie catches the kick.

43. It is not the case that both Stephanie slips by her defender and Chloe blocks her defender.

44. Only if Renu outruns the midfield will Anita pass to her and Stephanie slip by her defender.

45. Renu will out run the midfield only if Anita passes to her.

**Part D: Make a scheme of abbreviation and translate the following arguments into propositional logic.**

46. Middle class Americans would not be upset if the government changed the way they taxed them. However, the government will not change the way they tax them. So, middle class Americans will remain upset.

47. Either the Affordable Care Act will pass as it is written or it will be altered to be some weaker health care bill. If the ACA is altered to be some weaker bill, then many Americans will remain without health care insurance. The Affordable Care Act will not pass as it is written. So, many Americans will remain without health care insurance.

48. If racism (discrimination on the basis of race) is wrong and sexism (discrimination on the basis of sex) is wrong, then speciesism (discrimination on the basis of species membership) is wrong. Racism and sexism is wrong. So, speciesism is wrong.

49. Punishment of a criminal through imprisonment is morally permissible only if it deters future crime or helps rehabilitate the criminal. Imprisonment does not deter future crime. If imprisonment is the least effective method to rehabilitate a criminal, then we ought to choose another available method. Imprisonment is the least effective method for rehabilitating a criminal. So, punishment of a criminal through imprisonment is not morally permissible.

50. Murder is morally wrong. Aborting a fetus is murder. So, abortion is morally wrong. If abortion is morally wrong and capital punishment is similar to abortion in the relevant respects, then capital punishment is morally wrong. Capital punishment is similar to abortion in the relevant respects. So, capital punishment is morally wrong.