**Translation Workbook I**

**Section A:** Translate each of the following sentences into propositional logic. First, circle all of the logical connectives. Second make a scheme of abbreviation. Finally, present your translation.

1. If Samantha wins the election, then Jacinta or Federica will be vice-president.

2. It is not the case that Hester or Ahmed will win the election.

3. It is not the case that if Raja and Hema vote for Finn, he will win.

4. Either Fleur or Paz will vote for Rafaella.

5. It is not the case that both Sabra and Pippa will win.

6. Neither Sabra nor Pippa will win.

7. Tessie and Marlin will vote for Lux only if Sidra does not.

8. Anita and Renu will not vote for Donald.

9. The republicans will vote down the measure, if the democrats increase the budget.

10. The republicans will vote down the measure only if the democrats do not increase spending.

11. If the democrats do not increase spending, the republicans will not vote down the measure.

12. Jenna and Carlos will not vote for the republican candidate, if the current budget stays the same.

13. If spending stays constant and the budget stays the same, then next year there will be a debt.

14. Neither spending nor the budget will remain the same next year.

15. It is not the case that both the budget and spending will increase next year.

16. It is necessary that Frank pass the exam to be eligible to run for office.

17. Francine’s qualifications are sufficient for her to be eligible to run for office.

18. To pass this class it is necessary that one do all assignments.

19. To get an A in this class it is sufficient for one to get an A on each exam.

20. To win the election it is necessary and sufficient for each candidate to win over the voters.

**Section B:** Using the following scheme of abbreviation, symbolize the following sentences.

P: Australia will support India.

Q: Pakistan invades New Zealand.

R: Iraq supplies nuclear arms.

S: Iran builds a nuclear facility.

T: The U.S. invades Russia.

U: Russia will support Germany.

V: England will support the U.S.

W: Brazil will provide resources.

21. Australia will support India if and only if Pakistan invades New Zealand.

22. Brazil will not provide resources only if Iran builds a nuclear facility or Iraq supplies nuclear arms.

23. Russia will support Germany if Pakistan invades New Zealand or the U.S. invades Russia.

24. England will support the U.S. and Brazil will provide resources only if Australia will support India or Iran builds a nuclear facility.

25. Russia will support Germany unless the U.S. invades Russia.

26. It is not the case that both Brazil will provide resources and either Iran builds a nuclear facility or England supports the U.S.

27. Either Russia will support Germany, if either Pakistan invades New Zealand or Iraq supplies nuclear arms.

28. Australia will support India and Russia will support Germany if and only if either Brazil provides resources or Iraq supplies nuclear arms.

29. It is not the case that Australia will support India only if Russia will not support Germany.

30. Iraq will not supply resources and Russia will not support Germany only if Pakistan invades New Zealand.

**Section C:** Using the following scheme of abbreviation, symbolize the following sentences.

P: Hema will pass to Renu.

Q: Renu shoots on goal.

R: Anita blocks Manju.

S: Anu shoots from long.

T: Janet blocks Renu.

U: Karin passes to Anita.

V: Manju shoots on goal.

W: Hema out runs Rita.

X: Rita shoots on goal.

31. Hema will pass to Renu if Karin passes to Anita and Hema out runs Rita.

32. It is not the case that Janet blocks Renu and Anita blocks Manju.

33. Either Rita shoots on goal or Renu shoots on goal, but not both.

34. If Hema passes to Renu and Antia blocks Manju, then Renu will shoot on goal only if Hema out runs Rita.

35. Either Manju shoots on goal or Janet blocks Renu if Anu shoots from long.

36. Anita blocks Manju and Anu shoots from long only if Hema out runs Rita and Janet blocks Renu.

37. It is not the case that Hema will pass to Renu only if Karin passes to Anita.

38. Either Anu shoots from long or it is not the case that either Manju shoots on goal or Rita shoots from goal.

39. Anita won’t block Manju if and only if Anu shoots from long.

40. Neither Janet blocks Renu nor Karin passes to Anita only if Anu shoots from long.

**Section D:** Using the following scheme of abbreviation, symbolize the following sentences.

P: Ela will go to the meeting.

Q: Lisa will go to the meeting.

R: Raj will bring food.

S: Bill will run the meeting.

T: Carlos will bring drinks.

U: Janet will schedule the meeting.

V: Tony will skip the meeting.

W: Daniel will bring desert.

41. Ela will go to the meeting only if either Bill will run the meeting or Janet will schedule the meeting.

42. Tony will skip the meeting unless Janet schedules the meeting.

43. It is not the case that Ela won’t go to the meeting and Bill will run the meeting.

44. Carlos will bring drinks only if Raj will bring food or Daniel will bring desert.

45. Daniel will bring desert only if Carlos does not bring drinks.

46. Raj will not bring food, if Carlos does not bring drinks or Daniel does not bring desert.

47. Lisa will go to the meeting and either Bill will run the meeting and Janet will schedule the meeting only if Tony does not skip the meeting.

48. It is not the case that Ela will go the meeting only if Raj brings food.

49. Janet will schedule the meeting only if Daniel will not bring desert and Carlos will bring drinks.

50. Lisa and Ela will go to the meeting only if Bill runs the meeting and Raj brings food, but Tony skips the meeting.

**Section E:** Translate the following arguments. First identify the conclusion and premises of the argument. Second, make a scheme of abbreviation. Third, translate the argument. List the premises before the conclusion, use a ‘/’ to separate the premises from the conclusion.

51. Either the maid or the butler committed the crime. If the butler committed the crime, then the butler was at home. The butler was not at home. So, the maid committed the crime.

52. If the mayor runs for re-election, then the public will be unhappy. If the public is unhappy, then the economy will go down. The mayor will run for re-election. So, the economy will go down.

53. The economy will improve, if we create more jobs. Neither job creation nor reduced takes are forthcoming. So, the economy will not improve.

54. The republicans will veto the bill only if the democrats support the bill. The democrats will support the bill, if the green party members do not support the bill. So, the republicans will veto the bill.

55. The democrats will not support the republican candidate and the democrats will not support the bill. If the democrats support the republican candidate, then the green party candidate will lose. So, the green party candidate will not lose.